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Income inequality, economic growth and financial integration

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Supervising Committee: Emerita Professor Nikolina Kosteletou Professor Nikolaos Theocharakis Professor Christos Papatheodorou "As long as poverty, injustice, and gross inequality persist in our world, none of us can truly rest."

Nelson Mandela

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Embarking on the path to my PhD was a decision filled with anticipation and a sense of purpose. As I now stand at the culmination of this remarkable journey, I find myself reflecting on the invaluable experiences, knowledge, and personal growth it has brought. Thus, finishing my PhD has been a life odyssey where finally, paraphrasing the famous lyrics of the poem "Ithaka", the journey was more important than the destination.

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1 Intro

Issues of income distribution and inequality have gained prominence in public debates over the last several decades, as societies worldwide have observed high levels of income inequality and their negative impacts on economic and social outcomes. Although one of the primary goals of societies is to ensure the well-being of their members, disparities in wealth persist. The distribution of wealth and income among society's members has long been a central concern for economists and policymakers. Economic theories offer various perspectives on income distribution, yet when explaining the origins of inequality, it can be argued that individuals play a role in shaping their own fates, and each society determines the relative income positions of its members. Consequently, while economic theories offer diverse approaches to income distribution, the process through which each society decides to allocate the total output resulting from production is predominantly viewed as a political matter that societies should resolve autonomously. Hence, the morality, acceptability, or desirability of inequality levels within a society becomes a decision that each nation's constituents must make in line with their political systems.

Plato, the eminent ancient Greek philosopher, asserted that income inequality is the most significant of all afflictions (Desai, et al., 2009). Plato further believed that a successful state should neither tolerate extreme poverty nor excessive affluence among its citizens, and this principle should be established from the inception of the state. However, such a rule seems utopian, particularly in the realm of modern capitalism, where globalization has reached a level where the entire world appears interconnected as one vast integrated economy, making regulation that curtails extreme poverty and excessive wealth impractical. Consequently, the economic landscape has shifted over the past few decades due to increased global integration and transformed social structures. As argued, in environments marked by economic integration, shared policy applications, and common shocks, controlling inequality levels through domestic policies, especially within Europe has become nearly impossible (Galbraith, 2012). In a global market and a world connected by digital media, particularly the internet, behaviors, lifestyles, and consumption patterns tend to converge, suggesting that the globe can be envisioned as one multinational society. As a result, the legislative authority of individual countries seems dwarfed by the influence of markets and the pressures arising from an interconnected world. Consequently, many countries find themselves with limited policy options, particularly concerning income distribution and subsequent inequality. As Galbraith (2012) states, a significant portion of global inequality originates beyond national borders. Moreover, a number of these countries, especially smaller ones, are unwilling or unable to counter these forces that perpetuate inequality (Galbraith, 2012).

Furthermore, the boundaries of inequality levels appear to be spiraling out of control, as extreme poverty and excessive wealth have become hallmarks of societal growth in recent decades. Noteworthy examples can be observed in regions such as Latin America and sub-Saharan Africa. Moreover, global inequality levels have been highlighted by numerous organizations and studies. For instance, according to Oxfam's report, the world's ten wealthiest individuals collectively possess more wealth than the bottom 3.1 billion people (Ahmed, et al., 2022). Additionally, the richest 10% of the global population currently garners 52% of global income, while the bottom half receives only 8.5% (Chancel, et al., 2022). The substantial surge in global inequality over the past two centuries should serve as a cause for concern, considering the development of the international economy (Van Zanden, et al., 2014).

Hence, a significant objective is to identify the factors influencing income distribution and subsequently income inequality in today's globally interconnected capitalism. Given that financial development is a pivotal aspect of modern economies, some argue that the potential impact of financial sector policies on inequality has been largely overlooked, deserving greater attention in the study of inequality (Martin Čihák, 2020). While mainstream economic theories attribute wage share declines primarily to technological change and secondarily to globalization, political economy approaches emphasize financial and trade globalization, alongside declining union density (Stockhammer, 2012a). However, inequality trends in emerging markets and developing nations present complexities; certain countries have achieved reduced income inequality while still experiencing persistent inequalities in education, healthcare, and financial access. In contrast, the gap between the affluent and the impoverished in developed countries is at its widest point in decades (Dabla-Norris, et al., 2015).

Beyond the intriguing patterns of inequality, particularly during the mid-20th century, and its link to societal outcomes, the relationship between inequality and economic performance has garnered substantial attention. It is evident that income inequality correlates negatively with various social indicators, such as health, education, social cohesion, and trust. However, the relationship with economic performance remains more intricate. Focusing on the correlation between income inequality and economic outcomes is essential for effective policy-making.

Economists have identified numerous channels through which inequality could influence economic growth, including fiscal policy, financial development, and fertility (Persson & Tabellini, 1994; Perotti, 1996a). Alternative theoretical perspectives suggest that the connection between inequality and growth can arise from differences in saving rates between capitalists and workers, as well as through demographic composition and population growth's role within the economy (Kaldor, 1961). The linkage between economic growth and income inequality is crucial, as the income of different social classes shapes consumption and investment levels. Additionally, economic growth and income distribution can intersect through technological innovation (Arrow, 1962). Technological advancements significantly impact income inequality due to changes in the production process, leading to corresponding income shifts. Kuznets (1955) also postulates that inequality may follow a predictable trajectory as economics expand. According to Kuznets, the relationship between economic growth and income inequality over time takes the form of an inverted "U," initially being positive during early development stages and eventually becoming negative.

However, economic theory has yet to reach a consensus on whether inequality's effect on growth is positive or negative. On one hand, it is argued that inequality is essential for achieving growth, as investment predominantly stems from the wealthier segments of the population (Kaldor, 1956). Conversely, inequality has been found to hinder economic growth or lead to unsustainable growth (Persson & Tabellini, 1994; Stockhammer, 2012a; Galbraith, 2012; Stiglitz, 2012; Perotti, 1996a).

Furthermore, the relationship between income inequality and economic growth has become more intricate in recent decades, given the impacts of economic integration, including technological changes, expanded international trade, and advanced financial systems, on the economic landscape.

In summary, economists and policymakers should consider both economic growth and equitable income distribution as crucial components for a thriving society. To sustain societal well-being and avoid social upheaval, societies must ensure that most members' needs are met and aim to increase overall wealth, enabling improved standards of living and potential introduction of new needs.

The objective of this thesis is to analyze how inequality is escalating in the globally integrated environment and its connection to economic growth. The aim is to provide appropriate policy tools for sustainable growth, considering the influence of income inequality. Before debating whether inequality is beneficial or detrimental to the economy, the factors influencing inequality are discussed at both theoretical and empirical levels. Subsequently, the channels through which income distribution affects economic growth are explored.

Understanding income inequality and its origins is pivotal. Thus, Chapter 2 defines income inequality, introduces major theoretical approaches to income distribution and inequality, and distinguishes functional and personal inequality. This distinction is crucial in understanding inequality growth during production. Moreover, the chapter highlights prominent inequality indexes. In Chapter 3, key theoretical perspectives on the relationship between income inequality and economic growth are presented. Chapter 4 delves into the literature's theoretical perspectives on the evolution of income inequality and its link to economic growth, considering the influence of economic integration's core components. The interactions of technology, trade openness, and financial development with economic performance due to rapid globalization have induced substantial changes in economic processes. Consequently, the relationship between income distribution and economic growth has evolved over recent decades. Chapter 5 develops a theoretical model of inequality and its connection to economic growth, incorporating the functional-personal distribution distinction and the impact of financial integration. Income inequality is classified into factor inequality (between wage and profit earners), labor inequality (among workers), and profit inequality (among profit earners). Empirical evidence from the literature on determinants of inequality and its correlation with growth is presented in Chapter 6, using panel data models based on the theoretical model in Chapter 5. The analysis focuses on integrated eurozone economies, and results are outlined in Chapter 7. These results offer insights for designing economic policies that promote growth while limiting income inequality growth. Finally, Chapter 8 discusses the Eurozone's economic strategy's impact on inequality and growth.

2 Inequality

2.1 Definition of inequality

At its core, income inequality underscores the divergence in economic potential among individuals due to disparities in their earnings. This inequality exerts a profound influence on people's access to basic necessities such as food, healthcare, and legal protection. Moreover, inequality is associated to their overall well-being and social outcomes, including trust, social cohesion, stability, crime rates, social mobility, educational attainment, and social security (Wilkinson & Pickett, 2007; Pickett & Wilkinson, 2014). Consequently, income inequality levels and trends can significantly shape the prosperity of a society's members. This connection implies that income inequality has a mutual relationship with various factors associated with growth, including social cohesion, consumption patterns, unemployment rates, investment, education, financialization, and open markets. Indeed, indices of income inequality offer valuable insights into how the rewards of economic growth are distributed among society's members (Van Zanden, et al., 2014).

Beyond its social implications, income inequality is profoundly intertwined with economic performance. For instance, arguments have been made that inequality fuels unemployment due to its creation of an incentive to actively search for better opportunities, leading to elevated unemployment rates (Galbraith, 2012). Consequently, income inequality has become a topic of discussion for a multitude of reasons and demands comprehensive attention.

Economic inequality is characterized by the fundamental disparities that grant some segments of the population access to goods and services while withholding them from others. In his work "Measuring Inequality," Cowell (1995) acknowledges that "inequality" is a complex term, often associated with challenging social and economic issues. He refers to Rein and Miller's nine criteria of equality, each offering distinct facets of what inequality entails, including concepts like:

- One-hundred-percentism: in other words, complete horizontal equity "equal treatment of equals."
- The social minimum: here one aims to ensure that no one falls below some minimum standard of well-being.

- Equalization of lifetime income profiles: this focuses on inequality of future income prospects, rather than on the people's current position.
- Mobility: that is, a desire to narrow the differentials and to reduce the barriers between occupational groups.
- Economic inclusion: the objective is to reduce or eliminate the feeling of exclusion from society caused by differences in incomes or some other endowment.
- Income shares: society aims to increase the share of national income (or some other "cake") enjoyed by a relatively disadvantaged group such as the lowest tenth of income recipients.
- Lowering the ceiling: attention is directed towards limiting the share of the cake enjoyed by a relatively advantaged section of the population.
- Avoidance of income and wealth crystallization: this just means eliminating the disproportionate advantages (or disadvantages) in education, political power, social acceptability and so on that may be entailed by an advantage (or disadvantage) in the income or wealth scale.
- International yardsticks: a nation takes as its goal that it should be no more unequal than another "comparable" nation.

(Cowell, 1995).

Numerous theories have endeavored to explain the origins of inequality, as the uneven distribution of wealth and income has persisted throughout history. At first glance, one might assume that inequality arises from compensating individuals based on their contributions to the production process. This distribution of income, often encompassing wages and profits, plays a significant role in determining inequality.

Sahota (1978) categorizes historical theories on wealth inequality into two groups. The first asserts that people shape their destinies, and each community defines the relative economic status of its members. This group encompasses theories ranging from conservative "choice" theories to institutional and inheritance theories of liberal and radical economists advocating for reform the social order to mitigate inequality. The second group contends that inequality is preordained to varying extents. This group comprises three schools of thought: those suggesting genetically predetermined income-determining skills, those emphasizing chance and stochastic factors, and those discussing life-cycle theories proposing income and inequality hinge on skills acquired throughout one's growth. (Sahota, 1978)

In general, the income that each individual ultimately receives can be influenced by various factors. Furthermore, income, as the outcome of the production process, possesses a dual nature. On one hand, it can serve as a reward for productivity and as a proxy for welfare. The greater an individual's income, the more goods and services they can consume and acquire. Therefore, an individual striving to maximize their welfare may exert more effort in the production process to attain a higher income.

Furthermore, it has been argued that an individual's well-being may be determined by their income in relation to that of others (Ferrer-i-Carbonell, 2005). Stochastic influences also play a role in individuals' optimizing behavior, as indicated by Milton Friedman's theory of free individual choice (Bigsten, 1983). Small groups within a society can accept greater total revenues by accepting risk, especially when potential losses are outweighed by potential gains. This notion posits that societies primarily composed of risk-averse individuals are more likely to maintain greater equality. Moreover, a general observation is that affluent individuals tend to take risks more readily than those with lower incomes. Inequality is further reflected in consumption expenditure, serving as an appropriate economic indicator of income inequality (Blundell & Preston, 1998).

However, wealth accumulation isn't solely a product of diligent labor. Wealthier individuals also tend to enjoy better living conditions and often have improved access to opportunities, such as higher education or a substantial initial amount of wealth for investment. Nepotism, which refers to the tendency for wealthier individuals to originate from affluent families, is a phenomenon that perpetuates inequality. This phenomenon is pronounced in the United States, where children of wealthy parents are more likely to maintain affluence, particularly during periods of heightened inequality (Corak, 2013). Beyond this, inequality can stem from inheritance or lottery winnings.

On the other hand, given that an individual's income can be utilized for consumption, investment, or savings, and thus influences the economic process, income can determine the allocation of resources and, consequently, serve as an indicator of economic growth. Thus, the existence of inequality signifies that at least a few individuals, particularly the wealthier ones, have the capacity to accumulate the minimum physical capital necessary to start a business or invest in human capital (Barro, 2000). The significance of inequality is highlighted in investment in education

and human capital, which involve fixed costs and increasing returns (Galor & Zeira, 1993; Perotti, 1993). Furthermore, inequality can stem from the initial distribution and persist across subsequent generations due to the risk of 'poverty traps' associated with fixed investment costs (Piketty, 1994). Additionally, it's worth noting that wealth doesn't always contribute to production; it can also be saved or used for luxury consumption. There are situations where capital or economic productivity decreases while wealth increases (Kanbur & Stiglitz, 2015). In addition to the above, the initial distribution can also influence economic growth through its impact on equilibrium factor prices, such as interest and wage rates. The initial wealth distribution can determine the levels of supply and demand for credit, thus defining the equilibrium interest rate. Consequently, an unequal initial distribution, which often involves a significant proportion of the lower-income population, is associated with a high demand for capital (Piketty, 1997). This leads to expectations of a high equilibrium interest rate, difficulties in securing loans, and lower upward mobility. Conversely, a more equal initial distribution results in a lower interest rate, fostering greater upward mobility, faster capital accumulation, and reduced interest costs.

Moreover, the initial distribution of wealth can also shape the wage rate through its impact on labor demand. Lower-income classes primarily consist of workers rather than employers, who often face challenges in accessing credit for investments with higher returns. Consequently, their primary option is to sell their labor rather than investing in physical or human capital. In contrast, upper-income classes typically include employers who can invest in physical and human capital, either through their savings or by having easy access to credit. As a result, it becomes evident that a more unequal distribution increases labor supply, whereas a more equal distribution boosts labor demand. In the former case, with a high labor supply, equilibrium wage rates, capital accumulation, and upward mobility tend to be low. Conversely, less inequality and high labor demand appear to promote higher wage rates and increased mobility (Banerjee & Newman, 1993).

Therefore, while the first aspect of income is associated with the income distribution resulting from the production process, its second side is closely linked to economic growth.

Moreover, inequality can serve as an indicator of the polarization of economic power, which can have a range of consequences for different political regimes. The implications of inequality extend beyond economic considerations. Increased economic power often leads to long-term inequality, as those who benefit from it seek to maintain their positions. Furthermore, as argued by Marx, the legislative system tends to be perpetuated alongside the capitalist class, often resulting in legislation that favors their own class. Therefore, the lack of socioeconomic mobility and long-term inequality can pose a threat to democracy. In extreme cases, long-term inequality may provide opportunities for the wealthiest individuals to influence the political environment, thus undermining democracy and potentially leading to the peril of despotism.

In cases where wealth indirectly contributes to inequality through nepotism, various policies can be implemented to mitigate inequality while avoiding its detrimental effects. Concerning human capital, one potential policy is to ensure equal educational opportunities for the entire population. Additionally, for physical capital, a policy proposed by Atkinson (2015) involves providing a sum of money to every young adult upon reaching adulthood, thus offering an initial capital for investment.

Furthermore, depending on how it manifests, inequality may be more apparent in certain societies, particularly those with high levels of poverty, while it may be concealed in the lifestyle of residents in wealthier societies.

For instance, in countries without social protection, inequality can be observed in the stark contrast between the lavish residences of those who own expensive cars and the poverty-stricken favelas. It can also be seen in individuals who tragically pass away because they cannot afford medical treatment, while others spend a significant portion of their income on cosmetics or other luxury items. In contrast, in other societies, inequality might be more subtle, manifesting solely through individual habits. For example, some people can afford better cars or more extravagant vacations. Consequently, we can readily discern why inequality can be identified in both affluent and disadvantaged segments of the economy. However, the most challenging aspect lies not in detecting inequality but in identifying its sources, which may vary among nations, historical periods, or economic systems.

2.2 Income distribution and inequality

As discussed earlier, inequality arises from the distribution of income, which serves as both a welfare and an economic power indicator. But how is total income distributed among the members of society?

Income distribution has long been a prominent concern for societies striving to determine the fairest way to allocate their wealth. A fundamental objective for contemporary economies is to increase their overall production and aggregate income, which subsequently must be distributed among their citizens. Income distribution has been a central topic in economic literature and research. Economists and policymakers have discussed several theoretical approaches proposing optimal methods for how income should be distributed.

Primarily, the unequal distribution of total income among the members of an economy leads to income inequality. When we refer to income or wealth distribution, we are addressing the proportion of total income or wealth that each person in society receives or possesses. Understanding how income is distributed can help us comprehend the generation of inequality within society. Consequently, we can assert that income distribution mirrors both economic growth and income inequality within a society, assuming it represents the level of income and how it is divided among individuals.

Furthermore, considering that income distribution is the final stage of the production process and profoundly influences wealth and its recipients, it becomes apparent why economists and policymakers engaged in discussions on wealth distribution have not reached a consensus. Most theoretical approaches argue that distribution is determined by employment levels and payments to the means of production, primarily consisting of labor and capital. However, significant differences exist among these theoretical approaches, primarily in the assumptions they make about market behavior and the determination of wage, product, and service prices (Ahluwalia & Chenery, 1983,).

Different schools of economic thought present different explanations of the determinants of income distribution. As it has been presented there are several factors that determine differences in income like marginal costs, the conflict between workers and capitalists, the level of monopoly in the market, and investing in human capital. According to neoclassical economics, technology and preferences are assumed to

determine income distribution. In Keynesian economics the main determinant of income distribution is effective demand, while in Marxian economics the class struggle is assumed to determine income distribution. "Unfortunately, these results are obtained only in the highly restrictive setting of a long-run equilibrium of a closed economy characterized by full capacity utilization" (Stockhammer, 2009). However, during the last decades, most economies have become more open to international markets following a process of globalization.

Furthermore, we can focus on income distribution through two perspectives. The first is the perspective of functional distribution. Functional income distribution refers to the distribution of income that is returned to the main factors of production, which usually are labor and capital. The second perspective is the personal distribution, which refers to the distribution of income that is being distributed among households and individuals. Income inequality can be also observed among individuals with the same source of income.

In order to understand the difference of functional and personal distribution we should take under consideration the status of the income receiver. Thus, functional distribution refers to the income that is being distributed among different statuses, including firms, families, states, and individuals, while personal distribution refers to the income that is being distributed among individuals, sometimes proxied by households.

However personal distribution and functional distribution are strongly related to each other. Increases in inequality among classes may be the fundamental cause of the increases of personal income inequality (Wolff & Zacharias, 2007). As it has been argued by Atkinson, (2009), in order to understand personal income inequality, we should analyze functional income distribution. As it has been suggested, a redistribution between wages and profits affects the personal income distribution due to the distribution of the production factors among individuals (Molero-Simarro, 2016,).

For instance, it has been argued that distribution of capital is usually more unequal than that of labor. 'In a capitalist economy, income distribution is combined out of the distribution of capital income, the distribution of labor income and the shares of capital and labor in total income. As capital inequality is much greater than income inequality, a decrease in capital's share would decrease income inequality.' (Minsky, 1973). Hence

in contrast, in these cases, an increase of the profit share would increase personal inequality (Garca-Pealosa & Daudey, 2007).

Thus, the distribution of personal income, and hence total income inequality, is determined by the distribution of labor and capital endowments and the distribution of the aggregate output between labor and capital. Therefore, the levels of factor shares seem to be related to personal income distribution and inequality, and hence the determinants of functional income distribution can provide an explanation for the other dimensions of redistribution (Atkinson, 2009; Glyn, 2011).

Therefore, when trying to identify the determinants of inequality, we should seek those factors that lead to changes in functional and personal distribution. Furthermore, we should focus on the causes that lead to changes in these factors.

2.2.1 Functional distribution

Functional distribution refers to the way output is divided between the factors of production, usually capital and labor. Given that factors of production may be unequally distributed among individuals, functional distribution can be considered a strong determinant of personal inequality. Although the distribution of income and the way inequality is created takes different forms in different economies, it is generally accepted that it usually comes with a decline in the wage share. Since individuals of the middle or lower income classes mainly belong to the labor factor of the production process, the wage share can be considered a main indicator of inequality. For instance, in the post-war period, there was a reduction in inequality accompanied by a rise in wage shares. In contrast, in recent decades, inequality seems to have increased in most advanced countries, while wage shares have decreased (Atkinson, 2015). Therefore, even though there isn't an integrated theory that universally explains income distribution and inequality, a general "rule" has emerged from the policies that have been implemented, which is to redistribute wealth from the rich classes in an attempt to reduce inequality.

The earliest theory regarding income distribution can be found in the work of David Ricardo. Income distribution was a central issue in economic thought for Ricardo, who argued that the principal problem in Political Economy is to "determine the laws which regulate" the distribution of factor shares (Atkinson, 1997; Giovannoni, 2010; Glyn, 2011). According to Ricardo, the main factors of production are labor, capital, and land, while the main sources of income are wages, profits, and rent, respectively. Ricardo's approach stated that the differences in rent prices depend on land fertility, which explains why some landowners receive higher rents than others. He considered the increase in land rent as a consequence rather than a cause of already distributed wealth. Ricardo believed that the surplus over the cost of production is used to pay land rent, while the remaining payment is distributed among workers and capitalists. Furthermore, he accepted the Malthusian theory, which implies that labor, paid in subsistence wages, is unlimited (Kaldor, 1956; Cline, 1975). Ricardo's theory suggests that wage levels are determined by labor supply, which is defined by the accumulation of capital (Kaldor, 1956). Additionally, since land is assumed to be limited with varying fertility, in the long run, profit shares will decrease while the shares of land rent and wages, despite real wages remaining at subsistence levels, will increase. Ricardo believed that this distribution, favoring landowners, hinders economic growth and leads to stagnation. According to Ricardo, a decrease in import restrictions coupled with technological innovation, while maintaining labor with subsistence wages and full employment, would achieve growth (Gillis, et al., 1987). Therefore, Ricardo not only focused on redistribution from landlords to capitalists regarding economic growth, but he also placed the inequality between profits and wages at the core of economic thought.

From a different perspective, Marx centered on labor exploitation by the means of production owners as the main cause of inequality. According to Marx, the key characteristic of the capitalist production process is that the value of products is created by labor, with profit income being part of this value extracted by the capitalist class at the expense of labor-supplying workers. Marx believed that certain capitalists become extremely wealthy by exploiting the labor of the working class. Thus, while worker income remains at subsistence levels, profit incomes represent the difference between the value of the total product and the value of labor. Consequently, inequality can be seen as a conflict between the capitalist class, which profits from profits, and the working class, which derives income from wages. In general, factor shares in a country are determined by the value created by labor and the value of that labor (Herr, 2018).

Additionally, the value of labor power is determined by the value it can create in a given time period. Technological changes can increase labor productivity, allowing the same

labor to create more value in a certain period compared to the past. If wages remain constant or close to subsistence levels, profits will increase, leading to increased inequality. According to Marx, the pursuit of profit drives one of capitalism's positive aspects-the power to enhance productivity, creating strong incentives for firms to continuously modify the production process (Herr, 2018). "This process of creative destruction, as Joseph Schumpeter (1942) called it, is the secret to why capitalism, in comparison to all other modes of production known to date, is so successful in increasing productivity and driving innovation" (Herr, 2018). Marx also concurred with the idea that labor is practically unlimited, but for different reasons than Ricardo. Marx believed that there is always a level of unemployment, which he termed a "reserve army of labor," enabling capitalists to maintain wages close to subsistence levels to achieve their desired profit rate. Unemployment is seen as weakening the bargaining power of workers. According to Marx, a higher wage share is a double-edged sword: it increases living conditions but decreases profits, potentially resulting in reduced growth and higher unemployment. Thus, Marx, assuming workers are paid subsistence wages while the rest of the income goes to profits, posited that real wages are determined in the labor market (Herr, 2018). Therefore, a change in income distribution structure will only occur when relationships in the production process change. If these relationships persist in the capitalist production process, capitalists retain more power in income distribution. Additionally, capitalists tend to reproduce their relationship with the production process alongside the reproduction of legislation relevant to income distribution. Marx's theory implies that wages can only increase through collective organization of the working class, compelling the capitalist class to return some of their surplus value. Marx anticipated that productivity development would boost profits while workers' living conditions would deteriorate, eventually leading to a workers' revolution as the only solution to end exploitation.

In contrast, neoclassical economic theory posits that capital, land, and labor constitute the factors of production. Total product emerges from the interaction of these factors in the physical production process. A key characteristic of neoclassical economic theories is the assumption of individual rationality and market clearance. Consequently, each factor receives income based on its contribution to production, shaping functional income distribution. Another assumption of neoclassical distribution analysis is full capacity utilization and the clearance of markets in long-run equilibrium. According to neoclassical economic theory, product value is defined by marginal utility, which also determines the income returned to production factors. Marginal productivity is considered the basis for factor payment, with income distribution forming part of the general price-setting process in the economy. Therefore, market forces are expected to ultimately determine factor prices, including wages, as they determine good and service prices. Consequently, in equilibrium markets, income distribution is governed by technology (Stockhammer, 2009). Unlike Marx and Ricardo, neoclassical theory assumes that no factors are available in unlimited quantities. "Thus, if the total supply of all factors (and not only land) is taken as given, independently of price, and all are assumed to be limited substitutes to one another, but the share-out of the whole produce can also be regarded as being determined by the marginal rates of substitution between them" (Kaldor, 1956). In general, income distribution in neoclassical theory relies on elasticities and substitution processes (Cline, 1975). Therefore, as neoclassical theory tries to explain income distribution through the process of distribution of the productive factors, individuals' income depends on their total endowments. In neoclassical economics, prices adjust to achieve equilibrium, which means that aggregate supply of goods and services should be equal to aggregate demand (Cowell, 2007). According to neoclassical economic theory, changes in factors distribution and, consequently, changes in the size of distribution over time can be explained by changes in the relative supply of a factor, the substitution elasticity between factors, changes in demand for certain products, and technological advancements (Cline, 1975). In neoclassical economics, functional distribution is automatically determined by the market (Cowell, 2007).

Furthermore, following the tradition of Marx, Keynes argued that values are primarily created by labor and that exploitation is the source of profits, considering the income of rentiers from interests and dividends as expressions of exploitation. They both rejected the marginal productivity theory of income distribution (Herr, 2018). Keynes rejected the idea of perfect rationality and instead emphasized the role of fundamental uncertainty and the importance of socio-psychological phenomena.

At the center of Keynes's analysis is the determination of output and employment in the short run. On one hand, demand is driven by investment, while on the other hand, demand influences prices and employment. In the view of Keynesian economics, where nominal wages and functional distribution are negotiated in the labor market, wages not

only represent income for workers but also serve as costs for firms. Therefore, wages, like other costs, play a role in determining the prices of goods and services. The total labor cost is determined by the nominal wage and productivity. A decrease in nominal wages could lead to a decrease in prices and result in a deflationary spiral. However, depending on the level of competition among firms in the economy, changes in nominal wages can be adjusted so that the level of profits remains unchanged. According to Keynes, changes in the wage cost may primarily impact the price level rather than functional distribution. According to Keynes' analysis, real wages are more of an expost outcome of economic activity rather than a choice variable (Stockhammer, 2009).

Furthermore, influenced by the Marxist perspective on wage shares, Kalecki (1971) proposed a distribution model that revolves around wage shares through a monopolistic analysis (Kalecki, 1971). The Kaleckian analysis places functional income distribution at its core. In an oligopolistic or monopolistic market, profits are assumed to be determined by the markup that firms set over their costs, according to Kalecki. Consequently, if firms can set prices, demand changes have a limited impact on prices. Therefore, income distribution tends to be stable rather than an ex-post result. The degree of monopoly determines the level of the markup and, consequently, income distribution, according to Kalecki. Monopolistic pricing by firms is considered a major determinant of functional distribution (Kalecki, 1937). Competition constraints are important for analyzing the lower part of the earnings distribution, while monopoly power is relevant for analyzing earnings in professions with restricted entry (Cowell, 2007). Therefore, one determinant of the degree of monopoly, and thus the markup, is the "degree of price competition among firms in the goods market." A higher degree of concentration within an industry or sector has a positive effect on the markup, while the relevance of price competition compared to other forms of competition has a negative effect on the markup. Additionally, even if firms can offset an increase in nominal wages by raising prices, the impact on aggregate demand may not favor total profits.

Moreover, as has been argued, "supply and demand do not fully determine the market wage; they only place bounds on the wage, allowing scope for bargaining about the division of the surplus" (Atkinson, 2015). Additionally, "Once one abandons the assumption of perfect competition, income distribution becomes the outcome of a bargaining process between firms and labor, typically represented by labor unions"

(Stockhammer, 2009). Bargaining power is the relative power of one income class over the other. The bargaining power of workers, often mediated by trade unions, negatively impacts the markup, creating a strategic game with firms. Consequently, monopolization raises profit shares, while stronger bargaining power of labor is associated with higher wage shares. Moreover, if labor demand is inelastic, wage shares will also increase (Stockhammer, 2009; Stockhammer, 2017). Several authors have presented simple models demonstrating how wage shares are affected by bargaining power (Bentolila & Saint-Paul, 2003; Checchi & Peñalosa, 2005; Azmat, et al., 2007). Thus, it is expected that "the more powerful the trade unions are, the more they will be able to restrain the mark-ups and thereby to increase the share of wages in national income" (Kalecki, 1971). Furthermore, unemployment can impact bargaining power. The fear of unemployment can weaken the bargaining power of workers, leading to lower wages and higher inequality.

Finally, overhead costs, according to Kalecki, impact the degree of monopoly and the markup. Since overhead costs, like other costs, reduce gross profit, firms may increase their markup to protect profits. Interest payments on debt are also part of overhead costs, so an increase in interest rates could lead to an increased markup (Hein, 2013). Similarly, to Keynesian economics, if nominal wages increase, firms can adjust their markup, resulting in higher prices. Therefore, in Keynesian and Kaleckian economics, changes in nominal wages do not necessarily lead to changes in functional distribution. However, there is always the risk that this could cause lower demand and subsequently lower profits.

In conclusion, functional distribution focuses on the employment of production factors—primarily labor, capital, and rents—and their corresponding payments: wages and profits. Consequently, an individual's contribution of factors to the production process determines their personal income and, consequently, their level of inequality. Therefore, assuming that factors are unevenly distributed among individuals, changes in factor shares could result in changes in personal inequality. The literature suggests that a fall in wage shares is indicative of increased inequality (Stockhammer, 2012c). A decline in wage share has been associated with changes in income distribution, which also relates to personal inequality (Atkinson, et al., 2011). Thus, the changes in inequality observed over recent decades could be related to shifts in functional distribution. It is widely argued that wage shares have decreased since the 1980s

(International Monetary Fund, 2007b; International Labor Organization, 2011; Onaran, 2012; Stockhammer, 2012c).

In general, there is evidence that wage shares are negatively correlated with inequality (Garca-Pealosa & Daudey, 2007; Schmid, 2013), while profit shares are associated with higher levels of inequality (Giovannoni, 2010). Checchi & Peñalosa (2005), conducting a panel data analysis for 11 OECD countries from 1960 to 2000, found evidence that changes in personal distribution can be explained by variations in factor distribution (Checchi & Peñalosa, 2005). Specifically, they discovered a negative relationship between the wage share and inequality, as measured by the GINI coefficient.

2.2.2 Personal distribution

In modern economies, individuals receive income from various sources, making factor distribution only a part of the overall distribution and inequality explanation. If it's assumed that the distribution of endowments is equal across income classes—meaning every individual or household has the same amount of capital and labor power— changes in factor distribution wouldn't affect inequality. However, if income classes possess varying amounts of capital and labor, shifts in factor distribution could impact overall inequality. Additionally, the determinants of wage share levels can also lead to differences in earnings among different groups of workers. Differences in wages can be justified when individuals work longer hours, take on more responsibility, or perform less desirable jobs (Atkinson, 2015). Workers possess different labor skills, while capital owners have differing amounts of capital. Therefore, income inequality is influenced not only by the factor distribution between wages and profits but also by the way wages and profits are distributed among income classes.

Hence, while it is assumed that every individual seeks to maximize their utility by maximizing their income, personal distribution, which refers to the distribution of income among individuals or households, is determined by factor distribution and the contribution of personal endowments of these factors. Therefore, on one hand, as previously discussed, personal income depends on the factors that each individual contributes to the production process and the level of returns on those factors, which typically include profits and wages. Thus, the more capital stock or labor hours one provides, the higher their income. On the other hand, individuals with the same share

of factors may receive varying levels of income depending on the productivity of these factors. Therefore, it is essential to focus on the contribution of these factors to the production process and factors that can influence their productivity, such as education and technological advancements.

Therefore, if we assume that wages may constitute the primary source of income for most households, wage distribution becomes a crucial factor in total inequality. One of the key findings of Piketty and Saez (2003) is that at the top of the income distribution, rentiers have been replaced by the working rich. Consequently, among the determinants of inequality, special attention should be paid to the factors contributing to wage inequality among wage earners.

Wage inequality can stem from various factors, including investments in human capital through education. As has been argued, differences in wages may primarily stem from variations in training for jobs that require higher skills (Mincer, 1958; Sahota, 1978). According to Adam Smith, "a man educated at the expense of much labor and time... must be expected to earn over the usual wages... the whole expenses of his education, with at least the ordinary profits of an equally valuable capital" (Atkinson, 2015). Therefore, jobs requiring more extended education are typically compensated with higher wages to account for the time and financial investment in education.

Marx made a similar argument, contending that the labor power of workers with higher skills is more valuable because it includes the cost of education required to acquire those skills. The overall level of education can influence inequality, particularly when individuals must choose between investing in education (i.e., human capital) and working as unskilled laborers (Galor & Zeira, 1993). Consequently, investing in human capital through education can lead to higher returns on labor, impacting income distribution and inequality.

It has been noted that in the last two decades of the twentieth century, there was a significant widening in wage distribution (García-Peñalosa, 2010). Additionally, it has been argued that there is a rising skill premium since the 1980s, primarily driven by increased income among the highly educated, rather than a decrease in income among those with basic education (Ivanova, 2019).

Furthermore, experience gained through age can also lead to higher income by acquiring skills. According to the competition of professions, as proposed by Lester (1975), wage levels are determined by job characteristics, and employment opportunities depend on workers' relative positions in the job queue, which is often influenced by educational training (Lester, 1975). However, this perspective suggests that wages are determined not by the marginal product of the worker's education but by the marginal product related to skills acquired on the job. Thus, workers with the same education might receive different wages based on the skills they acquire through work. Additionally, the time required to gain necessary skills often depends on factors such as work and family conditions. Age might also measure biological growth and decline, assuming that productivity decreases over time (Mincer, 1958).

In addition to stochastic factors like chance and luck, labor income inequality is determined by skills acquired through education and experience. Higher-skilled individuals generally earn more than those with basic skills. The resulting income difference due to skill differences is known as the income premium. Consequently, lower levels of inequality tend to correlate with small differences between skill levels or between incomes of highly skilled and basic-skilled individuals. Evidence suggests that the increase in wage inequality has primarily been driven by the rise in the relative wage—the ratio of highly educated workers' wages to those of basic-educated workers (Gottschalk & Smeeding, 1997; Atkinson, 2008). Additionally, as different goods and services rely on varying skill levels, prices may also be affected. A higher wage premium leads to a higher relative price for goods relying heavily on skilled labor (Atkinson, 2015).

Furthermore, the level of the skill premium can be influenced by several factors. Beyond education, the labor market can impact the skill premium. If the demand for skilled labor increases, the skill premium tends to rise. A larger supply of skilled labor can decrease the skill premium, contributing to reduced inequality in labor income distribution (Li, et al., 1998). Countries with higher education levels often experience lower inequality (Checchi, 2001; Checchi & Garcia-Penalosa, 2004). However, Chambers (2005) suggested that primary education reduces inequality, while secondary and higher education might increase it (Chambers, 2005).

Moreover, Milton Friedman's theory of individuals' free choice argues that stochastic influences align with individuals' optimizing behavior (Bigsten, 1983). He posits that small groups in a society can reap larger total revenues by accepting risks, as potential losses are significantly smaller than potential gains. Consequently, if the majority of a society is risk-averse, it could be more equal than a society of risk-takers. Additionally, it's commonly observed that wealthier individuals tend to be more risk-tolerant than poorer individuals. Therefore, individuals' risk behavior can contribute to personal inequality within economies.

Furthermore, the type of labor can significantly influence income inequality. There is evidence of an increase in the share of supervisory workers (Mohun, 2013). Moreover, the rising remuneration for management, which is considered a labor cost, has played a role in increasing personal inequality in English-speaking countries (Stockhammer, 2013). The decrease in income inequality among wage earners in France and the decline in wages at the bottom of the distribution in Germany since the mid-1990s also correspond to the decreasing share of non-managerial wage earners in national income (Stockhammer, 2012c).

Finally, Behringer & Treeck (2018) suggest it's essential to investigate the relationship between personal and functional income distributions, specifically exploring whether an increase in personal inequality leads to a decline in wage shares (Behringer & Treeck, 2018).

2.3 Measuring inequality

Measuring inequality has posed significant challenges in economic studies. For example, many countries have not traditionally included measures of inequality in their national income accounts or labor statistics (Galbraith, 2012). Among the various measures used in empirical literature, the GINI index stands out as the most widely employed measure of income inequality, typically derived directly from the Lorenz curve.

The Lorenz curve provides a visual representation of the income distribution across the population of an economy. In a Lorenz curve diagram, such as the example in Figure 1, the horizontal axis represents the cumulative proportion of the population, while the

vertical axis represents the corresponding proportion of income. The 45-degree line visible in Figure 1 represents perfect equality, signifying that for every portion of the population, an equal portion of income is received. In essence, this means that every individual receives an equal income.

Inequality is quantified by the area between the 45-degree line and the curve representing the actual income distribution. The size of this area directly correlates with the level of inequality. Consequently, as depicted in Figure 1, the smaller the A area (or conversely, the larger the B area), the less pronounced the inequality. The GINI index coefficient is computed based on this area using the following formula.

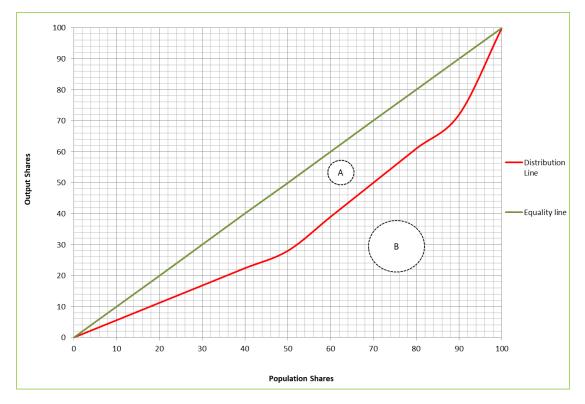
$$GINI = \frac{area A}{area A + area B} = 1 - 2area B$$
(2.3.1)

The GINI index is known for its simplicity in computation, and it spans a range from 0 to 1. A score of 0 signifies total equality, indicating that national income is distributed evenly among all individuals, while a score of 1 signifies total inequality and concentration of income, where one person possesses the entire national income.

One valuable attribute of the GINI coefficient is its ability to compare every income value with all other incomes in the distribution (Sen, 1973). Furthermore, it is primarily sensitive to the number of individuals involved in income transfers, in addition to its sensitivity to income disparities at higher income levels where these transfers take place. Additionally, the GINI coefficient tends to be more responsive to values near the median income rather than extreme values (Buhmann, et al., 1988).

Moreover, the GINI coefficient can be applied to different income and population concepts, including household or individual incomes, gross or net income, income or consumption, and can be computed for urban centers or the entire country.

Figure 1. Lorenz curve



Another widely used measurement of inequality is the Theil index, which serves as a measure of dispersion frequently employed to gauge income inequality. The Theil index is derived from total income (or payroll) and the total population (or employment), and it involves calculating the ratio of each group's share in the entire population to the ratio of each group's average income to the overall population's average income. Consequently, the "Theil element" results from multiplying these two shares by the logarithm of the second ratio (Galbraith, 2012).

Moreover, the Theil index can be scaled from zero, representing perfect equality, to one, representing complete inequality. One notable advantage of the Theil index is its capacity for decomposition into within-group and between-group inequality components, allowing for a more detailed analysis of the demographic factors contributing to inequality (Galbraith, 2012; Boushey & Price, 2014).

Additionally, the Atkinson index is a widely recognized welfare-based measure of inequality. It quantifies the percentage of total income that a given society would need to forgo in order to achieve a more equitable distribution of income among its citizens. This measure is contingent on the extent of society's aversion to inequality, a theoretical parameter determined by the researcher. A higher value indicates a greater social utility

or a stronger willingness among individuals to accept smaller incomes in exchange for a more equal distribution.

A noteworthy aspect of the Atkinson index is its capability to decompose inequality into within-group and between-group components. Unlike other indices, it allows for the exploration of the welfare implications of various policies and introduces normative considerations into the analysis. In empirical studies, alternative measures of inequality based on percentile comparisons are also utilized. Some of these alternative measurements include the income share of the third quantile, the sum of the income shares of the third and fourth quintiles, and the ratio of the income share of the first quintile to that of the fifth quintile (Panizza, 1995).

3 The relationship with growth

Inequality serves as both a cause and a symptom of various social and economic outcomes. Beyond the compelling interest in understanding the trends and underlying drivers of income inequality, the impact of income inequality on economic performance, particularly economic growth, has become a subject of significant concern for economists and policymakers alike. The relationship between income inequality and economic growth is a topic marked by ongoing debate and exploration (Barro, 2000; Galanis, 2014). Consequently, there exist multiple theoretical frameworks that seek to elucidate how income inequality can influence economic growth and overall economic performance. However, even though many economists accept the concept of a trade-off between inequality and economic efficiency, the nature and direction of this trade-off remain uncertain.

The channels and mechanisms through which income inequality and economic growth are interrelated tend to vary, contingent on the specific theoretical approach, statistical analysis, model, variables, time period, or geographic context employed in each study.

As a result, economic growth, which is considered among the indicators of quality of life, appears to be connected to income inequality in a range of ways. However, a consensus has yet to emerge among economists regarding the nature of the relationship between inequality and growth.

Consequently, the primary objective is to determine whether there is a causal relationship between growth and inequality or whether both are independent endogenous outcomes influenced by similar economic factors and policies.

3.1 Kuznets hypothesis

The notion of a possible relationship between inequality and growth was first highlighted by Simon Kuznets in 1955 in his seminal paper "Economic Growth and Income Inequality" (Kuznets, 1955). Kuznets argued that levels of inequality could be linked to output levels as an economy develops over time. The Kuznets hypothesis posits a positive non-linear relationship between inequality and total output during the early stages of growth, which then shifts to a negative correlation as the economy matures. Consequently, Kuznets proposed that income inequality initially increases during the early growth stages, stabilizes during the transition from rural or pre-industrial to industrial economies, and eventually decreases during the later stages of growth. This suggests that the graphical representation of the relationship between economic growth and income inequality would resemble an inverted "U" shape.

Kuznets based his suggestions on historical data from three developed countries (USA, UK, and Germany) spanning the period from 1919 to 1945. According to Kuznets, income inequality seems to oscillate between a positive and negative relationship with GDP per capita as an economy shifts from a poor rural to a prosperous industrialized state. This phenomenon was particularly evident during the industrial revolution when rural economies transformed into industrial ones. This transition led to expansion in sectors yielding higher returns, prompting the population to migrate from rural to urban regions in pursuit of higher-paying jobs and improved living conditions. As this demographic shift gained momentum, inequality, which initially increased, started stabilizing and then decreasing, thus forming the characteristic inverted U-shape of the Kuznets hypothesis. Consequently, the economy featured a larger proportion of high-paid industrial workers and fewer low-paid agricultural laborers.

Kuznets's hypothesis suggests that the observed inequality in less developed countries might only represent a phase in their development trajectory, with inequality expected to decline as these countries continue growing (Boushey & Price, 2014). Kuznets's

optimism also echoes in the analysis of Solow (1956), who delineated the prerequisites for an economy to attain a balanced growth path where all variables experience uniform growth rates. This balanced growth path ensures that every social group benefits from growth to an equal extent (Piketty, 2014).

The debate surrounding the validity of the Kuznets hypothesis has given rise to numerous controversies regarding the intertemporal relationship between inequality and economic growth. There are several reasons to doubt the Kuznets hypothesis. Firstly, Kuznets's assumptions relied on the transition from rural to urban and from agricultural to industrial sectors during income rise, which may not apply universally across different historical contexts. The observed decrease in inequality during the sample period for the USA, one of the countries included in Kuznets's study, could be attributed to the impact of World Wars and the Great Depression rather than representing a lasting relationship (Piketty, 2014). Additionally, modern economies, particularly in the last three decades, have undergone substantial changes and crises that may affect both inequality and growth. These shifts, including credit market imperfections and skill-biased technical changes, may not align with the Kuznets hypothesis (García-Peñalosa, 2010).

Kuznets himself acknowledged that his hypothesis was constructed using limited empirical data, simple mathematical extrapolation, and theoretical speculation (Boushey & Price, 2014). He humorously stated that his work comprised "perhaps 5 percent empirical information and 95 percent speculation" (Kuznets, 1955). Furthermore, Kuznets argued that developing countries were unlikely to follow an inverted U-shaped pattern of inequality and growth due to two primary reasons. Firstly, developing countries have relatively fewer savings compared to developed nations, which limits their ability to drive growth through investments. Additionally, wealthier individuals in developing countries tend to channel their savings to developed economies where investments are considered safer or opt for luxury consumption (Todaro, 1994). Secondly, the potential for political instability due to initial inequality spikes is more pronounced in poorer nations. This instability can disrupt economic growth trajectories and the relationship between growth and inequality. Thus, poor economies may struggle to achieve higher growth and lower income inequality. Contrary to Kuznets's assumptions, it's possible that as populations transition from rural to urban areas, inequality may decrease due to shifts in market power. For instance, as the supply of agricultural products diminishes, prices may rise, leading to higher incomes for farmers. Kuznets himself appeared surprised by his findings, pondering how two developmental processes assumed to be inherently unequal—concentration of savings among the wealthy and the simultaneous shift from agriculture to industry—could lead to income convergence (Korzeniewicz & Patrick, 2005).

Furthermore, it's essential to recognize that inequality can stem from disparities in access to education, both socially and politically (Ahluwalia, 1976; Simpson, 1990). For example, certain political regimes, like social democracies, are often associated with reducing inequality (Galbraith, 2012).

Taking these factors into consideration, we might expect that developing and impoverished countries are situated on the left, ascending side of the inequality curve, while developed, wealthier countries are on the right, descending side of the curve. However, it's important to note that developed countries went through their development process in different historical periods and likely under different economic conditions than those currently developing. Therefore, the current position of developed countries may not necessarily reflect the future trajectory of developing nations.

Furthermore, it's observed that the growth path of developing countries can be heavily reliant on the economic activities of developed countries (Saith, 1983). This economic dependency could potentially perpetuate high levels of inequality in poorer and developing nations (Bollen & Jackman, 1985; Evans & Timberlake, 1980).

While the validity of the Kuznets hypothesis has been debated in the literature, Kuznets offers two crucial insights that shed light on the relationship between income inequality and capitalism. Firstly, economic growth plays a pivotal role in shaping inequality, particularly through the transitions between older and newer modes of production. These transitions have the capacity to reveal the effects on income distribution, making it a dynamic process. The second insight emphasizes that the features of income distribution in any given society are influenced by the impact of institutions and collective social forces on power arrangements. In other words, the way income is distributed is shaped by the interplay of economic and social factors, including institutions and societal forces (Galbraith, 2012).

Indeed, Kuznets was onto something significant with his recognition of the organic relationship between inequality and transformative changes within national economies. However, he may not have accounted for the influence of global financial forces, which have become increasingly influential and parallel the impact of Keynesian and Minskyan global forces (Galbraith, 2012).

In a modern context, one can draw parallels between Kuznets's hypothesis concerning the movement of people from rural to urban areas and the contemporary transition from less developed economic environments to modern financial systems. This can also be likened to the shift from sectors of the economy with outdated technology to those with new technology, which has been widely observed in various economies over recent decades.

As financialization advances capital allocation and spurs economic growth, it is initially the affluent segments of society that tend to benefit most. However, over time, an increasing proportion of society gains access to the financial markets, resulting in broader and more equitable distribution of benefits across income strata.

Similar effects can also be observed due to technological progress and the shift in leading economic sectors from high-volume manufacturing to high-value information and technological services, as witnessed in recent years. Consequently, the relative demand for skilled and unskilled labor can undergo changes. This has led to increased income inequality, with wages of unskilled workers experiencing downward pressure while returns for skilled workers have been on the rise (Berman, et al., 1994; Acemoglu & Robinson, 2000; Autor, et al., 2008). However, as technology becomes more widely diffused in later periods, the supply of skilled labor is expected to increase, potentially reducing income inequality. However, as technology diffuses more widely, the supply of skilled labor is likely to increase, potentially reducing inequality. Additionally, the transitions from old to new systems entail certain costs, including retraining and losses due to the necessary abandonment or replacement of older technology and capital.

3.2 How inequality affects growth

Since Kuznets, many theoretical approaches have attempted to dissect the relationship between inequality and growth. Over the years, numerous economists who have argued that inequality is linked to growth have presented several channels where this connection becomes evident. For instance, these channels include fiscal policy and taxation (Alesina & Rodrik, 1994; Panizza, 1995), sociopolitical instability (Perotti, 1996a), or imperfect markets (Alesina & Rodrik, 1994).

Other channels that concern the modern globalized economy include technology, open markets, credit, and international financial deregulation. Additionally, international financial deregulation and prolonged current account deficits may impact growth. In debt-led growth models where inequality coexists with household debt, long-term instability can arise (Stockhammer, 2012b).

In general, it appears that the relationship between income inequality and growth is a topic that warrants attention from economists and policymakers alike. Consequently, on one hand, there are approaches arguing that inequality can contribute to growth, particularly at the outset of a country's economic activity and growth. On the other hand, there are approaches contending that inequality can be detrimental to growth.

The prevailing argument among economists is that higher inequality resulting from a greater share of profits leads to rapid growth. This argument stems from the fact that investment and entrepreneurship, which drive economic growth, depend on profit income. Moreover, it's widely accepted that investments primarily stem from the savings of the wealthy, who can save in contrast to the poor, who tend to spend most of their income. Therefore, the acceptance of "some" inequality, especially in the initial stages of growth, is deemed essential for achieving growth. It follows that, since the propensity to save is higher for the rich than for the poor, higher initial inequality is expected to result in greater savings, capital accumulation, and growth (Kaldor, 1956; Bourguignon, 1981). Consequently, inequality could boost growth by ensuring that at least a few individuals possess the minimum income necessary for investing in education or starting a firm (Barro, 2000; Kolev & Niehues, 2016).

Conversely, other perspectives argue that inequality can impede growth or lead to unsustainable growth in the future (Panizza, 1995; Perotti, 1996a). Various indications suggest that income inequality can erect barriers to economic growth. For example, certain theoretical perspectives contend that income inequality can hinder growth by limiting the poor's access to credit, thereby hindering business development. Additionally, it reduces access to education for lower-income classes and ultimately decreases consumption (Benabou, 1996). Furthermore, it is asserted that unequal distribution denies the poorest access to quality healthcare and subjects them to malnutrition (Perotti, 1996a; Aghion, et al., 1999), potentially resulting in less productive labor. Moreover, inequality could escalate the risk of crises by creating instabilities, whereas a more equal distribution enhances demand, production, employment, and investment. As a result, rapid growth is associated with the advantage of broader participation in processes that foster growth (Todaro, 1994).

In essence, it is argued that inequality affects growth in two ways. On one hand, inequality has a positive impact on growth, following traditional literature that correlates increased savings with higher investment and growth. Conversely, inequality negatively affects growth due to opportunity disparities and investment limitations (García-Peñalosa, 2010).

3.2.1 Social-political effects

It is quite evident that inequality can be associated with growth through political issues. Income inequality, as argued, not only has a negative relation with welfare, but it also strongly correlates with social outcomes such as trust, social cohesion, social stability, crime, social mobility, health, educational quality, and social security (Wilkinson & Pickett, 2007). The social, political, and institutional structures that exist within economies are important factors in understanding the impact of income inequality on growth. High levels of inequality may erode political and social stability. It has been observed that societies characterized by high inequality or polarized income distribution often witness attempts by individuals to enhance their income through illegal economic activities, significantly impacting social and political stability. Consequently, disputes over laws and property arise, investments are discouraged, and growth is hindered. Similarly, income inequality can incite extreme social and political instabilities that can lead to violent uprisings, political violence, and organized crime all of which detrimentally affect a country's economic performance and growth. These forms of extreme social and political instability are thought to negatively relate to economic growth in two distinct ways. First, they generate uncertainty within the political and legal environment, thereby affecting growth. Second, they disrupt markets and labor relations, directly impacting productivity (Perotti, 1996a). Moreover, social

and political instabilities are characterized by wasted labor potential that could otherwise be harnessed efficiently for production, thereby boosting growth. For example, high levels of inequality can drive marginalized groups to resort to illegal activities in their pursuit of increased income, subsequently necessitating greater security measures. As a result, economic resources may be squandered due to illegal actions, negatively affecting growth.

For example, high levels of inequality may drive some economically disadvantaged groups to engage in illegal activities to increase their income, leading to a greater demand for security measures. As a result, the economy may suffer losses due to these illegal activities, which can have a negative impact on growth.

Consequently, given that income inequality fosters social and political instability, which, in turn, impedes investments, productivity, and growth, one can assume a negative connection between income inequality and growth. The argument has been made that heightened political instability and the resultant uncertainty due to greater inequality can hamper investments, while negative social outcomes typically give rise to insecurity, ultimately leading to reduced investment and growth (Alesina & Perotti, 1996). Additionally, as is conceivable, damage to social structures can render economies vulnerable to various economic shocks, complicating the task of maintaining growth stability. However, the impact of inequality on growth could potentially be more intricate and multifaceted, contingent upon the specific timeframe under consideration.

Assuming a link between income inequality and the political regime of a society is reasonable, as greater inequality might intensify the demand for income redistribution. It has been argued that inequality levels are influenced by the relationship between the type of government and economic outcomes (Galbraith, 2012). Empirical evidence supports the idea that more democratic nations, stronger law enforcement, and financial development are linked to less inequality, while segmented labor markets are correlated with greater inequality (Bourguignon & Morrisson, 1998; Barro, 2000).

Consequently, it is expected that high levels of inequality will spur demands for redistribution, resulting in policies that influence growth. If redistribution is achieved through taxation, greater inequality can lead to heightened demands for income redistribution through taxes. This, in turn, discourages investments and negatively

affects growth (Alesina & Rodrik, 1994; Persson & Tabellini, 1994). Fiscal policies, such as government spending and taxation, are posited as channels through which income distribution influences economic growth. This perspective is primarily rooted in the work of Meltzer & Richard (1981), involving a model of an economy comprising units with varying productivity and income levels. In this model, voters gain from redistribution through taxes. A key objective of fiscal policy, whether through taxation or public spending on education and healthcare, is wealth redistribution to mitigate inequality. Consequently, higher levels of inequality drive greater demand for redistribution based on their income relative to others. Reducing inequality through taxation can influence economic growth, as redistributive transfers voted for by the median voter could be invested to stimulate growth, associating inequality with lower growth.

Hence, accepting that fiscal policy is determined by policies shaped through elections implies that, ultimately, the median voter sets fiscal policy. This translates to the proportion of the population with income below the median income desiring more taxation and government-led redistribution. This redistribution can manifest as allowances or public spending on education, healthcare, and other public welfare endeavors. Thus, we can identify a political mechanism wherein the median voter, often representing the middle class, influences fiscal policy by voting to reduce inequality. Alesina & Rodrik (1994) have empirically confirmed this effect. They demonstrated that the desired tax rate in an economy is contingent upon the ratio of income derived from labor to income derived from capital – specifically, the smaller this ratio, the greater the desired taxation (Alesina & Rodrik, 1994). Additionally, those with lower income relative to average income are more likely to benefit from taxation (Persson & Tabellini, 1994).

Furthermore, interventions aiming to decrease inequality through policies may distort production and adversely impact economic growth. Therefore, attempts to reduce inequality may yield counterproductive results (Okun, 1975). This introduces an economic mechanism, where government spending for redistribution disrupts growth trajectories, leading to a negative relationship between redistributive fiscal policy and growth.

As it becomes evident, income inequality and economic growth are intertwined through these two mechanisms, particularly in the context of endogenous fiscal policy. The political mechanism suggests that growth improves as distortion taxation decreases, while the economic mechanism entails that government expenses for redistribution and taxation decrease as income inequality decreases. Consequently, a negative relationship between growth and income inequality emerges (Perotti, 1996a). Therefore, inequality is negatively associated with growth due to the distortion resulting from demanded redistribution by lower income classes.

However, political incentives might be more intricate. Wealthier income groups, for instance, may wield political influence through lobbying (Benabou, 2000; Stiglitz, 2012). In such cases, the political mechanism in question becomes invalid, as fiscal policy is shaped by the upper income strata. This perpetuates inequality and may lead to political and economic corruption, impeding growth. Thus, inequality can negatively impact growth even without substantial income redistribution. Moreover, the political mechanism could foster a positive connection with growth by investing in human capital, such as government spending on education (Verdier, 1993; Gilles & Thierry, 1993).

However, this notion can be disputed if we question the concept of economic rationality. Often, better wages are not the sole incentive for increased effort. Conversely, a more democratic and egalitarian society may provide the right incentives for individuals to enhance their economic performance. Additionally, meritocracy, where individuals expect rewards based on effort, can be more motivating than higher wages. Conversely, phenomena like nepotism discourage effort among the working population. The absence of meritocracy, often accompanied by low mobility across income classes, provides little incentive for workers to be productive. Therefore, a trend toward reduced inequality due to meritocracy can foster economic growth (Acemoglu & Robinson, 2000).

Furthermore, the fundamental assumption underlying the concept of the median voter, or the average individual, is that they have the ability to influence the level of redistribution. However, this assumption of a smoothly functioning democracy may not hold true in many modern economies. It has also been suggested that a similar logic, akin to the mechanisms of the median voter approach, can be applied even in dictatorships. As Alesina and Rodrik (1994) argue, 'Even a dictator cannot completely ignore social demands for fear of being overthrown.' While in some totalitarian regimes, authorities can make decisions about fiscal policies and other matters without the need for voting, there are situations where the desires of large majorities cannot be disregarded. Thus, the trajectory of inequality observed by Kuznets might be more of a political effect than an economic one. This transformation occurred by extending voting rights to segments of society that previously had no political representation (Acemoglu & Robinson, 2000). According to Acemoglu and Robinson (2000), the fear of a revolution by the impoverished population compelled the elite to grant more rights to lower classes, leading to a reduction in income inequality. They argue that an increase in inequality is often linked with growing social discontent and tends to foster movements toward democracy. Consequently, democracy, in turn, triggers wealth and income redistribution, promotes public education, and ultimately works to diminish inequality. In this perspective, wealth distribution can be viewed as a dynamic struggle between the impoverished and the elite. On one hand, the impoverished strive to gain more rights and a larger share of the economic output, while on the other hand, the elite seeks to maintain or enhance their power.

This scenario often resembles a class struggle, as articulated by Marxists, where income distribution hinges on the bargaining power of capitalists and workers. Notably, it has been posited that inequality, in certain instances, arises from the weakening of labor unions and the erosion of the real value of minimum wages (Freeman, 1993). Moreover, it is contended that emerging technologies can facilitate economic mobility, creating a favorable environment for individuals from lower economic strata to accumulate wealth and transition to higher-income groups as these technologies become more accessible. In this context, the prevailing political regime emerges as a pivotal factor influencing both inequality and economic growth.

For example, under more authoritarian regimes, the elite might hinder the adoption of new technologies in production due to concerns that such innovations could empower the impoverished populace, potentially leading to challenges to their authority. This, in turn, can thwart the process of "Schumpeterian" creative destruction, which typically fosters economic growth. Consequently, one could posit that in less authoritarian regimes that actively encourage the adoption and widespread accessibility of new technologies, lower levels of inequality tend to have a positive impact on economic growth.

Furthermore, it is posited that inequality can influence economic growth through its impact on fertility. Lower fertility rates have often been associated with higher levels of inequality, as increased income among the less affluent can lead to larger, better-educated families (Perotti, 1996a; Rodríguez, 2000). When considering parents' choices regarding wealth allocation, two options typically arise: investing in the education of their existing children or having more offspring. This dynamic reveals a direct link between fertility and human capital investment.

Within the context of imperfect markets, fertility appears to interact with income distribution, particularly concerning education. Education is often accompanied by fixed costs. To elaborate, within a given income distribution, higher fertility rates imply that fewer financial resources are allocated to each family member, thereby reducing disposable income within households. Pursuing the same line of reasoning, within a fixed fertility rate, greater income inequality implies that less income is available to impoverished households for investing in education (Galor & Zang, 1997). In this vein, initial inequality can hinder future growth rates, as inequality exerts a notable influence on overall fertility rates.

The fertility perspective unveils two effects: the income effect and the substitution effect. The income effect refers to parents choosing to have more children in response to increased income. Conversely, the substitution effect arises when the opportunity cost of raising a child escalates, prompting a reduction in fertility rates as parents opt to invest in the education of their existing offspring. Typically, it is posited that the income effect prevails in lower-income classes, while the substitution effect dominates among the wealthier classes. Intriguingly, despite the evident links between fertility, income distribution, and economic growth, the fertility approach has been relatively overlooked in the literature pertaining to income distribution and economic growth. Yet, there are indications that suggest that fertility rates are related to investments in human capital (Perotti, 1996a).

Dahan & Tsiddon (1998) introduce a compelling hypothesis: rising income inequality tends to prompt poorer households to have more children rather than invest in human capital (Dahan & Tsiddon, 1998). This primarily arises from the widening income

disparities between the unskilled, numerous offspring of impoverished families and the skilled progeny of the affluent. Consequently, the increased supply of unskilled labor, coupled with a decreased supply of skilled labor, fuels greater income inequality. However, it is expected that a tipping point occurs where impoverished families decide to invest in education or education becomes more financially attainable. This leads to an expansion in the supply of skilled labor and a subsequent decline in inequality, resulting in an inverted U-shaped trajectory of inequality over time, reminiscent of Kuznets's hypothesis. It should be noted, however, that the decision to have fewer children might also be influenced by cultural shifts, not solely driven by economic factors.

To conclude, the endogenous fertility approach implies that lower inequality levels correspond with lower fertility rates due to the substitution effect. This, in turn, encourages investment in education and human capital, ultimately promoting growth. Conversely, high initial inequality levels lead to higher fertility rates and increased supply of unskilled labor, driving down wages for this group and raising costs for skilled labor. This imbalance translates to lower growth. Additionally, the influx of cheap unskilled labor might increase not solely due to fertility, but also due to immigration, yielding similar results for inequality and growth. Hence, political choices regarding taxation or the fixed cost of education might influence individual behavior, as manifested through voting or the decision to invest in educating the first child instead of having a second child.

3.2.2 Aggregate demand

As previously mentioned, income can be expressed in two ways. Firstly, income is the reward for every factor or individual's contribution to the production process. Furthermore, individuals can allocate their income in various ways. An individual can utilize their disposable income to consume goods and services, invest, or save a portion of their income for future spending. Thus, the second dimension is that income, by determining available factors and demand, activates the production process.

For instance, since wages have a dual role, acting as both production costs and a source of demand, their total impact on growth is ambiguous. The historical, cultural,

economic, and institutional characteristics of a nation determine which of these variables dominates (Zeman, 2019).

Consequently, as economic growth is shaped by decisions regarding the allocation of factor shares (labor and capital), inequality in functional distribution will be closely related to growth levels due to the production process. This can occur due to various saving propensities among income classes, influencing aggregate demand and investment. Economic theories influenced by Keynesian approaches, such as Kaldor (1955), Robinson, and Pasinetti (1962), as well as Kaleckian and Marxian economics, suggest differing saving decisions between capitalists and workers. The key ideas of these theoretical approaches revolve around the notion that the propensity to save from profit incomes is higher than that from wage incomes. Thus, changes in functional distribution, such as a decrease in wage shares in national income, can reduce aggregate demand (Cowell, 2007; García-Peñalosa, 2010; Pettis, 2013; Lavoie & Stockhammer, 2013). For instance, Stockhammer et al. (2008) indicate a saving differential of around 0.4 for the Euro area (Stockhammer, 2012a).

Therefore, as early approaches by Kuznets (1955) and Kaldor (1956, 1961) argued, inequality is essential for growth due to higher saving and investment rates. Similar conclusions are drawn from Marxian assumptions and Goodwin (1967), suggesting that reduced inequality translates to lower investments funded exclusively by profits (Stockhammer, 2014). Thus, economies with higher inequality might experience faster growth compared to more egalitarian economies (García-Peñalosa, 2010). However, if the Kuznets hypothesis holds, later stages should lead to higher personal incomes and reduced inequality through trickle-down effects.

Moreover, redistributing in favor of lower-income groups, shifting from investment to consumption, might not necessarily harm growth. The potential positive effect of shifting from profits to wages, proposed by the Kaleckian and Keynesian schools of thought, introduces a new perspective (Carvalho & Rezai, 2015). Their assumptions suggest that reducing wage shares or household incomes—major sources of consumption—can decrease both consumption and aggregate demand due to higher marginal propensity to consume among households compared to firms. According to

Kaleckian assumptions, decreasing inequality by increasing wage shares could boost aggregate demand, thanks to higher consumption from wages.

The concept of effective demand driving output levels is central in post-Keynesian/post-Kaleckian models. The distribution of income, often presented as a balance between wage and profit earners, significantly influences demand and output, as outlined in models by Dutt (1984) and Bhaduri & Marglin (1990). More specifically, the framework proposed by Bhaduri & Marglin (1990) accommodates both Kaleckian and Marxian assumptions and is widely used in post-Keynesian economics (Stockhammer & Onaran, 2004; Naastepad & Storm, 2007; Hein & Vogel, 2008; Onaran & Galanis, 2012). According to their model, if the consumption resulting from increased wage shares outweighs the negative impact of reduced investment and net exports due to falling profit shares, the demand regime grows faster in wage-led economies. Conversely, if the impact of investment exceeds that of consumption, profit-led economies experience faster growth with higher profit shares (Stockhammer & Kohler, 2019).

In a wage-led regime, capital accumulation and subsequent growth exhibit a positive relationship with an increase in wage share. Conversely, in profit-led regimes, growth tends to rise in conjunction with an increase in profit share. Consequently, assuming that profits constitute the earnings of the upper-income classes, an elevated wage share in a profit-led economy, while advantageous for addressing inequality, ultimately proves detrimental to profits. This scenario unfolds as the economy experiences reduced demand and diminished growth. In contrast, within a profit-led economy, a shift in favor of profit share redistribution amplifies both inequality and growth.

However, in a wage-led economy, a redistribution favoring wages enhances overall consumption, thereby boosting aggregate demand and consequently fostering higher growth. Simultaneously, this redistribution leads to a reduction in inequality. Therefore, as it becomes evident that equality does not impede growth, the positive impact of higher wages on demand underscores the notion that "wage-led growth can be more broadly defined as equality-led growth" (Onaran, 2019). Consequently, since inequality may interact with growth differently depending on the economy's growth regime, policies that are either pro-capital or pro-labor can either bolster or impede growth, with consequences for inequality. Therefore, echoing Dutt (2017), "the primary question

does not revolve around whether an economy leans toward wage-led or profit-led growth in a given period; instead, it centers on whether inequality can be curtailed without adversely affecting growth, and indeed, can be increased through a balanced blend of policy-induced adjustments" (Dutt, 2017).

Numerous empirical studies explore the relationship between factor inequality and growth. Rodríguez (2000), for instance, found evidence that higher profit shares associate with lower growth rates due to decreased investment in human capital (Rodríguez, 2000). Moreover, the post-1980 economy in the USA is often viewed as more profit-led, attributed to heightened inequality (Carvalho & Rezai, 2015). Onaran (2019) suggests that among G20 countries, only Canada and Australia lean toward profit-led economies, while USA, UK, Japan, Germany, France, eurozone, Italy, Korea, and Turkey tend to be wage-led. Emerging economies like China, India, Argentina, Mexico, and South Africa are considered profit-led. According to Onaran (2019), an increase of profit share by one percentage point is associated with a 0.36 percentage point decline in global GDP in most developed and developing economies. (Onaran, 2019)

Thus, the search for the relationship between inequality and growth posits that functional inequality significantly affects growth through aggregate demand and consumption in a growth regime-dependent manner. Policies favoring capital in profitled regimes may increase growth and inequality, while wage-led economies benefit from wage-friendly policies that enhance both growth and equity. Nevertheless, the fact that high-income individuals may also earn wages introduces further complexity into this connection.

Moreover, in theoretical models where growth cycles are assumed, income distribution is proportionate to these cycles. Therefore, there isn't an inherent mechanism guaranteeing reduced inequality with economic growth. Structural barriers to inequality reduction might persist with or without growth (Harris, 1993). Furthermore, it's argued that "the dynamics of wealth distribution reveal powerful mechanisms pushing alternately toward convergence and divergence. There is no natural, spontaneous process to prevent destabilizing, inegalitarian forces from prevailing permanently" (Piketty, 2014). Assuming that there isn't an inherent trend toward greater or lesser inequality, periods of decreasing inequality observed in various timeframes could be transient. Consequently, relying on mechanisms that promise decreasing inequality with future growth might not be entirely justified.

The effect of increased wage shares on inequality also hinges on how wages are distributed among workers. Wage inequality and saving out of wages must also be considered when exploring the relationship between inequality and growth. The impact of wage savings on demand has garnered attention in recent decades from various authors (Kiefer & Rada, 2004; Barbosa-Filho & Taylor, 2006; Franke, et al., 2006; Ederer & Stockhammer, 2007; Hein & Vogel, 2008). For instance, higher-income workers may choose to save a proportion of their income instead of consuming it all, for investment or future consumption. The opportunity for high-income groups to receive wage income and save a portion introduces additional complexity. If skilled and unskilled labor exhibit different consumption propensities, the effect of wage savings becomes uncertain. As evidenced by Carvalho & Rezai (2015), evidence from the US economy suggests that higher-income quintiles tend to save more than lower quintiles. This implies that aggregate demand could increase with redistribution in favor of lower incomes (Carvalho & Rezai, 2015). Consequently, although wage shares increase, consumption might not increase as expected due to high-income wage earners saving more. This could lead to weaker aggregate demand, potentially countering the anticipated decrease in inequality. Hence, increased personal income inequality might either increase demand growth due to higher savings among the wealthy or reduce demand growth if consumption decrease outweighs the impact on investments (Frank, 2007; Frank, et al., 2014). Various authors have proposed theoretical frameworks accounting for differing saving propensities among individuals with the same income source (Carvalho & Rezai, 2015; Hein & Prante, 2018). For example, Palley (2015) introduced a model featuring three economic classes, where distinct saving propensities among classes impact demand (Palley, 2015). Other frameworks consider wage inequality's effect on the demand regime based on workers' saving propensities (Carvalho & Rezai, 2015; Hein & Prante, 2018). Evidence from Carvalho & Rezai (2015) suggests that wage earners have varying saving propensities dependent on their disposable income levels. Thus, wage inequality affects aggregate demand and output through the paradox of thrift.

Additionally, under wage inequality, the impact of functional income distribution on output becomes ambiguous. Wage equality could favor a wage-led economy, while wage inequality might signal a preference for a particular type of labor by capital, especially when capital is substituted for basic or skilled labor.

4 Income inequality and growth due to financial integration

In our attempt to comprehend the existence of inequality in modern economies, we must understand how incomes are generated in an era of financial integration. Factors such as globalization, technological change, financialization, and distributional policies in favor of capital have contributed to the polarization of income (Stockhammer, 2012c).

According to Atkinson (2015), credit should be given to economists who have focused on the rising inequality and identified several contributing factors, including globalization, technological change (information and communications technology), the growth of financial services, changing norms, the reduced role of trade unions, and the scaling back of redistributive tax-and-transfer policies.

The literature presents various drivers of income distribution due to globalization. Over the past decades of globalization, economic performance has been characterized by open markets and financialization, both of which can impact income distribution, as discussed in the following chapters. Additionally, technological changes have been considered the primary determinant of income distribution during globalization (Stockhammer, 2017). Moreover, shifts in bargaining power between labor and capital resulting from globalization may influence income distribution. Inequality may arise from the power shift between capital and labor that has emerged due to globalization and financialization (Stockhammer, et al., 2015).

Income distribution can result from changes in both factor and personal distribution due to globalization. There has been extensive debate about whether globalization and economic integration could reduce poverty and inequality through rapid growth (Dollar & Kraay, 2002). However, the benefits of globalization might not have been equitably distributed, potentially leading to higher levels of inequality within and between countries. Openness and international trade tend to favor capital and high-skilled labor over basic labor, potentially correlating globalization with increased inequality (Firebaugh, 2003; Wade, 2004).

The impact of financial integration on income distribution has been extensively discussed in empirical literature. Several authors have identified technological change, globalization, and financialization as primary determinants of changes in wage shares in recent decades (Rodrik, 1998; Harrison, 2002; International Labour Organization (ILO), 2008; International Monetary Fund, 2007b; Stockhammer, 2013). Evidence from OECD countries suggests that financial globalization, trade globalization, and the decline in union density were the main contributors to falling wage shares (Stockhammer, 2009). Furthermore, globalization, financialization, and increasing inequality have been identified by various authors as key features of neoliberalism (Duménil & Lévy, 2004; Harvey, 2005; Glyn, 2007; Brenner, et al., 2010; Dardot & Laval, 2014). Neoliberalism appears to be a significant factor in the polarization of income distribution, as the rise in capital power is evident in wage trends (Stockhammer, 2012a). In recent decades, inequality has increased in most developed countries, accompanied by a decrease in wage shares—a contrast to the post-war period when inequality decreased alongside rising wage income shares (Atkinson, 2015). Additionally, the effects of globalization on wages have been used to explain inequality between skilled and unskilled workers (Geishecker & Görg, 2008). Furthermore, inequality may be linked to growth through the effects of research and development, education, and access to credit (Madsen, et al., 2017).

Furthermore, observing inequality has become more intricate in modern economies, where income can stem from various sources beyond wages. Workers can also receive income from profits. Similarly, besides profits, some capitalists may earn income from managerial or highly skilled labor.

Moreover, the outcomes of applied economic policies can be more ambiguous. The demand and supply of factor shares, along with their total returns, are influenced by the pressures of financial integration, where open markets and financialization shape the economic landscape. For instance, in a world where the vast majority of countries are wage-led, a higher share of income going to profits could lead to stagnation tendencies. While a higher profit share might promote growth in profit-led economies, a simultaneous global decrease in wage shares could lead to global demand deficiencies and lower growth. Thus, as Atkinson (2015) points out, "Globalization is the result of decisions taken by international organizations, by national governments, by corporations and by individuals as workers and consumers. The direction of

technological change is the product of decisions by firms, researchers, and governments. The financial sector may have grown to meet the demands of an ageing population in need of financial instruments that provide for retirement, but the form it has taken regulation of the industry have been subject to political and economic choices." (Atkinson, 2015).

4.1 Technological change

Given the close relationship between the technological process and economic growth, particularly through enhanced productivity, the onset of the "fourth industrial revolution" is expected to bring about various economic shocks and changes in factor shares. Consequently, inequality and income distribution are strongly intertwined with technological advancements.

Several theoretical approaches, including the works of Arrow (1962) and Shell (1973), stress the importance of the technological process or research and development in uncovering the link between income inequality and growth (Arrow, 1962; Shell, 1973). Technological changes have long been utilized to explain variations in personal income, given that technological advancements have always been considered a factor influencing income distribution (Dolton & Pelkonen, 2008).

To begin with, technology holds a pivotal role in production, thus technological changes can exert a significant impact on economic processes, especially production and labor dynamics. Differences in productivity and technological capabilities have been posited as explanatory factors for variations in economic performance across countries (Storm & Naastepad, 2015).

Furthermore, the primary causes of the declining trend in wages can be attributed to technological changes and the balance of power between labor and capital (Onaran, 2019). In the context of technological changes, the interplay of bargaining power becomes pivotal in reshaping factor distribution. As technological advancements impact the cost of production by altering labor and capital productivity, changes in nominal wages and factor distribution are to be expected. Thus, increased productivity, whereby two cars can be manufactured with the same effort as one, would yield varying impacts on inequality based on bargaining power. If the bargaining power is strong,

such as in the case of highly influential car industry workers, wage income would experience a more significant increase than the changes in vehicle prices and profit income, leading to a reduction in inequality. Conversely, if technological change results in decreased wage shares while capital benefits from the advancement, inequality levels could rise. Consequently, technological changes can impact inequality by diminishing bargaining power and reducing costs due to increased productivity. However, it has been argued that technological change tends to augment capital and acts as a primary driver of wage reduction (International Monetary Fund , 2007a; European Commission, 2007; Stockhammer, 2012c).

Moreover, the broader influence of technological progress can be contextualized within the framework of Schumpeterian growth dynamics and the concept of "creative destruction." Capitalism thrives on innovation to stimulate growth, a process that inevitably leads to creative destruction where the obsolescence of existing elements makes way for new ones (Schumpeter, 1942). The dominance of novel technological products and production methods emerges as a result of technological innovation. In parallel, outdated methods and products become obsolete due to unfavorable production costs and waning demand.

Faster technological change driven by innovation can lead to shifts in inequality. According to the Schumpeterian perspective, technological innovations are endogenously influenced by market conditions and economic incentives. Therefore, as higher income levels provide a more compelling incentive for innovation, inequality tends to change when individuals opt to take risks and engage in innovation, subsequently increasing their income relative to others. This implies that a certain level of inequality can provide the necessary incentives for investment and growth. In other words, the presence and acceptance of income inequality, as a consequence of higher returns, can serve as a catalyst for motivating innovation and entrepreneurship (Lazear & Rosen, 1981).

Furthermore, it has been argued that innovation can disproportionately benefit specific groups, typically those who are already privileged, due to the reinforcement of property rights (Cozzens, 2008). Therefore, when there are heightened incentives for investment and entrepreneurship, this can lead to a larger share of profits and faster economic

growth, but it may also result in increased inequality. Consequently, inequality can be regarded as crucial for fostering innovation and driving technological advancements.

According to the theoretical arguments of Korzeniewicz & Patrick (2005), who emphasized the role of technological progress in the context of Schumpeterian growth processes and the idea of "creative destruction," technological innovation often accompanies higher levels of inequality. They posit that such a process, characterized by continuous technological changes and shifts in labor demand, tends to have a detrimental impact on the simultaneous occurrence of high growth and low inequality. Consequently, this process is more likely to result in a persistent trend of increasing inequality. Furthermore, Korzeniewicz & Patrick (2005) argue that the effectiveness of both institutions and markets in redistributing wealth is contentious, often leading to a persistent trend of inequality that is highly dependent on the specific region and time period under consideration. As a result, observations regarding the relationship between income inequality and growth cannot be generalized (Korzeniewicz & Patrick, 2005).

Taking a Schumpeterian perspective, where capitalism evolves dynamically through continuous creative destruction, we may need to redefine our understanding of the relationship between inequality and economic growth. For instance, technological changes, particularly those related to information and communication technology, have influenced shifts in corporate organization (Saint-Paul, 2001; Garicano & Rossi-Hansberg, 2006).

Furthermore, personal income inequality is closely linked to technological changes, primarily through variations in labor skills. New technologies often create new types of jobs that require different skills from those currently available. Consequently, technological changes frequently result in income disparities between the skills required for current technologies and those needed for emerging technologies. Additionally, the type of investment that arises from technological changes determines the kind of labor required and, subsequently, the relative demand for skilled and unskilled labor.

In cases where investment leans towards skilled labor, the demand for skilled workers can positively affect inequality. Conversely, if investment drives demand for basic labor, inequality is expected to decrease. However, technological development tends to increase the demand for skilled labor, potentially replacing unskilled labor through technological innovations, resulting in a bias toward skilled labor. According to several authors, new technologies are often more complementary to skilled labor, leading to a rise in the demand for skilled workers compared to less skilled individuals (Autor, et al., 1998; Goldin & Katz, 2008). Some argue that a faster rate of innovation necessitates a more educated labor force to engage in research and development (Grossman & Helpman, 1991; Aghion & Howitt, 1992). Moreover, it is proposed that technological changes require a more educated and skilled labor force to enhance productivity and achieve higher incomes (Zeman, 2019). In essence, education plays a crucial role in supplying skilled labor and promoting growth through factor accumulation, as more efficient labor results in higher output levels (Lucas, 1988). Consequently, not only is more educated labor more productive, but technological changes also necessitate a more educated labor force for their adoption and widespread implementation (García-Peñalosa, 2010).

Additionally, the increased demand for highly educated workers leads to higher wages for skilled labor, thereby affecting wage inequality due to changes in the income gap between skilled and unskilled labor. Skilled-biased technological changes and a shift in the economy toward innovation and high-tech products are believed to result in a greater demand for skilled labor, leading to an increased wage premium (Berman, et al., 1994; Autor, et al., 1998; Buera, et al., 2015).

In general, it has been suggested that when technology is skewed towards skilled labor, new technology investments result in higher demand and wages for skilled labor compared to basic labor, as well as higher capital shares in the national income, while the wage share declines overall (Stockhammer, 2009; Dünhaupt, 2016). Increased demand for skilled labor implies a rise in the skill premium, affecting wage inequality, which suggests compatibility between skilled and unskilled labor. Simultaneously, increased demand for skilled labor, coupled with higher capital shares, implies that technological change is more capital-intensive, with skilled labor being complementary to capital. This suggests a positive trend in factor inequality. Therefore, if skilled labor complements capital, a pro-capital policy is likely to result in increased overall inequality.

Hence, the inequality witnessed over the past few decades may be an effect of skilledbiased technological change, primarily associated with high-information and communication technologies (ICT). Given that computers and other ICT are more complementary to skilled labor and substitutes for basic labor, it has been suggested that the increased use of ICT has affected the demand for both skilled and basic labor. Consequently, ICT capital increased simultaneously with an increase in demand and wages for highly skilled workers relative to low-skilled workers. Thus, technological changes and economic progress since the 1980s have been characterized by skill bias, accompanied by capital augmentations and lower wage shares. (Stockhammer, 2017)

Empirical research indicates that technological change often has a significant impact on income distribution. For instance, the inequality observed between highly skilled and low-skilled labor during the 1970s was primarily attributed to workplace computerization (Berman, et al., 1994; Autor, et al., 1998). Furthermore, evidence shows that between 1990 and 2007, approximately 80% of the decrease in wage shares within industries can be attributed to specific sectors, particularly those with skilled labor, especially in information and communication technologies (OECD, 2012; Herr, 2018). Moreover, there is evidence that skilled-biased technological change has played a major role in income distribution in the USA, with high-paying jobs being less susceptible to outsourcing (Dew-Becker & Gordon, 2008). While Stockhammer (2012bb) does find some evidence linking changes in income distribution to technological changes, he argues that this is not the primary determinant. Thus, technological change can impact both labor and overall inequality through wage premiums and shifts in the relative demand for skilled labor (Stockhammer, 2012c).

Additionally, it has been argued that a rapid diffusion of innovation can reduce income inequality as industrial transformation progresses (Antonelli & Gehringer, 2013). It is expected that in the future, as creative destruction leads to the dominance of innovation in the market, more skilled labor will be supplied, and more firms will have accepted new production standards. As a result, labor inequality is projected to decline, following patterns proposed by Kuznets' hypothesis.

Furthermore, the reasons behind rising inequality can be attributed to shifts in the balance of power influenced by globalization and technological change (Atkinson, 2015). Generally, technological changes result from innovation and investments in

research and development (R&D). In addition, globalization and market openness have a further positive impact through technological diffusion, primarily via foreign direct investments (FDIs). Consequently, globalization is seen as a force that reinforces trends toward technological change. Additionally, globalization may be the main driver of technological changes in less developed countries that may not have invested significantly in R&D (Asteriou, et al., 2014). International trade competition compels economies to keep pace with technological changes, facilitating faster technology diffusion (Coe & Helpman, 1995; Kali, et al., 2007; Keller, 2004; Soukiazis & Antunes, 2011). A higher level of openness may result in more innovation and technological diffusion, leading to higher economic growth, primarily due to the expansion of new markets and increased foreign direct investment (Grossman & Helpman, 1991). Therefore, more developed countries with highly skilled labor and advanced technology are likely to produce more sophisticated products, transmit innovation and knowledge, and achieve higher growth (Spilimbergo, 2000). Outsourcing, a fundamental feature of globalization in which corporations relocate the production of intermediate goods to reduce costs, may further amplify this impact. Furthermore, faster integration of production processes will be achieved as a result of this technological progress, while increased competitiveness arising from openness may lead to the exploitation of economies of scale (Andraz & Rodrigues, 2010).

4.2 Trade openness

While examining the relationship between inequality and growth in financially integrated economies, it is imperative to analyze how diverse economies, with varying technological levels and labor skills, interact through trade openness and globalization. Initially, globalization and trade openness have brought about significant transformations in the economic performance of countries worldwide, primarily owing to technological diffusion, international competitiveness, and labor market deregulation. As a result of international competitiveness and the deregulation of labor markets, the prices of goods tend to decrease in open economies, exerting downward pressure on wages. This implies a reduction in wage share and an increase in inequality.

As argued, higher degrees of openness arising from globalization augment labor supply, particularly in developed nations, resulting in slower wage growth (Zeman, 2019).

Furthermore, open markets have bolstered exports of intermediate goods from developing to developed countries and imports of advanced economy goods from emerging economies. Consequently, wage shares in both developed and developing countries have significantly declined, indicating a shift in bargaining power in favor of capital (Onaran, 2019). Openness, as it has been posited, is intertwined with expanded market dimensions and increased product sales due to heightened demand pressures demand (Andraz & Rodrigues, 2010; Soukiazis & Antunes, 2011). Additionally, when markets are open, there is an upsurge in demand for various products within the economy, resulting in concurrent increases in producer income and national income. Furthermore, foreign investments in specific regions or sectors within a country can influence overall inequality while promoting growth (Anderson, 2005).

Moreover, trade openness's formidable impact on inequality, manifested through the decline in wage shares driven by weakened labor bargaining power, becomes evident (Harrison, 2002; Stockhammer, 2012c; Dünhaupt, 2013). Trade openness diminishes trade union influence, fostering labor market deregulation, which exacerbates unemployment and suppresses wages. Furthermore, trade openness's impact on income distribution is often more pronounced than changes in relative prices due to its effects on labor and capital bargaining positions (Rodrik, 1997; Onaran, 2011).

Furthermore, it is widely acknowledged that openness can stimulate specialization and more efficient resource allocation. Consequently, increased capital mobility resulting from openness expands investment opportunities for capitalists seeking higher profits in new markets. Moreover, workers may migrate in pursuit of improved working conditions and higher wages. However, trade openness typically benefits the more mobile factor, which is often capital (Rodrik, 1997). Evidence suggests that capital restrictions and capital mobility influence income (Rodrik, 1998; Harrison, 2002; Jayadev, 2007).

Moreover, according to the Heckscher-Ohlin theory, international trade alters factor prices by elevating compensation for the abundant factor in each country¹. Since competing economies possess distinct factor endowments, this has varying implications for different economies. Classical trade theories, as embodied in both Stolper-

¹ (Atkinson, 2015)

Samuelson and Heckscher-Ohlin theorems, posit that the abundant factor benefits from international trade.

In general, economies endowed with excess capital and skilled labor tend to specialize in capital and skill-intensive products, while economies with abundant unskilled labor produce intermediate inputs through offshoring and immigration. Advanced economies are often endowed with advanced technology due to innovation, abundant capital, and skilled labor. Consequently, developed economies, characterized by abundant skilled labor and physical capital, manufacture advanced products or services that heavily rely on skilled labor. Conversely, developing countries, which typically possess ample unskilled labor but a scarcity of capital, produce simpler goods or services reliant on unskilled labor. These two types of economies can interact through open markets and globalization features such as outsourcing and immigration. Consequently, developed economies export capital and skill-intensive products and services, while emerging economies import labor-intensive goods.

Therefore, the Heckscher-Ohlin theory implies that trade openness significantly impacts the supply and demand for skilled and unskilled labor and their corresponding goods. The abundant factor in each country plays a pivotal role in shaping pricing and income distribution. Consequently, shifts in the relative demand for skilled and unskilled labor can cause changes in functional and personal inequality.

As a result, open markets are likely to affect both factor and labor inequality. First, labor employment may decrease in advanced economies as labor-intensive industries relocate to economies with abundant labor, leading to increased factor inequality. Conversely, inequality may decrease in developing countries with lower labor costs due to heightened demand for unskilled labor. Second, economies with a higher relative demand for skilled labor are expected to experience a higher wage premium, leading to increased inequality among workers. Conversely, economies experiencing a decreasing wage premium due to heightened demand for unskilled labor are likely to experience lower levels of inequality. In accordance with the Heckscher-Ohlin theory, trade openness can increase labor inequality in advanced countries while decreasing it in developing countries.

Globalization should ideally benefit both capital and skilled labor in developed nations and labor in underdeveloped countries. However, labor losses are apparent in both developing and developed nations. While globalization was initially expected to benefit less-skilled workers, presumed to be the locally abundant factor in developing countries, evidence suggests that they are not necessarily better off, especially when compared to higher-skilled or educated worker (Goldberg & Pavcnik, 2007). On one hand, economies reliant on unskilled labor struggle with international competitiveness, resulting in job losses or outsourcing to lower-wage economies. On the other hand, the demand for highly skilled workers has increased as production shifts toward highskilled industries (Atkinson, 2015). Therefore, outsourcing or foreign direct investment (FDI) in developing countries may not always benefit unskilled labor and lower income. Additionally, the benefits of openness related to technological changes may vary based on a country's level of development. Hence, analyzing openness necessitates considering the technological components of exports and imports. Moreover, since high-skill-intensive inward FDI from advanced economies to developing nations may involve low-skill-intensive outward FDI from the advanced economy, the demand for skilled labor in poorer countries should increase, while the demand for unskilled labor should decrease. Depending on the degree of education in developing nations, outsourcing may potentially benefit skilled workers (Feenstra & Hanson, 1997). Consequently, inequality may grow in both emerging and developed economies due to skill-biased FDI (Acharyya, 2011). Additionally, evidence indicates that exports of high-technology products positively influence growth, while exports of lowtechnology-intensity products negatively impact growth. This outcome is attributed to productivity disparities resulting from trade openness, and the evidence varies between developed and developing economies (Cuaresma & Wörz, 2005). Moreover, while the transfer of resources from low-return, stagnant industries to dynamic entrepreneurial sectors can yield efficiency gains, the co-evolution of financial arrangements and technological advancements can lead to instabilities that worsen economic performance (Zalewski & Whalen, 2010).

Moreover, the fact that firms now possess the ability to move capital investments easily can exert pressure on labor during negotiations. Key features of globalization, such as outsourcing and foreign direct investment (FDI), augment the bargaining power of capital in relation to labor. Outsourcing, in particular, exacerbates this erosion of bargaining power through similar mechanisms (Hein, 2013; Hein & Detzer, 2015; Dünhaupt, 2016; Stockhammer, 2017). For instance, it amplifies the 'threat' of relocation, simultaneously weakening labor's bargaining position and pressuring for reductions in capital taxes.

As a result, while trade openness can bring benefits to economies, primarily through improved capital allocation and increased technological diffusion, especially in poorer countries, leading to higher growth rates and reduced poverty, the advantages of globalization may not be distributed evenly. This can result in higher levels of inequality both within and between countries. Conversely, the benefits of trade openness and the changes brought about by globalization over the past few decades can be associated with a decrease in both poverty and inequality due to an increase in average income. However, as Stockhammer (2009) contends, regardless of theoretical considerations, empirical data clearly indicates a discernible impact of globalization on functional distribution, signifying that globalization reduces wage shares, a viewpoint also supported by the IMF (2007a) (Stockhammer, 2009).

Evidence from the literature is diverse, with some authors reporting no impact of openness on inequality (Li, et al., 1998; Higgins & Williamson, 1999; Dollar & Kraay, 2002), while others observe a positive effect, particularly in poorer countries (Barro, 2000; Ravallion, 2001; Lundberg & Squire, 2003; Milanovic, 2005). In contrast, several authors have identified negative effects of globalization and openness on inequality. Harrison (2002), analyzing data from 100 countries during the period of 1960-1997, found evidence that capital-labor ratios strongly influence distribution in a positive direction, while globalization is negatively correlated (Harrison, 2002). Jayadev (2007), using data from 80 countries during the period of 1970-2001, discovered that trade openness and financialization have eroded bargaining power (Jayadev, 2007). Stockhammer (2012bb, 2015a) uncovered data indicating that workers have not benefited in developing economies over recent decades, revealing that wage shares have declined in both advanced and emerging nations, contradicting the Stolper-Samuelson theorem (Stockhammer, 2012c; Stockhammer, 2017).

4.3 Financial development- Financialization

During the last decades, we have witnessed an increased role of financial activity leading to transformations of economies and societies. According to Hein (2019),

"Since the early 1980s, financialization has become an increasingly prominent feature in developed capitalist countries, with different timing, speed, and intensities in different countries" (Hein & Dünhaupt, 2019). Financial openness has resulted in fundamental changes in the economic performance of the majority of economies globally, but it mostly tends to transform advanced economies (Palley, 2007; Stockhammer, 2012a).

Among the several definitions, it has been argued that financialization is "the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operations of the economy and its governing institutions, both at the national and international levels" (Epstein, 2001). Additionally, Stockhammer (2009) suggests that "Financialization refers to the increased influence of financial institutions and financial motives on non-financial activities" (Stockhammer, 2009).

In general, financial development is commonly acknowledged to have a significant impact on growth and income distribution, with certain income groups benefiting more than others. Since it has been suggested that trade policies and financial regulation have a greater impact on income distribution than labor unions, financialization may be the missing ingredient when it comes to changes in distribution (Stockhammer, 2017).

As a consequence, on the one hand, financialization has been regarded as beneficial to economic growth and income inequality. It has been claimed that financial growth promotes poverty and inequality reduction by disproportionately increasing earnings in the lowest quantiles of the distribution (Beck, et al., 2007). More specifically, according to Beck et al. (2007), "40% of the long-run impact of financial development on the income growth of the poorest quintile is the result of reductions in income inequality, while 60% is due to the impact of financial development on aggregate economic growth. Moreover, the proportion of people that live with less than \$1 a day decreases as the financial sector gets developed." According to them, there are two channels through which financial development can affect the poor classes. Firstly, due to increases in aggregate growth, which allows some people in the lowest income classes to overcome the poverty limit, and secondly, by changing the distribution of poverty. Thus, through their findings, Beck et al. (2007) claimed that greater financial development, in fact, helps the poor, as their incomes grow faster than the average income growth, leading to a reduction of inequality (Beck, et al., 2007). Therefore,

financialization improves access to financial resources which, as a consequence, may increase the income of the poorest faster than average GDP growth, leading to a reduction of inequality (Beck, et al., 2007).

On the contrary, financial development may disproportionately benefit the wealthy, who already have higher access to financial systems, leading to increased inequality and the perpetuation of disparities in economic opportunities (Greenwood & Jovanovic, 1990). As it has been argued, financialization affects income distribution mainly in favor of profits and high wages, leading to falling wage shares and increasing wage inequality (Hein & Dünhaupt, 2019). For instance, there is evidence that financialization strongly affects functional distribution (Dünhaupt, 2016: Stockhammer, 2017; Kohler, et al., 2018). In addition, according to the International Labour Organization (ILO), although without econometric evidence, financial globalization has contributed to the decline of wage shares (International Labour Organization (ILO), 2008). Stockhammer (2015a) provided similar evidence, arguing that financialization had a large contribution to the decrease in wage share (Stockhammer, 2017).

Additionally, financialization has been related to the increased indebtedness of households, financial deregulation, increased volatility of asset prices, short-termism of financial institutions, and weaker bargaining power of labor (Zeman, 2019). Furthermore, it has been suggested that financialization has affected both households and firms, mainly due to rising debt and shareholder value orientation, respectively (Stockhammer, et al., 2015). These aspects of financialization may have a significant impact on economic growth and income distribution. As it has been argued, inequality may be affected by reduced worker bargaining power, rising shareholder profits, and changes in the sectoral composition of the economy at the expense of the non-financial sector and government (Stockhammer, 2012c; Hein, 2019; Detzer, 2018). Moreover, financialization has led to the deregulation and liberalization of labor and financial markets, the downsizing of the public sector, the privatization of public enterprises, the break-up of labor rights, has been connected with the rising power of finance, and has contributed to a decrease in wage shares (Dünhaupt, 2013). Financial deregulation gives more investing options while empowering shareholders against labor. Additionally, financialization has contributed to distribution changes due to an increase in the income of top management, hostile takeovers and mergers, and the liberalization of international trade and international finance (Hein, 2013; Tridico & Pariboni, 2017). For instance, the deregulation of financial and labor markets, especially in Anglo-Saxon countries, caused an explosion in top management salaries, share options, and other profit-related elements. The fact that the earnings of the CEOs of the Standard and Poor's Index in 2015 were 335 times higher than the average earnings of a non-supervisory worker, and 819 times higher than the minimum wage of a US federal worker is ostensive (Herr, 2018). Hence, although financial development should help reduce inequality, a poorly managed financial system can potentially be a source of higher inequality (Martin Čihák, 2020). Therefore, the era of financialization may be related to higher inequality and lower growth, mainly due to a lower demand for investment, a higher possibility of debt or wealth-financed consumption instead of wages, and with the deregulation of national and international financial markets and capital accounts (Hein & Dodig, 2014).

Thus, financialization can affect economic performance in many ways. According to Palley (2007), "Its principal impacts are to (1) elevate the significance of the financial sector relative to the real sector, (2) transfer income from the real sector to the financial sector, and (3) increase income inequality and contribute to wage stagnation. Additionally, there are reasons to believe that financialization may put the economy at risk of debt deflation and prolonged recession" (Palley, 2007).

Furthermore, poorly managed financial systems may lead to financial crises and slowing economic growth. Additionally, while resource shifts from low-return, stagnant sectors to dynamic, entrepreneurial sectors may result in decreased efficiency, the co-evolution of financing and technical progress can also lead to instabilities that impede economic growth, as Minsky suggested (Zalewski & Whalen, 2010). For instance, commercialization due to the internet might combine with financial innovation to produce speculative bubbles that eventually collapse, generating economic instability (Kindleberger, 2000). Furthermore, rising inequality increases the propensity to speculate, as richer households tend to hold riskier financial assets that provide greater returns. The rise of hedge funds and subprime derivatives has been linked to the rise of the super-rich (Stockhammer, 2012b).

4.3.1 Sectoral composition and short termism

As previously stated, the most significant impact of financialization is the elevation of the position of the financial sector in relation to the real sector (Palley, 2007; Stockhammer, 2012b). Since financial development has given more options to capital, which can choose between investing in financial or real assets, financialization may cause a shift in the economy's sectoral composition (Hein & Dünhaupt, 2019; Stockhammer, 2017). Changes in sectoral composition may have a significant impact on both income distribution and income.

Initially, since income levels vary among sectors, a shift in sectoral compositions may affect income distribution. Factor distribution will be affected due to increases in profits and more specifically due to increases in retained profits, dividends, and interest payments (Hein, 2014; Stockhammer, 2017). Therefore, as the finance sector is increasingly dominating real activity, the income transfer between sectors can be related to increasing inequality and wage stagnation (Palley, 2007; Ivanova, 2019). Additionally, this may also affect personal profit inequality among individuals who choose to invest in real sectors and those who prefer to invest in financial sectors. For instance, evidence provided by Duménil and Lévy (2001) supports that the increase in profit shares between 1960 and 2001 was mostly due to increases in financial profits in France and the United States; hence, rentiers benefited primarily from income distribution (Duménil & Lévy, 2001). Additionally, while an increasing share of the financial sector in comparison to the non-financial sector may affect the sectoral composition of the economy, an additional impact will be due to a reduction in government activities in GDP. This privatization trend may also reduce wage shares since the private sector seeks higher profits while public utilities only need to pay costs (Herr, 2018).

Furthermore, sectoral composition may affect growth as a result of investment. A main characteristic of financial integration is that rising profits have not translated into rising investment. This might be the result of rent-seeking, which has become a common feature of firms in recent decades. As it has been argued, there has been a shift in the behavior of managers through financialization which has turned from "retain and reinvest" to "downsize and distribute" (Lazonick & O'Sullivan, 2000). Hence, firms tend to choose to reorient from long-term investment motives to shareholder value maximization (Manea & Wildauer, 2019). This comes in line with Hyman Minsky who

argued that if the only criterion of the performance of managers is total profits, then there will be a reorientation in focusing on the maximization of shareholder value (Minsky, 1996). Thus, financialization has increased the rate of return on equities and bonds held by rentiers, while short-term performance has become more crucial, leading managers to align with shareholder interests (Hein, 2011; Onaran & Grafl, 2011).

According to the evidence found by Minsky (1996) among firms in the United States, managers' goal of profitability and flexibility in the workplace will result in inequality and insecurity for workers (Zalewski & Whalen, 2010). Thus, focusing on maximizing profits due to the financial sector may have an impact on both functional distribution and growth. Takeovers and leveraged buyouts will also be used against corporations that do not comply (Stockhammer, 2017).

There is econometric evidence that financialization can explain a significant portion of the accumulation slowdown (Stockhammer, 2004). Apart from changes in employment and the sectoral composition of the economy, we should pay attention to the sources of profits and whether they come from the financial or non-financial sectors. Thus, on the one hand, short-termism in managements may decrease animal spirits by changing their priority from growth to profitability. On the other hand, sectoral shifts through shorttermism drain sources of funding that could be used for capital stock investment targeting short-run profitability rather than long-run economic growth (Hein, 2011; Hein, 2013b; Hein, 2014; Detzer, 2018; Hein & Dünhaupt, 2019). There is evidence that both impacts will have a detrimental impact on actual investment (Stockhammer, 2004; Davis, 2018; Hein & Dünhaupt, 2019). Additionally, financialization, it is argued, has been linked to a decrease in labor productivity; the fact that financialization diverts resources away from productive investments and toward more speculative ones will have a detrimental impact on technological progress and productivity (Tridico & Pariboni, 2017). As a result, given that productivity growth is capital embodied, this behavior will have an impact on economic growth (Hein, 2013). Therefore, factor inequality may increase, accompanied by a low level of investment and productivity, and hence slow growth.

Furthermore, financialization weakens the strength of labor unions due to the undermining of working-class identities (Stockhammer, 2017). Hence, since the erosion of labor unions and the decline in public social protection spending are strongly

associated with financialization and globalization, impacts on functional inequality due to capital-labor bargaining power will also arise (Onaran, 2019). As has been argued, bargaining power may decline as a result of sectoral changes that result in wage declines (Hein, 2014). Moreover, since rent-seeking has been a major characteristic of corporations in recent decades, financialization has been characterized by changes in corporate governance and an increasing role for shareholders. The rising influence of shareholders in the corporation and their power over workers has been a critical component of financialization (Stockhammer, 2004; Hein, 2011; Onaran & Grafl, 2011). In addition, corporate behavior has been in line with the interests of managers and against the interests of workers and their unions (Stockhammer, 2004; Zalewski & Whalen, 2010). Hence, the fact that the alignment of management and shareholders has raised dividend and fee profits at the expense of wages indicates a decrease in labor bargaining power. Thus, financialization may lead to factor share inequality increases due to bargaining power.

Furthermore, according to Stockhammer (2012), the financial sector appears to have evolved considerably as a result of financialization, with non-bank financial institutions gaining weight. Non-financial institutions perform similar activities to banks; however, they are less regulated. These institutions have served as a financialization engine, and they are often referred to as the shadow banking system (Pozsar, et al., 2010). Financial innovations, mostly driven by shadow banking organizations, may act as a catalyst for the entrepreneurial process of economic development; nevertheless, as Minsky (1990) suggests, they may also impede economic advancement by causing financial instability (Minsky, 1990). Shadow banking has been accused of serving for tax evasion and money laundering (Shaxson, 2010; Stockhammer, 2012a).

4.3.2 Credit

There are three main reasons why financial development could affect income distribution and inequality. Firstly, financial development has an impact on income distribution and inequality due to easier credit access; secondly, due to the growth models that emerge from financialization; and finally, because of the crises that emerge from financialization, given that losses are usually unequally distributed.

To begin with, improved credit accessibility is a key feature of financial integration and changes in financial standards. Assuming that everyone can increase their income through lending, future distribution and growth will be affected in a variety of ways. Credit accessibility depends on several factors like the level of financial development, legal institutions, poverty, and asymmetrical information. As stated, wealth distribution is assumed to be directly connected to individuals' borrowing accessibility since their initial endowment may be used as collateral (Galor & Zeira, 1993; Banerjee & Newman, 1993). Therefore, unequal access to credit by different income classes can affect initial distribution and, consequently, future inequality.

In cases where certain individuals, often those with lower income, are excluded from financial markets due to the lack of credit access, it becomes more difficult for them to invest in education or start a business compared to households that can rely on their initial wealth. While the wealthy often have the resources to support education, investment, and research and development, underdeveloped financial systems have a stronger impact on lower-income groups (Galor & Zeira, 1993). As a result, in situations of financial underdevelopment, where investment in education or capital relies on initial wealth, lower-income groups find it challenging to escape poverty. This inability to gradually invest in larger projects means that low-income individuals can't move to higher income levels, leading to low income mobility (Piketty, 2000). Consequently, in imperfect markets, existing inequality may persist, contributing to greater income disparities between the rich and the poor. This can ultimately impact consumption and aggregate demand, affecting growth. The evidence suggests that inequality is related to growth as a result of financialization, with credit availability playing a crucial role in this relationship (Galor & Zeira, 1993; Piketty, 1997; Aghion & Bolton, 1997).

Furthermore, it has been widely suggested that lending constraints arising in imperfect markets can not only create income inequality but also diminish the efficiency of capital allocation (Galor & Zeira, 1993; Aghion & Bolton, 1997; Galor & Moav, 2000). Consequently, financial underdevelopment may hinder the economy from reaching its full potential, as limited credit in certain circumstances can prevent individuals from utilizing their skills and abilities for productive investments (Galor & Moav, 2000). It appears that in less financially developed nations with limited credit access, inequality hampers economic growth due to the costs associated with education, innovation, and

fixed capital investments (Madsen, et al., 2017). Thus, the negative impact of inequality on growth seems more pronounced under financial underdevelopment, primarily due to limited credit access for lower-income families. As such, in cases of financial imperfection, lower growth could result from the absence of beneficial investments by lower-income classes.

Many authors have emphasized the role of financial market imperfections in the relationship between initial wealth distribution and long-term growth (Banerjee & Newman, 1993; Galor & Zeira, 1993; Aghion & Bolton, 1997; Piketty, 1997). Deininger & Squire (1998) found evidence suggesting that initial land inequality is statistically significant for the poor, but not for the rich. This finding aligns with the theoretical approach that argues highly unequal distribution generates credit restrictions for some individuals, discouraging them from investing (Deininger & Squire, 1998). Thus, as they claim, initial distribution indeed affects future growth due to the imperfect market approach, where the impact of initial inequality in land distribution on future growth has been found to be statistically significant. Furthermore, since initial inequality can affect education but not investments in physical capital, they concluded that the effect of investments in physical capital and not in human capital is a result of the variable of inequality. Hence, they found that high initial inequality in land distribution is associated with lower growth in subsequent years, with the level of market imperfection having a significant impact on future growth, especially concerning human and physical capital (Deininger & Squire, 1998).

Therefore, imperfect markets significantly impact human capital accumulation (Galor & Zeira, 1993). For instance, if we assume that education comes with private costs, there is a risk of a poverty trap, and inequality may be inherited from the previous generation at every time period. Thus, wealth distribution can impact the overall education level of the economy (Galor & Zeira, 1993). According to García-Peñalosa (2010), a higher human capital stock results from a more equitable distribution of wealth due to the diminishing returns on education investments (García-Peñalosa, 2010).

As a result, initial distribution becomes a potential determinant of inequality and the production process, as lower-income groups refrain from investing in human and physical capital, which could yield higher returns and contribute to higher growth.

Thus, initial distribution may consistently impact future growth and distribution. However, despite the fact that imperfect markets suggest that higher inequality leads to lower levels of human capital, innovation, and growth on the one hand, while creating incentives for investing and innovating on the other, these processes can coexist and operate simultaneously (García-Peñalosa, 2010).

In contrast, while imperfect financial markets often rely on initial income distribution, financial development reduces the impact of initial distribution by allowing more people to access credit. Therefore, given that lower-income classes have easier credit access compared to the past, they should benefit from improved credit access, leading to increased income and improved income distribution, thereby reducing inequality. Improved financial institutions enable lower-income groups to use credit strategically, enhancing future income by investing in education or physical capital, which ultimately leads to higher income mobility. It has been argued that financial development reduces income inequality due to changes in financial standards and the introduction of new financial instruments, resulting in improved credit access for low-income households and ultimately lower income inequality (Clarke, et al., 2006; Mookerjee, 2010; Kim, 2016; Detzer, 2018). Additionally, financial development is argued to improve the growth rates of the income of the poorest to the extent that it is eventually related to poverty alleviation (Beck, et al., 2007).

However, the relationship between inequality and credit availability is complex and depends on the quality of regulation and supervision (Martin Čihák, 2020).. As mentioned earlier, differences in credit access can be explained by variations in financial system growth, as well as the degree of deregulation and liberalization (Kumhof, et al., 2012; Belabed & Treeck, 2017).

Furthermore, unlike imperfect markets, where credit barriers may lead to lower growth levels, better financial systems enable lower-income groups to utilize credit for investing in human and physical capital, thereby promoting growth. Therefore, the harmful effects of inequality on growth appear to be less pronounced in financially developed countries (Barro, 2008; Madsen, et al., 2017). As suggested by Beck, et al. (2007), the reduction of credit constraints that lower-income groups used to face due to financial integration leads to higher investment in human or physical capital, resulting in increased economic growth. This can also lead to a greater increase in the income of

poorer individuals in relation to GDP growth, consequently reducing inequality (Beck, et al., 2007).

Cardaci & Saraceno (2016) found evidence suggesting that when inequality increases with credit constraints, the economy enters a recession. Conversely, if there is high access to credit, income redistribution initially leads to expansion (Cardaci & Saraceno, 2016). Additionally, as suggested by Greenwood and Jovanovic (1990), who developed a model with a nonlinear relationship between financial development, income inequality, and economic growth, financial development increases the incomes of the poor while simultaneously improving capital allocation and boosting aggregate growth at every stage of economic development. Furthermore, according to their implications, the Kuznets hypothesis is confirmed, as in the early stages of development, income inequality between the rich and the poor is expected to widen. However, when the economy matures and has a fully developed financial structure, enabling most people to access financial markets and financial development affecting a larger number of individuals, income inequality between the rich and the poor narrows (Greenwood & Jovanovic, 1990).

Therefore, in a developed economy, where everyone can invest their desired amount of capital, savings and distribution have less impact on growth, which becomes more dependent on financial development. Consequently, the relationship between financial development and inequality becomes essential in savings and growth regressions (Madsen, et al., 2017).

Moreover, while financial integration has made credit more accessible to everyone, enabling both the rich and the poor to borrow, both investment and consumption can be fueled by borrowed income. As suggested, financialization can impact economic activity through both consumption and investment (Onaran & Grafl, 2011). Hence, credit can be used in both investment and consumption, influencing aggregate demand.

4.3.3 Debt

As previously mentioned, investment and consumption patterns have shifted due to financial integration and widespread access to credit for individuals. However, credit is

not a panacea, and if not used judiciously, the outcomes might not align with expectations.

Borrowing norms have evolved over the past several decades, and borrowing for consumption, in addition to loans for business startups, has become commonplace. Consequently, while it is assumed that individuals choose to borrow to boost their income, in reality, some individuals are "compelled" to borrow in order to sustain their diminished income. It has been observed that the compressed and low wages resulting from market deregulation, labor flexibility, capital mobility, and global finance have been supplemented by consumption driven by credit (Tridico & Pariboni, 2017). Additionally, it has been argued that financial liberalization has increased consumer credit, which has "compensated" for the adverse impact of reduced wages on consumption, thus mitigating the decline in consumption compared to income reduction (Krueger & Perri, 2006; Heathcote, 2010; Gu, et al., 2014). Consequently, inequality can impact the economy's debt, leading individuals to borrow to maintain social consumption standards when their income falls short. Thus, even though individuals may borrow to align with their income class, the eventual outcome of increased credit accessibility might not align with expectations, potentially leading to debt.

As argued, the mounting debt of the poorest households over the past decades was a result of their attempts to uphold an elevated living standard in their society while their real incomes remained stagnant (Stiglitz, 2015). Additionally, it is suggested that a portion of the accumulated debt observed could be due to stagnant or declining wages, with workers striving to maintain their consumption norms (Stockhammer, 2012a). Therefore, in situations where consumption norms outpace wage growth, workers are pushed into debt to maintain those norms. This has led to the notion that household debt serves as a substitute for wages (Pivetti & Barba, 2009). Consequently, growing inequality, coupled with financial development, compels lower-income households to increase their debt to sustain their consumption norms (Rajan, 2011). Several studies have provided evidence of a positive relationship between inequality and private household debt (Iacoviello, 2008; Cynamon & Fazzari, 2008; Mian & Sufi, 2008; Frank, et al., 2014). Moreover, evidence suggests that heightened inequality in advanced financial systems leads to increased growth and escalating debt for workers in the short term, with the effect appearing to be positively correlated with the level of integration (Kumhof, et al., 2012).

In addition, it has been argued that inequality is linked to increased household debt due to income shocks that create a higher demand for credit (Krueger & Perri, 2006; Iacoviello, 2008). For example, a relationship has been identified between US wage inequality and the ratio of household debt to disposable income from the 1960s to the present, which could explain both the trend and the cycle of household debt levels (Iacoviello, 2008). Therefore, financialization, mainly driven by financial innovations and easier access to credit, when combined with inequality, is associated with rising levels of debt in the private sector.

Furthermore, it's widely argued that in cases where financialization influences consumption norms, leading to consumption based on debt, future growth becomes financially fragile (Hein, 2014). Therefore, if borrowing against future income is not employed prudently, it can lead to credit becoming a future problem rather than a short-term solution. Borrowing has been shown to increase aggregate demand and output in the short run but raises household debt in the long run, which has a negative impact on growth (Kim, 2013). Additionally, high levels of debt might compel banks to restrict credit access in the future, resulting in lower growth (Detzer, 2018). Furthermore, a surge in private sector credit may heighten the potential for a financial crisis (Sahay, et al., 2015). Consequently, while capital market imperfections and limited credit access can exacerbate inequality, financial deregulation amplifies credit availability, leading to higher leverage and financial vulnerability (Acemoglu, 2011).

To summarize, there's a risk that increased credit accessibility might not yield the intended results on inequality and that it could lead to an unforeseen problem— unmanageable debt. Moreover, although financialization instruments have brought short-term growth benefits, it appears that this might come at the expense of future income and growth.

Furthermore, the broader credit access resulting from financial development has charted new growth trajectories for economies. Debt-driven consumption can pave the way for new growth models as economies seek new avenues to address shifts in domestic demand.

Firstly, as credit becomes more accessible and individuals borrow to consume, potential deficiencies in domestic demand due to low incomes can be offset by consumption fueled by borrowing. Changes in national financial systems have led some countries to

counter potentially stagnant demand by generating demand through debt-financed consumption, creating a debt-led growth model where wage growth is substituted by household debt (Pivetti & Barba, 2009; Detzer, 2018; Stockhammer, 2012a).

Consequently, the fact that individuals consume through credit can stimulate domestic demand that might otherwise diminish due to stagnant or decreasing wages. In terms of consumption, credit has acted as a solution to counter the weakened aggregate demand stemming from wage stagnation. Debt-driven consumption has been considered a response to reduced aggregate demand caused by declining wage shares in various advanced and emerging economies such as the United States, United Kingdom, Spain, Ireland, Turkey, and South Africa leading up to the Great Recession (Onaran, 2019).

Thus, financialization has, on one hand, provided certain countries the means to compensate for low demand with credit-driven consumption. On the other hand, this has resulted in an increasing debt-to-income ratio among households. Consequently, when stagnant wages prompt households to consume through credit and, consequently, accumulate private debt to offset domestic demand decline, inequality becomes closely tied to a debt-led growth model. In these scenarios, growth might increase as debt and inequality rise simultaneously. Therefore, while financialization might "correct" inequality through credit, the level of financial system development, regulation, and liberalization—which also determine households' credit access—play a role in whether a debt-led growth model or reduced activity due to inequality prevails (Kumhof, et al., 2012; Belabed & Treeck, 2017).

Moreover, as argued, there's a strong empirical connection between financial liberalization and higher current account deficits, primarily due to debt-driven growth models that result in these deficits (Kumhof, et al., 2012). Therefore, as inequality rises, domestic demand increases simultaneously with a current account deficit due to consumption driven by credit. In essence, "the rich fund a significant part of their increased domestic lending by intermediating foreign savings" (Kumhof, et al., 2012). Thus, in financially developed economies, debt-driven models generally result in higher debt and current deficits due to inequality. Stockhammer (2012b) asserts that one of the most conspicuous effects of financial development and recent international financial deregulation is that countries have been permitted to sustain larger current account deficits over extended periods. The United States and other Anglo-Saxon countries

have exemplified credit-driven consumption boom growth models, where the median working-class household experiences stagnant wages while consumption norms grow faster than median wages, resulting in escalating household debt. These countries have typically exhibited current account deficits (Stockhammer, 2012a).

4.3.4 Imbalances

Therefore, although financialization has led to debt-led growth models relying on debtfinanced consumption to compensate for depressed demand when wage shares fall, some economies may adopt different strategies to adapt to weaker domestic demand.

A decrease in wage share not only reduces domestic demand but also shifts income from poorer households with a higher marginal propensity to consume to richer households with a lower marginal propensity to consume. Consequently, different countries may respond to the lack of domestic demand in various ways.

Instead of increasing household debt, several countries have accepted stagnation in domestic demand and focused on exports to achieve growth. These economies choose to export products that cannot or are not well-suited for domestic markets to stimulate growth. This type of growth is referred to in the literature as export-driven growth (Stockhammer, et al., 2015). Therefore, export-led growth models rely on exports as the driver of aggregate demand (Detzer, 2018).

As a result, countries whose populations are unable to respond to falling wages by borrowing often opt for export-driven economic models. Additionally, credit restrictions and imperfect markets that limit credit accessibility for lower-income classes further necessitate an export-led economic model due to weak domestic consumption.

As a consequence, if investment is positively affected by financialization while consumption increases at a slower rate, then an export-led growth model becomes a possibility (Detzer, 2018; Stockhammer, 2012a). Countries like Germany, Japan, China, and the Netherlands have adopted this export-driven growth strategy, with lower domestic demand but higher exports (Belabed & Treeck, 2017; Detzer, 2018; Behringer & Treeck, 2018; Zeman, 2019). Economies such as Germany, Japan, or China have

chosen this export-led model as a solution to the deficiency in domestic demand caused by falling wage shares (Onaran, 2019).

Furthermore, countries that adopt an export-led growth model often end up with current account surpluses. This phenomenon is particularly evident in the cases of China and Germany, where current account surpluses can be attributed to a weak aggregate domestic demand and consumption compared to domestic output. This imbalance is a consequence of low wage shares and a lack of credit-financed consumption (Belabed & Treeck, 2017; Detzer, 2018; Behringer & Treeck, 2018).

Furthermore, these countries' current account surpluses have been mirrored by current account deficits and increasing debt burdens in other nations. Thus, while under debtled growth models, income inequality tends to result in current account deficits, in economies where individuals are constrained from responding to declining wages through borrowing, income inequality often translates into current account surpluses (Kumhof, et al., 2012).

As a result, the combination of export-driven growth, weak domestic demand, and low wages can contribute to income polarization and increased inequality. Thus, while export-oriented models can be viewed as a response to demand challenges stemming from inequality, they may inadvertently perpetuate these inequalities. Consequently, countries opting for export-driven growth may find themselves accumulating significant current account surpluses alongside heightened levels of inequality.

Therefore, it has been suggested that under financialization, two extreme types of development can emerge: the 'debt-led private-demand boom' and the 'export-led mercantilist type' (Dodig, et al., 2016). Furthermore, it is argued that export-driven economies heavily depend on their trade partners due to their limited domestic financing capabilities (Karwowski, et al., 2017; Stockhammer & Kohler, 2019). It appears that economies pursuing export-led growth must amass substantial current account surpluses and maintain a positive international investment position, while their trading partners often contend with deficits financed through deregulated international capital markets and open capital accounts (Detzer, 2018). Consequently, debt-driven growth models are typically characterized by domestic household debt, whereas export-driven growth models are associated with external debt in trading partner nations (Stockhammer, 2011; Hein, 2013b; Thomas Goda, 2016). Thus, debt-led and export-

driven growth models are interconnected because countries pursuing export-driven growth rely on the current account deficits of their trading partners (Stockhammer, et al., 2015; Thomas Goda, 2016).

As a result, an economy that chooses an export-driven growth model often requires a trading partner with a debt-driven growth model. Moreover, while both debt-led and export-led growth models may result in economic expansion, they typically coincide with increased debt levels, either within the domestic private sector, in debt-led regimes, or within the trade partner's economy, in export-led regimes (Stockhammer & Kohler, 2019). Additionally, income inequality appears to widen due to wage stagnation, as economic growth becomes less linked to income distribution and more associated with credit.

However, the specific factors that lead a country to opt for either a debt-driven growth model characterized by consumption booms and current account deficits or an exportdriven growth model marked by subdued domestic consumption and current account surpluses remain somewhat unclear (Stockhammer, 2013; Belabed & Treeck, 2017). Nevertheless, it appears that more competitive countries have been better positioned to develop an export-driven demand regime, primarily due to financialization and easier access to foreign credit for countries with current account deficits (Naastepad & Storm, 2015).

As a result, with some countries running substantial current account deficits and others maintaining surpluses, financial integration has given rise to diverse economic trajectories across nations. The surge in current account imbalances is widely attributed to global and regional liberalization of international markets and capital accounts, particularly within the Eurozone (Stockhammer, 2010; Van Treeck & Sturn., 2012; Hein & Mundt, 2012; Stockhammer, 2012b; Stockhammer, 2012a).

Consequently, a global increase in inequality appears to be intrinsically linked to higher worldwide current account imbalances (Kumhof, et al., 2012). Given that income inequality can result in either an export-led or debt-led growth model, current account imbalances can be associated with varying levels of inequality due to the development of these two growth models. Thus, economic growth may be influenced by inequality under both models. Under debt-led growth models, growth is affected by financial liberalization, long-term current-account deficits, and growth models reliant on deficits (Stockhammer, 2012b). Meanwhile, export-led growth models operate with little necessity for a growing domestic market, as there is no dynamic relationship between the domestic market and investors' benefits.

Furthermore, as suggested by Belabed & Treeck (2017), personal income inequality increases have been associated with debt-led, debt-financed consumption and current account deficits. They also proposed that a significant corporate or government veil would lead to weaker private consumption and current account surpluses due to decreased household income. Finally, they argued that both models may coexist within the same economy, making it challenging to predict which model dominates (Belabed & Treeck, 2017). Consequently, both current account surpluses and current account deficits may coincide with rising income inequality. Therefore, similar levels of inequality may be observed among countries with both models, even though their growth performance and drivers may significantly differ.

Kumhof, et al. (2012), argued that increasing inequality has led to worsening national saving-investment balances and increased household leverage. This evidence primarily emerged from advanced economies with developed financial systems, such as the US and the UK, where lower-income classes compensated for consumption with borrowed income from domestic and foreign lenders. Additionally, they posited that some emerging economies, like China, with less developed financial markets and limited access to credit for lower-income classes, experienced increased inequality alongside an export-oriented growth model and weak domestic demand (Kumhof, et al., 2012). Furthermore, Kumhof, et al. (2012) found evidence of the relationship between income inequality and current accounts, using a sample of 14 OECD economies spanning from 1968 to 2008, with top incomes serving as inequality indicators. The evidence supported a negative effect of top incomes on current account balances.

Moreover, the fact that debt and export-driven growth models are complementary often leads to high household debts, international imbalances, and international debt (Thomas Goda, 2016). Consequently, both models can be unstable, with debt-led models prone to unmanageable levels of debt and export-led models relying on imbalances in other economies.

The phenomenon of current account deficits has manifested in many English-speaking countries worldwide. Prolonged periods of current account imbalances can precipitate

crises. As has been suggested, global current account imbalances were associated with the 2007 financial crisis (Caballero, et al., 2008; Obstfeld & Rogoff, 2009; Pivetti & Barba, 2009).

4.3.5 Crisis

Financial development has been identified as one of the primary causes of the crisis (Palley, 2007). As Palley (2007) argues, "the era of financialization has been associated with tepid real economic growth, and growth also appears to show a slowing trend... [as well as] ...increased financial fragility." Changes in financial norms and the introduction of new financial instruments that facilitate consumption through credit may stabilize aggregate demand and contribute to growth. However, there are serious concerns that this growth may prove unsustainable, resulting in financial fragility for the economy, primarily due to escalating household debt. Lending to households for consumption or housing can lead to unmanageable debts, resulting in housing bubbles and unstable growth (Manea & Wildauer, 2019). Additionally, inequality has been identified as one of the factors contributing to credit bubbles, thereby increasing the likelihood of financial crises (Bazillier & Hericourt, 2017).

It is commonly assumed that inequality can influence growth stability since it relates to the proportion of the population capable of consuming through borrowing or earning (Onaran & Galanis, 2012). Debt regimes arising from financialization, while initially improving inequality and growth, are expected to lead to weak long-term growth and heightened inequality, ultimately culminating in economic instability and crises. For instance, if inequality continues to rise due to stagnant wages, there is a risk that not all individuals will be able to repay their debts, potentially trapping them in a cycle of debt and perpetuating inequality while attempting to maintain social consumption norms.

Thus, rising inequality may be associated with increased financial risks when credit expansion coincides with increasing inequality. Consequently, financial development may lead to unsustainable economic growth and crises in the presence of inequality. The interaction of financial deregulation with the macroeconomic effects of rising inequality has led to economic imbalances (Stockhammer, 2013). Therefore, as changes in financial norms and growth coexist with increased inequality and debt, resulting in a debt-led growth model, higher debt growth is linked to greater instability and a higher

probability of banking crises, contributing to further increases in inequality. The crisis triggered by debt-driven consumption and international imbalances is closely tied to financial liberalization combined with income distribution polarization (Stockhammer, 2012a). Thus, as inequality fosters increased borrowing, the likelihood of a crisis grows, suggesting a "virtuous relationship between income equality and financial stability," while inequality appears to be connected to greater financial risks (Martin Čihák, 2020).

Attempting to address inequality by granting access to credit for those with lower incomes can be counterproductive if the financial sector lacks proper regulation. Consequently, although aggregate demand and growth may rise due to debt-fueled consumption by lower-income groups, the economy may become more precarious, vulnerable to the threat of financial bubbles (Onaran & Galanis, 2012). Furthermore, these debt-related issues emerged as a result of unequal distributions during the recent financial crisis, where income inequality played a role in some literature (Galbraith, 2012; Stiglitz, 2015). Moreover, there is evidence that in Anglo-Saxon countries, debt-driven consumption became the primary driver of demand, often in conjunction with real estate bubbles (Stockhammer, 2012a).

In general, it appears that there is a trade-off between the short-term benefits of increased growth and the temporary reduction of inequality through debt, and the long-term costs of financial stability and persistent inequality. Therefore, if the chosen policy is to stimulate consumption through debt, the economy may eventually accumulate unsustainable levels of debt, leading to non-viable growth, especially in cases of high inequality. High debt levels can impact growth in various ways, often resulting in financial crises. Consequently, debt and export-oriented economic models can potentially lead to global imbalances, unsustainability, and economic crises in the long run (Zeman, 2019).

Since both debt and export-led growth models rely on increasing debt ratios, they may eventually prove unsustainable. This is primarily because governments have been permitted to run larger and larger current account deficits due to financial deregulation, while consumers have been driven into enormous and unsustainable levels of debt to sustain their living standards through credit.

The deregulation and liberalization of capital markets and capital accounts resulting from financialization have facilitated the running and financing of persistent current account deficits and foreign indebtedness problems, as well as speculative capital flows, exchange rate volatility, and related currency crises (Hein, 2014). Indicators such as excessive household leverage and current account imbalances have indicated financial fragility (Belabed & Treeck, 2017).

Furthermore, financialization appears to be associated with weaker long-term growth, while inequality tends to increase due to changes in the financial structure and the expansion of secular debt. Income is transferred from lower-income classes to higher-income classes, resulting in higher levels of household indebtedness. The increased access to credit, coupled with changes in the financial structure, has exacerbated inequality by transferring income "from high marginal propensity to spend debtors to lower marginal propensity to spend creditors" (Palley, 2007). This implies that future consumption may decrease, as the income transfer between creditors and borrowers affects demand due to differences in debtors' and rentiers' propensities to consume and save. Thus, while financial liberalization may prevent an immediate reduction in consumption by lower-income classes and temporarily correct inequality, it does so at the cost of domestic debt, higher debt servicing, and reduced future consumption (Kumhof, et al., 2012).

Moreover, there is evidence that investment may decline due to financialization (Stockhammer, 2004; Orhangazi, 2008; Tori & Onaran, 2018). This is mainly because rentiers have a lower propensity to invest and prefer to lend their income from profits rather than invest. Additionally, there is evidence that rising inequality leads to higher labor debt, which is ultimately financed by savings generated from profits (Kumhof & Ranciere, 2010; Kumhof, 2015).

Therefore, it appears that financialization promotes consumption through debt while potentially leading to reduced investment in the real economy. Furthermore, there is evidence that the marginal propensity to consume from profit income of rentiers is higher than the marginal propensity to consume from profit income of investors, while both are lower than the propensity to consume from wages (Manea & Wildauer, 2019). Consequently, lower-income classes continue to consume at similar levels while borrowing from higher-income groups, who may opt to lend their income rather than invest. Furthermore, if investors borrow to invest, they may have less income to invest in the future due to the burden of future debt. Therefore, in a debt-driven regime, the stimulative effects of consumption need to outweigh the contractionary effects of reduced real investment in order to achieve growth. Consequently, financialized economies may be associated with greater output growth volatility and macroeconomic instability.

Financial deregulation has been linked to the 2008 financial crisis, in which financialization and rising inequality interacted in complex ways, contributing to the crisis (Stockhammer, 2012a). Both personal and functional inequality had been on the rise before the financial and economic crisis in most developed and developing countries (Dodig, et al., 2016). Furthermore, it is widely asserted that inequality contributed to the financial crisis in the USA, particularly due to household indebtedness (Rajan, 2010; Morelli, 2012). It has been argued that the relationship between income inequality and household indebtedness played a role in the 2007/8 financial crisis in the US, as increased borrowing allowed lower-income classes to maintain their consumption standards amid falling incomes (Rajan, 2010; Reich, 2010).

Moreover, it appears that the excessive credit that contributed to the 2007-08 crisis in the United States resulted from the credit expansion observed during the era of financialization, fueled by political interventions aimed at supporting the consumption of individuals experiencing declining incomes and thus exacerbating inequality (Martin Čihák, 2020). For instance, as Martin Čihák (2020) contends, mortgages to low-income households played a significant role in the subprime crises of 2007-08 in the USA. In the period leading up to the 2008 financial crisis, lower and middle-income groups in the United States were able to maintain their relative consumption levels compared to wealthier households, mainly due to government credit expansion policies (Rajan, 2010; Behringer & Treeck, 2018).

Furthermore, there is evidence that the years preceding the 2008 crisis, income inequality, as reflected in top incomes, was linked to household savings and current account balances (Kumhof, et al., 2012; Behringer & Treeck, 2015). For example, increasing inequality in the USA and its interaction with institutions contributed significantly to reduced national savings and a substantial portion of unsustainable personal debt and rising current account deficits (Rajan, 2010; Belabed & Treeck, 2017; Behringer & Treeck, 2018; Detzer, 2018). A similar pattern was observed in the UK (Kumhof, et al., 2012; Behringer & Treeck, 2018), as well as in several European

countries such as Greece, Portugal, and Spain (Zeman, 2019). Additionally, because the US dollar maintained its global status, the US current account deficit contributed to global financial fragility (Kumhof, et al., 2012). Consequently, rising income inequality has been identified as the root cause of the rapid growth of the non-prime mortgage market in the USA and the global payment imbalances that contributed to the 2008 crisis (Stiglitz, 2012; Kumhof, et al., 2012).

Moreover, financial crises appear to have long-term effects on income distribution in emerging nations (Onaran, 2009). While the ongoing global financial crisis has confirmed the instability of newly developed financial systems, there is a high probability that lower-income households will suffer the consequences of the crisis. Additionally, during a financial crisis, there is a possibility that losses are distributed unequally, exacerbating inequality (Kuttner, 2007; Wray, 2007). For instance, in the United States, unemployment increased, reaching 8.5% in March 2009, while financial elites continued to earn high incomes, including "retention bonuses" (Zalewski & Whalen, 2010).

5 Model

The theoretical framework presented in this chapter relates inequality to major issues, such as technological changes, openness, financialization and their impact on growth. To begin with, it is assumed that an economy under oligopoly, where total output, Y = f(K, L), develops over time as the capital stock (K) and the labor force (L) of the economy increase. Furthermore, the total population of the economy, N, consists of the economically active population, T, and the unemployed population, U^2 . It is assumed that the unemployed population has no participation in the economic process and hence has no income. Additionally, the total income, pY, is distributed among the economically active population, which consists of workers, denoted as L, and capital owners, denoted as Ξ . It is also assumed that every worker owns one unit of labor (L), while every capital owner possesses ζ units of capital (K)³.

 $^{^{2}}N = T + U$

 $^{^{3}}K = \zeta \Xi$

Furthermore, it is assumed that capital owners organize firms while providing capital (K) to the production process. Hence, the income of capital owners comes out of profit, Π , which is mainly used for investment. Furthermore, firms hire workers so that they can utilize their labor power, while they provide the materials and machinery necessary to be combined with labor in order to produce goods. Finally, workers contribute their labor (L) to the production process and receive income from wages, denoted as W, which they mainly use for consumption. Additionally, it is assumed that labor is unlimited, while the capital stock is determined by the savings that mainly stem from profits. Therefore, the total domestic income of the economy (pY)⁴ is distributed between profits and wages as presented in equation (5.1):

$$pY = \Pi + W \tag{5.1}$$

Additionally, the profit rate, denoted as r, is set according to equation (5.2), and the average wage, denoted as w, is set according to equation (5.3):

$$r = \frac{\Pi}{K}$$
(5.2)

$$w = \frac{W}{L}$$
(5.3)

Furthermore, it is assumed that the total product, Y, is determined by the demand and the factor productivities, namely labor and capital productivity. Factor productivities are presented in equations (5.4) and (5.5), where A_L represents labor productivity and A_K represents capital productivity:

$$A_L = \frac{Y}{L} \tag{5.4}$$

$$A_K = \frac{Y}{K} \tag{5.5}$$

Moreover, it is assumed that firms set the product price, denoted as p, based on their monopolistic power, primarily defined by the bargaining power between the firms and workers, as well as the degree of price competition. Hence, initially, the price, p, is set

⁴ p is the product price and Y the total product

by unit labor costs, $\frac{W}{Y}$, and unit gross profits, $\frac{\pi}{Y}$, which are assumed to be the only costs of the firm, according to equation (5.6):

$$p = \frac{\Pi}{Y} + \frac{W}{Y} \tag{5.6}$$

By combining equation (5.6) with equations (5.2), (5.3), (5.4), and (5.5), the price can be set according to equation (5.7):

$$p = \frac{r}{A_K} + \frac{w}{A_L} \tag{5.7}$$

Thus, prices are determined by the profit rate, r, the nominal wage, w, and the factor productivities, A_K and A_L . Finally, according to the post-Keynesian literature, capacity utilization, denoted as u, is set as the ratio of actual output to potential output of the economy, as expressed in equation (5.8):

$$u = \frac{Y}{Y^*} \tag{5.8}$$

Following the approach described above, income inequality will be presented in the following sectors.

5.1 Factor Inequality – Factor Distribution

Firstly, the income inequality driven by factor distribution will be defined. Focusing on the effect of factor distribution on personal inequality, it is assumed that personal inequality emerges from the way that total income is distributed among investors and workers. Setting up the distribution, the proportions of workers and investors to total employment are denoted by "l" and " ξ " respectively, as presented in relations (5.1.1) and (5.1.2).

$$l = \frac{L}{T}$$

$$\xi = \frac{\Xi}{T}$$
(5.1.1)
(5.1.2)

Furthermore, wage shares, " λ ", will be determined by real wage, " w^{r} "⁵, and productivity of labor, " A_L ", according to equation (5.1.3). Additionally, this relation can be presented in terms of growth according to equation (5.1.4).

$$\lambda = \frac{W}{pY} = \frac{w^r}{A_L} \tag{5.1.3}$$

$$\dot{\lambda} = \dot{w^r} - \dot{A} \tag{5.1.4}$$

As a result, since wage share is determined by real wage and productivity growth rates, if productivity rises faster than real wages, wage shares will fall (Giovannoni, 2010; Dünhaupt, 2013). When labor productivity improvements are not passed on to workers, the wage share falls while the profits share rises (Giovannoni, 2010). Respectively, profit shares, "h", are determined by profit rate and productivity of capital as presented in relation (5.1.5).

$$h = \frac{\Pi}{pY} = \frac{rK}{Y} = \frac{r}{A_K}$$
(5.1.5)

In growth terms relation, the growth rate of profit shares will be determined by the difference of the growth rates of profit rate and capital productivity as can be seen in equation (5.1.6).

$$\dot{h} = \dot{r} - \dot{A_K} \tag{5.1.6}$$

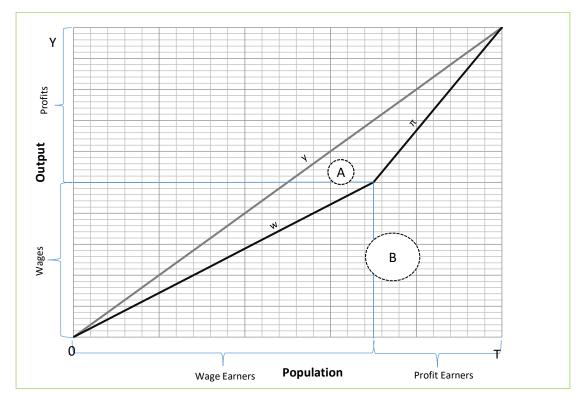
Furthermore, it is assumed an economy of two classes where the lower income class consists of workers while the higher income class consists of investors. Moreover, it is assumed that the population of employed workers is larger than the population of investors, ($l>\xi$). Additionally, it is assumed that every worker receives the same average wage, "w", while every investor possesses the same amount of capital, " ζ ", and hence receives the same average income from profits, " π ". In addition, it is assumed that the returns on capital are higher than returns to labor, so that the average income that one person receives from profits is bigger than the average income from wages, (π >w). Hence the total income of equation (5.1) can be presented according to equation (5.1.7).

 $\overline{{}^5 w^r} = \frac{w}{p}$

Therefore, the share of investors, ξ , earns the profit share "h", and the share of workers, "l", earns the wage share, " λ ". Setting the Lorenz curve between two income classes, investors and workers, it emerges that the share of workers in the total employment is larger than the wage share, $1 > \lambda$, while the opposite stands for the group of capital owners, where their population share of total employment is smaller than their profit income, $\xi < h$. Consequently, the personal inequality that emerges due to factor distribution, can be presented according to the Lorenz curve of figure 2.

(5.1.7)

Figure 2 Lorenz curve



In the Lorenz curve the horizontal axis represents total employment from the poorer to the richer individual while the vertical axis represents total output. The grey line is the average income, "y", and implies total equality, where average wage and average income from profits are equal to average income. In this case, every individual would earn equal income from wages and profits. The first part of the black line is the average income from wages, "w", and its slope is smaller than the average income. Respectively, the rest of the line is the average income from profits, " π ", and its slope is larger than the average income.

Inequality is calculated according to the famous GINI index as presented in relation (5.1.8). Using the calculation formula of areas, it arises that inequality in a two-class economy of workers and investors is determined by the income shares of the two classes, profit share, "h", and wage share, " λ ", and their employment shares, ξ and "l" as it is presented in equations (5.1.8), (5.1.9), and (5.1.10):

$$Inequality_F = \frac{area A}{area A + area B}$$
(5.1.8)

$$Inequality_F = h - \xi \tag{5.1.9}$$

$$Inequality_F = l - \lambda \tag{5.1.10}$$

Therefore, income inequality due to factor distribution is determined by the difference between labor employment and the wage share, or the difference between the profit share and the proportion of capital owners to total employment. Therefore, as it emerges, due to this equation, income inequality is related to functional distribution; however, it is not the only factor. Additionally, employment of both classes, hence the population that shares total income, is a fundamental determinant of factor inequality.

Furthermore, relations (5.1.9) and (5.1.10) can be presented in growth terms according to relations (5.1.11) and (5.1.12) respectively.

$$Inequality_F = \frac{h}{h-\xi}\dot{h} - \frac{\xi}{h-\xi}\dot{\xi}$$
(5.1.11)

$$Inequality_F = \frac{l}{l-\lambda}\dot{l} - \frac{\lambda}{l-\lambda}\dot{\lambda}$$
(5.1.12)

Therefore, Gini is positively related to profit share growth, and the growth of the employment share of workers, while it is negatively related to wage share growth and the growth of the employment share of investors.

Hence, for instance, according to relation (5.1.12) inequality will decrease if wage shares increase faster than relative employment of workers. Similarly, if the population of capital owners increases faster than profit share then inequality will decrease according to relation (5.1.11).

This, on the one hand, indicates that economic growth can increase with decreasing inequality only in a wage-led growth regime. On the other hand, if relative employment of labor grows faster than wage share, then inequality will increase. Hence, although an increasing wage share seems to be essential and a wage-led regime is a fundamental requirement, it is not enough for decreasing factor income inequality accompanied by increasing economic growth. Therefore, the difference in changes in relative employment of workers and wage shares, as well as the difference in changes in relative employment of investors and profit shares, will determine the change in factor inequality.

Furthermore, as it is generally accepted, wages are related to labor employment. However, as it seems, there is not a consensus as regards the sign of the impact. According to classical economic theory, it is assumed that higher levels of wages decrease employment due to lower labor demand as a result of lower profits and hence a lower budget to invest. On the contrary, mostly Keynesian theoretical approaches argue that a higher level of wages will increase labor employment due to an increase in aggregate demand as a result of the higher consumption that may emerge (Palley, 2016).

Therefore, under the classical theoretical perspective, a change in factor distribution will have a stronger impact on inequality since wage shares are negatively related to labor employment. While under a Keynesian theoretical perspective, the effect may not be as strong, given that the relation between wage shares and labor employment is positive. Hence the effects of wage share and labor employment will neutralize each other.

However, given that the growth of factor inequality is determined by the difference between the growth of relative employment of labor and wage share growth, the factor inequality index (5.1.12) can be applied in both theoretical perspectives.

Thus, if policy could focus on negative changes in factor inequality due to factor distribution, changes in the level of wage shares should be higher than changes in the employment share of labor. Similarly, profit share changes should be lower than changes in the population of capital owners. These relations are presented in equations (5.1.13) and (5.1.14).

$$Inequality_F < 0 \to d\lambda > dl \tag{5.1.13}$$

$$Inequality_F < 0 \to dh < d\xi \tag{5.1.14}$$

Additionally, combining relations (5.1.10) and (5.1.3), wage share, λ , can be expressed in terms of real wage and labor productivity. Thus, factor inequality can be presented according to relation (5.1.15). As a consequence, the growth rates of factor inequality can be presented as in relation (5.1.16).

$$Inequality_F = l - \frac{w^r}{A_L} \tag{5.1.15}$$

$$Inequality_F = \frac{l}{l-\lambda}\dot{l} - \frac{\lambda}{l-\lambda}(\dot{w^r} - \dot{A_L})$$
(5.1.16)

As emerges, in order to reduce factor inequality growth, the following condition should hold.

$$Inequality_F < 0 \to \frac{l}{\lambda} \dot{l} < \dot{w^r} - \dot{A_L}$$
(5.1.17)

Relation (5.1.17) implies that the difference between changes in nominal wage and labor productivity determines factor inequality due to wage share growth. Given that wage share increases could come from increases in employment or increases in real wages, as it emerges from relation (5.1.17), in order to reduce factor inequality, the wage share should increase due to real wage increases.

Therefore, while rising productivity, A_L , and relative employment of labor, l, are legitimate for economic growth, the real average wage, w^r , will be the major policy instrument for controlling factor inequality. As a result, in order to reduce factor inequality, policymakers should emphasize boosting the average wage, w^r , while also improving labor productivity A_L and labor employment, l.

Additionally, every increase in growth that comes due to increases in labor productivity or increases in labor employment needs two conditions in order to decrease inequality. The first condition is that the real average wage, w^r , must grow faster than labor productivity, A_L , so that wage share growth, $\dot{\lambda}$, will be positive according to equation (5.1.4). While the second condition is that wage shares, λ , should grow faster than labor employment, l, as presented by equation (5.1.12). Finally, assuming that there is further inequality among individuals of the same class, it is assumed that inequality due to factor distribution is the minimum inequality that can be observed in the economy.

5.2 Wage inequality – Kuznets hypothesis

However, distinguishing distribution between two classes might be misleading given that labor compensation can be separated among basic and skilled production workers or managers, while profits can be divided among self-employed, small or large business profits, and earnings from interest and dividends. As usual reality is much more complex than our assumptions. One of the main problems that prevent us from exploring how distribution impacts income inequality is that not all workers are paid the same. In fact, the distribution of wage and salary levels differs among economies, as does the distribution of profit earners.

The difference in labor income among workers may arise from several factors. For example, as noted by García-Peñalosa (2010), variations in wages may result from worker heterogeneity in terms of education or skill level (García-Peñalosa, 2010). In Kuznets' framework, differences in income exist due to distinct sectors, with industrial workers receiving higher incomes than agricultural workers.

Hence, firstly, it is assumed that there are two different types of labor⁶ with varying labor productivities. There is basic labor, denoted as L_b , consisting of workers with basic education and corresponding labor productivity $A_b = \frac{Y}{L_b}$. Additionally, there is skilled labor, denoted as L_s , comprising highly educated workers with labor productivity $A_s = \frac{Y}{L_s}$. Differences in labor productivity among workers may depend on factors such as their education, experience, or the sector in which they work. Consequently, it is assumed that these two types of labor receive different wages (w_b, w_s) , resulting in the average income of basic labor being lower than that of skilled labor $(w_b < w_s)$.

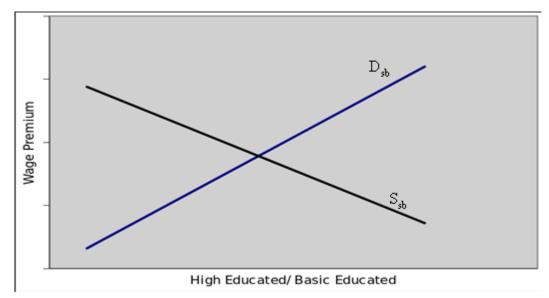
 $^{6}L = L_{b} + L_{s}$

Thus, assuming that a skilled labor worker receives a higher income than a basic worker, the relationship between the average wage of the skilled class and the basic class is defined as the wage premium, denoted as q_L , as presented in Equation (5.2.1):

$$q_L = \frac{w_s}{w_b} \tag{5.2.1}$$

The wage premium, q_L , is determined by the relative supply and relative demand for skilled and basic labor, as illustrated in Figure 3.

Figure 3 relative Demand/relative Supply



The wage premium is assumed to have a negative relationship with relative supply and a positive relationship with relative demand, as illustrated in Figure 3.

Relative supply of skilled labor, denoted as S_{sb} , is defined as the ratio of high-skilled labor supply (S_s) to basic skilled labor supply (S_b), expressed as ($S_{sb} = \frac{S_s}{S_b}$). Similarly, relative demand for skilled labor, denoted as D_{sb} , is determined by the ratio of the demand for highly educated labor (D_s) to the demand for basic educated labor (D_b), represented as ($D_{sb} = \frac{D_s}{D_b}$).

Furthermore, it's worth noting that both relative demand/supply and the wage premium can be influenced by exogenous factors such as technological advancements, globalization, and bargaining power. Basic labor workers L_b , receive a total wage income denoted as W_b , while skilled labor workers L_s , receive a total wage income denoted as W_s .

The ratio of the total income of higher-paid labor to that of lower-paid labor, denoted as m_L , is defined by the relationship (5.2.2), and their labor employment is represented as Λ_L , based on the relationship (5.2.3).

$$m_L = \frac{W_s}{W_b} = \frac{q_L}{\Lambda_L} \tag{5.2.2}$$

$$\Lambda_L = \frac{L_b}{L_s} \tag{5.2.3}$$

Furthermore, since each type of labor has different productivities and receives different wages, the unit costs also vary. Equations (5.2.4) and (5.2.5) present the unit costs of skilled and basic labor, respectively.

$$\frac{w_s L_s}{Y} = \frac{w_s}{A_s} \tag{5.2.4}$$

$$\frac{w_b L_b}{Y} = \frac{w_b}{A_b} \tag{5.2.5}$$

Moreover, while most skilled and basic labor can be substituted for each other, certain job positions demand either exclusively basic or skilled labor. Consequently, each firm's output requires a mix of both skilled and basic labor. Therefore, the total labor costs for each firm comprise two distinct labor costs based on the combination of these two labor types. Additionally, the relationship between the unit costs of the two labor types is defined as the relative cost, as shown in equation (5.2.6):

$$Relative \ cost = \frac{\frac{W_s}{A_s}}{\frac{W_b}{A_b}} = \frac{q_L}{\frac{A_s}{A_b}}$$
(5.2.6)

The relative cost of workers in the two labor classes depends on their productivities and nominal wages. Additionally, firms strive to minimize production costs to enhance competitiveness, and relative cost plays a crucial role in determining the relative labor employment Λ_L . Firms seek to optimize the composition of basic and skilled labor based on considerations of relative cost.

As a result, when the relative cost falls below unity, firms tend to demand more skilled labor, leading to a decrease in relative labor employment (Λ_L). Conversely, if the relative cost exceeds unity, employers will seek less skilled labor, resulting in an increase in relative employment Λ_L . Therefore, the determination of relative labor employment is predicated on the relative cost. Additionally, we assume that relative employment directly influences the total productivity of the economy because it reflects the composition of different labor types with varying labor productivities. Consequently, if we assume that skilled labor is more productive than basic labor $\Lambda_s > \Lambda_b$, a lower relative employment Λ_L , corresponds to higher overall productivity.

Furthermore, the income share of total wages for skilled labor, denoted as ω_s , is determined by relation (5.2.7). Correspondingly, ω_b , represents the income share of total wages for basic labor, calculated as shown in relation (5.2.8).

$$\omega_s = \frac{W_s}{W} \tag{5.2.7}$$

$$\omega_b = \frac{W_b}{W} \tag{5.2.8}$$

Furthermore, by combining (5.2.1) and (5.2.3) into relations (5.2.7) and (5.2.8), the income shares of total wages can be expressed as shown in relation (5.2.9) and (5.2.10).

$$\omega_s = \frac{W_s}{W} = \frac{1}{1 + \frac{1}{\frac{q_L}{\Lambda_L}}}$$
(5.2.9)

$$\omega_b = \frac{W_b}{W} = \frac{1}{\frac{q_L}{A_L} + 1}$$
(5.2.10)

Hence, as observed, income shares of wages are determined by wage premium and relative labor employment. Moreover, the proportions of skilled and basic workers in the total labor population are denoted as γ_s and γ_b , respectively, as shown in equations (5.2.11) and (5.2.12).

$$\gamma_s = \frac{L_s}{L} \tag{5.2.11}$$

$$\gamma_b = \frac{L_b}{L} \tag{5.2.12}$$

Additionally, by combining equation (5.2.3) with equations (5.2.11) and (5.2.12), the proportion of each labor type to the total labor force can be expressed using relative employment, as shown in equations (5.2.13) and (5.2.14).

$$\gamma_s = \frac{L_s}{L} = \frac{1}{\Lambda_L + 1}$$
(5.2.13)

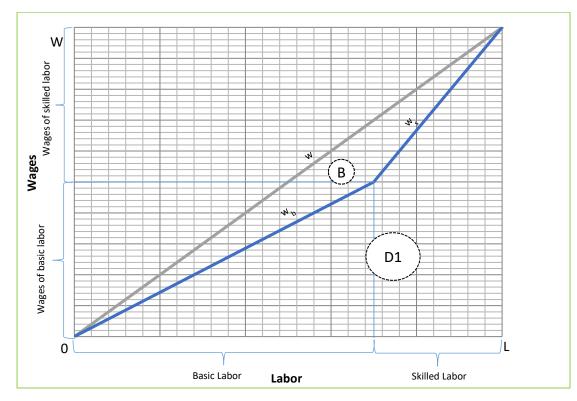
$$\gamma_b = \frac{L_b}{L} = \frac{1}{\frac{1}{\Lambda_L} + 1}$$
(5.2.14)

Hence, labor proportions in relation to the total labor force can be determined through relative labor employment. Furthermore, the average wage can be expressed using equation (5.2.15).

$$w = w_s \gamma_s + w_b \gamma_b \tag{5.2.15}$$

Consequently, assuming that each individual receives the same average income as the other members of their class, and that the average wage income for skilled labor is greater than the average wage income for basic labor, the Lorenz curve for labor inequality will be presented as shown in Figure 4.





The green line is the slope of average wage income, w, while the area B between the green and the blue line denotes wage inequality. Moreover, using the same calculation formula for the GINI index as before, the inequality between skilled and basic labor workers is given by the relation (5.2.16):

$$Inequality_{L} = \frac{area B}{area B + area D_{1}}$$
(5.2.16)

Therefore, labor inequality can be represented as a function of income shares from wages and employment shares, as seen in equations (5.2.17) and (5.2.18).

$$Inequality_L = \omega_s - \gamma_s \tag{5.2.17}$$

$$Inequality_L = \gamma_b - \omega_b \tag{5.2.18}$$

Hence, according to equations (5.2.17) and (5.2.18), it emerges that changes in income shares from wages of skilled and basic labor will affect inequality positively and negatively, respectively⁷. Additionally, the proportions of skilled and basic workers in the total labor force will affect wage inequality positively and negatively, respectively8.

Furthermore, by combining equations (5.2.17) and (5.2.18) with equations (5.2.11), (5.2.12), (5.2.13), and (5.2.14), wage inequality can be expressed as shown in equation (5.2.19).

$$Inequality_{L} = \frac{q_{L} - 1}{\left(\frac{q_{L}}{\Lambda_{L}} + 1\right)(1 + \Lambda_{L})}$$
(5.2.19)

Hence, as observed, labor inequality is determined by wage premium, q_L , and relative labor employment, Λ_L . Specifically, changes in wage premium have a positive relationship with changes in wage inequality, as seen in equation (5.2.20). Conversely, as shown in equation (5.2.21), the impact of changes in relative employment on labor inequality is uncertain and depends on whether the term $(m_L - \Lambda_L)$ is positive or negative.

 $7 \frac{\partial lnequality_L}{\partial \omega_s} = 1, \frac{\partial lnequality_L}{\partial \omega_b} = -1$ $\frac{8 \frac{\partial lnequality_L}{\partial \gamma_s}}{\partial \gamma_s} = -1, \frac{\partial lnequality_L}{\partial \gamma_b} = 1$

$$\frac{\partial Inequality_L}{\partial q_L} = \frac{\left(1 + \frac{1}{\Lambda_L}\right)}{\left(\frac{q_L}{\Lambda_L} + 1\right)^2 (1 + \Lambda_L)} > 0$$
(5.2.20)

$$\frac{\partial Inequality_L}{\partial \Lambda_L} = \frac{(q_L - 1)\frac{1}{\Lambda_L}(m_L - \Lambda_L)}{\left(\frac{q_L}{\Lambda_L} + 1\right)^2 (1 + \Lambda_L)^2}$$
(5.2.21)

Furthermore, the total growth in labor inequality is determined by changes in wage premium and relative employment growth, as shown in equation (5.2.22).

$$Inequality_{L} = \frac{q_{L}\left(1 + \frac{1}{\Lambda_{L}}\right)}{\left(\frac{q_{L}}{\Lambda_{L}} + 1\right)\left(q_{L} - 1\right)}\dot{q}_{L} + \frac{\left(\frac{q_{L}}{\Lambda_{L}} - \Lambda_{L}\right)}{\left(\frac{q_{L}}{\Lambda_{L}} + 1\right)\left(1 + \Lambda_{L}\right)}\dot{\Lambda}_{L} \rightarrow$$

$$Inequality_{L} = \frac{q_{L} + m_{L}}{(m_{L} + 1)(q_{L} - 1)}\dot{q}_{L} + \frac{m_{L} - \Lambda_{L}}{(m_{L} + 1)(1 + \Lambda_{L})}\dot{\Lambda}_{L} \qquad (5.2.22)$$

Therefore, as observed in equation (5.2.22), labor inequality is influenced by two terms, each representing changes resulting from the growth of wage premium and relative labor employment, respectively.

Furthermore, as previously mentioned, the impact of relative labor employment growth is ambiguous. To elaborate, the second term suggests that the effect of relative employment growth on labor inequality is positive when their relative incomes m_L are higher than their relative labor employment $\Lambda_L, (m_L - \Lambda_L > 0)$; otherwise, it is negative⁹. Hence, the influence of changes in the relative employment of labor on wage inequality appears to peak when $\Lambda_L = m_L$.

Furthermore, as relative employment decreases when the population of higher-paid workers increases, an increase in skilled labor will heighten inequality only when their relative incomes, m_L , are lower than their relative labor employment, Λ_L^{10} . Conversely, if their relative incomes, m_L , surpass their relative employment Λ_L^{11} , inequality will diminish as a consequence of the growth in the skilled labor population relative to basic

 \rightarrow

 $[\]frac{\partial \text{Inequality}_L}{\partial \Lambda_L} > 0 \rightarrow m_L > \Lambda_L \text{ and } \frac{\partial \text{Inequality}_L}{\partial \Lambda_L} < 0 \rightarrow m_L < \Lambda_L$

 $^{^{10}} m_L < \Lambda_L$

 $^{^{\}scriptscriptstyle 11}\,m_L > \Lambda_L$

labor. Thus, the outcome regarding relative labor employment growth rates may differ across economies, contingent on their labor composition.

Moreover, assuming that relative labor employment decreases over time as the economy expands alongside the skilled labor population, an inverted "U" relationship between growth and labor inequality, akin to Kuznets' hypothesis, would inevitably emerge.

Hence, assuming that in the early stages of economic growth, the labor force primarily consists of basic labor, relative labor employment (Λ_L) will be high, while relative income (m_L) will be low. As technology advances and labor gains skills through education and experience, more productive labor and sectors emerge. If policymakers choose to increase labor productivity by employing skilled workers with higher wages, Λ_L will decrease – in other words, it will have a negative growth as labor productivity increases.

In the early stages, where Λ_L is still higher than m_L , $(m_L - \Lambda_L < 0)$, an increase in the population of skilled labor relative to basic labor will lead to higher inequality, as shown in equation (5.2.22). However, as the economy continues to reduce relative labor employment (Λ_L) by employing more productive and higher-paid workers, labor inequality will reach a maximum point where Λ_L is no longer higher than relative income m_L . As the economy surpasses this maximum point, a scenario emerges where $(m_L - \Lambda_L > 0)$. In this scenario, the introduction of more productive labor with higher wages leads to a reduction in labor inequality, as indicated by equation (5.2.22). Consequently, the economy experiences simultaneous growth and increasing labor inequality during its early stages, characterized by a higher relative labor employment, Λ_L , compared to relative income, m_L^{12} . However, when this situation reverses due to economic progress, the economy continues to grow while labor inequality reduces¹³. This pattern suggests a Kuznets curve trajectory. Therefore, the second term of the equation implies that the relationship between labor inequality and economic growth aligns with the Kuznets hypothesis when the composition of the labor force shifts toward a workforce that is more skilled, productive, and better compensated. In light of this, policymakers should prioritize the reduction of relative labor employment by

 $^{{}^{12}(}m_L - \Lambda_L) < 0$ ${}^{13}(m_L - \Lambda_L) > 0$

promoting higher productivity through a workforce that is more educated, skilled, and better remunerated. This phase, $(m_L - \Lambda_L > 0)$, where inequality becomes inversely related to growth, can be achieved by fostering a labor force composed of highly educated and well-paid workers.

Moreover, the first term of the equation indicates that the impact of the growth in wage premium on labor inequality will consistently be positive, as wage premium always exceeds unity, expressed as $(q_L - 1 > 0)$.

Furthermore, according to relation (5.2.22), labor inequality remains unchanged when relation (5.2.23) is satisfied.

$$\frac{\dot{q}_L}{\dot{\Lambda}_L} = \frac{(\Lambda_L - m_L)(q_L - 1)}{(1 + \Lambda_L)(q_L + m_L)}$$
(5.2.23)

Thus, considering that growth changes in relative labor employment, Λ_L , can follow either a positive or negative trajectory, in line with the Kuznets hypothesis, changes in wage premiums can either amplify or mitigate these shifts. Therefore, during the initial stages $(m_L - \Lambda_L < 0)$, in order to maintain low levels of labor inequality, changes in wage premiums should be positively associated with changes in relative employment. Conversely, in later stages $(m_L - \Lambda_L > 0)$, an increase in skilled labor could be accompanied by increases in wage premiums and decreases in labor inequality.

On one hand, in general, the growth of wage premiums can serve as a useful tool for controlling levels of labor inequality, irrespective of the stage of the economy. On the other hand, considering that wage premiums also determine the relative income between the two labor classes (m_L) , they can either amplify or dampen the inverted U-shaped relationship between labor inequality and economic growth, as described earlier.

5.3 Profit inequality – market openness

Furthermore, it is assumed that profit income differs among investors, implying that additional income inequality can be observed among profit earners. Additionally, as argued, profit income may be more unequally distributed than wages; hence, a shift from wages to profits may increase inequality (Piketty, 2014).

In the present theoretical approach, it is assumed that the income class of capital owners consists of two different income classes with varying profit incomes: the high-class investors, E_h , and the middle-class investors, E_m^{14} .

In this theoretical framework, it is assumed that the population of high-class investors, \mathcal{I}_h , remains relatively stable over time and represents the dominant group of investors.

This implies that high-income investors can create barriers for new investors seeking to enter the market, while they can also invest in new sectors or technologies more easily than middle-class investors, \mathcal{Z}_m . Conversely, it is assumed that the population of middle-class investors, \mathcal{Z}_m , can either increase or decrease over time. Changes in the population of middle-class investors, \mathcal{Z}_m , depend on factors such as market openness, barriers set by other firms, or the required initial capital needed to establish a firm.

As a result, it is expected that the larger the population of middle-class investors, Ξ_m , in comparison to the population of high-class investors, Ξ_h , the fewer barriers new investors will face, leading to a weaker monopolistic power held by high-class investors, Ξ_h . The relationship between middle-class investors, Ξ_m , and high-class investors, Ξ_h , is defined in equation (5.3.1).

$$\Lambda_K = \frac{\Xi_m}{\Xi_h} \tag{5.3.1}$$

Thus, equation (5.3.1) can be regarded as a monopoly index, where a lower value of, Λ_K , implies that fewer middle-class investors, Ξ_m , can enter the market. Conversely, a higher value of Λ_K , indicates a more open economy with greater opportunities for investors.

Furthermore, we assume that K_h represents the total capital stock of high-class investors in Ξ_h , with a corresponding profit rate of, r_h , and profit income Π_h^{15} . Similarly, middleclass investors in Ξ_m possess a capital stock of K_m and receive profits amounting to Π_m , with a profit rate denoted as r_m^{16} .

As there are two classes of investors with varying personal endowments in capital stock, the total capital stock is the sum of the capital holdings of each class¹⁷. Additionally, each profit income class receives different levels of profit income depending on the amount and characteristics of capital they supply, as well as the bargaining power of their respective firms. Hence, total profits are calculated as the sum of the profit amounts of each class, as presented in equation (5.3.2).

$$\Pi = \Pi_h + \Pi_m = r_h K_h + r_m K_m \tag{5.3.2}$$

Furthermore, it is assumed that each individual from the high-income class of profit earners owns a certain amount of capital denoted by ζ_h . Similarly, each individual from the middle-income class of profit earners owns an amount of capital denoted as ζ_m as shown in equations (5.3.3) and (5.3.4).

$$\frac{K_h}{\Xi_h} = \zeta_h \tag{5.3.3}$$

$$\frac{K_m}{E_m} = \zeta_m \tag{5.3.4}$$

Additionally, the average income of high-class and middle-class capital owners will be denoted as π_h and π_m respectively, as presented in equations (5.3.5) and (5.3.6).

$$\pi_h = \frac{\Pi_h}{\Xi_h} = \frac{\Pi_h}{\frac{K_h}{\zeta_h}} = r_h \zeta_h \tag{5.3.5}$$

$$\pi_m = \frac{\Pi_m}{\Xi_m} = \frac{\Pi_m}{\frac{K_m}{\zeta_m}} = r_m \zeta_m \tag{5.3.6}$$

Therefore, it is assumed that the incomes of high- and middle-class profit earners are determined by the capital they have invested, denoted as ζ_i , and their respective profit rates, r_i .

Furthermore, the relationship between the two profit rates is denoted as ρ , and the relationship between their capital stocks is denoted as k, as described in equations (5.3.7) and (5.3.8).

 $[\]frac{1}{17}K = K_h + K_m$

$$\rho = \frac{r_h}{r_m} \tag{5.3.7}$$

$$k = \frac{K_h}{K_m} \tag{5.3.8}$$

Furthermore, as described in equations (5.3.7) and (5.3.8), the total income from profit depends on the relationship between the two profit rates and the relationship between their capital stocks, as shown in equation (5.3.9). In terms of growth, the ratio of total income for high-class investors, \mathcal{E}_h , to that of middle-class investors, \mathcal{E}_m , is presented in equation (5.3.10).

$$m_K = \frac{\Pi_h}{\Pi_m} = \frac{r_h K_h}{r_m K_m} = \rho k$$
(5.3.9)

$$\dot{m}_K = \dot{\rho} + \dot{k} \tag{5.3.10}$$

Additionally, as previously mentioned, individuals possess different personal capital stocks, and their personal relative capital stock is defined as the ratio of their personal capital stock, κ , as shown in equation (5.3.11). Furthermore, by combining relation (5.3.1) with relations (5.3.3), (5.3.4), and (5.3.8), the relationship between their populations can be expressed as shown in equation (5.3.12). Additionally, equation (5.3.12) can be presented in growth terms using equation (5.3.13).

$$\kappa = \frac{\zeta_h}{\zeta_m} \tag{5.3.11}$$

$$\Lambda_{K} = \frac{\Xi_{m}}{\Xi_{h}} = \frac{\frac{K_{m}}{\zeta_{m}}}{\frac{K_{h}}{\zeta_{h}}} = \frac{\kappa}{k}$$
(5.3.12)

$$\dot{\Lambda_K} = \vec{\Xi_m} - \vec{\Xi_h} = \dot{\kappa} - \dot{k} \tag{5.3.13}$$

Furthermore, their personal relative average income from profits is defined as the profit premium, as presented in relation (5.3.14). The profit premium, denoted as q_K , is determined by both their relative profit rates, ρ , and their personal relative capital stock, κ . This relationship can be expressed in growth terms using equation (5.3.15).

$$q_K = \frac{\pi_h}{\pi_m} = \frac{r_h \zeta_h}{r_m \zeta_m} = \rho \kappa$$
(5.3.14)

Assuming that the average profit income of the high-income class is greater than that of the middle-income class, it follows that the profit premium, denoted as q_K , is always greater than unity, $q_K > 1$.

Furthermore, the income shares of each class of investors in terms of total profits are described by equations (3.16) and (3.17). Specifically, the relationship representing the profit income of high-class capital owners relative to total profit income is represented as k_h , while the relationship for the profit income of middle-class capital owners relative to total profit income is denoted as k_m .

$$k_h = \frac{\Pi_h}{\Pi} \tag{5.3.16}$$

$$k_m = \frac{\Pi_m}{\Pi} \tag{5.3.17}$$

Furthermore, by combining equations (3.16) and (3.17) with equations (5.3.12) and (5.3.14), it becomes evident that income shares from profits are determined by two key factors: the profit premium, denoted as q_K , and the relation of their population, which signifies market openness and is represented as Λ_K . This relationship is illustrated in equations (5.3.18) and (5.3.19).

$$k_{h} = \frac{\Pi_{h}}{\Pi} = \frac{1}{1 + \frac{1}{\frac{\Pi_{h}}{\Pi_{m}}}} = \frac{1}{1 + \frac{1}{\frac{q_{K}}{\Lambda_{K}}}}$$
(5.3.18)

$$k_m = \frac{\Pi_m}{\Pi} = \frac{1}{\frac{q_K}{\Lambda_K} + 1} \tag{5.3.19}$$

Moreover, the proportion of high-income class population to total profit earners population is denoted by η_h , while respectively, the proportion of middle-income class population to total profit earners population is denoted by η_m according to relations (5.3.20) and (5.3.21).

$$\eta_h = \frac{\Xi_h}{\Xi} \tag{5.3.20}$$

$$\eta_m = \frac{\Xi_m}{\Xi} \tag{5.3.21}$$

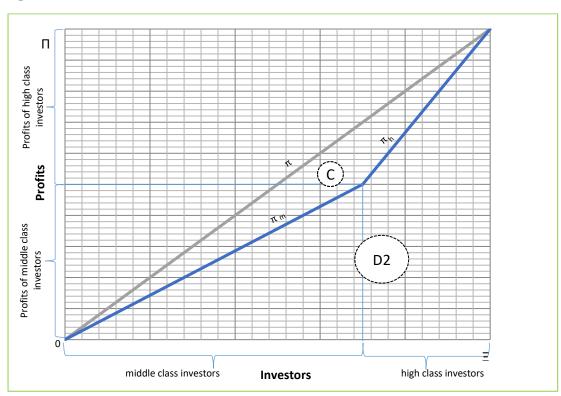
Furthermore, when equations (3.18) and (3.19) are combined with equation (5.3.12), it becomes evident that the proportion of each class of capital owners to the total population of capital owners can be expressed by their relation to market openness, denoted as Λ_K . This relationship is demonstrated in equations (5.3.22) and (5.3.23).

$$\eta_{h} = \frac{\Xi_{h}}{\Xi} = \frac{1}{1 + \frac{1}{\frac{\Xi_{h}}{\Xi_{m}}}} = \frac{1}{1 + \Lambda_{K}}$$
(5.3.22)

$$\eta_{\mu} = \frac{\underline{z}_{m}}{\underline{z}} = \frac{1}{\frac{1}{A_{K}} + 1}$$
(5.3.23)

Additionally, to represent profit distribution, it is assumed that each individual within the high or middle class receives the same income as others in their respective class. As mentioned earlier, the average income of high-class investors exceeds that of middleclass investors, denoted as $\pi_h > \pi_m$. Therefore, following the same rationale as in previous sections, the Lorenz curve for profit earners is depicted in Figure 5.

Figure 5 Lorenz curve



The green line represents the slope of the average profit income, π , whereas the area C between the green and the blue line illustrates profit inequality. Employing the same formula for calculating inequality indices as previously, we can express the inequality between high- and middle-class capital owners through the relation (5.3.24).

$$Inequality_{K} = \frac{C}{C + D_{2}}$$
(5.3.24)

Moreover, as per equations (5.3.25) and (5.3.26), profit inequality is influenced by the income shares of profits for each class and their proportion of the population.

$$Inequality_K = k_h - \eta_h \tag{5.3.25}$$

$$Inequality_K = \eta_m - k_m \tag{5.3.26}$$

On one hand, increases in the high class's share of income from profits relative to total profits, along with increases in the proportion of middle-class investors in the overall population of investors, are positively associated with inequality¹⁸. On the other hand, increases in the middle-class's share of income from profits relative to total profits and in the proportion of high-class investors in the overall population of investors would have a negative impact on profit inequality.¹⁹

Furthermore, according to relations, (5.3.18), (5.3.19), (5.3.22) and (5.3.23), profit inequality can be expressed according to relation (5.3.27).

$$Inequality_{K} = \frac{q_{K} - 1}{(m_{K} + 1)(\Lambda_{K} + 1)}$$
(5.3.27)

Thus, profit inequality is determined by profit income premium, q_K , their relative income shares, m_K , and the relative employment of capital owners, Λ_K . As can be easily observed, the impact of profit premium, q_K , on profit inequality will always be positive, as presented in equation (5.3.28). Regarding the impact of Λ_K , which has been assumed to measure the monopolistic power of the high class of investors, on profit inequality, it is uncertain, as can be observed through equation (5.3.29). Finally, equation (5.3.30)presents total changes in profit inequality in growth terms.

 $^{{}^{18} \}frac{\partial Inequality_K}{\partial k_h} = 1, \frac{\partial Gini_{\Xi_h,\Xi_m}}{\partial \eta_m} = 1$ ${}^{19} \frac{\partial Gini_{\Xi_h,\Xi_m}}{\partial \eta_h} = -1, \frac{\partial Inequality_K}{\partial k_m} = -1$

$$\frac{\partial Inequality_{K}}{\partial q_{K}} = \frac{\left(1 + \frac{1}{\Lambda_{K}}\right)}{\left(\frac{q_{K}}{\Lambda_{K}} + 1\right)^{2} (1 + \Lambda_{K})} > 0$$
(5.3.28)

$$\frac{\partial Inequality_L}{\partial \Lambda_K} = \frac{(q_K - 1)\frac{1}{\Lambda_K}(m_K - \Lambda_K)}{\left(\frac{q_K}{\Lambda_K} + 1\right)^2 (1 + \Lambda_K)^2}$$
(5.3.29)

Inequality_K =
$$\dot{q_K} \left(\frac{(q_K + m_K)}{(q_K - 1)(m_K + 1)} \right) - \dot{\Lambda_K} \left(\frac{(\Lambda_K - m_K)}{(m_K + 1)(1 + \Lambda_K)} \right)$$
 (5.3.30)

Therefore, as can be observed through equation (5.3.30), profit inequality is determined by two terms. Each of these terms expresses the changes caused by the growth of profit premium and relative investors' employment, respectively. The first term in relation (5.3.30) represents the effect of profit premium q_K on profit inequality, which is always positive.

The second term in relation (5.3.30) represents the effect of monopoly on changes in profit inequality, which, as already mentioned, is ambiguous. When there is a high level of monopoly, and hence a small Λ_K and a high m_K , changes in monopoly, (Λ_K), are positively related to changes in profit inequality, as seen in relation (5.3.31).

$$\frac{\partial Inequality_{K}}{\partial \Lambda_{K}} > 0 \to m_{K} > \Lambda_{K}$$
(5.3.31)

On the contrary, in cases of a low level of monopoly, which implies a larger Λ_K and a lower m_K , changes in monopoly, $(\dot{\Lambda_K})$, are negatively related to changes in profit inequality, as seen in relation (5.3.32).

$$\frac{\partial Inequality_K}{\partial \Lambda_K} < 0 \to m_K < \Lambda_K \tag{5.3.32}$$

Moreover, following relation (5.3.30), profit inequality changes are equal to zero when the relation (5.3.33) holds.

$$Inequality_{K} = 0 \to \frac{\dot{q_{K}}}{\dot{\Lambda_{K}}} = \frac{(\Lambda_{K} - m_{K})}{(1 + \Lambda_{K})} \frac{(q_{K} - 1)}{(q_{K} + m_{K})}$$
(5.3.33)

Hence, as can be observed in relation (5.3.31), in cases with high monopoly level, in order to decrease profit inequality, a monopoly reduction due to Λ_K increases must be accompanied also by decreases in growths of profit premium, q_K . In contrast, in cases of low monopoly level, in order to decrease profit inequality, increases of Λ_K could be accompanied by increases in growths of profit premium, q_K up to certain level.

5.4 Technology

5.4.1 Technology and factor inequality

It is assumed that technological change affects all types of inequality and is strongly related to economic growth. Firstly, technological change and inventions are assumed to be positively related to investment demand, as argued by Lima (2000), Hein (2012), and Parui (2018) (Lima, 2000; Hein, 2012; Parui, 2018). In addition, since at any given level of profit rate, higher technological change results in the installation of new machinery and increased investment in general, following the ideas of Dutt (1994) and Lima (2004), it is assumed that the innovation rate positively affects incentives to invest (Dutt, 1994; Lima, 2004). This analysis aligns with both the Schumpeterian view, which argues that firms' incentives for investment are driven by innovation, and the neo-Schumpeterian view that investment is fueled by technical change (Schumpeter, 1942; Nelson R., 1982; Lima, 2004).

Furthermore, it is frequently assumed that technological changes improve productivity, and as a consequence, it is believed that technological change affects growth due to its influence on productivity. For instance, when productivity costs fall as a result of technological change, firms are expected to increase their investments and profits. This has a significant impact on factor distribution and pricing, as increased labor productivity allows for higher nominal wages and profits. Therefore, changes in inequality are determined by the bargaining power of both labor and capital. Thus, technological changes lower product costs and encourage shifts in wage and profit shares, depending on policymakers' objectives and the economic regime. Hence, technological change can result in changes in nominal wages, profit rates, product prices, and factor inequality. As argued by Lima (2000), lower unit costs favor bargaining, so in the case of technological changes, labor-saving innovations will affect distribution by reducing unit labor costs and, consequently, the share of wage income (Lima, 2000). As a result, if wage shares decrease due to labor productivity growth

through technological changes, factor inequality will increase, as shown in equations (5.1.10) and (5.1.15).

Furthermore, it is assumed that inequality affects technological change through its influence on incentives to innovate. According to Lima (2000) and Lima (2004), technological innovation (τ) is not given exogenously but is non-linearly related to income distribution, as described by the following innovation function: $\tau = \lambda - \lambda^2$ (Lima, 2000; Lima, 2004). This function, proposed by Lima (2000) and Lima (2004), suggests that the level of profit distribution that maximizes the rate of technological innovation is when the wage share, λ , corresponds to half of the total income, with the other half as the profit share, denoted as h. This innovation function, as presented by Lima, attempts to capture the impact of wage share on firms' propensity to innovate, particularly in adopting labor-saving innovations. Additionally, it reflects the non-linear influence of concentration on firms' innovation propensity, in line with Schumpeterian-based theories (Lima, 2000).

Consequently, a low wage share and a high profit share create an environment where, despite the availability of funding for innovation, the incentives for firms to innovate are diminished. Conversely, when the profit share is lower, there are stronger incentives to innovate as firms seek to enhance their profit income. However, in such cases, the capacity to fund innovation may be limited (Lima, 2004). Lima's model suggests that high levels of inequality, characterized by substantial disparities in profit and wage shares, provide little motivation for innovation, indicating a negative relationship between factor inequality and investment in new technologies.

Nonetheless, it's important to recognize that the ability to implement innovation requires a certain level of capital stock. Thus, even if profits are available for investing in new technologies, successful innovation is contingent on having the requisite capital. Conversely, when profit levels fall below this critical threshold, despite the incentives for innovation, firms may be unable to invest in new technologies due to insufficient profits. Consequently, factor inequality is positively correlated with innovation. According to Lima (2004), this critical threshold is reached when the profit share equals the wage share.

5.4.2 Technology and profit inequality

In this theoretical approach, following Lima (2000) and Lima (2004), innovation is presumed to be influenced by profit distribution rather than factor distribution.

The reason for using profit distribution is to account for competitiveness among firms, driven by innovation. Firms that can leverage new technologies to reduce production costs gain a significant advantage over others. Consequently, it is posited that profit income inequality shapes the demand for investment in new technologies due to capital concentration and competitiveness.

Initially, it is assumed that investing in new technologies requires a minimum income threshold, which is beyond the reach of medium profit earners (Ξ_m) . Therefore, barriers exist for the medium class (Ξ_m) , primarily leading them to imitate and follow technological norms established by the high class (Ξ_h) . So, it is assumed that while the income of medium-profit earners is π_m , the income required for investment in new technologies is $\pi_m + \alpha > \pi_m$, where $\alpha > 0$.

Likewise, it is considered that the higher the income of high-class investors compared to middle-income profit earners is, the lesser is the motivation to innovate. Therefore, it is assumed that high-class investors choose to innovate when profit inequality decreases in order to maintain their economic leadership. Hence, higher profit inequality indicates lower incentives to invest in new technologies, while, in contrast, falling profit inequality means that high-class firms will try to innovate in order to regain the profit distribution advantage.

However, if high-class average profit income falls below a critical income level ($\pi_m + \alpha$), although their personal income may remain higher than the middle-class personal income ($\pi_m < \pi_h < \pi_m + \alpha$), then despite the high incentives to innovate, high-class firms will not afford innovation. Hence from that point, if inequality keeps decreasing, investing in new technologies will also decrease, implying a positive relation of inequality and technological change. Thus, it is assumed that there is a certain level of profit inequality that implies a maximum level of demand for innovation. If inequality levels differ from that level, then innovation has a decreasing trend.

In cases characterized by high monopolistic power, characterized by low levels of Λ_K and high levels of m_{κ}^{20} , middle-class investors will face barriers when trying to adopt technological changes. Therefore, only high-class investors will benefit from higher profit rates due to innovations, leading to a higher income premium from profits, q_K , and an increase in relative incomes, m_K . Thus, according to equation (5.3.30), profit inequality will increase due to the influence of the first term, which rises as the income premium from profits grows, q_K^{21} . The second term implies that in cases where the population of middle-class investors increases, income profit inequality will also increase²². Thus, in cases of high monopolistic levels, technological changes through innovation will lead to increases in profit inequality, which will result in future declining incentives for innovation.

In contrast, in cases of open markets, characterized by high levels of Λ_K and low levels of m_K^{23} , middle-class capital owners will tend to adopt technological changes depending on the levels of p. However, as previously mentioned, high-class investors are the first to be able to use new technology. Therefore, the income premium from profits will rise in the early stages of technological changes. Once middle-class investors are able to use technological change by imitating high-class investors and achieve higher profit rates, their income premium from profits will start decreasing²⁴ due to decreases in ρ , according to equations (5.3.14) and (5.3.15). Furthermore, higher incentives to invest due to higher profit rates and low levels of monopoly will result in higher market openness²⁵. Therefore, according to equation (5.3.30), on the one hand, the second term implies that profit inequality decreases. On the other hand, profit inequality will increase according to the first term in the early stages, where technological change can be used only by the leading class, while in later stages profit premium will decline, resulting in negative effects on profit inequality.

Hence, if a technological change leads to rises in the income of the richer class of innovators in the short run, then the relationship between profit inequality and

- $\frac{20 \Lambda_K < m_K}{q_K} < 0$ $\frac{21 \frac{dq_K}{q_K} > 0}{22 \frac{d\Lambda_K}{\Lambda_K} > 0}$ $\frac{23 \Lambda_K > m_K}{q_K} < 0$

- ${}^{25}\frac{q_K}{\Lambda_K} > 0$

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productivity will be positive in the initial stages of the technological change. After a certain period, as imitators start to benefit from technological diffusion, income profit inequality will start decreasing as growth continues to increase due to productivity resulting from innovation. Hence, a negative relationship between profit inequality and growth will emerge in the long run.

Finally, as mentioned before, this decline in profit inequality will result in future incentives for innovation by the leading class to retain leadership in the market. This will result in a similar inequality path due to new technological changes, implying a cyclical relationship between profit inequality and economic growth through innovation in a low monopolistic environment, while the economy follows a Schumpeterian innovation growth path.

Thus, innovation, on the one hand, is affected by profit inequality depending on the incentives and the availability of investors to invest based on their income levels. On the other hand, innovation affects profit inequality, depending on the diffusion levels of innovations, which is determined by the monopolistic power of the leading class, Λ_K . Therefore, if policymakers can control the diffusion of innovation, they may be able to control profit inequality and future demand for innovation. Since productivity due to innovation has been assumed to positively affect economic growth, profit inequality seems to be related to economic growth because of the dispersion of new technology among investors. The diffusion of innovation can be regulated through patent control or economic incentives.

5.4.3 Technology and labor inequality

Technological changes and innovation are expected to be related to labor inequality, mainly due to the change in the composition of the employed labor force. Firstly, it is considered that technological changes and innovation are skill-biased since higher-educated workers can use new technologies and information more efficiently. Thus, since skilled labor tends to adapt more easily to technological changes, it is assumed that every innovation firstly increases the employment of skilled labor. As a result, according to relation (5.2.3), relative labor employment, Λ_L , will decrease.

Moreover, as previously assumed, skilled labor is more productive than basic labor. Consequently, the relative cost, as demonstrated in relation (5.2.6), will decrease. Consequently, the reduction in relative cost will lead to an increased demand for skilled labor and, as a result, decreases in relative labor employment, Λ_L . Furthermore, as a result of innovation, the growth of the skilled labor population will be accompanied by increases in total average productivity. Hence, while technological changes are considered to boost labor productivity, total labor productivity will be determined by relative labor employment, Λ_L , as a result of technological changes.

Furthermore, changes in relative labor employment (Λ_L) that emerge due to technological changes also imply changes in labor inequality according to relation (5.2.22). As innovation decreases the relative cost and firms try to decrease their product costs, the demand for skilled labor will increase relative to basic labor. As a result, following equation (5.2.22), relative labor employment will change in favor of skilled labor ($\dot{\Lambda}_L < 0$) implying changes in wage inequality.

The impact of these changes, $(\dot{\Lambda}_L < 0)$, could be reflected by the second term of equation (5.2.22). Therefore, for instance, if the impact of the second term is negative²⁶, implying that there is much more basic labor related to skilled labor in the economy, an increase in demand for skilled labor ($\dot{\Lambda} < 0$) will increase labor inequality. In contrast, if the impact of the second term is positive²⁷, implying an economy driven by skilled labor, then an increase in demand for skilled labor ($\dot{\Lambda} < 0$) will have a negative impact on wage inequality.

Furthermore, as mentioned in previous chapters, innovation could result in a relationship between labor inequality and growth characterized by a Kuznets curve, as demonstrated in section 5.2. For instance, if we assume that the initial relative labor employment Λ_L is large, while the total skilled labor income is low in relation to the total basic labor income, an increase in skilled labor employment will lead to increased inequality, as described in equation (5.2.22). Consequently, as innovation initiates technological change and encourages greater investment requiring skilled labor, the demand for skilled labor will rise. As a consequence, relative employment (Λ_L) will decline, and the relative total incomes between skilled and basic labor (m_L) will start

 $^{^{\}rm 26}$ when $m_L-\Lambda_L<0$ $^{\rm 27}$ when $m_L-\Lambda_L>0$

increasing. The velocity of these changes in relative total income (m_L) will depend on changes in the wage premium (q_L) , as discussed in Chapter 5.2.

With innovation driving more investment, whether by innovators (h) or imitators (m), relative employment (Λ_L) will keep decreasing while total earnings of skilled labor will keep increasing in relation to total earnings of basic labor. As long as the economy remains in the first phase, $(m_L - \Lambda_L < 0)$, labor inequality will keep increasing as skilled employment increases relative to basic employment. As this process continues, total earnings of skilled labor will eventually exceed total earnings of basic labor, and the economy will enter the second phase, $(m_L - \Lambda_L > 0)$, where inequality begins to decline while Λ_L continues to fall.

Therefore, as more and more firms replace their old technology with new, requiring more skilled labor, it eventually leads to a period in which labor inequality begins to decline. This indicates a Schumpeterian process of creative destruction in which more and more firms replace their old technology with innovation, resulting in a rising demand for skilled labor, ultimately leading to an inverted U-shaped labor inequality path as income keeps increasing accompanied by increases in skilled labor. Consequently, the relationship between economic growth and labor inequality, from a Schumpeterian perspective where technological change is driven by innovation, can be described by the Kuznets hypothesis. Technological changes due to innovation, therefore, result in an inverted U-shaped relationship of labor inequality with economic growth over time, as presented in Chapter 5.2.

Furthermore, a decrease in relative cost also implies a decrease in nominal wage growth compared to labor productivity growth, resulting in a declining wage share. Consequently, a technological change will have a positive impact on factor inequality due to its effects on nominal wages and relative employment, as described in equations (5.1.15) and (5.1.16).

Therefore, policymakers should prioritize initiatives aimed at enhancing the acquisition of skills by the labor force. Combined with technological changes, this can stimulate the economy and swiftly move it to the right side of the Kuznets curve, where a decrease in labor inequality contributes positively to economic growth.

5.5 Trade Openness

Trade openness, a fundamental aspect of globalization, is believed to exert a significant influence on both economic growth and inequality. Initially, its impact on net exports, and consequently economic growth, is considered due to international competitiveness. Following Hein (2014), net exports (NX) are assumed to be dependent on international competitiveness, represented by the real exchange rate (e^r), domestic capacity utilization (u) reflecting domestic demand, and foreign capacity utilization (u_f) representing foreign demand (Hein, 2014). This relationship is presented in Equation (5.5.1), with the assumption that v, φ , $\zeta > 0$.

$$b = v e^r(h) - \varphi u + \zeta u_f \tag{5.5.1}$$

Furthermore, we assume that the net exports rate to capital stock is determined by Equation (5.5.2).

$$b = \frac{NX}{pK}$$
(5.5.2)

Furthermore, following Hein (2014), we assume that international competitiveness, denoted as e^r , is determined by the real exchange rate, e, and domestic prices, p, relative to foreign prices, p_f . This relationship is expressed in Equation (5.5.3). In growth terms, the same equation can be expressed as shown in Equation (5.5.4).

$$e^r = \frac{ep_f}{p} \tag{5.5.3}$$

$$\hat{e}^r = \hat{e} + \hat{p}_f - \hat{p} \tag{5.5.4}$$

Thus, as evident from Equations (5.5.3) and (5.5.4), international competitiveness is positively correlated with real exchange rates, while the relationship between the growth rates of domestic prices appears to be negatively associated with international competitiveness.

Thus, the fact that, according to relations (5.5.3) and (5.5.4), an open economy and international competitiveness are negatively correlated with the domestic product price growth rate sets a downward pressure on domestic markets, as described in previous chapters by relation (5.7). According to the price equation, (5.7), a downward pressure on prices leads to downward pressures on both the profit rate, r, and nominal wages, w.

Therefore, as it becomes evident, since profit rates and wages have diverse effects on factor inequality, the impact of international competitiveness on factor inequality is uncertain. Consequently, the relationship between international competitiveness and factor inequality is ambiguous, as both profit rates and nominal wages are negatively related to international competitiveness. Hence, international competitiveness can be negatively or positively related to inequality depending on the drivers of distributional changes.

Furthermore, by combining equation (5.7) with equation (5.5.3), it emerges that changes in the profit rate, r, and wage, w, are both negatively related to international competitiveness, as can be observed in equations (5.5.5) and (5.5.6).

$$\frac{\partial e^r}{\partial r} = \frac{-ep_f \frac{K}{Y}}{p^2} < 0 \tag{5.5.5}$$

$$\frac{\partial e^r}{\partial w} = \frac{-ep_f \frac{1}{A}}{p^2} < 0 \tag{5.5.6}$$

For instance, a higher profit rate tends to raise prices, reducing international competitiveness while increasing the profit share. Consequently, the income share of investors is negatively related to international competitiveness, implying wage-led international competitiveness. Additionally, since profit share changes are positively related, as described in previous chapters and equation (5.1.11), higher inequality appears to be associated with lower international competitiveness.

Furthermore, if changes in product pricing result from changes in nominal wages, international competitiveness appears to be positively related to factor inequality. For example, if nominal wages increase, product prices rise, resulting in decreasing international competitiveness²⁸ accompanied by a decreasing profit share. Changes in profit share caused by changes in nominal wages and the relationship between product prices and unit labor costs can be positively related to international competitiveness. Hence, in this case, profit shares are positively related to international competitiveness,

and a lower inequality is positively related to lower international competitiveness according to equations (5.1.11) and (5.5.6).

Thus, if distribution changes because of a change in nominal wages, then profit share will be positively related to international competitiveness, which is compatible with a profit-led demand regime where inequality will be positively related to international competitiveness. However, given that prices can decrease due to either declines in profit incomes, resulting in lower inequality, or due to decreases in wage income, resulting in higher inequality, the cause of international competitiveness will determine the relationship of inequality with net exports and, hence, growth due to trade openness and international competitiveness through the relationship between distribution and price level, the effect depends on the cause of the change in distribution. Hence, if profit share decreases in a wage-led demand regime, then the total effect on net exports will be positive because of the decreasing factor inequality. On the contrary, if wage share increases in a profit-led demand, then factor inequality will be negatively related to net exports.

Thus, following Hein (2014), distribution, and hence factor inequality, affects net exports due to international competitiveness, as can be seen in the first term of equation (5.5.7).

$$\frac{\partial b^*}{\partial h} = v \frac{\partial e^r}{\partial h} - \varphi \frac{\partial u^*}{\partial h}$$
(5.5.7)

Thus, on the one hand, as presented above, the sign of the first term of equation (5.5.7) can be positive or negative depending on the cause of the change in profit shares. Furthermore, factor inequality affects net exports due to capacity utilization, as indicated by the second term in equation (5.5.7), denoted as $\left(\varphi \frac{\partial u^*}{\partial h}\right)$. This second term shows that factor inequality influences net exports through its impact on capacity utilization, u^* . Consequently, following Bhaduri & Marglin (1990), since a profit-led demand regime is associated with profit increases, while a wage-led regime is associated with profit decreases, in a profit-led demand regime, changes in distribution, and hence factor inequality, are negatively related to net exports. Conversely, a change in factor inequality is positively related to net exports when the demand regime is wage-led. Thus, if, for instance, inequality decreases in a profit-led regime due to a declining profit rate, then both terms will be negative, resulting in an ambiguous total effect on

the equilibrium net exports rate. If inequality decreases because of a higher nominal wage, then a declining profit share will be associated with a positive outcome, while the first term will be positive and the second term will be negative, potentially shifting the regime toward a wage-led one. However, the overall impact of changes in factor inequality on the equilibrium net exports rate would remain ambiguous under both regimes, primarily due to the uncertain influence of the first term.

Thus, on the one hand, the impact of international competitiveness has an ambiguous effect on factor inequality, as it exerts pressures on both wage and profit incomes due to price competition. On the other hand, factor inequality affects net exports due to the relationship between distribution and international competitiveness, as well as capacity utilization. However, the overall effect will depend on the cause of distributional changes and the nature of the demand regime.

Furthermore, following the Heckscher-Ohlin theory²⁹, it is assumed that openness affects labor inequality and growth through its influence on relative labor employment, Λ_L , and labor productivity, Λ_L . For instance, according to the Heckscher-Ohlin theory, if the abundant factor in an economy is skilled labor, leading to an excess supply of highly educated workers, it is assumed that foreign direct investment will be attracted to sectors requiring skilled labor. This process would result in a decrease in relative labor employment, Λ_L , and a decline in labor productivity as more productive labor enters the market. Therefore, since relative labor employment, Λ_L , affects labor inequality and is indicative of labor productivity, the level of trade openness is assumed to impact labor inequality and growth primarily through its effects on productivity and foreign direct investments. Additionally, trade openness can promote the diffusion of technological changes, mainly through foreign direct investments. Consequently, further relationships with both labor and profit inequality will emerge through the channel of technological change, as described in Chapter 5.4.

In summary, international competitiveness can either increase or decrease factor inequality and profit share, with the overall outcome determined by the causes of distributional shifts. Therefore, while trade openness tends to exert downward pressure on prices, the total impact on inequality will primarily hinge on the interplay between

²⁹ Heckscher-Ohlin theory has been presented in section 4.2.

profits and wages. Moreover, trade openness can influence labor inequality by affecting the relative demand for basic labor versus skilled labor. Additional effects may manifest in both labor and profit inequality due to the diffusion of technology that may arise as a result of increased trade openness.

In conclusion, as international competitiveness tends to drive prices lower, the bargaining power of all classes, including investors, becomes constrained. Consequently, policymakers should place more emphasis on assessing the overall effect of relative labor demand on inequality.

5.6 Financialization-credit

As mentioned in previous chapters, financialization has a significant impact on income changes and distribution. Therefore, it is hypothesized that personal income and inequality are influenced by financialization primarily through shifts in distribution resulting from lending and borrowing activities. Moreover, it is posited that these alterations in personal distribution have repercussions on the broader economy, particularly due to the influence of personal income on consumption and investment.

In this context, firms are considered to be organizations consisting of one or more investors. To investigate the effects of financialization on inequality, it is assumed that firms can be categorized into two types based on the sectors in which they operate.

Firms are categorized into two distinct sectors: the real sector and the financial sector. Real sector firms employ a combination of skilled and unskilled labor along with capital stock to engage in production. Their primary source of income is derived from profits, which are subsequently reinvested by the investors to sustain their production activities.

In contrast, financial sector firms utilize their capital resources for lending purposes, generating profits from these lending activities. These firms are predominantly composed of individuals known as rentiers, who provide capital with the aim of earning income from debt, a concept initially articulated by Keynes (1936). Consequently, financial sector firms thrive by lending capital, while real sector firms prosper through investments in both human and physical capital to drive production.

This framework operates under the assumption that individuals have the capacity to save and borrow for consumption or investment purposes. Furthermore, profit earners are subdivided into two distinct groups: investors, who earn profits through investments in the real sector, and rentiers, who provide capital for lending and receive income in return.

5.6.1 Financialization and factor inequality

Initially, we assume that the profit share is apportioned between two distinct categories: investor profits and rentier profits, a concept in line with the work of Parui (2018) and Hein & van Treeck (2008) (Parui, 2018; Hein & van Treeck, 2008). In accordance with the profit inequality model elucidated in Chapter 5.3, we denote Π_h as the aggregate profits of rentiers and Π_m as the aggregate profits of investors. Their respective profit rates are denoted as r_h and r_m , while their personal income derived from profits is represented as π_h and π_m , as explicated by equations (5.3.5) and (5.3.6).

Additionally, we make the assumption that rentiers lend a specific portion of their income in each time period, represented as B. This sum, (B_{Ξ}) , is allocated to investors to facilitate their investment activities, while workers access another portion, (B_L) , to sustain consumption and potentially ameliorate income inequality. Consequently, in each time period, B signifies the total credit extended, and β is the ratio of overall credit to total income, as delineated in equations (5.6.1) and (5.6.2).

$$B = B_L + B_\Xi \tag{5.6.1.1}$$

$$\beta = \frac{B_L + B_{\Xi}}{pY} \tag{5.6.1.2}$$

Moreover, a portion of the labor debt that stems from credit in prior time periods is repaid each period and is labeled as X_L . Therefore, given that r_h represents the profit rate of rentiers, the labor debt that is reimbursed as income to rentiers is equal to $r_h X_L$. Correspondingly, the fraction of the debt settled by investors each time period is represented as X_K . Consequently, rentiers' income from investors amounts to $r_h X_K$ in each period. Hence, during any given time period, the total disposable income of workers relies on their aggregate wages, W, augmented by the borrowed sum, B_L , and reduced by the portion of debt repayment in that period, $r_h X_L$. The total income of workers is expressed in equation (5.6.1.3).

$$Y_L = W - r_h X_L + B_L (5.6.1.3)$$

Subsequently, the overall income of investors is contingent upon their aggregate profits, Π_m , supplemented by the borrowed sum, B_m , and reduced by the portion of debt that is settled during the period, $r_h X_m$, as delineated in equation (5.6.1.4).

$$Y_m = \Pi_m - r_h X_m + B_m = r_m K_m - r_h X_K + B_K^{30}$$
(5.6.1.4)

Hence, the disposable income of both investors and workers will rise or fall depending on the proportion of debt settled during that period and their borrowed income.

Furthermore, given that a portion of the total borrowed amount returns as profits to rentiers, their income encompasses the debts paid by workers, $r_h X_L$, and investors, $r_h X_K$, less the sum lent, B, to these categories, as depicted in equation (5.6.1.5).

$$Y_h = r_h X_L - B_L + r_h X_K - B_\Xi = r_h X - B$$
(5.6.1.5)

Therefore, the overall disposable income of rentiers in the current period comprises their income from lending, $r_h X$, minus the amount that is lent. Thus, the total disposable income from profits is outlined in equation (5.6.1.6).

$$Y_{\Xi} = r_m K_m + r_h X_L - B_L \tag{5.6.1.6}$$

Furthermore, real debt, which represents the gap between the borrowing income and the debt repayment of each income class in each time period as a proportion of total income, is denoted as δ_i^{31} , as shown in equations (5.6.1.7) and (5.6.1.8).

$$\delta_{\Xi} = \frac{r_h X_K - B_K}{pY} \tag{5.6.1.7}$$

$$\delta_L = \frac{r_h X_L - B_L}{pY} \tag{5.6.1.8}$$

$$^{31}i = L, \Xi$$

³⁰ Since it is assumed that m class is the only class of profit earners that borrow to invest $B_m - r_h X_m = B_E - r_h X_K$.

Consequently, δ is determined as the real debt share of total income and consists of the real debt share of investors, δ_{Ξ} , and the real debt share of workers, δ_L^{32} .

Therefore, as emerges from combining equations (5.6.1.7) and (5.6.1.8) with equation (5.6.1.5), the share of rentiers' income to total income, $\frac{Y_h}{pY}$, equals the total real debt share, δ , as presented in equation (5.6.1.9).

$$\frac{Y_h}{pY} = \frac{r_h X - B}{pY} = \frac{r_h X_K + r_h X_L - B_K - B_L}{pY} = \frac{r_h X_K - B_K}{pY} + \frac{r_h X_L - B_L}{pY} = \delta_{\Xi} + \delta_L$$

= δ (5.6.1.9)

Hence, the total profit share can be represented by equation (5.6.1.10), and the total wage share can be represented by equation (5.6.1.11).

$$\frac{Y_{\Xi}}{pY} = k_m h - \delta_K + \delta = k_m h + \delta_L$$
(5.6.1.10)

$$\frac{Y_L}{pY} = \lambda - \delta_L \tag{5.6.1.11}$$

Thus, factor inequality as described in relations (5.1.15) and (5.1.16) can be represented by equations (5.6.1.12) and (5.6.1.13):

$$Inequality_F = l - \frac{w^r}{A} + \delta_L \tag{5.6.1.12}$$

$$Inequality_F = \frac{l}{l-\lambda}\dot{l} - \frac{\lambda}{l-\lambda}(\dot{w} - \dot{A}) + \frac{\delta_L}{l-\lambda}\dot{\delta}_L$$
(5.6.1.13)

Therefore, as derived from equation (5.6.1.13), the labor real debt share is positively correlated with factor inequality. Consequently, if we assume that credit is utilized to "correct" inequality, changes in real debt shares will be influenced by shifts in factor inequality. Therefore, in situations where inequality is on the rise, there will be a demand for credit from the lower-income classes to maintain their income levels. This will lead wage earners to seek loans to preserve income inequality, resulting initially in negative changes in net debt shares, $\dot{\delta}_L < 0$.

 $[\]overline{{}^{32} \delta = \delta_{\Xi} + \delta_L}$

This initial borrowing will "correct" inequality in the early stages. However, if factor inequality continues to rise, and the same income classes keep borrowing to "correct" inequality, their total debt, and consequently their real debt shares δ_L , will increase. Thus, as it becomes evident, there is a risk that in the long run, their real debt share will begin to grow positively $\dot{\delta}_L > 0$, leading to an increase in factor inequality in accordance with equation (5.6.1.13).

Furthermore, as argued earlier, household debt has two effects on consumption. On one hand, since debt serves as a source of finance, it has a positive impact on consumption. On the other hand, repaying debts reduces disposable income, resulting in reduced consumption (Dutt, 2006; Nishi, 2012; Hein, 2012b).

Hence, the ability of workers to borrow initially increases their consumption, leading to short-term increases in aggregate demand and decreases in factor inequality. However, in the long run, their income will decrease as δ_L turns positive while their debt is increasing. Consequently, their debt will lead to lower levels of consumption and higher levels of inequality in the long run, posing the risk of an unsustainable debt crisis in the future.

Borrowing to "correct" inequality may seem beneficial in the short run, but it carries the potential for unsustainable growth and a debt crisis in the long term. Conversely, if factor inequality decreases after the initial stages, workers will borrow less as they pay off their debt from previous periods ($\delta_L > 0$). Therefore, it is argued that wage earners will temporarily "sacrifice" their inequality position to repay their debt. This is the preferable scenario where workers can pay off their debt while inequality tends to decrease. This scenario is also favorable for growth because aggregate demand through consumption will be boosted both in the short run and the long run. In the short run, consumption is expected to increase due to the additional income from credit, while in the long run, consumption will remain at high levels due to wage increases that have been achieved.

5.6.2 Financialization and profit inequality

It is assumed that profit inequality is primarily influenced by financialization, driven by disparities in profit rates between investing and lending. Additionally, it is assumed that profit inequality is linked to growth as a result of financialization.

Assuming that income from rent is higher than the personal income of investors³³, inequality can be described according to relation (5.6.2.1). This relation is presented in growth terms in equation (5.6.2.2).

Inequality_K =
$$\frac{q_K - 1}{(m_K + 1)(\Lambda_K + 1)} + \frac{\delta_K}{h}$$
 (5.6.2.1)

$$Inequality_{K} = \dot{q_{K}} \left(\frac{(q_{K} + m_{K})}{(q_{K} - 1)(m_{K} + 1)} \right) - \dot{\Lambda_{K}} \left(\frac{(\Lambda_{K} - m_{K})}{(m_{K} + 1)(1 + \Lambda_{K})} \right) + \frac{(m_{K} + 1)(\Lambda_{K} + 1)\delta_{K}}{q_{K} - 1} \dot{\delta_{K}}$$
(5.6.2.2)

At first, profit inequality is determined by the first term, which implies that profit inequality is positively related to the income premium from profits, q_K . Thus, according to equations (5.3.14) and (5.3.15), the relation of their profit rates is assumed to be a strong determinant of profit inequality.

Furthermore, the second term implies that a sectoral shift can affect profit inequality, depending on the sign of the relation $\Lambda_K - m_K$. In cases where individuals, instead of borrowing, choose to invest in the financial sector where there is a higher profit rate³⁴, there will be a sector shift affecting profit inequality.

Additionally, on the one hand, seeking higher profitability leads to a sector shift where capital is transferred from the real to the financial sector. On the other hand, this shift will affect growth negatively, since it has been assumed that growth comes only from investments in the real sector. In other words, a dominance of rentiers due to increased personal incomes $(\dot{q_K} > 0)$ and sectoral shift $(\dot{\Lambda_K} < 0)$ will increase profit inequality³⁵, while this is related to weak growth due to a decline in investments. As

 $^{^{^{33}}}q_{K} > 1$ $^{^{34}}\rho > 1$

³⁵ given that $\Lambda_K - m_K < 0$

has been argued, distributed profits (i.e., dividends and interest payments to rentiers) reduce the available internal funds, affecting investment demand negatively. Additionally, as has been assumed, rentiers have different propensities to save, as presented in several post-Keynesian models (Dutt, 1992; Hein & van Treeck, 2008). Furthermore, distributed profits may generate restrictions on access to external funds, as argued by Kalecki (1937).

Finally, the third term implies that debt shares are positively related to profit inequality. Hence, a decreasing δ_K in the early stages could be good for growth and profit inequality. In this stage, middle-class investors will either borrow to "correct" inequality or invest in a sector with higher profit rates, like an advanced technological sector as described in the previous chapter.

Thus, if they earn a higher income in the long run, they will pay off the debt that has been created in previous periods while profit inequality will tend to decrease. This will result in lower profit inequality in the long run due to a lower income premium, while growth will also be positively affected due to investment increases. On the contrary, if the future income of middle-class investors decreases, there is a risk of increased debt and unsustainable growth, which would be followed by increased inequality in the long run.

Therefore, policymakers should focus on controlling credit accessibility in order to avoid a debt crisis and give lower-income classes the opportunity to achieve a better income position in the long run.

5.7 Growth and inequality

As already assumed, the presented model describes an open economy where growth is driven by investment decisions and productivity resulting from technological changes, with the potential for credit access for both investors and workers.

Moreover, similar to Hein (2014), it is assumed that growth adheres to Kalecki's principle of effective demand. In this framework, an economy's output and employment levels are chiefly determined by aggregate demand, while aggregate supply adjusts

accordingly (Hein, 2014). Consequently, aggregate income is determined by independent investment and saving choices.

Furthermore, the model posits that all income classes have the capacity to save. This saving is comprised of savings from profits (S_{Π}) and savings from wages (S_W) . More precisely, total savings encompass savings from high-class profits (S_{Π_h}) , middle-class profits (S_{Π_m}) , skilled labor wages (S_{W_s}) , and basic labor wages (S_{W_b}) . The respective propensities to save for each income group are denoted as $s_{\Pi_h}, s_{\Pi_m}, s_{W_s}$, and s_{W_b} . Total savings are presented in equations (5.7.1) and (5.7.2). Furthermore, it is posited that each income class exhibits distinct propensities to save, and consequently, different propensities to consume.

$$S = S_{\Pi_h} + S_{\Pi_m} + S_{W_s} + S_{W_b} \tag{5.7.1}$$

$$S = s_{\Pi_h} Y_h + s_{\Pi_m} Y_m + s_{W_s} Y_s + s_{W_b} Y_b$$
(5.7.1)

Following Stockhammer (2014), the model assumes that the personal distribution of income impacts growth through consumption due to two factors. The first factor is that varying income groups exhibit different marginal and average propensities to save. Consequently, the assumption that lower-income groups possess a higher propensity to consume relative to wealthier groups implies a negative influence of inequality on consumption. The second factor is that as households follow their peers' consumption patterns, increasing inequality positively affects consumption (Stockhammer, 2014). As a result, the model assumes that wealthier segments of the economy save a greater portion of their income³⁶.

Additionally, in accordance with Bhaduri and Marglin's growth model, as in Hein (2014), it is postulated that investment decisions and, consequently, capital accumulation primarily depend on animal spirits (α_0), capacity utilization (u), and profit share (h). Moreover, growth is assumed to be inversely related to interest rates and is also driven by technological advancements and financialization, following Lima (2000) and Lima (2004). Consequently, growth is driven by capital accumulation, expressed through the rate of investment, as described by equation (5.7.3).

³⁶ $s_{\Pi_h} > s_{\Pi_m} > s_{W_s} > s_{W_b}$

$$g = \frac{I}{K} = \alpha_0 + \alpha_1 u + \alpha_2 h - \alpha_3 r_R + \alpha_4 \tau$$
 (5.7.3)

The model posits that animal spirits α_0 , capacity utilization (u), and profit shares (h) have a positive impact on investment decisions. Furthermore, α_1 and α_2 indicate the relative significance of demand and cost considerations in investment choices. Moreover, α_3 reflects the influence of the profit rate (r_R) of rentiers, while α_4 reflects the effect of technological changes and innovation (τ) on growth.

5.7.1 Growth and factor inequality

As previously discussed, income distribution, and consequently factor inequality, impact capital accumulation and growth due to varying saving propensities. The total saving rate is depicted by equations (5.7.1.1) and (5.7.1.2).

$$\sigma = \frac{S}{pK} = (s_w + (s_{\Pi} - s_w)h)\frac{u}{v}$$
(5.7.1.1)

$$\sigma = \frac{s}{pK} = \left((s_{W_s} - s_{W_b}) \omega_s + s_{W_b} + ((s_{\Pi_h} - s_{\Pi_m}) k_h + s_{\Pi_m} - (s_{W_s} - s_{W_b}) \omega_s - s_{W_b} \right) h \right)_{v}^{u}$$
(5.7.1.2)

Furthermore, following Hein (2014) and the post-Keynesian literature, it's assumed that for short-term stability in the goods market equilibrium, the responsiveness of saving to changes in capacity utilization must exceed the combined responsiveness of investment and net exports. Thus, the stability condition ($\psi > 0$) is necessary, as per equation (5.7.1.3).

$$\psi > 0 \rightarrow \psi = \frac{\partial \sigma}{\partial u} - \frac{\partial g}{\partial u} - \frac{\partial b}{\partial u} > 0 \rightarrow \psi = (s_w + (s_{\Pi} - s_w)h)\frac{1}{v} - \alpha_1$$

> 0 (5.7.1.3)

Equation (5.7.1.3) represents the stability criteria for a two-class economy with workers and investors. For a four-class economy, which includes basic skilled workers, highly skilled workers, middle-class investors, and high-class investors, the stability condition equation (5.7.1.3) transforms into equation (5.7.1.4).

$$\psi = \left(\left(s_{W_s} - s_{W_b} \right) \omega_s + s_{W_b} + \left(\left(s_{\Pi_h} - s_{\Pi_m} \right) k_h + s_{\Pi_m} - \left(s_{W_s} - s_{W_b} \right) \omega_s - s_{W_b} \right) h \right) \frac{1}{v} - \alpha_1 + \varphi$$

$$> 0 \rightarrow \psi$$

$$= \left(s_{W_s} \omega_s + s_{W_b} \omega_b + \left(s_{\Pi_m} k_m - s_{W_s} \omega_s - s_{W_b} \omega_b \right) h + \left(s_{\Pi_h} - s_{\Pi_m} \right) \delta_{\Xi} + s_{\Pi_h} \delta_L \right) \frac{1}{v} - \alpha_1 + \varphi > 0$$
(5.7.1.4)

This stability equation implies that the saving rate's marginal response to changes in capacity utilization must outweigh the responses of the investment rate and net exports. Thus, the equilibrium condition that emerges from this stability equation is presented as relation (5.7.1.5):

$$\sigma = g + b \rightarrow (s_w + (s_{\Pi} - s_w)h)\frac{u}{v}$$
$$= \alpha_0 + \alpha_1 u + \alpha_2 h - \alpha_3 r_R + \alpha_4 \tau + v e^r(h) - \varphi u + \zeta u_f \qquad (5.7.1.5)$$

Hence, the total saving rate must equal the rates of capital accumulation and net exports. Consequently, from equation (5.7.1.5), the equilibrium values of capacity utilization (u^*) , growth (g^*) , and profit rate (r^*) are described by equations (5.7.1.6), (5.7.1.7), and (5.7.1.8), respectively:

$$u^{*} = \frac{\alpha_{0} + \alpha_{2}h - \alpha_{3}r_{R} + \alpha_{4}\tau + \nu e^{r}(h) + \zeta u_{f}}{\psi}$$
(5.7.1.6)

$$g^* = \alpha_0 + \alpha_1 u^* + \alpha_2 h - \alpha_3 r_R + \alpha_4 \tau$$
(5.7.1.7)

$$r^* = hu^*$$
 (5.7.1.8)

Additionally, the equilibrium value of the net exports rate, as presented in equation (5.5.1) in Chapter 5.5, can be rewritten as follows:

$$b^* = v e^r(h) - \varphi u^* + \zeta u_f \tag{5.5.1}$$

From the equilibrium values, it is evident that an improvement in animal spirits (α_0) will lead to increased equilibrium rates of capacity utilization (u^*), capital accumulation (g^*), and profit rates (r^*), while the equilibrium net export rate (b^*) decreases.

Furthermore, as functional distribution determines equilibrium values through income shares, such as the profit share (h), factor inequality will impact economic growth. However, the effect of the profit share on equilibrium values is not uniform. The impact of changes in functional income distribution on equilibrium capacity utilization (u^*) and capital accumulation (g^*) is ambiguous, as observed in equations (5.7.1.9) and (5.7.1.10).

$$\frac{\partial u^*}{\partial h} = \frac{\alpha_2 - (s_{\Pi} - s_w)\frac{u^*}{v}}{\psi} = \frac{\alpha_2 + v\frac{\partial e^r(h)}{\partial h} - \frac{\partial \sigma}{\partial h}}{\psi}$$
(5.7.1.9)

$$\frac{\partial g^*}{\partial h} = \alpha_2 + \alpha_1 \frac{\partial u^*}{\partial h} = \alpha_2 + \alpha_1 \frac{\alpha_2 + \nu \frac{\partial e^r(h)}{\partial h} - \frac{\partial \sigma}{\partial h}}{\psi}$$
(5.7.1.10)

The way income is distributed between capital and labor determines factor inequality, influenced by labor employment levels and wage share. Therefore, before exploring the relationship between inequality and growth, it's essential to determine whether profits or wages are the primary drivers of the economy. Assuming a positive ψ through stability conditions, the overall effect of redistribution on equilibrium capacity utilization (u^*) and capital accumulation (g^*) depends on the positive impact of investment demand (α_2), the negative impact of consumption demand $\frac{\partial \sigma}{\partial h}^{37}$, and the ambiguous effect of net exports $\nu \frac{\partial e^r(h)}{\partial h}^{38}$. Consequently, functional distribution inequality will impact equilibrium capacity utilization based on which effect prevails in the economy.

If investment demand dominates, the economy is profit-led³⁹; conversely, if consumption demand dominates, the economy is wage-led⁴⁰, as per equation (5.7.1.9). Similar results apply to the equilibrium value of capital accumulation according to equation (5.7.1.10). Changes in equilibrium capital accumulation depend on the positive direct impact of improved profitability and the negative impact of redistribution due to consumption demand and equilibrium capacity utilization. Thus,

$${}^{39}\frac{\partial u^*}{\partial h} > 0 \to \alpha_2 > \frac{\partial \sigma}{\partial h}$$
$${}^{40}\frac{\partial u^*}{\partial h} < 0 \to \alpha_2 < \frac{\partial \sigma}{\partial h}$$

³⁷Consumption demand, $\frac{\partial \sigma}{\partial h} = (s_{\Pi} - s_w) \frac{u}{v}$. The smaller the $\frac{\partial \sigma}{\partial h}$ the larger the consumption demand. ³⁸ The effect of distribution on net exports are presented in section 5.5

accumulation and growth can be profit-led⁴¹ or wage-led⁴² depending on the dominant distribution changes.

In an overall wage-led regime, a substantially higher propensity to save from profits compared to wages is needed, along with a low impact of the profit share and a strong effect of capacity utilization on investment. In contrast, in a wage-led economy, redistributing in favor of wages stimulates growth, suggesting that lower factor inequality enhances growth-a negative relation with inequality.

On the contrary, in a profit-led economy where the gap between propensity to save from profits and wages is smaller, a strong effect from the profit share exists, while capacity utilization has a weak impact on capital accumulation and investment rates. In such a domestically profit-led economy, increased profit share drives expansion, making factor inequality positively correlated with growth. Consequently, reducing inequality by favoring workers with higher nominal wages could negatively impact growth.

Moreover, in a scenario where the demand regime is wage-led but capital accumulation is profit-led, due to a limited impact of capacity utilization on capital accumulation, an intermediate conflict regime arises.

Therefore, while inequality increases lead to decreased aggregate demand and consumption due to poorer income groups with higher propensities to consume, a potential solution lies in raising wages, which reduces inequality and concurrently stabilizes economic growth (Onaran & Galanis, 2012)

Hence, it emerges that growth is positively affected by personal income inequality resulting from factor distribution in profit-led regimes, while in wage-led regimes, growth is likely negatively linked to factor inequality. However, this may not be a consistent pattern. Redistribution in income shares doesn't always lead to factor inequality changes, as discussed in previous sections, given that factor inequality changes result from a combination of changes in income shares and population proportions, as it has been presented in equations (5.1.9) and (5.1.11). Therefore, the impact of inequality due to factor distribution on demand and growth may be

 $^{{}^{41}\}frac{\partial g^*}{\partial h} > 0 \rightarrow \alpha_2 + \alpha_1 \frac{\partial u^*}{\partial h} > 0$ ${}^{42}\frac{\partial g^*}{\partial h} < 0 \rightarrow \alpha_2 + \alpha_1 \frac{\partial u^*}{\partial h} < 0$

ambiguous, considering that an increase in wage share could stem from increased labor employment rather than nominal wage hikes.

5.7.2 Growth labor and profit inequality

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Moreover, it's postulated that labor and profit inequality are associated with growth owing to the dissimilarities in saving tendencies among various income classes. As indicated in equation (5.7.1.2), equilibrium values are influenced by the income shares of each income class, as illustrated in equations (5.7.2.1), (5.7.2.2), (5.7.2.3), and (5.7.2.4).

$$\frac{\partial u^*}{\partial \omega_s} = -\frac{\frac{\partial \sigma}{\partial \omega_s}}{\psi} < 0 \tag{5.7.2.1}$$

$$\frac{\partial g^*}{\partial \omega_s} = \tau + \beta \frac{\partial u^*}{\partial \omega_s} = \tau - \beta \frac{\frac{\partial \sigma}{\partial \omega_s}}{\psi}$$
(5.7.2.2)

$$\frac{\partial u^*}{\partial k_h} = -\frac{\frac{\partial b}{\partial k_h}}{\psi}$$
(5.7.2.3)

$$\frac{\partial g^*}{\partial k_h} = \tau + \beta \frac{\partial u^*}{\partial k_h} = \tau - \beta \frac{\frac{\partial \sigma^*}{\partial k_h}}{\psi}$$
(5.7.2.4)

Hence, labor and profit inequality adversely impact capacity utilization, capital accumulation, and consequently growth, due to varied saving tendencies across different income classes. This implies that growth is positively linked to the income shares of less affluent classes, including basic workers and middle-class capitalists, due to disparities in saving propensities.

Thus, the relationship between inequality and growth is manifested through savings, where the impact of inequality on growth hinges on the differences in saving tendencies. The influence of savings on consumption and investment underscores that any redistribution favoring the income shares of the less prosperous population will lead to higher equilibrium values.

Consequently, as inequality can shape the economy's saving choices, alterations in income distribution impact economic growth due to distinct saving propensities among classes. However, the direction of this impact depends on the growth framework, with changes in income shares needing to outpace variations in employment growth.

5.8 Estimating total inequality

Total inequality is computed as a combination of factor inequality, labor inequality, profit inequality, and unemployment. Moreover, the amalgamation of their respective Lorenz curves results in the distribution curve of total inequality, as illustrated in Figure 6. The inequality index is determined by calculating the area A, which lies between the red and blue lines, and the sum of area D, which exists between the red line and the axes of the diagram, in addition to area A.

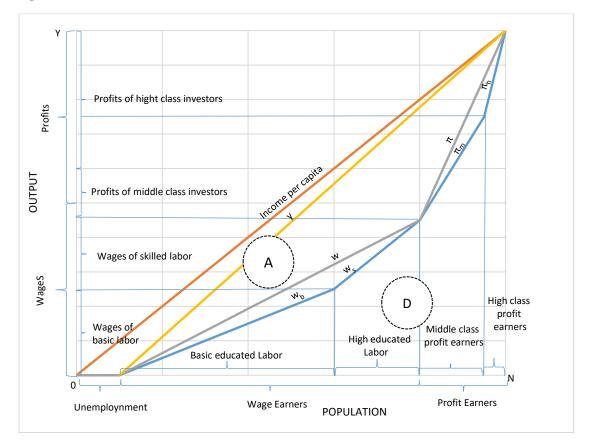


Figure 6 Income Distribution

Initially, assuming that all employed individuals earn an identical personal income, and the unemployed population earns no income, the inequality index can be computed using the same formula as presented in Chapter 5. From Figure 7, we can deduce that the inequality index between the employed and unemployed populations is determined by the relationship between area G and area D^{43} . This leads to the formulation given by equation (7.4.4.1.1), which establishes the inequality index for the employed and unemployed populations as the unemployment rate:

$$InequalityU = \frac{\frac{Unemployment*Y}{2}}{\frac{N*Y}{2}} = Unemployment \ rate$$
(7.4.4.1.1)

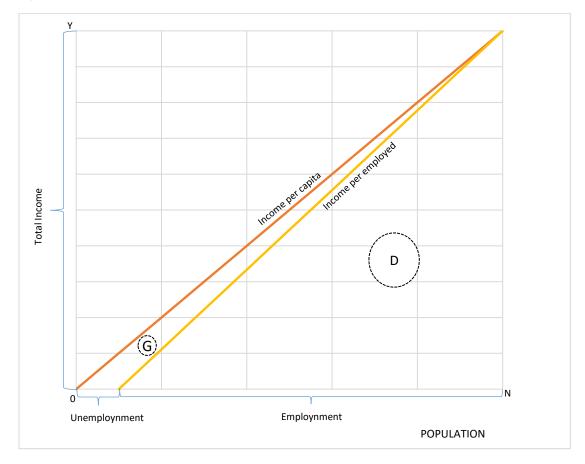


Figure 7 Income Distribution

Furthermore, the assumed hierarchy of income distribution among classes is as follows: high-class profit earners are wealthier than middle-class profit earners, and skilled labor workers have higher earnings than basic labor workers, i.e., $w_s \ge w \ge w_b$ and $\pi_h \ge$

 $[\]frac{43}{InequalityU} = \frac{\text{area G}}{\text{area G+area D}}$

 $\pi \ge \pi_m$. Additionally, it is assumed that middle-class profit earners are wealthier than skilled labor workers, i.e., $\pi_m \ge w_s$.

Given these assumptions and referring to Figure 6, the total inequality can be computed using equation (7.4.4.1.2). Combining equation (7.4.4.1.2) with the factor, labor, and profit inequality equations (5.1.15), (5.2.19), and (5.3.27), the inequality index can be calculated according to equation (7.4.4.1.3):

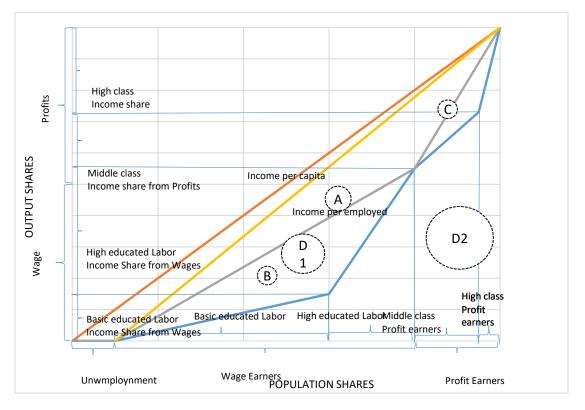
$$Inequality = \frac{area A}{area A + area D}$$

= Unemployment rate
+ employment rate(Inequality_F + λ IInequality_L
+ $h\xi$ Inequality_K) (7.4.4.1.2)

$$Inequality = \left(1 - \frac{T}{N}\right) + \frac{T}{N} \left(l - \frac{w^r}{A} + \lambda l \left(\frac{q_L - 1}{\left(\frac{q_L}{A_L} + 1\right)(1 + A_L)}\right) + h\xi \left(\frac{q_K - 1}{(m_K + 1)(A_K + 1)}\right)\right)$$
(7.4.4.1.3)

However, this assumption may not universally hold, as in some economies middle-class investors might not earn higher income than skilled workers. In such cases, assuming that middle-class investors are less affluent than skilled labor workers ($\pi_m < w_s$), the distribution of total inequality differs. Total distribution is presented following figure 8. Notably, this distribution does not form a Lorenz curve since higher-paid workers are wealthier than middle-class investors, contrary to the typical assumption that a Lorenz curve progresses from the poorer to the richer.

Figure 8 Income Distribution



Hence, if it is assumed that middle class investors and skilled labor workers form an additional income class, the middle class, isolating the distribution of the middle class, their distribution will look like the following Figure 9.

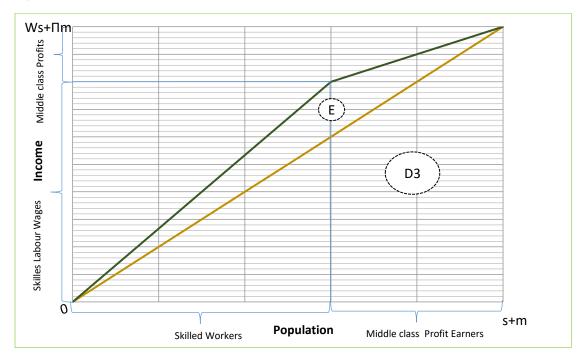


Figure 9 Income Distribution

The orange line represents the equality line for the middle class. As previously mentioned, this configuration does not constitute a Lorenz curve due to the fact that the population is not arranged from the poorest to the richest. Consequently, this leads to the Gini coefficient not being constrained within the range of zero to one. To establish a Lorenz curve, the order of the income classes within the middle class must be rearranged, as illustrated in Figure 10

In the scenario where $\pi_m < w_s$, the inequality index of the middle class can be expressed using the equations (7.4.4.1.4), (7.4.4.1.5), and (7.4.4.1.6) as follows:

$$InequalityM = \frac{E}{D_3}$$
(7.4.4.1.4)

$$InequalityM = \left(\frac{W_s}{W_s + \Pi_m} - \frac{L_s}{L_s + \Xi_m}\right)$$
(7.4.4.1.5)

$$InequalityM = \left(\frac{\Xi_m}{L_s + \Xi_m} - \frac{\Pi_m}{W_s + \Pi_m}\right)$$
(7.4.4.1.6)

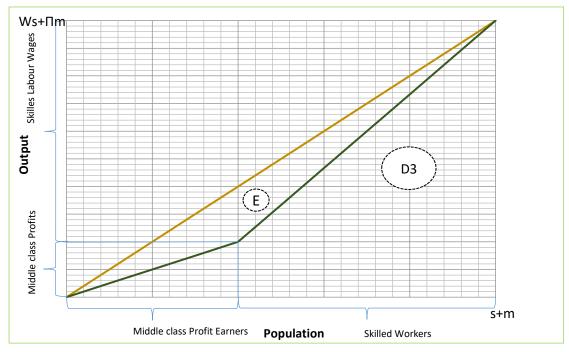


Figure 10 Income Distribution

In the scenario where $\pi_m < w_s$, the inequality index of the middle class can be expressed using the equations (7.4.4.1.4), (7.4.4.1.5), and (7.4.4.1.6) as follows:

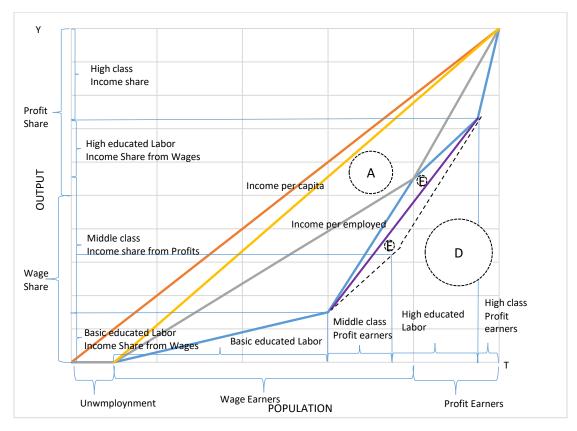
$$InequalityM = \frac{E}{D_3} \tag{7.4.4.1.4}$$

$$InequalityM = \left(\frac{W_s}{W_s + \Pi_m} - \frac{L_s}{L_s + \Xi_m}\right)$$
(7.4.4.1.5)

$$InequalityM = \left(\frac{\Xi_m}{L_s + \Xi_m} - \frac{\Pi_m}{W_s + \Pi_m}\right)$$
(7.4.4.1.6)

In this case, in order to compute the overall inequality of the economy, the arrangement of the skilled labor and middle-class capitalist classes can be modified. By doing so, the resulting Lorenz curve would resemble the one depicted in Figure 11.

Figure 11 Lorenz curve



However, it's important to note that area E remains constant regardless of the order of classes, as evidenced in both figures 9 and 10. As a result, the distribution curve of total inequality, when higher-paid workers are wealthier than middle-class owners, will resemble the pattern in figure 10. The inequality index can then be calculated using the equation (7.4.4.1.7):

$$Inequality = \frac{area A + 2areaE}{area A + 2areaE + area D}$$
(7.4.4.1.7)

Thus, in cases where the class of skilled workers is more affluent than the class of middle-class capital owners, the calculation of total inequality follows the equations (7.4.4.1.8) and (7.4.4.1.9):

Inequality

$$= \text{Unemployment rate}$$

$$+ \text{employment rate} \left(\text{Inequality}_{F} + \lambda \text{Inequality}_{L} + h\xi \text{Inequality}_{K} \right)$$

$$+ 2 \frac{(W_{s} + \Pi_{m})}{Y} \frac{(L_{s} + \Xi_{m})}{T} \text{Inequality} M \right)$$
(7.4.4.1.8)

$$Inequality = \left(1 - \frac{T}{N}\right) + \frac{T}{N} \left(l - \frac{w^r}{A} + \lambda l \left(\frac{q_L - 1}{\left(\frac{q_L}{A_L} + 1\right)(1 + A_L)}\right) + h\xi \left(\frac{q_K - 1}{(m_K + 1)(A_K + 1)}\right) + 2\frac{(W_s + \Pi_m)(L_s + \Xi_m)}{T} \left(\frac{W_s}{W_s + \Pi_m} - \frac{L_s}{L_s + \Xi_m}\right)\right)$$

$$(7.4.4.1.9)$$

Therefore, to compute the total inequality index, either equation (7.4.4.1.3) or (7.4.4.1.9) has been utilized, contingent on whether the average income of highly paid workers, w_s , is lower or higher than the average income of middle-class capital owners, π_m . For the determination of total inequality, the demographic variables and the variables related to income and distribution, as presented in Table 6, have been employed. It's noteworthy that all inequality indexes have been calculated using income before any transfers or adjustments.

6 Empirical evidence from the literature

The relation between inequality and economic growth has been a famous research subject among economic researchers. Hence, there are numerous of empirical studies searching for the relation between inequality and growth from which we can deduct useful information. Among these studies, the causality has been checked in both directions, while the Kuznets hypothesis has also been investigated. Hence, some researchers study the impact of inequality on growth, some others the growth effects on inequality while there are also studies that investigate both. However, since these studies are based on different theoretical perspectives and econometric techniques, not all of them reach the same conclusions. Thus, among the literature, there are studies that indicate a negative relationship between inequality and growth, others that imply a positive relationship, and yet others that find no relationship. The Kuznets hypothesis have also been characterized by similar disagreements.

6.1 Determinants of inequality

Firstly, economic growth, financialization and technological changes seems to be the main determinants of inequality according to the literature, while, additionally, various studies have been conducted to determine the validity of the Kuznets hypothesis, either rejecting or approving it.

For instance, Williamson & Lindert, (1980) found evidence of the Kuznets hypothesis arguing that inequality in the USA has been rising during the second half of the 19th century, remaining high during the first part of the 20th century, and then decreasing until the 60s (Williamson & Lindert, 1980).

Among these studies, Matyas, et al., (1998) found no evidence supporting the Kuznets's hypothesis by using two unbalanced panel data sets consisted of 47 countries for the first and 62 countries for the second set (Matyas, et al., 1998). Both data sets are referred to the period 1970-1993, and the econometric technics they used is the two-way fixed and random effects models trying to include the special characteristics of the country and time endogeneity. Through their findings they suggested that there are no statistically significant indications for the existence of the Kuznets's hypothesis and that instead of the GDP per capita, the factors that really affect inequality levels are the special characteristics of the society, like the social structure, the political system, physical sources and the time period. Thus, as they conclude, inequality is determined more by specific factors than by growth levels.

Another study trying to re-examine if the Kuznets hypothesis is true, was that of Huang, et al., (2012), who used annual data of USA of the period of 1917-2007. Using a test

introduced by Lind & Mehlum, (2010), they supported that there is no evidence of an inverted-U or a monotone relationship between inequality, represented by top income share, and economic growth, represented by real income per capita. In contrast they propose that the relationship seems like a U-shaped, where inequality first improves and then worsens as growth increases (Huang, et al., 2012).

Furthermore, financial integration seems to have a strong impact to inequality mainly due to technology, financialization and globalization. Seeking for the impact of globalization on distribution, Harrison, (2002) has used a data of 100 countries for the period of 1960-1997. Among the indicators, openness, capital controls, trade openness and exchange rates have been used for globalization while capital labor-ratio has been used for technological change. The results indicate a positive effect of technological change and a negative effect of globalization. (Harrison, 2002)

International Monetary Fund, (2007a) used a panel of 18 countries of OECD for the period of 1983-2002 seeking for the impact of globalization, technological change and labor institutions on labor income. The indicators that have been used are offshoring, immigration and relative import and export prices. Technological changes have been represented by ICT capital stock and capital-labor ratio. Further indicators that have been used is the union density and taxes. As emerges from the International Monetary Fund, (2007a) study, globalization and technological change have been contributed to the reduction of wage shares in advanced countries (International Monetary Fund , 2007a).

In addition, International Monetary Fund, (2007b) supports that inequality has risen since the income of the highest quintile has been increased while income of the rest of the quintiles have been declined. The higher impact on income inequality increases has been due to the technological progress, while globalization has a smaller contribution. In addition, according to their findings trade openness has been negatively related while the impact of FDI is positive (International Monetary Fund, 2007b).

Furtheremore, European Commission, (2007) used a panel data of 13 OECD countries for the period 1983-2002. The variables that have been used by European Commission, (2007) are the capital-labor ratio, ICT services (per employee) and openness. The results of the European Commission, (2007) study suggest a positive effect of

technological change and a negative effect of openness on wage shares (European Commission, 2007).

Searching for the effect of financial and trade openness on wage share, Jayadev, (2007) used a data of 80 countries for the period 1970-2001. Among the variable that has been used are openness, interest rates and a crisis dummy. According to their estimates, financial and trade openness are negatively related to wage shares. (Jayadev, 2007)

Furthermore, Zalewski & Whalen, (2010) found evidence of a simutaneously increase of financialziation and income inequality due a ten year period of 1995-2005. (Zalewski & Whalen, 2010). Additionally, Dabla-Norris, et al., (2015), investigated the determinants of inequality using a fixed effect model on a sample of almost 100 countries from 1980 to 2012, using a 5year average data controlling for initial per capita income and other variables. In their study, they used the GINI index and the disposable incomes of the poorest 10% of the population, the fifth decile, and the top 10% of the population as inequality indices. Among their explanatory variables they used the sum of export and import shares as a trade openness proxy, the sum of foreign assets and liabilities as financial globalization. Furthermore, as a proxy for technology the sum of ICT capital to total capital has been used, while private credit has been also among the explanatory variables. Finally, the average years of education in the population of 15 years old and older has been used as a skill premium. As they result, financial openness has been positively related to inequality, while the impact of trade openness is negative. Furthermore, technology and financial development are positively related to inequality. (Dabla-Norris, et al., 2015)

Stockhammer, (2012b) used a panel data analysis searching for the determinant of wage share, which is determinant of factor inequality, among 71 countries for the period of 1970-2007. In his study, among the indicators he uses variables of financial globalization, technology, trade openness. Capital-labor ratio and ICT services have been the proxies for technology. He also used union density and government consumption. The result the emerge support that there is a trend to higher inequality in OECD countries due to wage share declines. Wage share have also declined in emerging countries. Additionally, they support that wage share has been declined mainly due financialization, while globalization has also negative effect. Furthermore, technology has a positive effect in developing countries. The fact that globalization

affects income distribution negatively in both advance and emerging economies is in contrast with the hypothesis of Stolper-Samuelson theorem. (Stockhammer, 2012c)

6.2 The impact of inequality on growth

In terms of the influence of inequality on growth, several authors in the literature argue that high inequality is connected with poor future growth and seems to be harmful to the lowest quantiles. Among these studies is the study of Alesina & Rodrik, (1994) who looked into the relation of initial income inequality and unequal land distribution with next period growth. Using a sample of 54 OECD countries for 25 years they found a significant negative relation between the initial land distribution inequality and growth that achieved the forthcoming period. The same result came up for the relationship between income inequality and growth as well, more specific initial income inequality affected negatively the economic growth for the next period. Their project was based on the traditional theory of endogenous growth (Romer, 1986; Lucas, 1988; Barro, 2000); while their main standpoint was the endogenous approach which assumes that the majority of the voters decide about the level of taxes in every period (Meltzer & Richard, 1981). According to their assumption, in societies where a large amount of the population has no access to the productive resources of the economy, there will be a strong demand for redistribution, which consequently is considered to be harmful for growth. This assumption has proved to be a fact according to their estimates, while as they proposed that voting decisions of every period are able to affect growth in subsequent periods. (Alesina & Rodrik, 1994)

Subsequently, Persson & Tabellini, (1994) came up with similar results finding a negative relation of income inequality and growth for 56 countries and 25 years. According to their findings, the effect is presented only in democracies, in contrast with the findings of Alesina & Rodrik, (1994), who supported that this relation does not differ between democracies and non-democracies. Their theoretical approach was founded on the assumptions that growth is driven by the concentration at productive components, with regulation and tax policies influencing incentive. Thus, inequality affects negatively growth due to pressures of redistributing income like taxes and allowances which is assumed that affect investment and growth-promoting activities negatively. In their study they used the income share of the third quintile as a proxy of

inequality assuming that this is the variable that best approximates the relative position of the median income recipient. As inequality index, they also used the fifth quintile of income share. Additionally, they used proxy variables of average skills, political participation and initial GDP, assuming that they are strongly related to growth. Concluding, the main theoretical result that comes out from their empirical study is that inequality promotes policies that "do not protect property rights and do not allow full private appropriation of returns from the investment", thus it can be harmful for growth (Persson & Tabellini, 1994).

Similar results were presented by Panizza, (1995) using data from the USA for the years 1920-1980, who suggested that inequality is bad for growth. Panizza, (1995) also suggested that panel-data set should be preferred to cross-state models, because they can increase the number of observations and additionally give the ability of running fixed effects estimations. By running fixed effects estimations, it is allowed to control for unobservable special characteristics of each state or country that can be correlated with the explanatory variables. By using four alternative methods of measuring inequality, he tried to locate the affection of distribution on 10-year and 20-year periods. Inequality has been measured as the income share of the third quantile in his first model, in his second model he uses the summary of the income shares of the third and the fourth quintiles, in the fourth model he uses the income share of the first quintile divided by the income share of the fifth quintile while in the fourth model, GINI coefficient has been used as inequality measure. Through his findings although he supports the robustness of the negative relation of income inequality and economic growth that has been found in cross-section studies, that is income inequality affects negatively economic growth that follows next periods, he supported that the results may not be accurate by using only cross section data. Furthermore, as regarded the structural relationship between inequality and growth, the analysis is concentrated in two channels, the channel of the fiscal policy and the channels of the endogenous fertility. Thus, according to the fundamental relation between inequality and growth, most of the fiscal variables are related negatively with inequality, while inequality also seems to be negatively correlated with the economic growth of the sequent period. Additionally, according to his findings, as it seems, fiscal policy variables are often related positively with the level of political participation and inequality affect positively teenage pregnancy, which is negatively related to college enrollment, thus with human investment. (Panizza, 1995)

Another empirical research concerning the relation of inequality with economic growth made by Perotti, (1996) contributed on the findings of negative relation between income inequality and growth. His sample was referred to the period 1960-1985 and his models were consist of the depended variable of growth, represented by the average rate of GDP per capita growth, while the explanatory variables he used were the proportion of income that corresponds to the middle income class as a proxy of income inequality and four variables that are mostly found among the literature like the initial GDP per capita, representing economic convergence, the average enrolment in secondary schooling, representing human capital, the PPP value of the investment deflation related to that of USA in 1960. His results are similar with those of Alesina & Rodrik, (1994), Persson & Tabellini, (1994) and Panizza, (1995). Further, he also found that this relation is weaker in the poorer countries, but he could not find an impact of democracy in this relation. In addition, the Kuznets hypothesis seems to be confirmed through his findings. Concluding, Perotti, (1996), suggests that societies with lower levels of inequality also have lower fertility rates, thus higher rates of investment in human capital. In addition, they tend to be more political and social unstable, which prevent investments and growth. Finally, the idea that more equal societies due to democratic institutions leads increases in growth because of the decreases in demand for redistribution, which also means low levels of distortion in markets, seems that cannot be supported. (Perotti, 1996a)

In order to investigate the relation of growth and inequality Partridge, (1997) used a panel data study of the states of USA. The share of median income and GINI coefficient have been used as a proxy for inequality. According to their results, both indicators have been found to be positively related to growth. (Partridge, 1997)

Moreover, according to the findings of Deininger & Squire, (1998), apart from unequal distribution of income, initial distribution of land seems also to be associated with low levels of long-run growth. These findings are emerged from their study, who also question the reliability and the validity of the negative relation of growth and income inequality. In their studies they used an ordinary equation to describe the connection of inequality and growth, in which the depended variable is the growth of GDP, while the

independent variables are, the initial inequality, initial income, the level of investments, black markets premium and the role of education. In addition, considering that some independent variables can be affected by other factors, they also included some models with investments, human and physical capital, as the depended variables. Deininger & Squire, (1998) reject the idea that there is a systematic contemporaneous link between inequality and income levels. Furthermore, as it seems initial land inequality is statistically significant for the poor, but this is not the fact for the rich. This finding is consistent with the theoretical approach that suggests that highly unequal distribution creates constraints in credit for some of the individuals from investing. Thus, as they claimed, initial distribution indeed affects future growth due to imperfect market approach, since the impact of initial inequality in land distribution in future growth has been found statistically significant. Furthermore, given that initial inequality can affect education but not investments in physical capital, they refer in results that concluded the effect of investments in physical capital and not in human capital, so they considered that education's impact acts due to the variable of inequality. In addition, due to their findings they suggest that the poor are likely to benefit disproportionately from aggregate investment, implying that increasing investment and boosting growth would not hurt the poor at least in the medium term, and growth boosting policies can be consistent with the aim of poverty alleviation. As emerges from their study, accumulation of new assets is likely to be more effective way of reducing poverty in contrast with redistributing the existing assets. Furthermore, Deininger & Squire, (1998) argued that there is weak evidence of the Kuznets hypothesis. Using a model with GINI levels representing inequality, as dependent variables and GDP per capita representing growth, as independent variables. Through their findings, it is supported that there are serious doubts firstly as regarded the Kuznets hypothesis and secondly as regarded the use of cross section data in order to interpret the relation between inequality and growth. More specific, in 80% of the countries of their sample show no relation of inequality and growth that looks like an inverted U. More general, as it seems there is no precise intertemporal relation between inequality and growth. Finally, they supported that government policy, which is related to income redistribution for different income groups of the population cannot affect income inequality (Deininger & Squire, 1998). Another important argument of Deininger & Squire, (1998) was that income inequality affects future growth in non-democratic countries but not in democratic countries challenging the endogenous fiscal approach, which claims that the median

voter determines through elections the level of taxation, thus the level of sequent inequality and growth. Thus, concluding, they found that high initial inequality in land distribution is associated with lower growth in sequent years while at the same time the level of market imperfection has significant impact in future growth, especially those that are related to human and physical capital. (Deininger & Squire, 1998)

Generally, most of the literature suggest that high inequality is associated with low growth in the future while appears to be bad for the bottom quantiles. However, as it has been mentioned, the theories that support a negative relation of inequality and growth usually lay on political effect, which is expected to have long run implications (Rodríguez, 2000). Additionally, there are indications that inequality can also be associated with increasing growth, at least in short terms (Barro, 2000; Forbes, 2000; Li, et al., 1998).

Li, et al., (1998), for instrance, found evidence that income inequality is positively related to economic growth. They used a panel data of 2,480 observations on Gini of 112 developing and andvenced economies. Additionally, Barro, (2000), found evidence for a nonlinear relation between growth and inequality where inequality is positively related to growth at high levels of income and negatively related at low levels. Barro, (2000) found a weak relation between inequality and growth, while as it seems, inequality impedes growth in rich countries and encourages growth in poor countries. As regarded the estimation process, he suggested that if we do not apply models including fixed effects for the countries then there is danger that error problems will appear, especially when we deal with GINI. Searching for the impact of inequality on growth, Barro, (2000) used a model parted by two equations for the sub periods 1965-1975, 1975-1985, and 1985-1995. In the first equation he used GDP per capita growth rate as a depended variable while in the second equation the level of investments is being used as the depended variable. As explanatory variables, he included average rates of government expenditures as GPD proportion, investments as GDP proportion, inflation rate, total fertility, trade rate and indexes for democracy and rule of law. In both equation he also used GINI index as inequality among the explanatory variables. For his estimates he used the method of least squares in three stages, as instrumenting variables he uses. The results that he ends up is that the connection of GINI with growth, expressed by GDP growth rates, is not statistically significant when the variable of fertility is including in the model. In addition, the sign of the impact of inequality on

growth changes is depended on the growth levels of the country. More specific he finds that inequality's affect is negative for richer countries while the opposite seems to happen for the poor countries, inequality affects growth positively. Furthermore, for testing the Kuznets hypothesis, real GDP per capita, real GDP per capita squared and the average participation in secondary and higher education in the beginning of every period have been used as explanatory variables. Additional explanatory variables that are being used is the level of participation in international trade and indexes for democracy and rules of law. He also used two dummy variables, the first for countries of Africa and Latin America and the second for GINI that originate from income or from spending data. Finally, his results verify Kuznets's hypothesis, since he finds that in poor countries inequality is positively related to growth while in rich countries the relation is being inverted. According to this fact he supports that "The Kuznets curve emerges as a clear empirical regularity" (Barro, 1990). However, as it is proposed, this relation cannot explain the amount of variation in inequality levels across societies. As it has been supported by Barro, (2000), the Kuznets curve emerges as a clear "empirical regularity" due their empirical results. However, although his results verify Kuznets's hypothesis, as it is proposed, this relation cannot explain the amount of variation in inequality levels across societies. (Barro, 2000)

Furthermore, challenging the belief that there is a negative relation of inequality with growth, Forbes, (2000) using panel data technique suggested that the relation between income inequality and subsequent economic growth seems to be positive in short and medium terms. In general, she criticizes the studies that propose that there is a negative relation between inequality and growth, and according to her suggestions there are three kinds of problem. Firstly, most of the estimates seems to be statistically insignificant. Second problem is that these studies usually have two econometric issues, the first issue is the difficulty of measuring inequality which leads to error measurements while the second issue is omitted-variable bias. Measurement errors on the one hand can generate biases that reduce the significant of the results, while on the other hand in cases where there are omitted variables, the relation of inequality and growth can be outweighed, generating biases. Finally, a third difficulty that emerges is that it is difficult to determine how a change in inequality levels in one nation would affect that country's economic development when using cross-country methods. Cross country surveys often show that countries with low levels of inequality tend to grow faster, which implies that

if the economic policies of the government results to decrease inequality, then it is expected that in the long run growth will be improved. However, as she argues cross section studies cannot explain how a change in inequality levels within an economy is associated with growth in this economy, this can be improved by using panel estimation. In her model she used she estimates growth using as explanatory variables income inequality represented by GINI index, GDP per capita, human capital, expressed by average participation in secondary schooling. In the explanatory variables she also used the PPP value of investments as regarded the exchange rate related to USA, this is indicator widely used in literature. Her research uses a sample of 45 countries for the period 1965-1995, which is divided in six sub-periods. In fact, she investigates whether the explanatory variables in the first year of every period affects the growth path of the period. Forbes, (2000) also argues that, in order to choose which technic applies better to our estimates, we should consider three factors. First of all, there is a possibility that some of the variables may be related to special characteristics of the country. The second factor is the fact that one variable (income) may be lagged and endogenous and finally the third factor is the possible endogeneity of the rest of the explanatory variables. In order to estimate her model, she tried four different methods. In the first method she uses the random effect model, in the second method the fixed effect model, in the third method she uses the process of Chamberlain's π -matrix, while in the fourth method she uses GMM (generalized method of moments). By focusing on the method of GMM, she proposes that in the short and the medium term an increase in inequality levels has significant positive impact on subsequent growth. Although Forbes, (2000) found that there is a statistically significant positive relation between inequality and growth in short terms, she did not explain how these two variables are connected, in addition she cannot ensure that the sign of the relation will stay positive in the long run.

Furthermore, Dollar & Kraay, (2002) in their study, where they used a sample of 92 countries, they argued that the relation between poverty and growth does not differ in periods of normal growth and in periods of crisis, while the impact of poverty on growth has not changed in the last forty years. Additionally, as it seems, growth which is driven by trade and other macroeconomic policies benefits the poverty as much as benefits the classic average household while, pro-poor policies such as democratic institutions or public spending on health and education seems to have weak influence on the income

of the poorer. Dollar and Kraay (2002) proposed that the approach of least squares that has been used for common observations of years and countries is most likely to lead to different estimates of the parameters for a number of reasons. According to their estimating process, in order to find the effect of growth on the income of the poor income classes, they used three kinds of method. The first two methods they used are the method of least squares and the method of two stages least squares on a panel dataset while, consequently they also used a third kind of method, the GMM method. As regarded the effect of income inequality on economic growth, the variables they used were, the GDP per capita, the income proportion that corresponds to the richest fifth of the population, the GINI index, the sum of imports and exports as a proportion of total GDP, government spending as a proportion of total GDP, a proxy for legal institutions and secondary schooling enrolment. Through their findings they suggested that secondary schooling, financial development, and better legal institutions are linked positively with growth while high government expenditures and inflation seems to be linked negatively with economic growth. They also found that pro-growth macroeconomic policies concerning the stabilization on inflation, the decrease of the government size, financial development, the rule of law, and the openness to international trade can increase the income proportion of the poorest fifth class of the population as much as the average income. Furthermore, Dollar & Kraay, (2002), investigating the Kuznets hypothesis, claim that there is not an obvious tendency that is biased as regarded the poor income classes in the initial levels of development. On the contrary, they found that, private rights, stability and transparency can generate a positive environment for income and productivity growth of the poorest parts of the economy. However, their main result is that policies and institutions as much as economic growth do not benefit the poorest much more that the rest of the society, hence, as they conclude, economic growth is not what poor income classes need in order to better of their life. (Dollar & Kraay, 2002)

Although there is different evidence regarding the relation of inequality and growth, in general it seems that the relationship between inequality and economic growth is nonlinear (Banerjee & Duflo, 2003). Using non-parametric methods for a cross country data, Banerjee & Duflo, (2003), supported that growth will be reduced in the subsequent period if inequality changes in any direction. Furthermore, Banerjee & Duflo, (2003) think that the relation between income inequality and economic growth is not unique, while the choice of explanatory variable is very crucial given the fact that there are plenty of factors that can affect inequality. For their estimates they used a model with the same variables that have been used by Perotti, (1996) and Barro, (2000), where they reject the hypothesis of linearity. Although their findings are in agreement with the political economy model, they argued that this could also be a result of measurement errors. However, the main fact that emerges from their study is that the relation between inequality and growth is nonlinear and that the assumption of linearity may lead to false results.

Another panel data study made by Voitchovsky, (2005) argues that in order to define economic growth there should be given special focus on the shape of inequality. More specific due to her findings she claims that inequality at the top of the income distribution is positively related to total economic growth, while inequality at the lower income classes of the distribution is related negatively with growth. She also used a five-period model of panel dataset like (Forbes, 2000) and the GMM technique for a sample of 25 countries. In general, through her empirical research Voitchovsky, (2005) supported her main hypothesis that inequality can affect either positively either negatively economic growth, depended on the inequality on different part of income distribution. (Voitchovsky, 2005)

In general the use of panel dataset has been considered that reduces measurement errors and allows the comparisons across countries and time periods, for this reason it is preffered for several authors investigating the relation of inequality and growth. Iradian, (2005), for instance, using a panel dataset for a sample of 82 countries for the period of 1965-2003 found a positive relation between inequality and growth in short and medium terms, while in the long term there is the possibility that inequality will affect growth negatively. As regarded the depended variable, he uses growth expressed by GDP per capita while as regarded the explanatory variables he uses the GINI coefficient for inequality, the level of initial GDP per capita for every period, an index for the level of rules of law, an index for the level of democracy, inflation rate, total investment and a dummy variable for credit intermediation. Furthermore, Iradian, (2005), considering that the method of least squares is not the appropriate when we deal with panel datasets and trying to avoid inverted causality, he uses two additional econometric methods. In the first method he uses a fixed effect model, while in the second method he uses a model of generalized methods of moment (GMM). According to his estimates, initial inequality may have positive effects on the subsequent economic growth in short terms, which comes in contrast with the studies that use cross section analysis, who suggest that the relation of inequality and growth is positive. This positive link may be a cosequence of the credit market imperfection, however in the long erm there is the posibility that inequality could have an adverse impacts on growth. Furthermore, trying to confirm the validity of the Kuznets curve, he uses a model with inequality as a depended variable, and as explanatory variables he uses initial GDP per capita, the squared initial GDP per capita, government spending, population growth, secondary school enrolment, and dummy variables representing if the country is in a sub-saharian, a Latin-American or a former soviet region and whether inequality data is originated from income or spending data. Finally he confirms the validity of the Kuznets hypothesis while in addition he supports the idea that higher per capita income is associated with poverty deacreases. (Iradian, 2005)

Further evidence that inequality can also affect economic growth positively found by Chambers, (2005), who used a panel dataset and semiparametric methods trying to identify the impact of past growth in current inequality. More specific, he found a positive relation of growth and inequality for the short run which, which, finally becomes negative in the long run. These findings strengthen the Kuznets hypothesis. His study involved 29 countries and 232 observations, while the variables he used were the exchange rate of the purchasing power (PPP), the average years of schooling over 15 years old, representing human capital and an index of trade levels. As regarded inequality, he used the GINI index as his main variable. Due to his findings, he supported Kuznets hypothesis; while additionally he supported that primary education decreases inequality while secondary and higher education tend to increase inequality. Thus, Chambers (2005) primarily supported that in the short run, there is a positive relationship between inequality and growth, which then flattens and results in a negative relationship in the long term, demonstrating evidence that supports the Kuznets hypothesis. Additionally, he suggests that countries that have more rapid growth tend to experience lower levels of inequality in subsequent periods. (Chambers, 2005)

Indications that the relationship between inequalty and growth could be positive are also found by Lopez, (2006). More specific, through his estimates he supported that there is not a clear relationship between inequality and growth since 1990, while there is a significant positive correlation between them in the 90s. For his estimates he used the method of least squares and the GINI index representing income inequality. (Lopez, 2006)

Moreover, Andrews, et al., (2010) using a panel data of 12 developed countries from the period 1905 to 2000 found no relation of top income shares and economic growth. However, similar to Voitchovsky, (2005), they found that after 1960 there is statistically significant evidence that higher inequality is related to higher economic growth. (Andrews, et al., 2010)

On another point of view, Grijalva, (2011) assumed that the effect of inequality on growth may have different sign, depending on the length of the time period. His hypothesis comes from the observation of the differences between the literature that corresponds to a long-run relationship and the literature that corresponds to short-run relationship. As regarded the short-run studies the relationships is found to be nonlinear, so positive effect can be easily detected. Using restricted system-GMM estimators for a short-run period of 5 years, a medium-run period of 10 years and a long-run period of 20 years, finds evidence for an inverted-U relationship for the short and the medium-run period, while this evidence does not exist in the long-run. His estimates emerge from a database of 100 countries for the period 1950-2007. More specifically, it seems that inequality in poorer countries affects negatively economic growth, while in richer countries inequality has a positive effect on growth. He discovers that high levels of inequality lead to lower levels of growth during a 37-year period (1970-2007). His main argument is that that a part of economic inequality is affecting positively economic growth for the short-run and the medium-run, but in the long-run high levels of economic inequality tend to be negative to economic growth. (Grijalva, 2011)

Additionally, evidence found by Halter, et al., (2014), using a data of 106 countries for the period of 1965-2005 support that lower inequality affects positively growth in the long run while in the short run the effect is the opposite. Furthermore, they support that the studies that use cross sectional models find negative relation between growth and inequality while studies that use time-series variation methods find positive effects of inequality on growth. Thus, the choice of methodological models will determine the result since, as they argued, cross sectional models are detecting the long-term effects on growth while time-difference models detect the short-term effects on growth. (Halter, et al., 2014)

Testing for the relation between inequality and growth, Weide & Milanovic, (2014) used a panel data of the states of the USA for the period of 1960 to 2010. As a depended variable of economic growth, they used the growth of income instead of GDP while GINI has been used as an inequality index. Among their results they found that high inequality is associated with decreases on the income growth of the bottom income classes, and hence increases on the top of the distribution. (Weide & Milanovic, 2014)

Ostry, et al., (2014) supported that higher redistribution is related to higher inequality while is also related to economic growth. Furthermore, they found evidence that increased inequality is negatively related to growth and they suggested that redistributive policies that not affect negatively growth should be followed. (Ostry, et al., 2014)

Berg, et al., (2018) came with similar results using a panel data found that lower levels of inequality are related to higher growth. As in Ostry, et al., (2014), they used inequality and redistribution as the related factors with growth Berg, et al., (2018). As regarded the relation of inequality and growth, they argued that the impact of inequality on growth comes mainly due the channels of human capital accumulation and fertility. According to their estimates, equality is related to faster and more sustainable growth. (Berg, et al., 2018)

Furthermore, Jäggi, et al., (2021), developing a Schumpeterian growth model with heterogeneous households and non-homothetic quality preferences, they investigate how inequality and openness combine to shape emerging countries' long-run development potential. As they argued, inequality interacts with growth differently in closed economies than in open economies. More specifically, If the economy is close to the rate of technological progress, international competition may increase the positive demand impact of inequality on growth reported in closed-economy models. On the contrary, in economies with a larger gap to technological progress, richer households will reach their demand for higher technological products by importing leading to a weaker effect of inequality on growth in relation to closed economies. (Jäggi, et al., 2021)

Furthermore, inequality seems to affect growth due to savings. Several studies have related inequality with savings; however, the impact of inequality on savings seems to be ambiguous as they emerge in different evidence. (Edwards, 1996; Schmidt-Hebbel & Servén, 2000; Leigh & Posso, 2009; Gu, et al., 2014).

Additionally, when the accessibility of credit is considered, the evidence appears to be more complicated. For instance, Gu, et al., (2014) found evidence that the relation of savings and income inequality is negative in economies with deficit where consumption can be financed by credit. As regarded the surplus economies with underdeveloped financial systems and less credit, they find a positive relation. (Gu, et al., 2014)

Table 1 summarizes the most notable studies on the relationship between inequality and growth.

Author	relation	Inequality index	Dataset	Period	Sample	Kuznets Hypothesis
Alesina & Rodrik, 1994	negative	GINI	cross-country	1960-1985	54 countries	
Persson & Tabellini, 1994	negative	Q3 and Q5	cross-country	1960-1985	56 countries	
Panizza, 1995	negative	Q3, Q3+Q5,Q1/Q5, GINI	panel data	1920-1980	USA states	
Perroti, 1996	negative	Q3+Q4	cross-country	1960-1985	42 countries	yes
Partridge, 1997	positive	share of median income, GINI	panel data	1960-1990	48 USA states	
Deininger & Squire, 1998	negative	GINI	cross-country	1960-1992	66 countries	no
Li, et al., 1998	positive	GINI			2,480 observations	
Barro, 2000	positive on poor, negative on rich	GINI	panel data	1965-1995	100 countries	yes
Forbes, 2000	positive	GINI	panel data	1965-1995	45 countries	
Dollar & Kraay, 2002	no relation	GINI, Q5	panel data	1950-1999	92 countries	no
Banerjee & Duflo, 2003	no relation					
Voitchovsky, 2005	positive on the top of income distribution, negative on bottom income distribution	GINI, ratio of top to bottom incomes	panel data	1975-2000	25 counries	yes
Iradian, 2005	positive	GINI	panel data	1965-2003	82 countries	yes
Chambers, 2005	itive in the short run, negative in the long	GINI	panel data	1968-1987	29 countries	yes
Lopez, 2006	positive	GINI	panel data	1970-200	92 countries	
Andrews, et al., 2010	positive relation after 1960	GINI	panel data	1905-2000	12 countries	
Grijalva, 2011	positive on rich, negative on poor	GINI	panel data	1950-2007	50 countries	yes (for short and medium run)
Halter, et al., 2014	itive in the long run, negative in the short	GINI	panel data	1965-2005	106 countries	
Ostry, et al., 2014	negative	GINI	panel data			
Weide & Milanovic, 2014	f income distribution, negative on botton	GINI	panel data	1960 - 2010	USA states	
Berg, et al., 2018	negative	GINI	panel data			

Table 1 review table

7 Evidence

This chapter focuses on providing empirical evidence for the determinants of inequality and their relationship with economic growth, building upon the theoretical framework discussed in Chapter 5. The specific context for this analysis is the Eurozone, which is considered a suitable environment for testing the connection between inequality and growth in an integrated setting. The study employs panel data analysis, using data from Eurozone countries spanning the period from 1995 to 2020⁴⁴. The objective of this

⁴⁴ Malta has been excluded

empirical investigation is to gather insights that can inform the development of economic policies aimed at mitigating the negative impact of inequality.

7.1. Methodology

For conducting the econometric estimations, a panel data methodology has been adopted as the most appropriate approach. Panel data analysis is particularly suitable when dealing with data heterogeneity and the need to control for time-invariant variables. The general model for panel data analysis is represented by equation (7.2.1), where Y_{it} stands for the dependent variable, and X'_{it} represents the set of explanatory variables. In this context, the subscript "i" corresponds to individual countries, and the subscript "t" pertains to time periods. The term b_i represents the unknown intercept for each country, and u_{it} signifies the error term.

$$Y_{it} = a_{1it} + a_2 X'_{it} + b_i + u_{it}$$
(7.2.1)

Panel data analysis is advocated by various researchers due to its ability to provide more efficient evidence compared to cross-sectional analysis. It offers increased variability, reduced collinearity, and more degrees of freedom, rendering it a favored approach for investigating relationships such as inequality and growth (Deaton, 1995; Baltagi, 2005; Schmidheiny, 2019). Furthermore, the use of panel datasets is advantageous in minimizing measurement errors and facilitating cross-country and cross-time comparisons, a feature particularly beneficial in studies exploring the link between inequality and growth (Iradian, 2005).

Both fixed and random effects methods for panel data have been applied to address potential heterogeneity arising from unobservable social and institutional variables. Additionally, the pooled ordinary least squares (OLS) method has been employed to augment the body of evidence. To account for endogeneity and potential dynamic effects, the Generalized Method of Moments (GMM) method, proposed by Arellano & Bond in 1991, has been employed. As it has been argued, GMM is advantageous in that it capitalizes on both cross-sectional and time dimensions, increases the number of observations, controls for country fixed effects, and addresses endogeneity of regressors (Steger, 2010).

The significance of the results has been corrected for heteroskedasticity and autocorrelation using a robust variance-covariance estimator (VCE) model. Furthermore, the appropriateness of the Fixed Random and Pooled OLS methods has been tested using the Hausman and Breusch-Pagan tests, which are detailed in the Appendix. Additionally, the presence of multicollinearity issues has been examined, and a collinearity matrix of coefficients is included in the Appendix.

The econometric analysis encompasses a range of panel data regressions utilizing various methods, including Pooled OLS, Fixed Effects, Random Effects, and the Arellano and Bond GMM approach.

7.2 Results

7.2.1 Factor inequality

To estimate the impact of the determinants of factor inequality, panel data econometric models (7.3.1.1) and (7.3.1.2) have been employed based on equations (5.1.12) and (5.1.16), respectively.

$$\Delta Inequality_{F_{it}} = a_{1it} + a_2 \Delta l_{it} + a_3 \Delta \lambda_{it} + b_i + u_{it}$$
(7.3.1.1)

$$\Delta Inequality_{F_{it}} = a_{1_{it}} + a_2 \Delta l_{it} + a_3 \Delta w_{it} + a_4 \Delta A_{it} + b_i + u_{it}$$
(7.3.1.2)

In these models, the dependent variable is the growth of factor inequality, denoted as $\Delta Inequality_{Fit}$. The first model includes explanatory variables like the growth of the proportion of workers (Δl_{it}) and the growth of wage share ($\Delta \lambda_{it}$). The second model incorporates the proportion of workers (Δl_{it}), the growth of average personal income from wages (Δw_{it}), and the growth of labor productivity (ΔA_{Lit}) as explanatory variables.

Here, *l* represents the proportion of employed labor population in relation to the total employed population. The average personal wage income is denoted as w, calculated as the total wages (W) divided by the total labor population (L). Additionally, labor productivity is calculated by dividing the Gross Domestic Product by the employed labor population.

The wage share (λ) signifies the total income of wage earners as a fraction of the total income of the entire population. The results of these models are presented in Table 2.

Table 2 results

				Depented variat	ole: ΔInequalityF			
		(7.3	.1.1)			(7.3	.1.2)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
ΔWS	-2.8389191***	-2.8232209***	-2.8006095***	-2.8536332***				
Δw					82472426***	84522649***	-1.0605207***	79042558***
Δproductivity					.9083483***	.86782125***	1.0588542**	.68687105***
ΔI	4.0685912***	4.1776805***	3.9363927***	4.0532853***	3.4081567***	3.4307379***	3.0187782***	3.0731965***
L. ∆InequalityF				01501685				11242281**
_cons	00119031	00143693	01042085	00122503	01668679*	01433682**	.04974844	01073604**
N	457	457	457	421	457	457	457	421
r2	.81811889		.83989876		.21354653		.37345393	
r2_a	.81731765		.82280057		.20833823		.304854	

Wage shares exhibit an expectedly negative sign, indicating a negative relationship with factor inequality, as discussed in Chapter 5.1. Consequently, factor inequality decreases when wage shares increase. Moreover, the relative employment of labor displays a positive association with factor inequality, consistent with the theoretical model in Chapter 5.1.

Further analysis must be conducted on the relationship between the growth rates of wage shares and the relative employment of labor, as prescribed by equation (5.1.13). This examination aims to understand whether factor inequality worsens or improves with changes in wage shares and relative employment. Consequently, based on the results from model (7.3.1.1) and equation (5.1.13), for factor inequality to not deteriorate, the growth rate of wage shares ($\Delta \lambda_{it}$) should increase 1.48 times faster than the growth rate of relative employment of labor (Δl_{it}), ($\frac{\Delta \lambda_{it}}{\Delta l_{it}} = 1,479756862$)⁴⁵.

Furthermore, decomposing wage share growth into nominal wage and labor productivity growth rates, as defined by relation (5.1.3), reveals that nominal wage growth must exceed productivity growth for wage shares to increase. Thus, the relationship between the growth rates of nominal wages and labor productivity emerges as a critical factor in determining inequality. As a result, the results from model (7.3.1.2) and equation (5.1.17) indicate that the growth rate of average wages Δw_{it} should

 $\frac{1}{45} \Delta Inequality_{F_{it}} = 0 \rightarrow 4.1776805 \frac{dl}{l} = 2.8232209 \frac{d\lambda}{\lambda} \rightarrow \frac{d\lambda}{dl} \frac{l}{\lambda} = 1,479756862$

increase 0.97 times for every increment in labor productivity growth (ΔA_{Lit} ,), for wage shares to exert a negative impact on factor inequality $\left(\frac{\Delta w_{it}}{\Delta A_{it}} = 0.973963809\right)^{46}$.

In summary, the growth of factor inequality decreases when wage shares grow 1.48 times faster than the growth of relative employment of labor. Additionally, this positive effect of wage shares remains valid only when the growth rate of nominal wages is 0.97 times greater than the growth rate of labor productivity.

Furthermore, as elucidated in earlier chapters, average wages, labor productivity, wage shares, relative employment, and consequently factor inequality, are profoundly influenced by other factors such as technological change, trade openness, and financial integration. To delve into the impact of these factors, econometric models (7.3.1.3) through (7.3.1.7) are employed. Specifically, models (7.3.1.3), (7.3.1.4), (7.3.1.5), (7.3.1.6) and (7.3.1.7) focus on the growth rates of average wages, labor productivity, wage shares, and relative employment. These results are then compared with those obtained from model (7.3.1.7), which investigates the growth rate of factor inequality.

Wage growth_{it}

 $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$ $+ a_4 technological change_{it} + a_5 FDI oppenness_{it} + a_6 financial oppenness_{it}$ $+ a_7 trade openness_{it} + a_8 convergence_{it} + a_9 financial development_{it}$ $+ a_{10} house debth_{it} + a_{11} current account balance_{it}$ $+ a_{12} eurozone participation_{it} + a_{13} 2008 financial crisis_{it} + b_i$ $+ u_{it}$ (7.3.1.3)

Productivity growth_{it}

 $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$ $+ a_4 technological change_{it} + a_5 FDI oppenness_{it} + a_6 financial oppenness_{it}$ $+ a_7 trade openness_{it} + a_8 convergence_{it} + a_9 financial development_{it}$ $+ a_{10} house debth_{it} + a_{11} current account balance_{it}$ $+ a_{12} eurozone participation_{it} + a_{13} 2008 financial crisis_{it} + b_i$ $+ u_{it}$ (7.3.1.4)

Wage Share growth_{it}

 $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$ + $a_4 technological change_{it} + a_5 FDI oppenness_{it} + a_6 financial oppenness_{it}$ + $a_7 trade openness_{it} + a_8 convergence_{it} + a_9 financial development_{it}$ + $a_{10} house debth_{it} + a_{11} current account balance_{it}$ + $a_{12} eurozone participation_{it} + a_{13} 2008 financial crisis_{it} + b_i$

(7.3.1.5)

(7.3.1.6)

(7.3.1.7)

$$+ u_{it}$$

Relative Labor Employment growth_{it}

 $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$

 $+ a_4 technological change_{it} + a_5 FDI oppenness_{it} + a_6 financial oppenness_{it}$

 $+ a_7 trade openness_{it} + a_8 convergence_{it} + a_9 financial development_{it}$

 $+ a_{10}$ house $debth_{it} + a_{11}$ current account balance_{it}

 $+ a_{12}eurozone$ participation_{*it*} $+ a_{13}2008$ financial crisis_{*it*} $+ b_i$

$$+ u_{it}$$

Factor Inequality growth_{it}

 $= a_{1_{it}} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$

 $+ a_4 technological change_{it} + a_5 FDI oppenness_{it} + a_6 financial oppenness_{it}$

 $+ a_7 trade openness_{it} + a_8 convergence_{it} + a_9 financial development_{it}$

 $+ a_{10}$ house debth_{it} $+ a_{11}$ current account balance_{it}

$$+ a_{12}eurozone$$
 participation_{it} $+ a_{13}2008$ financial crisis_{it} $+ b_i$

$$+ u_{it}$$

Among the explanatory variables, the trade union density, derived from ILO, serves as an index of bargaining power. Relative Labor Employment represents the ratio of workers with up to secondary education or post-secondary, non-tertiary education to the population of workers with tertiary education, based on ILO data.

The Capital Innovation Ratio, indicating the ratio of capital services related to ICT to capital referred to as Non-ICT, is utilized as a proxy for technological change. This data is sourced from the EU KLEMS database. While variables such as time trends and capital-labor ratios have been employed as proxies for technological change, using ICT capital is considered a more reliable approach. This is attributed to its representation of implemented technical change irrespective of deployment motivations (Stockhammer, 2009).

As a measure of financial openness, the Chinn-Ito index, discussed in Chapter 7.1.3, is employed. The sum of exports and imports presented in logarithm values is adopted to quantify the degree of trade openness. Data for calculating this variable is sourced from the AMECO database⁴⁷. Trade openness, commonly computed by the sum of imports and exports relative to GDP, is frequently used as an indicator of globalization (Harrison, 2002; Rodrik, 1997)

Regarding Foreign Direct Investment (FDI) Openness, the sum of FDI inflows and outflows as a percentage of GDP is employed. Furthermore, the GINI index of average personal income among the eurozone population is utilized as a proxy for convergence.

As a measure of financial development, we utilize the Financial Development Index, which is derived from the International Monetary Fund (IMF). This index ranges from zero to one, with values closer to zero indicating lower levels of financial development (International Monetary Fund, 2006).

Additionally, we employ household private debt in logarithm levels as the variable representing Household Debt, obtained from Eurostat. Furthermore, the current account balance as a percentage of GDP serves as an explanatory variable and is sourced from the United Nations database (UNCTAD).

⁴⁷ Exports, at current prices (UXGS), Imports, at current prices (UMGS)

		Depented v	Depented variable: Δw		Depe	nted variabl	Depented variable: Δproductivity	vity		Depented variable: ΔWS	riable: ΔWS			Depented v	Depented variable: Δl		Dep	Depented variable: InequalityF	ile: Inequalit	۲.
		(7.3	(7.3.1.3)			(7.3.1.4)	1.4)			(7.3.1.5)	1.5)			(7.3.1.6)	1.6)			(7.3.1.7)	(2)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
relative labor employment	03023922	00755471	.02350617	0267871	02361914	00349656	.00395311	00701955	003246	00376445	.00783135	-00490412	00357631	0023082	00521092	00343376	.00651168	.01229255	03784321	.00540998
bargaining power	.17119345	02242761	.35339412*	.28584672*	.15356596	03242772	.17663525	17919599	05294938	00222716	.00968002	01140478	00961555	.00240279	01770902	0051638	.11807578	.0287777	13226786	.04604131
technological change	.35821583	.20245558	.07596906	.5662835**	.43355733*	.19414299	.32764301* .	.71567581***	0405528	.04456705	08026374	.0509096	.03110225	.0009613	.04613261	04989734	.36487045	10450149	.58049563	.13378973
FDI oppenness	.00539111	.00026888	.01016342*	.00818195*	.01614332**	.0089794	.01608806*	.017541**	00164495	.00043321	00015223	-,00008842	00122***	00077154	0014067**	00184097***	.00048142	00120107	00581026	00377932
financial oppenness	.0035409	.00456255	.00229362	.00953696	.0032794	.00220165	.00235108	.0061932	00399355	00032033	-00323592	00308503	.00407665**	.00292508**	.00476026***	.00449911***	03694834*	.00490904	.03701163*	.0459657*
trade openness	.04163294	.02311893*	.02252016	.06484378	.08902012***	.04267147***	.04266221	.11562317***	02623058*	.00002167	-01382393	02299153	.00192132	.00213584	00015664	00401187	.10379117*	00205707	.05 13 77 95	.10606024*
convergence	24067024*	19292917*	29.313037	-:12861217	10507176	02957511	10083202	143707	0028851	0004387	87885545	00881485	0164316	00978822	-12216237	0132769	.07145417	.11579489	-30750224	05155081
financial development	04316618	02330073	12327373*	.00632188	03239156	.05011372*	-10809667	08505653	.02727606	00140225	.01835177	.03436719	.02086286	.00839105*	.02608126	.03253886**	00831128	.03075689	.0228753	.02786207
house debth	00128491***	00049422*	00123927***	00103546***.	-00095243***	0006949***	00110805***-	00085592***	00043877**	00018916*	00042833** -	.00043684***	00013835**	00006484	00010231	00012326*	.00074035**	.00043798	.00076769**	.00052998*
current account balance	00566978**	00268925	00550016**.	00539308***	00375645**	00243128*	003521**	00447861*** -	0015097***	00111502***	-,0016944*** -	.00152307***	00025993	00034635*	0001329	00030954*	.00355359***	.00123954	.00459007***	.00427958***
eurozone participation	.01588307	00980332	.01925214	.0173923	0270769	02991538	02415619	03241064*	.020013***	.01061416	.02026163***	.01881339***	00007726	.00052697	00139826	.00018848	07380244***	02970271*	07832446***-	.08547401***
2008 financial crisis	01079341	02173773***	25643279	- 6825690	-02267187***-	.02371835***	- 00118282 -	.02365584***	.00554259	.00090229	-07232414	.0064429	00044407	0003.0976	.00816079	00033516	01669647	.00120325	.23784411	00828446
L1. Depended variable				.19089813***				19106462**				.05303931				.16617655				08498277
cons	.04424056	.07814301**	-35368625	10823273	01107547	.02707972	14946436	04800482	.04899402	.00631577	-10099576	02267238	00813369	00578486	.13325726	02266459	23035701	05415309	35039997	21443922
z	289	289	289	263	289	289	289	263	289	289	289	263	289	289	289	263	289	289	289	263
r2	.48042614		.69103078		.50116893		.70962214		.13679002		.29295833		.18345402		.43923343		.11982981		.28981107	
r2_a	.45783597		.63381426		.47948062		.65584846		.09925915		.16202468		.14795203		.33538776		.08156155		.1582946	

Table 3 results

To account for the effects of the Economic and Monetary Union (EMU) and the 2008 financial crisis, we introduce two dummy variables. The first dummy, 'eurodumm,' signifies the period during which a country is a member of the EMU, taking a value of 1 for eurozone countries and 0 otherwise. The second dummy, 'crisisdumm,' covers the period from 2008 onwards and also takes a value of 1.

The results of the models are presented in Table 3. Relative labor employment, Λ_L , has been theorized to be inversely related to labor productivity, A_L , as discussed in Section 5.2. While relative employment has the expected sign in model (7.3.1.4), it is not statistically significant.

Bargaining power has the expected positive impact on nominal wage growth; however, this impact appears to be statistically significant only when using Pooled OLS and the GMM method. Consequently, the effect on factor inequality is not clear, as presented in Table 3.

The impact of technological change on labor productivity growth is statistically significant and has the expected positive sign. While the average wage seems to be positively affected by technological change, this impact is not statistically significant. Furthermore, the impact on wage share growth is negative, while the impact on relative labor employment is positive; both impacts are not statistically significant. Additionally, technological change has the expected positive sign regarding its influence on factor inequality; however, this impact is not statistically significant. These results are presented in Table 3.

The impact of FDI openness is found to be statistically significant in models (7.3.1.4) and (7.3.1.6), while in models (7.3.1.3), (7.3.1.5), and (7.3.1.6), the impact is not statistically significant. More specifically, FDI openness has a significant positive impact on labor productivity growth and a significant negative impact on the relative employment of labor, 1. The sign regarding average wage and wage share is positive and negative, respectively; however, these impacts are not statistically significant. Additionally, the impact on relative employment of labor is negative and statistically significant. Hence, although the effect on factor inequality in model (7.3.1.7) is not statistically significant, it has the expected positive effect, mainly due to the effects on labor productivity and relative employment of labor.

The financial openness index seems to have a significant positive impact on the relative employment of labor. In addition, the signs on average wage and wage shares are positive and negative, respectively, but not statistically significant. Furthermore, the impact of financial openness on factor inequality is the expected positive and is statistically significant. The positive sign of the effect of financial openness on factor inequality is mainly through the impact on relative employment of labor, as observed in Table 3.

Labor productivity and average wage growth seem to be positively affected by trade openness. In addition, trade openness is negatively related to wage share and positively related to relative employment of labor. However, the impact on relative employment is not statistically significant. The impact of trade openness on factor inequality appears to be strongly positive. According to the evidence, this result is mainly due to the effect of wage shares.

European convergence has a statistically significant negative relationship with average wages in models (7.3.1.3). Additionally, the relationships with wage share and relative productivity of labor growth in models (7.3.1.4), (7.3.1.5), and (7.3.1.6) are negative but not statistically significant. The impact on factor inequality is positive but not statistically significant. The impact of financial development seems to be insignificant in all models. However, the sign of the variable is negative for nominal wage, while it is positive for labor productivity, wage shares, relative employment of labor, and factor inequality.

The factor of private debt is statistically significant and negative in models (7.3.1.3), (7.3.1.4), (7.3.1.5), and (7.3.1.6), implying a negative impact on average wage, wage shares, labor productivity, and relative employment of labor. Since the negative impact on wage share growth is greater than the negative impact on relative employment of labor, it appears that the final impact on factor inequality is positive; additionally, the impact appears to be statistically significant. Current account balances have a significant negative effect on nominal wage, labor productivity, and wage share growth. In addition, the effect on relative employment of labor is negative but insignificant. The effect on factor inequality is significant and positive, mainly due to the negative impact of current account balances on nominal wages and wage shares. Furthermore, the positive relationship of both private debt and current account balances with factor

inequality is accompanied by a negative relationship with labor productivity. Hence, both factors indicate weak economic performance through their effects on both factor inequality and labor productivity.

The wage shares of Eurozone members are positively connected to their participation in the Eurozone, as observed in Table 3. Additionally, since the impact on average wages, labor productivity, and relative employment of labor is statistically insignificant, the impact on factor inequality will mainly occur through the influence on wage shares. Hence, as expected, the impact of participation in the Eurozone on factor inequality is negative and statistically significant, as shown in Table 3.

The dummy variable for the 2008 crisis has a negative and statistically significant impact in model (7.3.1.4), while its relationship seems to be statistically insignificant in the other models. Therefore, although the 2008 crisis negatively affected labor productivity, its impact on factor inequality is not statistically significant.

In conclusion, factor inequality is primarily positively affected by financial openness, trade openness, private debt, and current account balances, while participation in the Eurozone appears to have a negative impact. Furthermore, it is evident that both financial and trade openness, while positively associated with increases in labor productivity, also lead to increased factor inequality. Therefore, policymakers should consider the levels of financial and trade openness as crucial factors for achieving sustained economic growth. On the other hand, high levels of private debt and current account balances seem to have negative effects on both wages and labor productivity, exacerbating factor inequality. Hence, policymakers should aim to avoid high levels of both private debt and current account balances to achieve sustainable economic growth. Finally, participating in the Eurozone appears to be a prudent decision as it relates to higher wage shares and, consequently, lower factor inequality.

7.2.2 Labor inequality

In this chapter, we present the empirical evidence regarding the factors influencing labor inequality. To investigate these determinants, we employ a panel data econometric model (7.3.2.1) based on the relationship described in equation (5.2.19) and the theoretical framework outlined in Chapter 5.2.

$$\Delta Inequality_{L_{it}}$$

$$= a_{1_{it}} + a_2 \Delta q_{L_{it}} + a_3 \Delta \Lambda_L L dummy 1_{it} + a_4 \Delta \Lambda_L L dummy 2_{it} + b_i$$

$$+ u_{it} \qquad (7.3.2.1)$$

The dependent variable in this model is the growth of labor inequality, which has been calculated using data from the World Inequality Database (WID) and the Ameco database. The growth of wage premium (q), representing the average income for highly paid work divided by the average income for basic labor, is used to measure labor inequality, as explained in Chapter 7.1.2. Additionally, relative labor employment, which measures the population of basic educated workers in relation to the population of highly educated workers, is calculated using data from the ILO and Ameco database, as discussed in Chapter 7.1.1.

To account for the population distribution changes in line with the Kuznets hypothesis, two dummy variables, Ldummy1 and Ldummy2, have been included. Ldummy2 represents the first period of the Kuznets hypothesis, where the ratio of basic to skilled labor population is greater than the ratio of total skilled labor income to total basic labor income ($m_L < \Lambda_L$).

In this period, an increase in the skilled population leads to an increase in labor inequality. Therefore, if economic growth relies on a more skilled and productive labor force, it will be accompanied by a rise in labor inequality. Consequently, the first dummy variable, Ldummy1, takes the value 1 if relative labor employment Λ_L is smaller than their relative total incomes m_L , while the second dummy variable, Ldummy2, takes the value zero. Conversely, if relative labor employment Λ_L is larger than their relative total incomes m_L , the first dummy1, takes the value zero, while the second dummy, Ldummy2, takes the value 1, as presented in equation (7.3.2.2). The estimates of model (7.3.2.1) are presented in Table 4.

$$Ldummy1 = 1$$
 if $(\Lambda_L - m_L) < 0$ else $Ldummy1 = 0$

$$Ldummy2 = 1$$
 if $(\Lambda_L - m_L) > 0$ else $Ldummy2 = 0$

	Dep	ented variat	ole: ΔInequa	lityL	
		(7.3	.2.1)		
Variable	fixed	random	pooled	gmmest	
ΔqL	1.0360858**	.98224568**	.9597293**	1.0918711***	
ΔΛL*Ldummy1	1.8282078**	1.690398**	1.649792*	2.1048377***	
ΔΛL*Ldummy2	39766549**	38928674**	45568441**	31572818*	
L. ΔlnequalityL				15324879	
_cons	.00873933	.00907235	.05837631*	.01666114*	
N	402	402	402	360	
r2	.47097374		.52866841		
r2_a	.4669861		.46908998		

As observed, firstly, the impact of the wage premium on labor inequality is positive, as expected. Secondly, both variables of relative labor employment, restricted using the Ldummy1 and Ldummy2 dummies, have the expected signs and are statistically significant. This indicates that the Kuznets hypothesis for labor inequality, as described in Chapter 5.2, has been confirmed.

Therefore, according to equation (5.2.23), if the rate of basic to skilled labor population is larger than the rate of total skilled labor income to total basic labor income $(\Lambda_L - m_L) > 0$, for every negative growth of relative labor employment $\Delta \Lambda_{Lit}$, due to more skilled labor, wage premium growth Δq_{Lit} should decrease by at least 0.38 times so that labor inequality will not increase $\left(\frac{\Delta q_{Lit}}{\Delta \Lambda_L L dummy 2_{it}} = 0,384411045\right)^{48}$. As a result, if the economy is in the first phase of Kuznets' hypothesis, and policymakers are focused on reducing labor inequality, they should take the necessary measures to ensure that wage premium decreases more than 0.38 times concerning relative labor employment growth.

Controlling the wage premium can be achieved by either reducing the average income of skilled labor or increasing the average income of basic labor. However, a reduction in the average income of skilled labor might discourage individuals from investing in acquiring higher skills through education, potentially leading to a decrease in the supply of skilled labor. This would imply a slower transition to the second phase of the Kuznets hypothesis.

On the contrary, a reduction in the average income of skilled labor could increase the demand for skilled labor due to changes in relative labor costs, as described in equation (5.2.6). In such a scenario, the transition to the second phase of the Kuznets hypothesis would occur more rapidly, with a decrease in the relative labor force ($\dot{\Lambda} < 0$).

It's important to note that reducing the average income of skilled labor raises concerns about the potential for lower wage incomes for both classes in the future, which could result in higher future factor inequality.

On the contrary, if the approach involves increasing the average wage of skilled labor, labor inequality will temporarily increase due to the impact of the wage premium. However, this increase in incomes for skilled workers will enhance incentives to invest in education, leading to higher rates of relative labor employment growth ($\Lambda \leq 0$) and thus a faster transition to the second phase of the Kuznets hypothesis.

Conversely, higher wage premium levels may influence relative labor employment by reducing the demand for skilled labor due to changes in relative costs, as described in equation (5.2.5). This suggests that the economy is progressing toward the second phase of the Kuznets hypothesis, but on a slower trajectory. Additionally, an increasing average wage implies a decrease in future factor inequality due to a general increase in

 ${}^{48}\left(1.0357795\frac{\mathrm{dq}}{\mathrm{q}}=0.39816508\frac{\mathrm{d\Lambda}}{\mathrm{\Lambda}}\mathrm{dum2}\right)$

wages. Furthermore, in both approaches, labor productivity will continue to rise due to a larger pool of skilled and productive labor, leading to higher economic growth rates.

If the economy is in the second phase of the Kuznets hypothesis, this means that the rate of basic to skilled labor population is smaller than the rate of total skilled labor income to total basic labor income ($\Lambda_L - m_L < 0$), for every negative growth of relative labor employment ($\Delta \Lambda_{Lit}$), due to more skilled labor, wage premium growth (Δq_{Lit}) can increase up to 1.76 times without increasing labor inequality $\left(\frac{\Delta q_{Lit}}{\Delta \Lambda_L L dummy 1_{it}} = -1,764326963\right)^{49}$. Therefore, if the economy is in the second phase of the Kuznets hypothesis, policymakers can choose to increase wage premium by up to 1.76 times relative to relative labor employment decreases.

So, on one hand, if policymakers choose to implement these increases, labor inequality will not decrease, but it will provide more incentives to workers to acquire more skills, leading to faster economic growth. Additionally, this will decrease factor inequality due to an average wage increase resulting from employing more labor with higher wages. On the other hand, if policymakers choose to maintain wage premium, labor inequality will decrease, but fewer incentives will be provided for skilled labor, affecting the demand for skilled labor. Additionally, factor inequality may increase, while labor productivity may increase more than average wages.

As a result, policymakers should always focus on declining relative labor employment, aiming towards the second phase of the Kuznets curve, where labor inequality decreases as economic growth grows. Furthermore, wage premium may be used to manage the level of labor inequality as it approaches the second phase of Kuznets' theory.

Consequently, the following econometric models (7.3.2.3) and (7.3.2.4) have been used to find evidence about the factors that affect relative employment and wage premium. The independent variables used in these models include the lag of wage premium, gross domestic expenditure on R&D, technological changes, financial openness, trade openness, FDI openness, European convergence, expenditures on education, participation in the eurozone, and the 2009 financial crisis. The results are

 $^{49}\left(1.0357795\frac{\mathrm{dq}}{\mathrm{q}} = -1.8274537\frac{\mathrm{dA}}{\mathrm{A}}\mathrm{dum2}\right)$

compared with the results of model (7.3.2.5), where the dependent variable is labor inequality. The results of estimations of models (7.3.2.3), (7.3.2.4), and (7.3.2.5) are presented in Table 5.

$$\Delta \Lambda_{Lit} = a_{1it} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it}$$

$$+ a_4 capital \ innovation \ ratio_{it} + a_5 financial \ oppenness_{it}$$

$$+ a_6 trade \ openness_{it} + a_7 fdi \ oppenness_{it} + a_8 convergence_{it}$$

$$+ a_9 education \ expenditure_{it} + a_{10} euro \ dummy_{it}$$

$$+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it}$$
(7.3.2.3)

$$\begin{split} \Delta q_{L_{it}} &= a_{1it} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it} \\ &+ a_4 capital \ innovation \ ratio_{it} + a_5 financial \ oppenness_{it} \\ &+ a_6 trade \ openness_{it} + a_7 f \ oppenness_{it} + a_8 convergence_{it} \\ &+ a_9 education \ expenditure_{it} + a_{10} euro \ dummy_{it} \\ &+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it} \end{split}$$
(7.3.2.4)

 $\Delta Inequality_{L_{it}}$

$$= a_{1it} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it}$$

$$+ a_4 capital \ innovation \ ratio_{it} + a_5 financial \ oppenness_{it}$$

$$+ a_6 trade \ openness_{it} + a_7 f \ di \ oppenness_{it} + a_8 convergence_{it}$$

$$+ a_9 education \ expenditure_{it} + a_{10} euro \ dummy_{it}$$

$$+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it}$$
(7.3.2.5)

Firstly, as observed in Table 5, the lag of wage premium appears to be significant and positively related to relative labor employment. This indicates that a higher past wage premium results in less skilled labor, in line with equation (5.2.6) and the assumptions made in Chapter 5.2. Higher wage premiums reduce the relative demand for skilled labor. Furthermore, it is negatively related to wage premium growth. Both of these effects lead to a significant negative relationship with labor inequality.

Moreover, as seen in Table 5, gross domestic expenditure on R&D is significant and negatively related to relative labor employment, indicating a higher population of skilled labor. Hence, investing in new technologies seems to be related to having more skilled labor, as expected. The impact on wage premium and labor inequality appears to be positive but not statistically significant.

Table 5 results

	Depente	d variable: R growth	lelative emp ΔrelatL	loyment	Depente	d variable: R grow	-	loyment	Dep	ented varial	ole: Δinequa	lityL
		(7.3.	.2.3)			(7.3	.2.4)			(7.3	.2.5)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
wage premium lag	.11879201*	.00052348	.09107268*	.08774065	25790434***	00644427	24477***	35533234***	60149639**	06487312**	56851052**	68197869***
RnD	06054271*	.00062947	07782532*	01301101	.01637226	00219117	.02022057	.0179685	.07432758	00678444	.08748752	.05007922
technological change	.13608341	0032481	.08580011	.14458321	.36050954**	.05637253	.29225571**	.22808222	.72321621*	.23276016	.61978446*	1.4979191*
financial oppenness	.00528096	.00891722	.00140836	.01756714	.04113869	.01273743*	.03940963	.05518051	.061507*	.01991852	.05760094*	.07236799
trade openness	.1660144*	.01878482	.12927042	.12803815*	.08224537	.02203092**	.0339595	.09601026	.07566467	.01257978	00396444	.04287738
FDI oppenness	.00343046	.00247162	.00204216	.00621664	03707311***	03696971***	03561976**	04626999***	.00857765	01422769	.01106899	00920781
convergence	.03505421	.17166672	-69379105	.10252836	07651479	11275597	.08632446	10201112	.10417587	04868713	-20415092	00564224
expenditures on education	85148245	30649743	11561723	94480574	-3.2141589*	53726103	-13845667	-4.9539946**	-5.8816438*	-15926023	-31489029	-10.617865*
eurozone participation	00570193	0091896	.02930729	02663529	01089526	0023353	01290383	00861149	01496177	.00434698	01620793	.00557039
2008 financial crisis			01927783**	01593293	00614991	.01080942	01713946	0495597	01174714	05639723	03483818	
L1. Depended variable				.05420576				0806407				20986787
_cons	.21925297	07397884**	13003362	1004417	.02719765	.02528313	08438431	.13173934	14089063	.13978113***	05116189	.28795686
N	361	361	361	329	359	359	359	323	359	359	359	323
r2	.08607221		.21262244		.2854321		.3737859		.16238401		.25134212	
r2_a	.05995999		.09439003		.26489854		.27914904		.13831459		.13820089	

Regarding technological changes, the variable ICT capital services to non-ICT capital services, derived from the EU KLEMS database as presented in section 7.1.3, is used. Technological changes are found to be statistically significant and positively related to wage premium, leading to a significant positive effect on labor inequality. Additionally, while the variables of technological changes and relative labor employment have positive relationships with wage premium, they are not statistically significant.

The impact of financial openness, represented by the Chinn-Ito index, on relative labor employment and wage premium is positive but not statistically significant. However, labor inequality appears to be positively affected by financial openness, and this relationship is statistically significant. Trade openness shows a positive relationship in all three models but is statistically insignificant in model (7.3.2.3). Hence, trade openness seems to decrease the proportion of skilled labor relative to basic labor. Furthermore, the factor of FDI openness is statistically significant in model (7.3.2.4), indicating a negative impact on wage premium. The effect is positive on relative labor employment and labor inequality, although it is not statistically significant.

Moreover, government expenditure on education appears to have a negative and statistically significant impact on wage premium and labor inequality, as observed in models (7.3.2.4) and (7.3.2.5) in Table 5. Hence, higher government expenditure on education is associated with a lower wage premium and a decrease in labor inequality. Additionally, although the effect is not statistically significant, government expenditure seems to be negatively related to relative labor employment.

Finally, European convergence, participation in the eurozone, and the impact of the 2008 crisis appear to be statistically insignificant in all three models.

Therefore, labor inequality is negatively related to past wage premium and expenditures on education, while it appears to be positively related to technological changes and financial openness. Consequently, while technological changes and financial openness cannot be avoided, policymakers should focus on increasing expenditures on education to control labor inequality.

Furthermore, to achieve a rapid reduction in relative labor employment Λ_L , policymakers should concentrate on factors such as wage premium, investment in new technologies, and trade openness to transition to the second phase of the Kuznets hypothesis.

More specifically, as trade openness may not be easily regulated and is positively associated with relative labor employment, pursuing policies focused on education and research and development, while also aiming for a lower wage premium, may be the most suitable strategy for sustaining economic growth. Moreover, wage premium can be managed through factors like technological advancements, FDI openness, and investments in education, as indicated by the findings in Table 5.

7.2.3 Profit inequality

The empirical evidence of the factors driving profit inequality growth is discussed in this chapter. Firstly, following Equation (5.3.27) and the theoretical approach of Section 5.3, we use the following panel data econometric model (7.3.3.1) to estimate the impact of the determinants of inequality among investors.

$$\Delta Inequality_{K_{it}} = a_{1it} + a_2 \Delta q_{K_{it}} + a_3 \Delta \Lambda_{K_{it}} + b_i + u_{it}$$
(7.3.3.1)

The dependent variable in this model is the growth of profit inequality, as calculated previously. Among the explanatory variables, $\Delta q_{K_{it}}$ represents the growth of the income premium of investors. The income premium, denoted as q_K , is the average income of the high-class capital owners divided by the average income of mediumlevel investors. The data used for these calculations is derived from the World Inequality Database (WID) and the Ameco database, as discussed in Section 7.1.2. Additionally, $\Delta A_{K_{it}}$ signifies the growth of relative employment of investors, A_K , which refers to the population of middle-class investors relative to the population of high-class investors. Data for these variables has been sourced from the International Labour Organization (ILO) and the Ameco database, as outlined in Section 7.1.1. The results of model (7.3.3.1) are presented in Table 6.

Firstly, it should be noted that, for all countries and years in the data, the ratio of the population of middle investors to high-class investors, denoted as Λ_K , has consistently been larger than the ratio of the total income of high-class investors to middle-class investors, represented as m_K , ($\Lambda_K - m_K > 0$).

	Tabl	le 6	resu	lts
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	Dep	ented variat	ole: ΔInequal	ityK
		(7.3	3.1)	
Variable	fixed	random	gmmest	pooled
ΔΛΚ	73852989***	71134871***	70643144***	3730266**
ΔqΚ	.87892723***	.88276458***	.88252905***	.83368362***
L1. ΔInequalityK				02230484
_cons	.00378484	.00397681	.05250114	.00654638
N	456	456	456	420
r2	.83523291		.84681544	
r2_a	.83450546		.83041612	

Hence, according to the theoretical approach presented in Chapter 5.3, there is a low level of monopoly, which indicates a negative relationship between the rate of the population of middle investors and high-class investors, denoted as Λ_K , and profit inequality growth rates, in accordance with relation (5.3.32). As observed, the sign of this impact is negative, as expected. Therefore, following relation (5.3.33), for every growth in Λ_K , the profit premium q_K should increase by a factor of 0.84 in the same direction $\left(\frac{\Delta q_{Kit}}{\Delta \Lambda_{Kit}} = 0.84026284\right)^{50}$. Consequently, if the economy tends toward higher monopoly due to a decreasing (Λ_K) , the profit income premium should decrease by 0.84 times in relation to changes in Λ_K .

Furthermore, evidence is presented regarding the factors that affect monopoly and profit premium changes. Consequently, the following econometric panel models (7.3.12) and (7.3.13) have been used to find evidence about the determinants of profit

⁵⁰ 0,87892723 $\frac{dq}{q}_{it} = 0,73852989 \frac{d\Lambda_K}{\Lambda_K}_{it}$

inequality. Moreover, the estimates from these models are compared with the results from model (7.3.14), where the dependent variable is profit inequality. The econometric model that is used includes variables for financial integration, such as financial, trade, and FDI openness, in accordance with the literature and the theoretical approach of Chapter 5. Additional independent factors, such as the lag of the monopoly index, Λ_K investing in R&D, technological changes, financial development, European convergence, participation in the eurozone, and the financial crisis of 2008, have been included. The results of models (7.3.3.2), (7.3.3.3), and (7.3.3.4) are presented in Table 7.

$$\Delta \Lambda_{K_{it}}$$

$$= a_{1it} + a_{2}L.relatK_{it} + a_{3}invest in R\&D_{it} + a_{4}capital innovation ratio_{it}$$

$$+ a_{5}financial oppenness_{it} + a_{6}trade openness_{it} + a_{7}fdi oppenness_{it}$$

$$+ a_{8}convergence_{it} + a_{9}financial development_{it} + a_{10}convergence_{it}$$

$$+ a_{11}euro dummy_{it} + a_{12}2008 crisis dummy_{it} + b_{i}$$

$$+ u_{it} \qquad (7.3.3.2)$$

 $\Delta q_{K_{it}}$

$$= a_{1it} + a_{2}L.relatK_{it} + a_{3}invest in R\&D_{it} + a_{4}capital innovation ratio_{it}$$

$$+ a_{5}financial oppenness_{it} + a_{6}trade openness_{it} + a_{7}fdi oppenness_{it}$$

$$+ a_{8}convergence_{it} + a_{9}financial development_{it} + a_{10}convergence_{it}$$

$$+ a_{11}euro dummy_{it} + a_{12}2008 crisis dummy_{it} + b_{i}$$

$$+ u_{it} \qquad (7.3.3.3)$$

 $\Delta Inequality K_{it}$

 $= a_{1it} + a_2L.relatK_{it} + a_3invest in R\&D_{it} + a_4capital innovation ratio_{it}$ + $a_5financial oppenness_{it} + a_6trade openness_{it} + a_7fdi oppenness_{it}$ + $a_8convergence_{it} + a_9financial development_{it} + a_8convergence_{it}$ + $a_{11}euro dummy_{it} + a_{12}2008 crisis dummy_{it} + b_i$ + u_{it} (7.3.3.4)

The lag of the monopoly index, Λ_K , appears to be statistically significant in all three models. The impact on model (7.3.3.2) indicates a negative relationship of past monopoly levels with changes in monopoly levels. The relationship with profit premium is positive, as observed in model (7.3.3.3).

	Depente	ed variable: R growt	-	loyment		Depented v	ariable: ΔqK		Dep	ented variat	ole: Δinequa	lityK
		(7.3.	3.2)			(7.3	.3.3)			(7.3	.3.4)	
Variable	fixed	random	gmmest	pooled	fixed	random	pooled	gmmest	fixed	random	gmmest	pooled
L. In∧K	07744025**	02343783*	0778633**	12505281***	.27180944***	01410062	.27291982***	.39660105***	.20789804**	01655754	.21437148**	.47121589***
L. qK	00212011	00204602	00160552	00683672	46372846***	13947613***	46642327***	68051296***	43264361***	14968003***	44152736***	63647083***
R n D	02712038	.00379656	03655434	01956105	.05048469	00741516	.02561751	.1533956*	.06867003*	00945191	.04887712	.20162863**
technological change	.02738084	02547183	.065661	00226242	02711341	.05730945	01822066	09588395	07959011	.07430364	11335443	26506986
financial oppenness	07111941	05337142	11732151	08063583	52141214	28831515	65138973	18479559	38209876	24378766	46746252	.09154293
trade openness	0115984**	01137443***	01519551**	02244698***	05300305**	00170714	06370456*	11917058***	06176167**	01561811*	06761266**	08075175*
FDI oppenness	.07244781**	.01557889***	.06683736*	.06468906**	.25099755*	.04901115	.2057055	.1268164	.10105629	.02877574	.05787507	03857602
convergence	00603158*	00933116**	00760093**	00643314	.01904621	02319287*	.01944956	.02130447*	.01246157	01780197*	.01433713	.02530415**
financial development	.17606528	.20627865	41210585	.11911937	.1657873	.56677226	83570306	.08806383	01248138	.34290462	30812328	01011816
eurozone participation	.01291011	.01226949	.02334822	.02065608*	.03048398	.03295969	.05920743	.06943455	.02501781	.02555163	.03563662	.05212096
2008 financial crisis	00843095	01301512	01592923	01709056	09130896*	04501594*	02677614	16513952**	07850337*	03811186**	00861874	13592422**
L. Depended variable				.16401795				00071725				.00092672
_cons	.31659775*	.03017856	09380892	.44133223***	42711207	.20730572	-14628462	89833459	23471137	.31376458**	59555587	-13404884
N	396	396	396	374	396	396	396	369	394	394	394	367
r2	.13419901		.28927346		.26916647		.30120839		.25232487		.28765422	
r2_a	.10939742		.1909597		.24823113		.20454557		.23079496		.18854524	

This implies that lower levels of past monopoly result in higher profit premiums in the future. Finally, monopoly levels are related to higher future profit inequality, as observed in model (7.3.14) of Table 7. Additionally, as presented in Table 7, the lag of the profit premium index has a negative impact in all three models but is statistically significant only for models (7.3.3.3) and (7.3.3.4). Hence, high past wage premium levels are related to negative growth in future profit premium and profit inequality.

Gross domestic expenditure on R&D, although appearing to be negatively related to the monopoly index and positively related to profit premium, is not statistically significant. Nevertheless, the impact on profit inequality appears to be significantly positive, indicating a positive relation between expenditures on R&D and profit inequality.

Technological change also seems to have a positive impact on the monopoly index and a negative impact on profit premium and profit inequality. However, the variables of these factors are statistically insignificant for all three models. In addition, financial openness seems to have a negative but not statistically significant impact in all three models.

Furthermore, the impact of trade openness is statistically significant in all three models, indicating that higher trade openness is associated with increases in monopoly and decreases in profit premium. As expected according to equation (5.3.30), the final impact of trade openness on profit inequality appears to be negative and statistically significant, mainly through the impact of the monopoly level and profit premium. Furthermore, as it seems from the estimates of model (7.3.3.2), FDI openness leads to decreases in monopoly and increases in profit premium. However, the impact on profit inequality is positive and not statistically significant. Additionally, the variable of European convergence appears to increase monopoly; however, the impact on profit premium and profit inequality is not significant.

Moreover, the factors of financial development and participation in the eurozone have positive signs, but they are not statistically significant. Finally, the 2008 crisis dummy has a significant negative impact on profit premium and profit inequality.

Therefore, as it emerges, investing in R&D and trade openness are the factors that policy makers should consider in order to control profit inequality.

7.2.4 Growth and Inequality

The aim of this chapter is to provide evidence regarding the relationship between income inequality and economic growth.

7.2.4.1 Total inequality

To start, this chapter compares various types of inequality, as calculated and presented in Chapter 7.1.4, to different Gini indexes from diverse datasets. Both factor labor and profit inequality are used as independent variables in the following econometric panel data models: (7.3.4.1), (7.3.4.2), (7.3.4.3), (7.3.4.4), (7.3.4.5), (7.3.4.6), and (7.3.4.7). The dependent variables are the GINI indexes calculated in Chapter 7.1.4, as well as the GINI indexes from databases such as EUROSTAT, OECD, UN, and Texas University. The results are presented in Table 8 and Table 9.

$$Inequality_{it} = a_{1it} + a_2 InequalityF_{it} + a_3 InequalityL_{it} + a_4 InequalityK_{it} + b_i + u_{it} + b_i + u_{it}$$
(7.3.4.1)

Gini Eurostat_{it}

$$= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it}$$

+ $b_i + u_{it} + b_i + u_{it}$ (7.3.4.2)

Gini Eurostat Before Taxes_{it}

$$= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it}$$
$$+ b_i + u_{it} + b_i + u_{it}$$
(7.3.4.3)

$$Gini \ OECD_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$$
$$+ u_{it} + b_i + u_{it}$$
(7.3.4.4)

Gini OECD pre tax _{it}

$$= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it}$$
$$+ b_i + u_{it} + b_i + u_{it}$$
(7.3.4.5)

$$Gini \ UN_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$$
$$+ u_{it} + b_i + u_{it}$$
(7.3.4.6)

Gini Texas University_{it}

$$= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it}$$

+ $b_i + u_{it} + b_i + u_{it}$ (7.3.4.7)

	Depe	Depented variable: total ineq	e: total inequ	uality	Depu	ented variab	Depented variable: Gini Eurostat	stat	Depented v:	Depented variable: Gini Eurostat Before Transfers	urostat Befor	e Transfers	ă	epented vari	Depented variable: Gini OECD	Δ
		(7.3	(7.3.4.1)			(7.3.	(7.3.4.2)			(7.3.4.3)	4.3)			(7.3	(7.3.4.4)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
InequalityF	.69095134***	.69733751***	.69095134*** .69733751*** .65744165***	.55934004***	.03661512	.05110462	.01780474	.05445214	.30352995*	.27864187*	.40532983**	.04521537	.05472802	.07680521	.02479548	01441153
InequalityL	.57523917***	.57523917*** .57321844*** .62798751***	.62798751***	.49011404***	.01374528	.02442802	.05117015	02215972	.29407832***	.24625945***	.14383333*	.16239447***	.0082722	.02 292225	.03459109	02288631
InequalityK	.04599946*	.04854399**	.06697842 **	.04102038*	.01060766	.01849067	.03608438	02132802	.11769891	.1012287	.0570523	.0194527	.03950029	.04658281	.05767921	.02816089
unemplRT	.71140598***	.70916117***	.71140598*** .70916117*** .75211993***	.62565589***	.05673742	.06552245	.03822015	.0497817	.57086036***	.55135885***	.45948196**	.37139519***	.12523323*	.13275429*	.11952671	.07233185*
L1. Gini Eurostat Before Taxes				.10763409**				.51719929***				.55926783***				.53907503 ***
cons_	.06141908***	.06141908*** .05908287*** .05083117**		.07069465***	.27953801***	.27325438 ***	.26330397***	.07069465*** 27953801*** 27325438*** 26330397*** 1343606***	.29736171***	.31026086***	.31026086*** .32631614*** .14096318***	.14096318***	.28303769***	.2748262***	.26160715***	.13909927***
z	419	419	419	380	371	371	371	303	280	280	280	244	290	290	290	230
r2	.93587384		.9910418		.01617526		.89036952		.52694555		.89091811		.10241673		.89606778	
r2_a	.93525427		.98993406		.00542307		.8748047		.52006476		.87371848		.08981907		.8774024	

Table 8

	Depe	Depented variable: total inequality	e: total inequ	uality	Dep	ented variab	Depented variable: Gini Eurostat	stat	Depented v.	Depented variable: Gini Eurostat Before Transfers	urostat Befor	e Transfers	Ó	epented varia	Depented variable: Gini OECD	ρ
		(7.3.4.1)	.4.1)			(7.3	(7.3.4.2)			(7.3.4.3)	4.3)			(7.3.	(7.3.4.4)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
InequalityF	.69095134 ***	.69095134*** .69733751*** .65744165***	.65744165***	.55934004***	.03661512	.05110462	.01780474	.05445214	.30352995*	.27864187*	.40532983**	.04521537	.05472802	.07680521	.02479548	01441153
InequalityL	.57523917***	.57523917*** .57321844*** .62798751***	.62798751***	.49011404***	.01374528	.02442802	.05117015	02215972	.29407832***	.24625945***	.14383333*	.16239447***	.0082722	.02292225	.03459109	02288631
InequalityK	.04599946*	.04854399**	.06697842**	.04102038*	.01060766	.01849067	.03608438	02132802	.11769891	.1012287	.0570523	.0194527	.03950029	.04658281	.05767921	.02816089
unemplRT	.71140598***	.75211993***	.75211993***	.62565589***	.05673742	.06552245	.03822015	.0497817	.57086036***	.55135885***	.45948196**	.37139519***	.12523323*	.13275429*	.11952671	.07233185*
L1. Gini Eurostat Before Taxes				.10763409**				.51719929***				.55926783***				.53907503***
suo_	.06141908***	06141908*** 05908287***	.05083117**		.27953801***	.27325438***	.07069465*** .27953801*** .27325438*** .26330397***	.1343606***	.29736171***	.31026086***	.32631614***	.14096318***	.28303769***	.2748262***	.26160715***	.13909927***
Z	419	419	419	380	371	371	371	303	280	280	280	244	290	290	290	230
r2	.93587384		.9910418		.01617526		.89036952		.52694555		.89091811		.10241673		.89606778	
r2_a	.93525427		.98993406		.00542307		.8748047		.52006476		.87371848		.08981907		.8774024	

Table 9

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As observed in Tables 8 and 9, factor inequality is statistically significant only in model (7.3.4.3). This indicates that calculated factor inequality is associated solely with the Gini index before transfers from Eurostat. The variable representing calculated labor inequality shows statistical significance in the Eurostat Gini before transfers, OECD Gini before taxes, UN Gini, and Texas University Gini. On the other hand, profit inequality is statistically significant only in relation to the Gini index of the UN, while unemployment is a statistically significant component across all Gini indexes.

7.2.4.2 Kuznets

To examine the validity of the famous Kuznets hypothesis, a nonlinear approach, commonly employed in the literature, is utilized. In this investigation of the nonlinear Kuznets hypothesis, we employ the following panel data models: (7.3.4.2.1), (7.3.4.2.2), (7.3.4.2.3), and (7.3.4.2.4). These models incorporate GDP per capita and the square of GDP per capita as independent variables to explain the levels of all previously calculated inequality types. The choice of models aligns with the literature on the Kuznets curve, where the inclusion of the square of GDP per capita assesses whether the curve's relationship is concave or convex. The model estimates are presented in Table 10.

$$Inequality F_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it}$$

$$(7.3.4.2.1)$$

 $Inequality L_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it}$ (7.3.4.2.2)

$$Inequality K_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it}$$

$$(7.3.4.2.3)$$

$$Inequality_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it}$$

$$(7.3.4.2.4)$$

The results presented in Table 10 indicate that the Kuznets hypothesis holds true only in the context of labor inequality. These findings align with the theoretical model presented in Chapter 5.2 and are consistent with the evidence derived from the model (7.3.2.1) in Chapter 7.3.2, which also confirms the validity of the Kuznets hypothesis

concerning labor inequality. Consequently, policymakers should prioritize examining the relationship between labor inequality and economic growth to facilitate the transition of the economy into the later stages of the Kuznets hypothesis. In these stages, economic growth and the reduction of labor inequality occur simultaneously.

	Depent	ed variable: (Growth - ΔIn	equalityF	Depente	d variable: G	irowth - Δlne	equalityL	Depente	ed variable: G	irowth - Δlneo	qualityK	Depen	ted variable: (Growth - Δine	quality
		(7.3	3.4.1)			(7.3	.4.2)			(7.3	.4.3)			(7.3	.4.4)	
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
InGDPpcapita	0426496	03818488	04541298	09067933	.36090691*	.18686191	.43248355*	.63126785*	18167479	16344246	17203275	28845477	14738658	14287643	18411807	.02563525
InGDPpcapi~2	00053163	.00520573	00301349	.00512983	05502542*	02583172	07181858*	09508129*	.02239322	.02088649	.02712746	.04251531	.0145889	.01841131	.02402554	0147979
lag of depended				10212585				27898389*				19114824**				13179964**
_cons	.15355628	.06065211	.28467216	.25051491*	53732197	30203698	46337243	96853078*	.3712915	.32587859	.42029257	.48770334	.33560642	.26713475	.47649122	.10566629
N	457	457	457	421	405	405	405	363	456	456	456	420	435	435	435	393
r2	.04798908		.20266249		.01869218		.16452591		.01518312		.08416655		.05904854		.17421586	
r2_a	.0437952		.11750994		.01381005		.06241241		.01083514		01387888		.05469228		.08105047	

Table 10

7.2.4.3 Inequality on economic growth

Finally, evidence regarding the relationship between inequality and economic growth is presented, following the theoretical approach outlined in Chapter 5.7. To assess the impact of inequality levels on economic growth, the following models, (7.3.17) and (7.3.18), have been estimated based on equation (5.7.1) and the theoretical framework provided in Chapter 5.7.

$\Delta GDP percapita_{it}$

$$= a_{1it} + a_2L. profit rate_{it} + a_3L. interest rate_{it}$$

+ $a_4L. private \ dept_{it} + a_5 inequality_{it} + a_6 euro \ entrance_{it}$
+ $a_72008 \ financial \ crisis_{it} + b_i + u_{it}$ (7.3.17)

$\Delta GDP percapita_{it}$

$$= a_{1it} + a_{2}L. profit rate_{it} + a_{3}L. interest rate_{it}$$

$$+ a_{4}L. private dept_{it} + a_{5}InequalityF_{it} + a_{6}InequalityL_{it}$$

$$+ a_{7}InequalityK_{it} + a_{8}unemployment rate_{it}$$

$$+ a_{9}euro \ entrance_{it} + a_{10}2008 \ financial \ crisis_{it} + b_{i}$$

$$+ u_{it}$$
(7.3.18)

In the absence of data, the lag of the growth of the profit rate, denoted as 'r', has been utilized in place of profit shares ('h') and capacity utilization ('u'). Additionally, lagged growth rates of interest rates and private debt have been included as explanatory variables of growth.

Moreover, total inequality is employed as an explanatory variable in equation (7.3.17), while the unemployment rate, factor inequality, labor inequality, and profit inequality are utilized instead in equation (7.3.18). Furthermore, the model incorporates dummy variables for participation in the eurozone, 'eurodamm', and the dummy for the 2008 financial crisis, 'crisisdumm'. Both dummy variables were introduced in Chapter 7.1 and applied in the data models of previous chapters.

The eurozone dummy variable, which pertains to the years of participation in the Economic and Monetary Union (EMU), takes on a value of one during the years when the country is an EMU member, and zero otherwise.

The crisis dummy pertains to the years from the onset of the crisis until the most recent year of the available data, which extends up to 2020. Consequently, the dummy variable takes on a value of 0 for the period spanning from 1995 to 2007, and a value of 1 for the period covering 2008 to 2020. The results of models (7.3.17) and (7.3.18) are presented in Table 11.

The lag profit rate has a positive sign, as expected according to Chapter 5.7, and is statistically significant in both models (7.3.17) and (7.3.18). This result aligns with the theoretical framework outlined in Chapter 5.7, which posits that higher profit rates are associated with increased incentives to invest, leading to greater capital accumulation and economic growth.

Furthermore, the interest rate lag is negative, as expected, and is statistically significant only in model (7.3.18), while in model (7.3.17), it is statistically significant only for the GMM model. This result aligns with the theoretical framework of Chapter 5.7, which posits that the profit rate of rentiers is negatively correlated with economic growth.

	Depented variable: Growth - Δ GDP per capita				Depented variable: Growth - ΔGDP per capita			
	(7.3.17)				(7.3.18)			
Variable	fixed	random	pooled	gmmest	fixed	random	pooled	gmmest
L. growthr	.19339977***	.18564184***	.14142258***	.16445722***	.16286678**	.20401624***	.13179143***	.1419968**
L. growthir	05465182	03711583	05210005	06156484*	03127404*	04236648	02938462	02544647*
L. InDebtH1	00814004	00794952***	02109288***	00544937	01280178*	00713741***	02403464***	01584503*
inequality	.01015369	01559051	04237723	.02821708				
InequalityF					.21436476*	.12668683	.1229499	.386773**
InequalityL					.2590017***	02403379	.13335065*	.30384773***
InequalityK					.20440042*	.09703232	.12500724	.2957542***
unemplRT					27289671*	17149197	38746962**	29376438*
eurodumm	.00818106	00016015	00649107	.00051843	00290362	00347459	01653638	01706238
crisisdumm	02674982**	02301452***	01481813	03197394***	02175528**	01720973***	01877804	02294062**
L. Growth - ΔGDP per capita				.06845812				05834477
_cons	.06949668***	.08225844***	.12790487***	.0585991**	00339627	.04287618	.09931748*	03707087
N	430	430	430	410	402	402	402	382
r2	.27082422		.59107028		.34639932		.62292902	
r2_a	.2604813		.541956		.33139318		.57043903	

Table 11 results

Moreover, private debt has the anticipated sign and is statistically significant in model (7.3.18), while in model (7.3.17), it is statistically significant only for the Random Effects and the Pooled OLS model. This result also aligns with the theoretical framework of Chapter 5.7, which suggests that private debt hampers both investment and consumption, thereby impeding economic development.

The sign of total inequality appears to be positive for the Fixed Effects and GMM model and negative for the Random Effects and Pooled OLS model. Although the Fixed Effects model is more appropriate, the impact of total inequality seems not to be statistically significant, as observed in model (7.3.17) of Table 11. This outcome indicates that inequality has a weak or no relationship with growth.

However, when inequality is broken down into unemployment, factor, labor, and profit inequality, as presented in model (7.3.18), all the explanatory variables representing inequality appear to be statistically significant. As shown in Table 11, factor labor and profit inequality have a positive impact on growth, while unemployment appears to be negatively related. The contrasting impacts of unemployment and the other forms of inequality seem to explain why inequality was statistically insignificant in model (7.3.17). Additionally, in both models, the dummy for EMU participation is not statistically significant, while the dummy for the 2008 crisis is statistically significant in both models, implying a negative influence on economic growth, as expected.

Thus, it emerges that economic growth in the eurozone for the period 1995-2020 has been positively related to all types of inequality. According to the theoretical framework in Chapter 5.7, these results suggest that economic growth is associated with lower nominal wages in relation to profit income, indicating a possible profit-led economy. However, the positive relationship between factor inequality and growth may be attributed to changes in the relative employment of labor rather than changes in income shares.

Furthermore, based on the results presented in Table 11, economic growth has been correlated with high levels of labor inequality. This finding aligns with the theoretical framework outlined in Chapter 5.7.2, which suggests that this pattern is consistent in a profit-led economy where growth is driven more by investment than consumption. However, it's important to note that a significant portion of the observations pertain to the first phase of the Kuznets curve. Therefore, this conclusion implies that the economy experiences faster growth when it benefits from a more productive labor force, particularly with a higher proportion of skilled labor compared to basic labor. Additionally, the negative impact of inequality stemming from unemployment on growth suggests that a less economically active population is associated with weaker economic performance.

Hence, if our goal is to achieve economic growth accompanied by decreasing inequality, our primary focus should be on addressing levels of unemployment and labor inequality.

Therefore, policies aimed at reducing unemployment will not only lead to lower total inequality but also encourage more individuals to participate in the production process, whether as laborers or investors. Consequently, this will have a positive impact on economic growth, driven by increased investment and consumption.

Furthermore, a strategy to reduce unemployment, coupled with efforts to simultaneously decrease relative labor employment (Λ_L) due to the increased employment of highly skilled labor, should be pursued to expedite progress toward the later stages of the Kuznets curve, as discussed in Chapter 5.2. This implies that as labor inequality approaches a level where greater employment of higher-skilled and higher-paid workers leads to decreased labor inequality and higher growth, a quicker transition to these stages can be achieved. Consequently, increased labor force participation by more productive and higher-paid skilled workers will result in economic growth accompanied by reduced levels of inequality.

8 The political economy of inequality in Europe.

The impact of openness and financial integration is expected to be more pronounced in the case of monetary integration, such as the Eurozone. Monetary integration represents a deeper form of integration that can introduce new market forces and sources of shocks, potentially widening disparities across educational and skill levels.

In the aftermath of World War II, European countries began actively pursuing economic and social integration. The initial step was the Treaty of Rome in 1957, which led to the establishment of the European Economic Community (EEC) the next year.

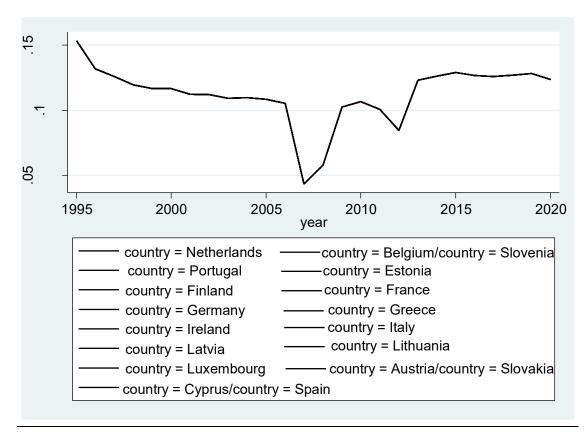
Subsequently, as more European nations expressed interest in economic and social cooperation, the European Union (EU) was founded in 1993 with the Maastricht Treaty, with a primary focus on building a European community. Since the establishment of the European Union, several initiatives have been undertaken to strengthen the integration of European nations, including the European Monetary Union (EMU) and the Lisbon Treaty (2009). It is evident that European countries have prioritized

European integration, with regional integration, accelerated economic growth, and enhanced social cohesion being among their primary objectives. Consequently, the EU and EMU structures and the ongoing integration process have given rise to new market forces and have been associated with changes in both economic growth and income distribution among member countries. However, this has also introduced the risk of encountering new economic shocks. Thus, it can be assumed that economic integration impacts economic growth and inequality significantly due to its fundamental characteristics.

In general, European integration, and more specifically, the Eurozone, has been a political process with a strong focus on economic objectives. While this process offers numerous advantages, such as increased trade, reduced uncertainty for businesses and individuals, and opportunities for technological catch-up, it also comes with notable disadvantages, including the need for budgetary austerity measures among member countries (García-Peñalosa, 2010).

Regional integration has been argued to have both positive and negative effects. On the one hand, it can create new markets, improve capital allocation, and promote faster economic growth. On the other hand, it may reduce inequality between countries while increasing inequality within countries (Azis, 2015). Specifically, concerning European integration, the evidence suggests that it is associated with lower inequality between countries but has also been linked to increased personal inequality within European countries (Bertola, 2007; Beckfield, 2009; Bouvet, 2010b). Additionally, it has been argued that poorer countries within the European Union have experienced an increase in regional inequality following the establishment of the EMU (Bouvet, 2010b). Furthermore, studies have indicated that there is greater symmetry among northern members of the Eurozone compared to southern members (Fingleton & Martin, 2015). According to Monfort et al. (2018), both between-country and within-country inequality increased in the European Union, accompanied by historical levels of unemployment (Monfort, et al., 2018). They argue that European treaties, such as the Maastricht Treaty and the fiscal discipline of the Stability and Growth Pact, have focused on nominal convergence while neglecting real convergence indicators (Monfort, et al., 2018). In general, it appears that nominal unit labor costs have diverged within the Eurozone, as productivity and production processes did not converge as assumed.

According to our estimations (see Chapter 7), inequality between Eurozone countries decreased until the 2008 financial crisis, suggesting regional convergence. However, there was a divergence in the period following the crisis, with inequality between countries reaching higher levels than before the crisis, as shown in Figure 12.





In addition, regional convergence, as measured by the inequality between countries, seems to have a negative and statistically significant impact on average wage growth, implying a positive effect on factor inequality⁵¹. Furthermore, convergence has been found to be statistically significant and negatively related to the relative employment of profit earners, implying a higher monopoly and a positive impact on profit inequality⁵². Finally, convergence, although it appears to be positively related to factor, labor, and profit inequality, has been found to be statistically insignificant, hence the impact is weak⁵³.

⁵¹ See results in Table 3

⁵² See results in Table 7

 $^{^{\}rm 53}$ See results in Tables 3, 5 and 7

European convergence is expected to affect intra-country inequality in several ways. Additionally, given that inequality within countries is essential for social cohesion, European convergence is crucial for the future of European nations.

Firstly, the impact of openness and financial integration is expected to be stronger in the case of monetary integration, like the Eurozone. European integration has focused on enhancing transparency, competition, and factor mobility (Monfort, et al., 2018). Additionally, income distribution is expected to be affected by capital mobility, which is assumed to be fostered by monetary integration. As a consequence, this results in rising effects of openness and international competitiveness on factor prices, and hence, on factor distribution and inequality. Consequently, the effect of openness and international competitiveness on factor prices and international competitiveness on production costs. Hence, depending on the policy of each economy, factor inequality could increase or decrease due to international competitiveness, as it has been presented in sections 5.5.1. and 7.3.2. More specifically, it has been argued that since the Euro was introduced, real exchange rates have diverged (Stockhammer, 2012a).

Moreover, inequality may also be affected by monetary integration due to the removal of macroeconomic policy tools from member countries. There is evidence that the ability to apply redistribution policies can be restricted by integration (Facchini & Mayda, 2006). Redistribution policies have always been used to reduce ex-ante inequality and prevent the perpetuation of inequality by helping the poorer move up to higher income classes. As it appears, the Eurozone, despite the better aggregate economic performance, is associated with higher inequality and lower social spending within countries that have joined the Eurozone (Bertola, 2007).

The process and the structure of European convergence have set several barriers to some economic policies regarding international competitiveness, imposing further pressures on factor prices. For instance, since the monetary union has removed the independence of macroeconomic policy tools among members, member states have lost the ability to devalue currency to manage international competitiveness issues. As a result, international competitiveness is determined exclusively by production costs, as per relation (5.5.3), since e = 0. Thus, as a consequence, on the one hand, trade openness has had a negative impact on wage shares due to international

competitiveness, as presented in section 7.3.1. Openness has been found statistically significant and negatively related to wage shares. Furthermore, the final impact on factor inequality is positive and statistically significant, as expected⁵⁴. Hence, openness has led to higher factor inequality within European countries due to lower wage shares, which is a result of higher international competitiveness.

In addition, it is suggested that inequality will increase due to workers' exposure to international competition and the weakening of labor unions (Beckfield, 2006). As seen in the evidence presented in Table 3, the impact of bargaining power has not been found statistically significant. Furthermore, there is evidence that the ability to implement redistribution policies can be restricted by integration (Facchini & Mayda, 2006). As it seems, EMU, despite its better economic performance, is associated with higher increases in inequality, mainly due to public spending constraints (Bertola, 2007). Redistribution policies have always been used to reduce ex-ante inequality and prevent the perpetuation of inequality by helping the poorer move up to higher income classes.

Furthermore, incentives to relocate resources into export-oriented economies have been generated, leading to higher labor productivity growth. As assumed, higher openness and FDIs can lead to technology diffusion and higher labor productivity. Indeed, as observed in Table 5, technological change, trade, and FDI openness have been found statistically significant and positively related to labor productivity. However, their impact on factor inequality is not statistically significant. Additionally, although trade openness has a significant positive effect on labor productivity, relative labor employment is affected positively⁵⁵. This effect was not expected, given that higher labor productivity is usually associated with more skilled labor. Hence, although labor productivity increases through openness, the demand for skilled labor decreases, and, as it seems, more trade openness is related to more basic labor. The final impact on labor inequality is positive but not statistically significant.

Moreover, trade openness seems to promote higher monopoly and lower profit premium, which finally leads to a significant negative effect on profit inequality. On

⁵⁴ See results in Table 3

⁵⁵ See results in Table 5

the contrary, FDI openness promotes a lower monopoly and a higher profit premium; however, the impact on profit inequality is not significant⁵⁶.

As argued, convergence was fueled by technology transfer, enabling improvements in product quality and organizational structures and procedures (Becker, et al., 2010). Therefore, since cross-border restrictions were removed, allowing for more international trade and direct investment, as well as technology transfer, monetary integration may also contribute to widening the gap across educational and skill levels. Differences in labor productivity and technological skills among the members of the Eurozone can be a significant problem for their inequality levels (Storm & Naastepad, 2015). Additionally, there is evidence by Bouvet, 2010b, that regional inequality has increased as a result of the decreased dispersion of regional productivity (Bouvet, 2010b). Moreover, as mentioned earlier, widening wage differentials across levels of education are responsible for a portion of the observed growth in income inequality, which might be explained by mechanisms where unskilled labor is replaced (and skilled labor is supplemented) by machines and labor from developing economies (Bertola, 2007).

Technological changes have a positive and statistically significant impact on labor productivity, indicating a positive relation with factor inequality; however, the impact is not statistically significant⁵⁷. Additionally, technological changes have been found statistically significant and positively related to the wage premium, indicating a positive impact on labor inequality⁵⁸. Hence, given that technological changes increase wages of skilled labor relative to wages of basic labor, the effect of technological changes on labor inequality is positive, as expected, and statistically significant. Thus, the impact of technological change is higher labor productivity, a wage premium, and labor inequality for the countries of the Eurozone. Additionally, expenditures on education seem to be a useful macroeconomic instrument in controlling labor inequality, given that it is negatively related to the wage premium and labor inequality.

Moreover, while on one hand, in order to respond to sectoral or regional shocks, monetary integration necessitates increased wage and employment flexibility, on the

⁵⁶ See results in Table 7

⁵⁷ See results in Table 3

⁵⁸ See results in Table 5

other hand, it also necessitates well-developed financial markets, which will make it easier for people to borrow, so they can be less affected by income variations. Financial liberalization was mainly an outcome of European integration. However, the impact of financial development on inequality has not been found statistically significant. On the contrary, financial openness has been found to be positively related to factor and labor inequality⁵⁹.

Therefore, inequality is primarily influenced by pressures on factor prices, changes in productivity due to technological diffusion, and the new financial environment. Furthermore, structural imbalances in the Eurozone may exert additional pressure on wages, affecting inequality, while integration may benefit some members more than others (Azis, 2015).

The core economies have shown some productivity improvements due to advancements in productive and trade specialization. In contrast, peripheral economies have seen job creation driven by public expenditure and real estate bubbles (Molero-Simarro, 2016,). In the peripheral countries, earnings, and especially wages, have deteriorated substantially. According to evidence found by Stockhammer & List, 2015, there were three different effects on the working class in European countries during the first decade of the Euro (Stockhammer, et al., 2015). Firstly, there was an erosion of cohesion in the working class of northern countries, while in southern countries, wage dispersion increased. In eastern countries, real wages increased simultaneously with an increase in wage differences. It should also be noted that there is a varying level of financialization among the countries in these three groups. In general, Europe has been characterized by debt and export-driven models (Hein, 2013b; Stockhammer, 2016), a subordinated integration of eastern countries (Bohle & Greskovits, 2012; Nölke & Vliegenthart, 2009), and divergence between northern and southern countries (Boyer, 2013; Stockhammer, et al., 2015).

Thomas Goda (2016) argued that European integration and capital flow deregulation have been cited as key factors enabling debt-driven growth in Europe's periphery. International financial liberalization allowed debt-driven growth regimes to maintain

⁵⁹ See results in Tables 3, 5 and 7

long-term current account deficits, supported by capital inflows from export-driven nations with persistent current account surpluses (Thomas Goda, 2016).

According to Blanchard & Giavazzi (2002), financial integration in Europe has been associated with the evolution of current account imbalances, where the richer countries used to run current account surpluses, while the poorer countries ran current account deficits (Blanchard & Giavazzi, 2002).

Several countries in the southern and eastern periphery of Europe have experienced significant capital inflows from countries with trade surpluses, mainly from Germany. It has been argued that on one hand, the European Union led to the maintenance of external trade deficits in peripheral countries, while on the other hand, some central countries, especially Germany, have focused on increasing their exports in high-value-added industries (Molero-Simarro, 2016,). Since 1999, Germany has depreciated by more than 20% in real terms against Portugal, Spain, Ireland, and Greece, leading these countries into substantial current account deficits, accompanied by current account surpluses in Germany (Stockhammer, 2012a). Consequently, southern countries have experienced low inflation, but they lost competitiveness to Germany and its satellites, while 'the entire era of European integration is marked by German surpluses and subsequent revaluations' (Stockhammer, 2013).

As a result, debt-driven expenditure has been supported, with large external liabilities accumulated in deficit countries (Thomas Goda, 2016). This debt has been mostly in the private sector, except in Greece, where the government sector was primarily responsible for the debt. Moreover, the policy of maintaining wages at low levels in order to achieve surpluses has added pressure to wage levels of trading partners (Disoska & Toshevska-Trpcevska, 2016). Additionally, further pressures have been imposed on European member states with trade deficits due to the strategy of international devaluation that has been enforced on them, based on the assumption that this would improve competitiveness, profitability, and growth (Obst, 2016). Therefore, on one hand, some countries have current account surpluses, pushing their partners into the Eurozone with current account deficits and debt-driven expenditure. On the other hand, this affects wages and, consequently, inequality in both surplus and deficit countries.

Current account imbalances have a statistically significant impact on wages, productivity, and factor inequality. More specifically, larger current account deficits are negatively correlated with average wages, wage shares, and labor productivity. Consequently, the impact on factor inequality has been found to be positive⁶⁰. Private debt exhibits a similar impact on wages and factor inequality, while also displaying a negative relationship with relative labor employment⁶¹. Therefore, both higher current account deficits and private debt contribute to greater factor inequality, primarily due to their adverse effects on wages, productivity, and employment.

These imbalances lead to debt crises, and the constriction of monetary policy exacerbates the crisis drivers. Thus, the Eurozone crisis may have resulted from the financial crisis, where payment imbalances and growing private debts were exacerbated by high inequality (Thomas Goda, 2016). Furthermore, it appears that post-crisis growth has been weak and unevenly distributed. As argued by Nacho Álvarez (2018), during the 2008 economic crisis, the European Union opted for austerity policies, which included restrictions on public investment and declines in wage shares. These measures aimed to achieve internal devaluation as a strategy to enhance competitiveness and foster export-led growth. The consequence was a period of poor annual growth in the Eurozone from 2008 to 2016, accompanied by rising unemployment and decreased investment (Nacho Álvarez, June 2018). According to our findings, the 2008 crisis factor has been significantly associated with profit inequality, implying a decrease in profit inequality since the financial crisis⁶².

Additionally, further labor market deregulation and wage moderation policies constituted the 2020 strategy of the European Commission. This strategy aimed to maintain real wage growth below labor productivity growth to regain international competitiveness, reduce unemployment, and stimulate economic growth (European Comission, 2011; European Comission, 2012; Obst, 2016). Disoska & Toshevska-Trpcevska (2016) supported the notion that the EU's strategy of keeping real wages below productivity levels results in slower economic growth. Moreover, this wage moderation policy has had a positive impact on inequality and unemployment. They also suggest that higher real wages promote economic growth through increased

⁶⁰ See results in Table 3

⁶¹ See results in Tables 3 and 5

⁶² See results in Table 7

effective demand, rather than hindering growth due to production slowdowns resulting from labor costs (Disoska & Toshevska-Trpcevska, 2016). Additionally, maintaining real wage growth below labor productivity has led to an increase in inequality, as explained in Section 5.1. Thus, inequality in the Eurozone has been primarily determined by the structure and strategies imposed by these policies.

9 Conclusion

The role of economic inequality has been a central focus in economic literature due to its association with negative effects on economic and social outcomes over recent decades. Specifically, the relationship between income inequality and economic growth has been a subject of debate, with various theories proposing different channels through which income inequality influences economic growth.

Initially, it is assumed that income inequality arises from the distribution of income among members of the economy. Income distribution is believed to be determined by several factors, including an individual's position in the production process, their productivity, and the amount of capital they supply. To comprehensively examine the formation of income inequality, it is essential to consider income distribution from two perspectives: functional distribution and personal distribution. Functional income distribution pertains to the allocation of income among the primary factors of production, typically labor and capital. Conversely, personal distribution refers to the allocation of income among households and individuals, who may be either workers or capital owners. Thus, income inequality can manifest among individuals with the same or different income sources.

In Chapter 5, the theoretical model is used to illuminate the emergence of income inequality by breaking it down into three distinct components: factor inequality, wage inequality, and profit inequality. This model for income distribution and inequality leverages the Gini formula.

Factor inequality represents the disparity between wage-earning workers and profitreceiving investors. It is shaped by functional distribution. According to the model, factor inequality hinges on the difference between the wage share, determined by labor productivity and the average wage, and the proportion of labor within the total employees. Consequently, given the crucial roles of labor productivity and labor employment in economic growth, any enhancement in either of these two factors requires the fulfillment of two prerequisites to reduce inequality. First, real average wage growth must surpass labor productivity to ensure positive wage share growth. Second, wage shares must increase at a faster rate than the relative employment of labor. Therefore, to mitigate factor inequality, one must examine the factors influencing labor employment, wage shares, productivity, and real wages. Consequently, elevating the real average wage emerges as the primary policy instrument for reducing factor inequality, as labor productivity and labor employment are pivotal for economic growth, and policies that hinder them cannot be deemed sound economic strategies. Consequently, assuming that there exists inequality among members of the same class, inequality stemming from factor distribution is considered the lowest level of income inequality.

Wage inequality pertains to disparities among workers whose income is derived from wages and is primarily attributed to differences in labor skills. As illustrated by the theoretical model in Chapter 5.2, wage inequality exhibits a positive relationship with the wage premium, which represents the rate of personal wage incomes for skilled and basic labor. Additionally, wage inequality is influenced by the composition of skilled and basic labor within the workforce, quantified by the relative labor employment rate. This rate signifies the ratio of the basic labor population to the skilled labor population. As deduced from the theoretical model, an increase in the population of skilled labor will intensify wage inequality when their relative labor employment rate surpasses the ratio of their total incomes (the combined income of skilled labor to that of basic labor). Conversely, in cases where their relative incomes exceed their relative employment, wage inequality will decrease as the population of skilled labor expands relative to basic labor. Therefore, if it is assumed that the relative labor employment rate diminishes over time as the economy evolves, concomitant with the growth of the skilled labor population, an inverted 'U'-shaped relationship between growth and labor inequality, reminiscent of Kuznets' hypothesis, would inevitably emerge. Thus, the theoretical model substantiates the Kuznets hypothesis in situations where the population of skilled labor increases at a faster pace than that of basic labor over time. Consequently, given that increased skilled labor employment is associated with higher labor productivity, a positive factor for economic growth, managing the wage premium becomes an economic instrument that policymakers should consider to mitigate wage inequality.

Profit inequality materializes among investors whose primary income source is profits. According to the theoretical model expounded in Chapter 5.3, profit inequality is propelled by the growth of the profit premium and the influence of monopoly dynamics through shifts in relative investor employment. Profit inequality is positively correlated with the profit premium. Moreover, the impact of relative investor employment hinges on market monopoly levels. Increased competitiveness is associated with a negative relationship with inequality and technological advancement, while higher levels of monopoly exhibit a negative connection with both inequality levels and the extent of innovation.

Furthermore, while many theoretical frameworks posit a trade-off between inequality and economic efficiency, the nature and direction of this trade-off have remained ambiguous. Simon Kuznets originally proposed a nonlinear relationship between inequality and growth that is positive in the early stages of growth but becomes negative as the economy matures over time. Kuznets' theory was rooted in a period during which rural economies transitioned into industrial economies, and the workforce shifted from agricultural employment to higher-paying industrial jobs. Consequently, income inequality initially increased as workers with higher incomes became the majority, subsequently stabilized, and ultimately decreased as a growing proportion of the population moved from rural to industrial work. Thus, as this significant transformation occurred—shifting the composition of the workforce—income inequality exhibited an inverted U-shaped relationship with economic growth over time. Kuznets' assertions suggest that transitions between old and new production processes impact income distribution due to varying wage levels among workers, as elucidated in the theoretical model in Chapter 5.2.

Since Kuznets' pioneering work, numerous theoretical approaches have attempted to elucidate the intricate relationship between inequality and economic growth. Some propose that inequality may stimulate growth, while others contend that it exerts a detrimental influence. Additionally, existing literature posits that the nexus between economic growth and income inequality is shaped by multifaceted channels, including fiscal policy, taxation, sociopolitical stability, and market imperfections. Consequently, income inequality can exhibit a positive relationship with growth, primarily because the requisite investment is typically furnished by the wealthier segment of the population. Conversely, the costs associated with income redistribution, aimed at addressing sociopolitical challenges stemming from heightened inequality, can impede economic performance, thereby engendering a negative association between income inequality and economic growth.

Moreover, it is postulated that income serves a dual function, with each individual employing it for consumption, investment, or savings. On one hand, income constitutes an integral component of the cost structure in the production function, thus forging a fundamental link with economic growth. On the other hand, income governs demand. Consequently, given that distinct income classes manifest varying propensities for saving, investing, and consuming, shifts in income distribution ultimately translate into fluctuations in economic growth. Therefore, as economic growth hinges on determinations concerning the allocation of factor shares, inequality in functional distribution becomes intricately entwined with growth dynamics arising from the production process.

Henceforth, it becomes apparent that, under certain circumstances, personal income inequality can bolster growth, particularly within a profit-led regime. Conversely, within a wage-led framework, growth may be inversely related to factor inequality. Nonetheless, such a relationship is not absolute. Alterations in income distribution may not invariably lead to shifts in factor inequality, as factor inequality is also influenced by changes in population proportions. Therefore, since an upswing in wage share can stem from an increase in labor employment rather than a surge in nominal wages, the repercussions of inequality resulting from factor distribution on demand and growth may be characterized by ambiguity.

Furthermore, labor and profit inequality exert a negative impact on capacity utilization, capital accumulation, and consequently, economic growth. This occurs due to variations in the propensity to save across different income classes, as elucidated in the theoretical model in Chapter 5.7.2. The model suggests that, given differences in saving and consumption habits among classes, growth is positively associated with the total income shares of the less affluent segments of society. In essence, inequality can influence the economy's saving patterns, thereby affecting economic growth. However,

the direction of this impact is contingent on the prevailing growth regime, with changes in income distribution needing to outpace alterations in employment growth.

Moreover, income inequality and economic growth share a complex relationship shaped by fundamental facets of globalization and financial integration. These pivotal factors include technological advancements, open markets, and financialization.

Technological advancements constitute a cornerstone influencing both income inequality and economic growth. Firstly, these innovations are intertwined with shifts in productivity, which, in turn, influence production costs and income levels for both wage and profit earners. Consequently, investments in more productive methods through technological innovation yield higher profits. Additionally, skilled labor capable of harnessing these new technologies can command higher wages, given their ability to contribute more efficiently to production.

It is posited that technological advancements are closely linked to income inequality, affecting factors such as labor and profit inequality. Assuming that technological innovation isn't exogenously determined but rather nonlinearly linked to distribution, inequality plays a role in shaping incentives for innovation. High levels of factor inequality can stifle incentives for innovation, even when financial resources are available for investing in innovative technologies. Conversely, low levels of factor inequality can foster significant incentives for innovation, but the capacity to support innovation may be limited.

Profit inequality exerts a parallel influence on innovation, as it hinges on the incentives and available capital for investing in new technology. Heightened profit inequality may impede technological change, thereby affecting productivity and overall growth, as affluent firms lack the motivation to innovate. In contrast, lower levels of profit inequality incentivize technological innovation since firms seek to maintain competitiveness. Additionally, substantial profit inequality might be linked to robust monopolies, discouraging new firms and innovations from entering the market. On the other hand, profit inequality is influenced by the diffusion of innovation, determined by the monopolistic strength of the leading class. Therefore, managing innovation diffusion may be an effective strategy for reducing profit inequality and spurring future demand for innovation. Furthermore, as discussed in both Chapters 5.2 and 5.4.3, technological innovation, coupled with an increase in skilled labor, may lead to an inverted "U" relationship between labor inequality and growth over time, thereby providing a theoretical confirmation of the Kuznets hypothesis. In scenarios where technological innovations trigger profound transformations, following a Schumpeterian creative destruction path, an increasing number of firms replace old technologies with innovations, driving up the demand for skilled labor. Given that skilled labor is typically better compensated than basic labor, this can result in a relationship between income inequality and economic growth characterized by an inverted "U" curve, aligning with the Kuznets hypothesis. Consequently, assuming that technological change can influence the population growth of workers, wage inequality may follow a Kuznets trajectory, with initial growth in skilled labor populations positively associated with inequality, while in the long run, when skilled workers become the majority, inequality decreases. Therefore, policymakers should prioritize enhancing the workforce's capacity to acquire skills, which, when combined with technological changes, can bolster the economy and rapidly shift it to the right side of the Kuznets curve, where reducing labor inequality is conducive to economic growth.

Income distribution and, by extension, inequality appear to be linked to trade openness, primarily due to the pressures exerted on the prices of goods and wages stemming from exposure to international competition and labor market deregulations. Additionally, trade openness promotes capital allocation and technological diffusion, amplifying the effects of technological changes on income distribution and economic growth. Consequently, on one hand, trade openness can be advantageous for economies through improved capital allocation and increased technological diffusion, particularly in less affluent countries, resulting in higher growth rates and reduced poverty. Furthermore, the benefits of trade openness and the transformations ushered in by globalization in recent decades have been associated with decreased poverty and inequality, stemming from an increase in average income. However, these benefits of globalization may not be evenly distributed, potentially resulting in higher levels of inequality both within and between countries. As trade openness tends to push down prices, international competitiveness can be linked to either the growth or reduction of factor inequality and profit share. Therefore, overall inequality will be primarily determined by the interplay between profits and wages, as the final outcome hinges on the causes of domestic distributional shifts. Furthermore, trade openness can influence labor inequality by altering the relative demand for basic labor versus skilled labor. The impacts on labor and profit inequality may also be observed due to the technological diffusion that can occur as a result of trade openness. Moreover, since international competitiveness exerts downward pressure on prices, it appears that the bargaining power of all classes, including investor classes, is curtailed. Consequently, policymakers should pay closer attention to the overall influence of relative labor demand on inequality.

Financial development has emerged as a prominent feature of economic growth in most advanced economies over recent decades. This evolution in financial development has precipitated fundamental changes in economies, particularly in the relationship between income distribution and economic growth. The capacity of credit to facilitate investment and consumption has fundamentally altered functional distribution, resulting in significant shifts in consumption and investment patterns, ultimately reshaping aggregate demand. Consequently, as credit enables individuals across developed economies to bridge income gaps through borrowing, savings and the distributive effect become less critical for growth, and the economy becomes increasingly reliant on financial development.

According to the theoretical model outlined in Chapter 5.6.1, the influence of financialization on factor inequality primarily stems from increased credit availability and labor debt. On one hand, mounting labor debt impacts factor distribution by boosting profits, as lending becomes an alternative source of profit income. On the other hand, workers may opt to supplement their income with credit, thereby increasing their disposable income and subsequently boosting aggregate demand. Consequently, if factor inequality diminishes in the early stages, workers will borrow less and gradually pay down their debt from previous periods. This, in turn, propels consumption, both in the short and long run. In the short term, consumption is likely to surge due to the injection of credit income, while in the long term, sustained high consumption levels are maintained thanks to the wage increases that have been realized.

However, there is a risk associated with expanding credit availability, which may not yield the intended outcome in terms of reducing inequality. While financial integration has made credit more accessible to a wider population, enabling both the affluent and less affluent to borrow, this may inadvertently encourage increased borrowing for both

investment and consumption. Such a trend could eventually lead to elevated levels of debt. Borrowing as a means to 'correct' inequality may offer short-term benefits, but it carries the potential to give rise to unsustainable growth in the long run, eventually culminating in a debt crisis.

Moreover, due to varying income levels among rentiers and investors, a shift in sectoral compositions has been observed. This shift has implications for personal profit inequality, differentiating between those who opt to invest in real sectors and those who favor financial sectors. According to the theoretical model discussed in Chapter 5.6.2, sectoral shifts and profit inequality between sectors are determined by differences in profit rates resulting from investments and lending. Additionally, the debt shares of the investor class are positively correlated with profit inequality. In the early stages, increased lending could benefit growth and profit inequality. Investors might choose to borrow to 'rectify' inequality or opt for sectors offering higher profit rates. Furthermore, if they accrue higher income in the long term, they can repay the debts accumulated over previous periods, leading to a decline in profit inequality. Ultimately, this results in reduced profit inequality and fosters increased investment for long-term growth. Conversely, if investors' future income decreases, there is a risk of heightened debt and unsustainable growth, which could ultimately exacerbate inequality in the long run.

Furthermore, the shift in sectoral composition has led to a change in managerial behavior, moving from a 'retain and reinvest' approach to a 'downsize and distribute' strategy. Firms increasingly prioritize shareholder value maximization over long-term investment motives. As a result, since real sector investments are a key driver of growth, profit inequality is closely linked to financialization and the extent of this sectoral shift.

Moreover, broader access to credit due to financial development has paved the way for new growth trajectories among economies. Inequality can give rise to either an exportled or debt-led growth model, as economies grapple with strategies to address changes in domestic demand. Consequently, current account imbalances can be tied to levels of inequality, driven by the development of debt and export-led growth models.

Therefore, attempting to address inequality by expanding access to credit for the less affluent could prove detrimental if the financial sector lacks effective regulation. While financialization tools have yielded short-term growth benefits, these gains may come at the cost of future income and economic growth. Therefore, policymakers should exercise caution when attempting to address inequality by expanding access to credit, ensuring effective regulation of the financial sector to prevent the risk of a debt crisis and facilitate long-term income improvements for those with lower incomes.

To explore empirical evidence on the determinants of income inequality and its relationship with growth, income inequality was analyzed based on the theoretical model. Panel data analysis was conducted using data from Eurozone member countries. The empirical findings reveal that factor inequality increased during the period of 1995-2020, driven by labor's increased share of employment compared to the growth of the wage share. Among the determinants of factor inequality, financial and trade openness were positively correlated with it. While financial and trade openness were associated with higher labor productivity and average wages, the rate of growth in labor productivity outpaced wage growth significantly, resulting in a negative trend in wage shares despite the expansion of labor employment. This contributed to rising factor inequality. Additionally, private debt and current account balances were found to have negative effects on both wages and labor productivity, while also increasing factor inequality. Therefore, policymakers should avoid high levels of both private debt and current account balances to achieve sustained economic growth. Furthermore, Eurozone participation appeared to be a prudent decision, particularly concerning wage shares and factor inequality.

The empirical evidence in Chapter 7.3.2 indicates that wage inequality is positively influenced by wage premiums, while the Kuznets hypothesis is empirically confirmed, as suggested in Chapter 5.2. The relative labor employment is negatively related to wage inequality when the rate of basic to skilled labor population is larger than the rate of total skilled labor income to total basic labor income ($m_L < \Lambda_L$). Conversely, it is positively related to wage inequality when the population and total income of skilled labor have increased, such that the rate of basic to skilled labor population is smaller than the rate of total skilled labor income to total basic labor income ($m_L > \Lambda_L$). The Kuznets hypothesis on wage inequality is further supported in Chapter 7.3.4.2 using an empirical model of non-linearity, widely utilized in the literature. Moreover, while technological changes and financial openness, which are positively related to wage inequality, cannot be avoided, policymakers should prioritize education expenditure to control wage inequality. Additionally, to achieve a rapid reduction in relative labor employment as a policy goal and shift to the second phase of the Kuznets curve, policymakers should focus on factors such as wage premiums, investment in new technologies, and trade openness. Trade openness, though challenging to regulate, can be complemented by investments in education and new technologies, combined with a lower wage premium, as an effective economic policy for sustained economic growth. Evidence suggests that wage premiums can be controlled through factors like technological changes, FDI openness, and education expenditures.

Regarding profit inequality, it appears to be negatively influenced by investments in R&D and trade openness, with a significant impact stemming from the 2008 economic crisis. Additionally, the data reveals low levels of monopoly among the countries studied.

European convergence is expected to impact inequality in several ways. However, regional integration, as measured by inequality between countries, does not appear to have a statistically significant impact on factor, labor, or profit inequality. Convergence does, however, exhibit a negative and statistically significant effect on average wage growth. Additionally, it has been found to be statistically significant and negatively related to the employment of relative profit earners, implying a higher level of monopoly power.

Furthermore, there is evidence that trade openness negatively affects wage shares, consequently resulting in a positive impact on factor inequality as expected. Thus, it appears that openness has led to higher factor inequality within European countries, primarily due to lower wage shares resulting from increased international competitiveness. Additionally, trade openness seems to promote lower profit inequality.

Technological changes, although they have a positive impact on labor productivity, do not appear to significantly affect factor inequality. However, technological changes have been found to be positively related to wage premiums, indicating a positive impact on labor inequality. Consequently, technological changes in Eurozone countries lead to increased labor productivity, larger wage premiums, and greater labor inequality.

Finally, all types of inequality have been found to be positively related to economic growth. Therefore, as factor inequality is positively related to growth, there is evidence

to suggest that Eurozone countries experience growth driven by profits. Furthermore, it seems that the majority of countries in the Eurozone are in the first phase of the Kuznets curve, as the relationship between wage inequality and growth is positive. Additionally, the fact that profit inequality is positively associated with growth aligns with the assumption that the wealthier population invests a higher portion of their income, leading to a higher growth rate, especially in a profit-led regime.

References

Acemoglu, D., 2011. *Thoughts on Inequality and the Financial Crisis,* Denver: American Economic Association Meeting.

Acemoglu, D. & Robinson, A. J., 2000. Why did the West extend the franchise?, Democracy, Inequality, and Growth in Historical Perspective. *The Quarterly Journal of Economics*, 115(4), pp. 1167-1199.

Acharyya, R., 2011. A note on quantitative trade restrictions, income effects and wage inequality. *Econ. models*, 6(28), p. 2628–2633.

Aghion, P. & Bolton, P., 1997. A theory of trickle-down growth and development. *Review of Economic Studies*, 64(2), pp. 151-172.

Aghion, P., Caroli, E. & García-Peñalosa, C., 1999. Inequality and Economic Growth: The Perspective of the New Growth Theories.". *Journal of Economic Literature*, Τόμος 37, pp. 1615-1660.

Aghion, P. & Howitt, P., 1992. A Model of Growth Through Creative Destruction. *Econometrica*, 2(60), pp. 323-351.

Ahluwalia, M. & Chenery, H., 1983,. The Economic Framework. Στο: *Redistribution with Growth*. London: Oxford University Press, pp. 135-147.

Ahmed, N. και συν., 2022. Inequality Kills, s.l.: Oxfam.

Alesina, A. & Perotti, R., 1996. Income distribution, political instability, and investment.. *European Economic Review*, Τόμος 40, pp. 1203-1228.

Alesina, A. & Rodrik, D., 1994. Distributive politics and economic growth. *Quarterly Journal of Economics,* pp. 465-490.

Anderson, E., 2005. Openness and Inequality in Developing Countries: A Review of Theory and Recent Evidence. *Overseas Development Institute*, 33(7), p. 1045–1063.

Andraz, J. M. & Rodrigues, P. M., 2010. What causes economic growth in Portugal: exports or inward FDI?. *Journal of Economic Studies*, 3(37), p. 267–287.

Andraz, J. M. & Rodrigues, P. M., 2010. What Causes Economic Growth in Portugal: Exports or Inward FDI?. *Journal of Economic Studies*, 3(37), p. 267–87.

Andrews, D., Jencks, C. & Leigh, A., 2010. Do Rising Top Incomes Lift All Boats?. *Discussion Paper No. 4920 IZA*.

Antonelli, C. & Gehringer, A., 2013. Innovation and income inequality. *Department of Economics*.

Arrow, K., 1962. Economic Welfare and the Allocation of Resources for Invention.
Στο: *The Rate and Direction of Inventive Activity: Economic.* s.l.:Princeton University Press, pp. 609-626.

Asteriou, D., Dimelis, S. & Moudatsou, A., 2014. Globalization and income inequality: A panel data econometric approach for the EU27 countries. *Economic Modelling, 36*, pp. 592-599.

Atkinson, A. B., 1997. Bringing Income Distribution in From the Cold. *The Economic Journal*, Τόμος 107, pp. 297-321.

Atkinson, A. B., 2009. Factor shares: the principal problem of political economy?. *Oxford Review of Economic Policy*, 1(25), pp. 3-16.

Atkinson, A. B., 2015. *Inequality: What can be done?*. London: Harvard University Press.

Autor, D. H., Katz, L. F. & Krueger, A. B., 1998. Computing Inequality: Have Computers Changed the Labor Market?. *Quarterly Journal of Economics*, Issue 113, pp. 1169-1213.

Azis, I. J., 2015. *Integration, Contagion, and Income Distribution,* s.l.: Regional Science Matters.

Baltagi, B. H., 2005. *Econometric Analysis of Panel Data*. 3rd επιμ. West Sussex, UK: John Wiley & Sons Ltd.

Banerjee, A. V. & Newman, A. F., 1993. Occupational choice and the process of development. *Journal of Political Economy*, 101(2), pp. 274-298.

Banerjee, V. A. & Duflo, E., 2003. Inequality and Growth: What Can the Data Say?. *Journal of Economic Growth*, Τόμος 8, pp. 267-299. Barbosa-Filho, N. H. & Taylor, L., 2006. Distributive and demand cycles in the US economy: a structuralist Goodwin model. *Metroeconomica*, 3 (57), p. 389–411.

Barro, J., 2000. Inequality and Growth in a Panel of Countries. *Journal of Economic Growth*, Τόμος 5, pp. 5-32.

Barro, R. J., 1990. Government Spending in a Simple Model of Endogeneous Growth. *Journal of Political Economy*, Τόμος 98, pp. 103-125.

Barro, R. J., 2008. Inequality and Growth Revisited. *ADB Working Paper Series on Regional Economic Integration*, Τόμος 11.

Bazillier, R. & Hericourt, J., 2017. The Circular Relationship between Inequality, Leverage, and Financial Crises. *Journal of Economic Surveys*, 2(31), p. 463–96.

Becker, Τ. και συν., 2010. Whither growth in central and eastern Europe? Policy lessons for an integrated Europe. *Bruegel economic think tank*, pp. 24-46.

Beckfield, J., 2009. Remapping Inequality in Europe - The Net Effect of Regional Integration on Total Income Inequality in the European Union-. *International Journal of Comparative Sociology*, Τόμος 50(5–6), p. 486–509.

Beck, T., Demirgüç-Kunt, A. & Levine, R., 2007. Finance, Inequality and the Poor. *Journal of Economic Growth*, 12(1), pp. 27-49.

Behringer, J. & Treeck, T. v., 2015. Income Distribution and the Current Account: A Sectoral Perspective'. *Working Papers 379, ECINEQ, Society for the Study of Economic Inequality*.

Behringer, J. & Treeck, T. v., 2018. Income distribution and the current account. *Journal of International Economics*, Issue 114, p. 238–254.

Belabed, C. A. & Treeck, T. T. a. T. v., 2017. Income distribution and current account imbalances. *Cambridge Journal of Economics,* Issue 42, p. 47–94.

Benabou, R., 1996. Inequality and Growth. Στο: B. S. B. a. J. J. Rotemberg, επιμ. *NBER Macroeconomics Annual*. s.l.:MIT Press, pp. 11-92.

Benabou, R., 2000. Unequal Societies: Income Distribution and the Social Contract. *American Economic Review*, 90(1), pp. 96-129.

Berg, A., Ostry, J. D., Tsangarides, C. G. & Yakhshilikov, Y., 2018. Redistribution, inequality, and growth: new evidence. *Journal of Economic Growth*.

Berman, E., Bound, J. & Zvi, G., 1994. Changes in the demand for skilled labor within U.S. manoufacturing: evidence from the annual survey of manufactures. *The Quarterly Journal of Economics*, pp. 367-397.

Bertola, G., 2007. Economic Integration, Growth, Distribution: Does the euro make a difference?. 15 September .

Bigsten, A., 1983. Income Distribution and Development: Theory, Evidence, and Policy. London: Heinemann.

Blanchard, O. & Giavazzi, F., 2002. Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?. *Brookings Papers on Economic Activity*, 2002(2), pp. 147-186.

Blundell, R. & Preston, I., 1998. Consumption inequality and income uncertainty. *The Quarterly Journal of Economics*, Issue 113, p. 603–640.

Bohle, D. & Greskovits, B., 2012. *Capitalist Diversity in Europe's Periphery*. s.l.:Itahca: Cornell University Press.

Bourguignon, F., 1981. Pareto Superiority of Unegalitarian Equilibria in Stiglitz' Model of Wealth Distribution with Convex Saving Function. *Econometrica*, 46(6), pp. 1469-1475.

Bourguignon, F. & Morrisson, C., 1998. Inequality and development: the role of dualism. *Journal of Development Economics*, 2 (57), p. 233–257.

Bouvet, F., 2010b. Dynamics of regional income inequality in Europe and impact of EU regional policy and EMU.

Boyer, R., 2013. The euro crisis; undetected by conventional economics, favoured by nationally focused polity,. *Cambridge Journal of Economics*, Τόμος 37, pp. 533-569.

Brenner, N., Peck, J. & Theodore, N., 2010. Variegated neoliberalization: geographies, modalities, pathways. *Global networks*, 2(10), pp. 182-222.

Buera, F. J., Kaboski, J. P. & Rogerson, R., 2015. Skill Biased Structural Change. *NBER Working Paper No. 21165*.

Caballero, R. J., Farhi, E. & Gourinchas, P.-O., 2008. An Equilibrium Model of "Global Imbalances" and Low Interest Rates. *American Economic Review*, 1(98), p. 358–393.

Cardaci, A. & Saraceno, F., 2016 . Inequality, Financialisation and Credit Booms: a Model of Two Crises. *LUISS Guido Carli / School of European Political Economy*.

Carvalho, L. & Rezai, A., 2015. Personal income inequality and aggregate demand. *Cambridge Journal of Economics*, 20 March, pp. 1-15.

Chambers, D., 2005. Trading places: Does past growth impact inequality?. *Journal of Development Economics, Volume 82*, 5 July, pp. 257-266..

Chancel, L., Piketty, T., Saez, E. & Zucman, G., 2022. *World Inequality Report 2022,* s.l.: World Inequality Lab.

Chinn, M. D. & Ito, H., 2005. "What Matters for Financial Development? Capital Controls, Institutions, and Interactions,". *NBER Working Paper*, May.

Chinn, M. D. & Ito, H., 2008. A New Measure of Financial Openness. *Journal of Comparative Policy Analysis*.

Clarke, G. R. G., Xu, L. C. & Zou, H.-f., 2006. Finance and Income Inequality: What Do the Data Tell Us?. *Southern Economic Journal*, 72(3), pp. 578-596.

Cline, W. R., 1975. Distribution and Development. A Survey Of Literature. *Journal of Development*, Τόμος 1, pp. 359-400.

Coe, D. T. & Helpman, E., 1995. International R&D spillovers. *European Economic Review*, 5 (39), p. 859–887.

Corak, M., 2013. Income Inequality, Equality of Opportunity, and Intergenerational Mobility. *The Journal of Economic Perspectives*, Τόμος 27, pp. 79-102.

Cowell, F. A., 1995. Measuring Inequality. London: Oxford University Press.

Cowell, F. A., 2007. *Inequality, Income Distribution and,* London: London School of Economics.

Cozzens, S. E., 2008. *Innovation and inequality*, s.l.: Georgia Institute of Technology Working Papers.

Cuaresma, J. C. & Wörz, J., 2005. On Export Composition and Growth.. *Review of*, 1(141), p. 33–49.

Cynamon, B. Z. & Fazzari, S. M., 2008. Household debt in the consumer age: Source of growth - risk of collapse. *Capitalism and Society*, 2(3), p. 1–30.

Dabla-Norris, Ε. και συν., 2015. *Causes and Consequences of Income Inequality: A Global Perspective*, s.l.: Strategy, Policy, and Review Department (IMF).

Dahan, M. & Tsiddon, D., 1998. Demographic Transition, Income Distribution, and Economic Growth. *Journal of Economic Growth*, 3(1), pp. 29-52.

Dardot, P. & Laval, C., 2014. The new way of the world: On neoliberal society. s.l.:s.n.

Davis, L. E., 2018. Financialisation and the Nonfinancial Corporation: An Investigation of Firm Level Investment Behavior in the United States. *Metroeconomica*, 69(1), p. 270–307.

Deaton, A., 1995. Data and econometric tools for development analysis. Στο: *Handbook of Development Economics*. Amsterdam:: J.B. a. T. Srinivasan.

Deininger, K. & Squire, L., 1998. New ways of looking at old issues: inequality and growth. *Journal of Development Economics*, Tóµoç 57, pp. 259-287.

Desai, S. D., Brief, A. P. & George, J. M., 2009. Meaner Managers: A Consequence of Income Inequality.

Detzer, D., 2018. Inequality, emulation and debt: The occurrence of different growth regimes in the age of financialization in a stock-flow consistent model. *Journal of Post Keynesian Economics*.

Dew-Becker, I. & Gordon, R. J., 2008. *The Role of Labor Market Changes in The Slowdown of European Productivity Growth*, Massachusetts: National Bureau of Economic Research.

Disoska, E. M. & Toshevska-Trpcevska, K., 2016. Debt or Wage-led Growth : the European Integration. *Journal of Economic Integration*.

Dodig, N., Hein, E. & Detzer, D., 2016. Financialisation and the financial and economic crises: theoretical framework and empirical analysis for 15 countries.

Dollar, D. & Kraay, A., 2002. Growth is good for the poor.. Journal of Economic Growth, 7(195-225).

Dolton, P. & Pelkonen, P., 2008. The Wage Effects of Computer Use: Evidence from WERS 2004. *British Journal of Industrial Relations*, 46(4), p. 587–630.

Duménil, G. & Lévy, D., 2001. Costs and benefits of neoliberalism. A class analysis. *Review of International Political Economy*, 4 (8), p. 578–607.

Duménil, G. & Lévy, D., 2004. *Capital Resurgent. Roots of the Neoliberal Revolution.* s.l.:Cambridge, MA: Harvard University.

Dünhaupt, P., 2013. Determinants of functional income distribution: Theory and empirical evidence. *Global Labour University*.

Dünhaupt, P., 2016. Determinants of labour's income share in the era of financialisation. *Cambridge Journal of Economics*, 41(1), pp. 283-306.

Dutt, A., 1992. Rentiers in post-Keynesian models, . Στο: *Recent Developments in Post-Keynesian Economics*. s.l.:s.n., p. 95–122.

Dutt, A. K., 2006. Maturity, Stagnation and Consumer Debt: a Steindlian Approach.. *Metroeconomica*, 57(3), p. 339–364.

Dutt, A. K., 2017. Income inequality, the wage share, and economic growth. *Review of Keynesian Economics*, Summer, p. 170–195.

Dutt, K. A., 1994. On the long-run stability of capitalist economies: implications of a model of growth and distribution. $\Sigma \tau o$: E. Elgar, $\varepsilon \pi \iota \mu$. *New Directions in Analytical Political Economy*. Aldershot: K. A. Dutt .

Ederer, S. & Stockhammer, E., 2007. Wages and aggregate demand in France: an empirical investigation. Στο: E. a. T. A. Hein, επιμ. *Money, Distribution and Economic*. s.l.:s.n., p. 119–38.

Edwards, S., 1996. Why are Latin America's savings rates so low? An international comparative analysis. *Journal of Development Economics*, Τόμος 51, pp. 5-44.

Epstein, G., 2001. *Financialization, Rentier Interests, and Central Bank Policy,* s.l.: University of Massachusetts, Amherst.

European Comission, 2011. *Annual Growth Survey*. [Ηλεκτρονικό] Available at: <u>http://ec.europa.eu/europe2020/making-it-happen/annualgrowth-</u> <u>surveys/2012/index_en.htm</u>

European Comission, 2012. *Annual Growth Survey*. [Ηλεκτρονικό] Available at: <u>http://ec.europa.eu/europe2020/making-it-happen/annualgrowth-</u> <u>surveys/2012/index en.htm</u>

European Commission, 2007. The labour income share in the European Union. In Employment in Europe., Brussels: European Commission.

Facchini, G. & Mayda, A. M., 2006. Individual Attitudes towards Immigrants:. *Welfare-State Determinants Across Countries*, Issue 1768.

Feenstra, R. C. & Hanson, G. H., 1997. Foreign direct investment and relative wages: evidence fromMexico's maquiladoras. *Journal of International Economics*, 3–4(42), p. 371–93.

Ferrer-i-Carbonell, A., 2005. Income and well-being: an empirical analysis of the comparison income effect. *Journal of Public Economics*, Issue 89, p. 997 – 1019.

Fingleton, B. & Martin, H. G. a. R., 2015. Shocking aspects of monetary union: the vulnerability of regions in Euroland. *Journal of Economic Geography*, p. 1–28.

Firebaugh, G., 2003. *The New Geography of Global Income Inequality*. s.l.:Cambridge, MA: Harvard University Press.

Forbes, J., 2000. A Reassessment of the Relationship Between Inequality and Growth. *American Economic Review*, Τόμος 90, pp. 869-887.

Franke, R., Flaschel, P. & Proaño, C. R., 2006. Wage-price dynamics and income distribution in a semi-structural Keynes-Goodwin model. *Structural Change and Economic Dynamics*, 4(17), p. 0–465.

Frank, R. H., 2007. *Falling Behind: How Rising Inequality Harms the Middle Class.* s.l.:Berkley: University of California Press.

Frank, R. H., Levine, A. S. & Dijk, O., 2014. Expenditure Cascades. *Review of Behavioral*, Τόμος 1, pp. 55-73.

Freeman, R. B., 1993. Labor Markets and Institutions in Economic Development. *The American Economic Review*, 83(2), pp. 403-408.

Galbraith, K. J., 2012. *Inequality and Instability: A study of the world economy just before the great crisis.* s.l.:Oxford University Press.

Galor, O. & Moav, O., 2000. From Physical to Human Capital Accumulation: Inequality and the Process of Development. *Review of Economic Studies*, Τόμος 71, pp. 1001-1026.

Galor, O. & Zang, H., 1997. Fertility, income distribution, and economic growth: Theory and cross-country evidence. *Japan and the World Economy*, Τόμος 9, pp. 197-229.

Galor, O. & Zeira, J., 1993. Income distribution and macroeconomics. *Review of Economic Studies*, 60(1), pp. 35-52.

Garca-Pealosa, C. & Daudey, E., 2007. The personal and the factor distributions of income in a cross-section of countries. *The Journal of Development Studies*, 5(43), pp. 812-829.

García-Peñalosa, C., 2010. Income distribution, economic growth and European integration. *Journal of Economic Inequality*, Τόμος 8, pp. 277-292.

Garicano, L. & Rossi-Hansberg, E., 2006. Organization and Inequality in a Knowledge Economy. *Quarterly Journal of Economics*, Issue 121, pp. 1383-1435.

Geishecker, I. & Görg, H., 2008. Winners and Losers: A Micro-Level Analysis of International Outsourcing and Wages. *The Canadian Journal of Economics*, 41(1), pp. 243-270.

Gilles, S.-P. & Thierry, V., 1993. Education, democracy and growth. *Journal of Development Economics*, 42(2), pp. 399-407.

Gillis, M., Perkins, D., Roemer, M. & Snodgrass, D., 1987. *Economics of Development*. 2nd επιμ. s.l.:WW Norton and Company. Giovannoni, O., 2010. Functional Distribution of Income, Inequality and the Incidence of Poverty: Stylized Facts and the Role of Macroeconomic Policy, s.l.: The University of Texas Inequality Project.

Glyn, A., 2007. *Capitalism unleashed: finance, globalization, and welfare*. s.l.:Oxford University Press.

Glyn, A., 2011. Functional Distribution and Inequality. *The Oxford Handbook of Economic Inequality*.

Goldberg, P. K. & Pavcnik, N., 2007. Distributional Effects of Globalization in Developing Countries. *Journal of Economic Literature*, 1(45), pp. 39-82.

Goldin, C. & Katz, L. F., 2008. *The Race between Education and Technology*. s.l.:Cambridge, MA: The Belknap Press of Harvard University Press..

Greenwood, J. & Jovanovic, B., 1990. Financial Development, Growth, and the Distribution of Income. *The Journal of Political Economy*, Τόμος 98, pp. 1076-1107.

Grijalva, D. F., 2011. *Inequality and Economic Growth: Bridging the Short-run and the Long-run,* s.l.: UC Irvine: Center for the Study of Democracy.

Grossman, G. M. & Helpman, E., 1991. Quality Ladders in the Theory of Growth. *The Review of Economic Studies*, , 1(58), pp. 43-61.

Grossman, G. M. & Helpman, E., 1991. Trade, knowledge spillovers, and growth. *European Economic Review*, 2-3(35), p. 517–526.

Gu, X., Dong, B. & Huang, B., 2014. Inequality, Saving and Global Imbalances: A New Theory with Evidence from OECD and Asian Countries. *The World Economy*.

Halter, D., Oechslin, M. & Zweimüller, J., 2014. Inequality and growth: the neglected time dimension. *J Econ Growth*, Issue 19, p. 81–104.

Harris, D. J., 1993. Economic Growth and Equity: Complements or Opposites. *Review* of Black Political Economy, 21(3), pp. 65-72.

Harrison, A., 2002. Has globalization eroded labor's share? Some cross-country evidence. *Mimeo, UC Berkeley*.

Harvey, D., 2005. *A Brief History of Neoliberalism.* s.l.:Oxford: Oxford University Press.

Heathcote, J. P. F. V. G., 2010. Unequal We Stand: An Empirical Analysis of Economic Inequality in the United States. *Review of Economic Dynamics*, Τόμος 13, p. 15–51.

Hein, E., 2011. *Distribution, 'Financialisation' and the Financial and Economic Crisis* –*Implications for Post-crisis Economic Policies,* Berlin: Berlin School of Economics and Law and Institute for International Political Economy (IPE).

Hein, E., 2012. "Financialization," distribution, capital accumulation, and productivity growth in a post-Kaleckian model. *Journal of Post Keynesian Economics*.

Hein, E., 2012b. Finance-dominated Capitalism, Re-distribution, Household Debt And Financial Fragility In A Kaleckian Distribution And Growth Model.. *PSL Quarterly Review*, , 260(65), p. 11–51.

Hein, E., 2013b. The crisis of finance-dominated capitalism in the euro area, deficiencies in the economic policy architecture, and deflationary stagnation policies. *Journal of Post Keynesian Economics*, 2(36), p. 325–354.

Hein, E., 2013. Finance-dominated capitalism and redistribution of income: A Kaleckian perspective, NY: Working Paper, No. 746, Levy Economics Institute of Bard.

Hein, E., 2014. *Distribution and Growth after Keynes. A Post-Keynesian Guide*. s.l.:Edward Elgar Publishing Limited.

Hein, E. & Detzer, D., 2015. Finance-Dominated Capitalism and Income Distribution: A Kaleckian Perspective on the Case of Germany. *Italian Economic Journal*, 2(1), p. 171–191.

Hein, E. & Dodig, N., 2014. Financialisation, distribution, growth and crises: Long-run tendencies. *Working Paper*, , Issue 35.

Hein, E. & Dünhaupt, P., 2019. Financialization, distribution, and macroeconomic regimes before and after the crisis: a postKeynesian view on Denmark, Estonia, and La. *Journal of Baltic Studies*.

Hein, E. & Mundt, M., 2012. *Financialisation and the Requirements and Potentials for Wage-led Recovery – A Review Focusing on the G20*, s.l.: In Conditions of Work and Employment Series 37.

Hein, E. & Prante, F. J., 2018. *Functional distribution and wage inequality in recent Kaleckian growth models*, Berlin, Germany: Berlin School of Economics and Law and Institute for International Political Economy (IPE).

Hein, E. & van Treeck, T., 2008. Financialisation'' in post-Keynesian Models of Distribution and Growth – a Systematic Review. *IMK Working Paper*, Τόμος no. 10.

Hein, E. & Vogel, L., 2008. Distribution and growth reconsidered: empirical results for six OECD countries. *Cambridge Journal of Economics*, 3(32), p. 479–511.

Hein, P. D. &. E., 2019. Financialization, distribution, and macroeconomic regimes before and after the crisis: a postKeynesian view on Denmark, Estonia, and La. *Journal of Baltic Studies*.

Herr, H., 2018. *Karl Marx's thoughts on functional income distribution – a critical analysis*, Berlin: Institute for International Political Economy (IPE),.

Higgins, M. & Williamson, J., 1999. Explaining inequality the world round: cohort size, Kuznets curve and openness. *NBER working papers*, Τόμος 7224..

Huang, H.-C. (., Lin, Y.-C. & Yeh, C.-C., 2012. An appropriate test of the Kuznets hypothesis. *Applied Economics Letters*, Τόμος 19, pp. 47-51.

Iacoviello, M., 2008. Household Debt and Income Inequality, 1963–2003. *Journal of Money, Credit and Banking*, 40(5), pp. 930-965.

ILO, 2008. *World of work report 2008 : income inequalities in the age of financial globalization*, Geneva:: International Labour Office, International Institute for Labour Studies. ILO.

International Labour Organization (ILO), 2008. World of Work Report 2008. Income inequalities in the age of financial globalization, Geneva: ILO.

International Monetary Fund , 2007a. *The globalization of labor*, Washington, DC: In World Economic Outlook .

International Monetary Fund, 2006. *World Economic Outlook: Financial Systems and Economic Cycles*, Washington, D.C.: International Monetary Fund,.

International Monetary Fund, 2007b. *Globalization and Inequality*, s.l.: World Economic Outlook.

Iradian, G., 2005. *Inequality, Poverty, and Growth: Cross-Country Evidence*, s.l.: IMF Working Paper.

Ivanova, M. N., 2019. Inequality, financialization, and the US current account deficit. *Industrial and Corporate Change Vol. 28*, 19 March, p. 707–724.

Jäggi, A., Schetter, U. & Schneider, M. T., 2021. Inequality, Openness, and Growth through Creative Destruction. *CID Research Fellow and Graduate Student Working Paper No. 130*.

Jayadev, A., 2007. Capital account openness and the labour share of income. *Cambridge Journal of Economics*, Τόμος 31, p. 423–443.

Kaldor, N., 1956. Alternative Theories of Distribution. *The Review of Economic Studies*, Τόμος 23, pp. 83-100.

Kaldor, N., 1961. Capital Accumulation And Economic Growth. F.A. Lutz and D.C. Hague, eds., The Theory of Capital, St. Martins Press,, pp. 177-222.

Kali, R., Méndez, F. & Reyes, J., 2007. Trade structure and economic growth. *The Journal of International Trade & Economic Development*, 2(16), p. 245–269.

Kanbur, R. & Stiglitz, J., 2015. Wealth and income distribution: New theories needed for a new era. *VOX CEPR's Policy Portal*, 18 August.

Karwowski, E., Shabani, M. & Stockhammer, E., 2017. Financialization: Dimensions and Determinants. A Cross-Country Study. *Kingston University Economics Discussion Papers*, Τόμος 1.

Keller, W., 2004. International Technology Diffusion. *Journal of Economic Literature*, 3(42), p. 752–782.

Kiefer, D. & Rada, C., 2004. Profit maximising goes global: the race to the bottom. *Cambridge Journal of Economics*.

Kim, J.-H., 2016. A Study on the Effect of Financial Inclusion on the Relationship Between Income Inequality and Economic Growth. *Emerging Markets Finance and Trade*, 2(52), p. 498–512.

Kim, Y. K., 2013. Household Debt, Financialisation, and Macroeconomic Performance in the United States. 1951–2009.. *Journal of Post Keynesian Economics*, Τόμος 35, p. 675–694.

Kindleberger, C. P., 2000. *Manias, Panics, and Crashes: A History of Financial Crise*. 4 επιμ. New York: s.n.

Kohler, K., Guschanski, A. & Stockhammer, E., 2018. The impact of financialisation on the wage share. A theoretical clarification and empirical test. *Kingston University Economics Discussion Papers*, Issue 1.

Kolev, G. & Niehues, J., 2016. *The Inequality-Growth Relationship - An Empirical Reassessment*, s.l.: Verein für Socialpolitik / German Economic Association.

Korzeniewicz, R. P. & Patrick, M. T., 2005. Theorizing the relationship between inequality and economic growth. *Theory and Society*, Τόμος 34, pp. 277-316.

Krueger, D. & Perri, F., 2006. Does Income Inequality Lead to Consumption Inequality? Evidence and Theory. *Review of Economic Studies*, 1 (73), pp. 163-193.

Kumhof, M., Lebarz, C., Rancière, R. & Throckmorton, A. W. R. a. N. A., 2012. *Income Inequality and Current Account Imbalances,* s.l.: International Monetary Fund.

Kumhof, M. & Ranciere, R., 2010. Inequality, Leverage and Crises. *IMF Working Paper*, Issue 268.

Kumhof, M. R. R. a. P. W., 2015. (2015) 'Inequality, Leverage, and Crises. *American Economic Review*, 3 (105), p. 1217–45.

Kuttner, R., 2007. The Squandering of America: How the Failure of Our Politics Undermines Our Prosperity. Knopf, Alfred A. επιμ. New York: s.n.

Lavoie, M. & Stockhammer, E., 2013. *Wage-Led Growth: An Equitable Strategy for Economic Recovery*. s.l.:Palgrave Macmillan.

Lazear, E. P. & Rosen, S., 1981. Rank-Order Tournaments as Optimum Labor Contracts. *Journal of Political Economy*, 89(5), pp. 841-864.

Lazonick, W. & O'Sullivan, M., 2000. Maximizing shareholder value: a new ideology for corporate governance. *Economy and Society*, 1(29), pp. 13-35.

Leigh, A. & Posso, A., 2009. Top incomes and national savings. *Review of Income & Wealth*, 55(1), p. 57 – 74.

Li, H., Squire, L. & Zou, H., 1998. Explaining international and intertemporal variations in income inequality.. *Economic Journal*, 108(446), p. 26–43..

Lima, G. T., 2000. Market concentration and technological innovation in a dynamic model of growth and distribution. December.

Lima, G. T., 2004. Endogenous Technological Innovation, Capital Accumulation and Distributional Dynamics. *Metroeconomica*.

Lopez, H., 2006. Growth and inequality: Are the 1990s different?. *Economics Letters*, Τόμος 93, pp. 18-25.

Lucas, R. E. J., 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*, Tóµoç 22, pp. 3-42.

Lundberg, M. & Squire, L., 2003. The simultaneous evolution of growth and inequality. *Economic Journal*, 113 (487), p. 326–344.

Madsen, J. B., Islam, M. R. & Doucouliagos, H., 2017. *Inequality, Financial Development and Economic Growth in the OECD, 1870-2011,* s.l.: European Economic Review.

Manea, S. & Wildauer, Ö. O. a. R., 2019. *The Impact of Fiscal Policy, Income and Wealth Inequality, Financialization and the Housing Market on Growth,* s.l.: University of Greenwich.

Martin Čihák, R. S. A. B. S. C. A. F. P. X., 2020. Finance and Inequality, s.l.: IMF.

Matyas, L., Konya, L. & MaCquarie, L., 1998. The Kuznets U-curve hypothesis: some panel data evidence. *Applied Economics Letters*, Τόμος 11, pp. 693-697.

Meltzer, A. H. & Richard, S. F., 1981. A rational theory of the size of government. *Journal of Political Economy*, 89(5), pp. 914-927.

Mian, A. & Sufi, A., 2008. 'The consequences of mortgage credit expansion: Evidence from the u.s. mortgage default crisis. *nber working paper series*, Issue Working Paper 13936.

Milanovic, B., 2005. Can we discern the effect of globalisation on income distribution? Evidence from household budget surveys. *World Bank Economic Review*, 19(1), p. 21–44.

Minsky, H. P., 1973. The Strategy of Economic Policy and Income Distribution. *Annals of the American Academy of Political and Social Science*, Issue 409.

Minsky, H. P., 1990. Schumpeter: Finance and Evolution.. Στο: A. Heertje & M. Perlman, επιμ. *Evolving Technology and Market Structure: Studies in Schumpeterian Economics*. s.l.:St. Martin's Press, pp. 51-73.

Minsky, H. P., 1996. Uncertainty and the Institutional Structure of Capitalist Economies: Remarks upon Receiving the Veblen-Commons Award. *Journal of Economic Issues*, 30(2), pp. 357-368.

Molero-Simarro, R., 2016,. Growth and inequality revisited: the role of primary distribution of income. A new approach for understanding today's economic and social crises. *Cambridge Journal of Economics*, pp. 1-24.

Monfort, M., Ordóñez, J. & Sala, H., 2018. Inequality and unemployment patterns in Europe: Does integration lead to (real) convergence?. *Open Economies Review, Springer,* Τόμος 29, pp. 703-724.

Mookerjee, R. &. K. P., 2010. Availability of financial services and income inequality: The evidence from many countries. *Emerging Markets Review*, 4(11), p. 404–408.

Morelli, P. L. a. S., 2012. Inequality, debt and growth, s.l.: Resolution Foundation.

Naastepad, C. & Storm, S., 2015. NAIRU economics and the Eurozone crisis. *International Review of Applied Economics*, 6(29), pp. 843-877.

Naastepad, C. W. M. & Storm, S., 2007. OECD Demand Regimes (1960-2000). Journal of Post Keynesian Economics, 2(29), pp. 211-246.

Nacho Álvarez, J. C. M. K. J. U., June 2018. *The Functional Income Distribution and Labour Market Institutions: the Missing Links in the Agenda for Inclusive Growth After Austerity*, s.l.: KU Leuven.

Nelson R., W. S., 1982. An Evolutionary Theory of Economic Change. s.l.:Harvard University.

Nishi, H., 2012. Structural VAR analysis of debt, capital accumulation, and income distribution in the Japanese economy: a Post Keynesian perspective. *Journal of Post Keynesian Economics*, 34(4), pp. 658-712.

Nölke, A. & Vliegenthart, A., 2009. Enlarging the Varieties of Capitalism: The Emergence of Dependent Market Economies in East Central Europe. *World Politics*, 61 (4), pp. 670-702.

Obstfeld, M. & Rogoff, K., 2009. *Global Imbalances and the Financial Crisis: Products of Common Causes*, s.l.: UC Berkeley and Harvard University.

Obst, O. O. a. T., 2016. Wage-led growth in the EU15 member-states: the effects of income distribution on growth, investment, trade balance and inflation. *Cambridge Journal of Economics*, pp. 1-35.

OECD, 2012. Employment Outlook, Paris: OECD.

Okun, A. M., 1975. *Equality and Efficiency: The Big Tradeoff.* Washington, DC: Brookings Institution Press.

Onaran, Ö., 2009. Wage share, globalization, and crisis: The case of manufacturing ndustry in Korea, Mexico, and Turkey. *International Review of Applied Economics*, 2(23), pp. 113-34.

Onaran, O., 2011. Globalisation, macroeconomic performance and distribution. $\Sigma \tau o: E$. H. a. E. Stockhammer, $\varepsilon \pi \iota \mu$. *A modern guide to Keynesian macroeconomics and economic policies*. s.l.:Cheltenham Edward Elgar. pp. , pp. 240-266. Onaran, O., 2019. Equality-led Development and the Demand- and Supply-side Effects. *Development and Change*, p. 445–457.

Onaran, Ö. & Galanis, G., 2012. Is aggregate demand wage-led? National and global effects. Στο: *Conditions of Work and Employment Series No. 40*. Geneva: International Labour Office.

Onaran, O. & Grafl, E. S. a. L., 2011. Financialisation, income distribution and aggregate demand in the USA. *Cambridge Journal of Economics*, 7 January, p. 637–661.

Orhangazi, O., 2008. Financialisation and capital accumulation in the non-financial corporate sector: A theoretical and empirical investigation on the US economy: 1973–2003. *Cambridge Journal of Economics*, Τόμος 32, p. 863–886.

Ostry, J. D., Berg, A. & Tsangarides, C. G., 2014. *Redistribution, Inequality, and Growth,* Washington, DC: International Monetary Fund.

Palley, T. I., 2007. *Financialization: What It Is and Why It Matters,* Washington, D.C.: The Levy Economics Institute and Economics for Democratic and Open Societies.

Palley, T. I., 2015. The middle-income class in macroeconomics and growth theory: a three-class neo-Kaleckian-Goodwin model. *Cambridge Journal of Economics*, 1 (39), pp. 221-243.

Palley, T. I., 2016. *Inequality and Growth in Neo-Kaleckian and Cambridge Growth Theory*, Massachusetts: Political Evonomy Research Institute.

Panizza, U., 1995. Income Inequality and Economic Growth: Evidence from American Data. *Journal of Economic Growth*, Τόμος 7, pp. 25-41.

Partridge, M. D., 1997. Is Inequality Harmful for Growth? Comment. *The American Economic Review*, 5(87), pp. 1019-1032.

Parui, P., 2018. Financialization and Endogenous Technological Change: a Post-Kaleckian Perspective. *Centre for Economic Studies and Planning, Jawaharlal Nehru*, October .

Perotti, R., 1993. Political Equilibrium, Income Distribution, and Growth. *The Review* of *Economic Studies*, 60(4), pp. 755-776.

Perotti, R., 1996a. Growth, Income Distribution, and Democracy: What the Data Say. *Journal of Economic Growth*, Τόμος 1, pp. 149-187.

Persson, T. & Tabellini, G., 1994. Is Inequality Harmful for Growth?. *The American Economic Review*, 84(3), pp. 600-621.

Pettis, M., 2013. *The Great Rebalancing: Trade, Conflict, and the Perilous Road Ahead for the World Economy*. s.l.:Princeton University Press.

Piketty, T., 1994. Inégalités et redistribution. Développements théoriques récents. *Revue d'Economie Politique*, 104(6), pp. 769-800.

Piketty, T., 1997. The dynamics of the wealth distribution and the interest rate with credit rationing. *Review of Economic Studies*, 64(2), pp. 173-189.

Piketty, T., 2000. Theories of persistent inequality and intergenerational mobility. Στο:
A. B. Atkinson & B. F., επιμ. *Handbook of Income Distribution*. s.l.:Elsevier Science
B. V., pp. 429-476.

Piketty, T., 2014. *Capital in the 21st century*. Cambridge, Massachusetts London: The Belknap Press of Harvard University Press.

Pivetti, M. & Barba, A., 2009. Rising household debt: Its causes and macroeconomic implications—a long-period analysis. *Cambridge Journal of Economics*, Issue 33, p. 113–137.

Pozsar, Z., Adrian, T., Ashcraft, A. & Boesky, H., 2010. *Shadow Banking*, New York: Staff Report No. 458.

Rajan, R. G., 2010. *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton: Princeton University Press.

Rajan, R. G., 2011. *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton: Princeton University Press.

Ravallion, M., 2001. Growth, inequality and poverty: looking beyond averages.. *World Development*, 29(11).

Reich, R., 2010. Aftershock: The Next Economy and America's Future. s.l.:Knopf.

Rodríguez, F. C., 2000. Inequality, Economic Growth and Economic Performance: A Background Note for the World Development Report 2000, s.l.: Department of Economics; University of Maryland.

Rodrik, D., 1997. *Has Globalization Gone Too Far?*. Washington: Institute of International Economics.

Rodrik, D., 1998. Capital mobility and labor, s.l.: Harvard University.

Rodrik, D., 1998. Who needs capital-account convertibility?, s.l.: Harvard University.

Romer, P. M., 1986. Increasing Returns and Long-Run Growth. *The Journal of Political Economy*, 94(5), pp. 1002-1037.

Roy-Mukherjee, S. & Udeogu, E., 2020. Neo-liberal Globalization and Income Inequality: Panel Data Evidence from OECD and Western Balkan Countries. *Journal of Balkan and Near Eastern Studies*.

Sahay, R. και συν., 2015. Rethinking Financial Deepening: Stability and Growth in Emerging Markets.. *IMF Staff Discussion Note*.

Sahota, G. S., 1978. Theories of Personal Income Distribution: A Survey. *Journal of Economic Literature*, Τόμος 16, pp. 1-55.

Saint-Paul, G., 2001. On the Distribution of Income and Worker Assignment under Intrafirm Spillovers, with an Application to Ideas and Networks. *Journal of Political Economy*, Τόμος 109, pp. 1-37.

Saith, A., 1983. Development and distribution: A critique of the cross-country U-hypothesis. *Journal of Development Economics*, 13(3), pp. 367-382.

Schmidheiny, K., 2019. Panel Data: Fixed and Random Effects. Στο: Basel: Unversitat Basel: s.n.

Schmidt-Hebbel, K. & Servén, L., 2000. Does income inequality raise aggregate saving?. *Journal of Development Economics*, 61(2), pp. 417-446.

Schumpeter, J. A., 1942. Capitalism, socialism and democracy. s.l.:s.n.

Shaxson, N., 2010. *Treasure Islands: Tax Havens and the Men who Stole the World*. London: s.n.

Shell, K., 1973. Inventive Activity, Industrial Organisation and Economic Growth. Στο: J. A. Mirrlees & N. H. Stern, επιμ. *In Models of Economic Growth*. New York: Wiley, pp. 78-100.

Soukiazis, E. & Antunes, M., 2011. Is foreign trade important for regional growth? Empirical evidence from Portugal. *Economic Modelling*, 3(28), p. –1373.

Spilimbergo, A., 2000. Growth and Trade: The North Can Lose. *Journal of Economic Growth*, 2(5), p. 131–146.

Steger, M. S. T. M., 2010. Financial Integration, Investment, And Economic Growth: Evidence From Two Eras of Financial Globalization. *The Review of Economics and Statistics*, November, p. 756–768.

Stiglitz, J., 2015. Inequality and Economic Growth. Στο: M. Mazzucato & M. Jacobs, επιμ. *Rethinking Capitalism*. New Jersey: Wiley-Blackwell.

Stiglitz, J. E., 2012. The price of inequality. s.l.:W. W. Norton & Company.

Stockhammer, E., 2004. Financialisation and the slowdown of accumulation. *Cambridge Journal of Economics*, November, Τόμος 28, p. 719–741.

Stockhammer, E., 2009. Determinants of functional income distribution in OECD countries. September.

Stockhammer, E., 2010. Income Distribution, the Finance-dominated Accumulation Regime, and the Present Crisis.. Στο: *The World Economy in Crisis - the Return of Keynesianism?* . Marburg: Metropolis: S. Dullien, E. Hein, A. Truger, and T. van Treeck, p. 63–86.

Stockhammer, E., 2011. Peripheral Europe's debt and German wages. *International Journal for Public Policy*, 7(1-3), pp. 83-96.

Stockhammer, E., 2012a. Financialization, income distribution and the crisis. *Investigación Económica*, 279(71).

Stockhammer, E., 2012b. *Rising Inequality as a Root Cause of the Present Crisis,* s.l.: Political Economy Research Institute.

Stockhammer, E., 2012c. *Why have wage shares fallen? A panel analysis of the determinants of functional income distribution*, GENEVA: International Labour Organization.

Stockhammer, E., 2013. Rising inequality as a cause of the present crisis. *Cambridge Journal of Economics*, pp. 1-24.

Stockhammer, E., 2014. Debt-driven Growth? Wealth, Distribution and Demand in OECD Countries.

Rising inequality as a structural cause of the present financial and economic crisis.

Stockhammer, E., 2015. Wage-led versus Profit-led Demand: What Have we Learned? A Kalecki-Minsky View. *Post Keynesian Economics Study Group*, December .

Stockhammer, E., 2016. Neoliberal growth models, monetary union and the Euro crisis. A post-Keynesian perspective. *New Political Economy*.

Stockhammer, E., 2017. Determinants of the wage share. A panel analysis of advanced and developing economies. *British Journal of Industrial Relations*, Issue 55, pp. 3-33.

Stockhammer, E. & Kohler, K., 2019. *Financialization and demand regimes in advanced economies*, s.l.: Post-Keynesian Economics Society.

Stockhammer, E., List, L. & Durand, C., 2015. *European Growth Models and Working Class Restructuring before the Crisis*, s.l.: Post Keynesian Economics Study Group.

Stockhammer, E. & Onaran, Ö., 2004. Accumulation, distribution and employment: a structural VAR approach to a Kaleckian macro model. *Structural Change and Economic Dynamics*, 4(15), p. 421–447.

Storm, S. & Naastepad, C., 2015. Europe's Hunger Games: Income Distribution, Cost Competitiveness and Crisis. *Cambridge Journal of Economics*, 3(39), p. 959–986.

Thomas Goda, Ö. O. a. E. S., 2016. Income Inequality and Wealth Concentration in the Recent Crisis. *Development and Change 48*, p. 3–27..

Todaro, M., 1994. Economic Development. 5 επιμ. s.l.:Longman Group.

Tori, D. & Onaran, Ö., 2018. Financialization, financial development and investment. Evidence from European non-financial corporations. *Socio-Economic Review*.

Tridico, P. & Pariboni, R., 2017. Inequality, financialization, and economic decline. *Journal of Post Keynesian Economics*.

Van Treeck, T. & Sturn., S., 2012. *Income Inequality as A Cause of the Great Recession? A Survey of Current Debates.*, s.l.: In Conditions of Work and Employment Series 39. Geneva: International Labor Organization.

Van Zanden, J. L. και συν., 2014. Income inequality since 1820, s.l.: OECD.

Vega, J. C. a. P. d. l., 2018. Investment, Inequality and Openness: A Cross-Country Analysis.

Verdier, G. S.-P. a. T., 1993. Education, democracy and growth. *Journal of Development Economics 42*, January.

Voitchovsky, S., 2005. Does the Profile of Income Inequality Matter for Economic Growth?: Distinguishing Between the Effects of Inequality in Different Parts of the Income Distribution. *Journal of Economic Growth*, Τόμος 10, pp. 273-296.

Wade, R. H., 2004. Is globalization reducing poverty and inequality?. *World Development,* Issue 32, p. 567–589.

Weide, R. v. d. & Milanovic, B., 2014. Inequality Is Bad for Growth of the Poor (But Not for That of the Rich). *Policy Research Working Paper 6963 World Bank Group*.

Wilkinson, R. G. & Pickett, K. E., 2007. The problems of relative deprivation: Why some societies do better than others. *Social Science & Medicine*, Τόμος 65, pp. 1965-1978.

Williamson, J. G. & Lindert, P. H., 1980. *American inequality : a macroeconomic history*. New York : Academic Press.

Wolff, E. N. & Zacharias, A., 2007. *Class Structure and Economic Inequality*, s.l.: Levy Economics Institute.

Wray, L. R., 2007. *Minsky's Approach to Employment Policy and Poverty: Employer of Last Resort and the War on Poverty,* New York: The Levy Economics Institute of Bard College.

Zalewski, D. A. & Whalen, C. J., 2010. Financialization and Income Inequality: A Post Keynesian Institutionalist Analysis. *Journal of Economic Issues*, Τόμος 44, pp. 757-777.

Zeman, J., 2019. Income Distribution and Economic Growth: Empirical Results for Slovakia. *Ekonomický časopis, 67*, pp. č. 5, s. 459 – 480.

Appendix

Description of variables

The data have been primarily derived from various sources, including the annual macroeconomic database of the European Commission (AMECO database), Eurostat, the International Labour Organization (ILO), the World Inequality Database (WID), the International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD), The World Bank, and the OECD. All variables and data used are presented in the following subsections.

Population data

For the demographic explanatory variables that have been used, data has been primarily sourced from the European Commission's database (AMECO database)⁶³ and the International Labour Organization (ILO) ⁶⁴. Population variables are presented in Table 12.

Population	description	source	label
Total Population	Unempl+L+E	calculated	Ν
Unemployment	(NUTN)	Ameco	Unempl
Unemployment rate	Unempl/N	calculated	unempIRT
Employment	L+E	calculated	Т
Employnment Rate	T/N	calculated	e
Workers	Wage and salary earners (Persons),Total economy, domestic (NWTD)	Ameco	L
Labor Employnment Rate	L/N	calculated	eL
Skilled Workers	adv_empl*L	calculated	Ls
Basic Educated Workers	Basic_empl*L	calculated	Lb
Tertiary Educated Workers	share of employed with tertiary education	ILO	adv_empl
Up to secondary educated Eorkers	1-adv_empl	ILO	Basic_empl
Capital owners	Self-employed (Persons), Total economy (NSTD)	Ameco	Ξ
High class Capital Owners	0,1*N	calculated	Ξh
Middle class Capital Owners	E-Eh	calculated	Ξm
proportion of workers	L/T	calculated	
Proportion of Skilled employment	Ls/L	calculated	γs
Proportion of Basic employment	Lb/L	calculated	γb
Proportion of high class capital owners	Ξh/Ξ	calculated	ηh
Proportion of middle class capital owners	Ξm/Ξ	calculated	ηm
income share of 0,1 richer population	pre tax income share of 0,1 richer population	World Inequality Database (WID) (https://wid.world/data/)	onePCshare
income share of the middle class	1-share of 50% poorer-share of 10% richer	World Inequality Database (WID) (https://wid.world/data/)	middleClassShare
relative labor employnmet	Lb/Ls	calculated	relatL
relative capital owners' employment	Em/Eh	calculated	relatK

Table 12

⁶³ Unemployment, Total (NUTN), Wage and salary earners (Persons), Total economy, domestic (NWTD), Self-employed (Persons), Total economy (NSTD)

⁶⁴ Employment by Education, Annual.

Income and distribution data

Income and distribution data has primarily been sourced from the European Commission's database (AMECO database) and the World Inequality Database (WID). Data for income variables are presented in Table 13.

Table	13
-------	----

Income	description	source	label
Gross domestic product at current prices	Gross domestic product at current prices (UVGD) (ECU/EUR)	Ameco	gdp
Total Income	Wages + Profits	calculated	Y
Wages	HH & NPISH, Gross wages and salaries (D11) (UWSH)	Ameco	w
Wage share	Wages/Profits	calculated	λ
Total Skilled Wages	ws*Ls	calculated	Ws
Total Basic Wages	W-Ws	calculated	Wb
Average Income From Wages	W/L	calculated	W
Average Income for skilled Labor	middleClassShare/(0,4*N)	calculated	WS
Average Income for basic Labor	Wb/Lb	calculated	wb
Share of skilled Wages	Ws/W	calculated	ωs
Share of Basic Wages	1-ωs	calculated	ωb
wage premium	ws/wb	calculated	qL
Profits	HH & NPISH, Nonlabour income (B2g+B3g+D4 net) (UYOH)	Ameco	п
Total High class Profits	onePCshare*Y	calculated	Πh
Total middle class Profits	П-Пһ	calculated	Пm
Average Income From Profits	Π/Ξ	calculated	π
Average Icome for high class profits	Πh/Ξh	calculated	πh
Average Icome for middle class profits	Πm/Ξm	calculated	πm
Share of high class profits	Пһ/П	calculated	kh
profti premium	πh/πm	calculated	qK
Share of middle class profits	Пт/П	calculated	km
profit rate	Operating surplus, Net (UOND)/Net capital stock (OKND)	Ameco	r

Integration data

Additionally, integration is represented by four explanatory variables. Firstly, the sum of exports and imports is used as a variable to represent trade openness. Second, the Chinn-Ito index, which measures financial openness, is employed as the second variable. The Chinn-Ito index, introduced by Chinn and Ito in 2005, is based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) (Chinn & Ito, 2005; Chinn & Ito, 2008).⁶⁵ This index quantifies the level

⁶⁵ http://web.pdx.edu/~ito/Chinn-Ito_website.htm

of financial openness in economies and has been utilized in various studies (ILO, 2008; Vega, 2018; Roy-Mukherjee & Udeogu, 2020).

Thirdly, the sum of inflows and outflows of FDI is used as a measure of FDI openness. Finally, the GINI index, which measures inequality among the citizens of the total European population, is employed as a proxy for convergence. The integration variables are presented in Table 14.

Table 14

integration variables				
trade openness	(X+M)/gdp	calculated	ор	
Financial openess	The Chinn-Ito index (KAOPEN)	index	financial_open	
fdi openness	FDIinflowPC+FDIoutflowPC	calculated	fdiopen	
convergence	Gini estimated bettween euro coutries	calculated	eugini	

Inequality data

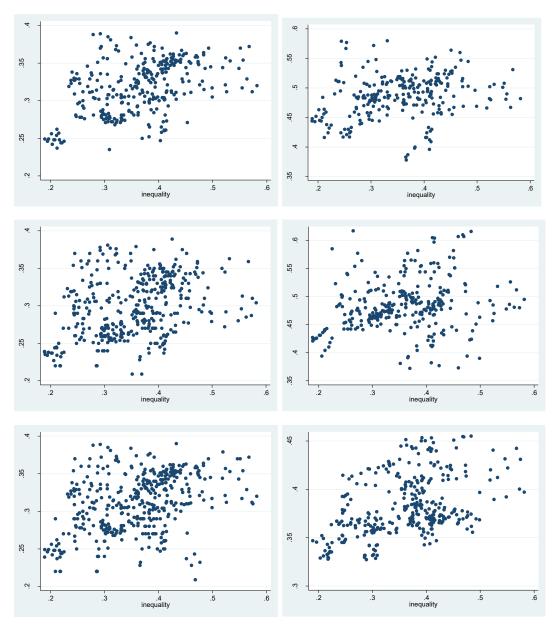
Factor inequality is calculated using equation (5.1.10), labor inequality is computed using relation (5.2.13), and profit inequality is determined using equation (5.3.21). These calculations utilize the variables of population, income, and distribution data, as presented in Table 15.

Inequality Data	description	source	label
	Unemploymentrate+e*(InequalityF+L* λ *InequalityL		
	+==*h*Inequality=) or		
Inequality	Unemploymentrate+e*(InequalityF+L* λ *InequalityL	calculated	Inequality
	+*Ξ*h*InequalityΞ+2*[(Ws+Пm)/Y]*[(Ls+Ξm)/T]*[Ws		
	/(Ws+Пm)-Ls/(Ls+Ξm)]		
InequalityF	Ι-λ	calculated	InequalityF
InequalityL	ωs- γs	calculated	InequalityL
InequalityK	kh-ŋh	kh-ŋh calculated In	

Related to other Gini indexes

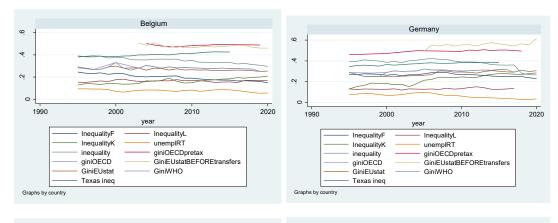
In the following figures, we can observe the correlation between the inequality index calculated using equation (7.4.4.1.3) or (7.4.4.1.9) and the Gini indexes from Eurostat, OECD, Texas University, and the UN.

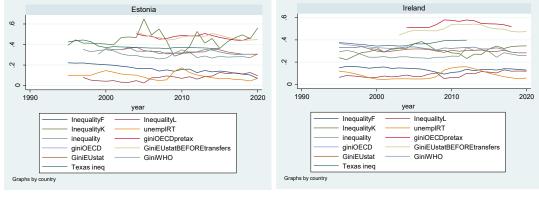


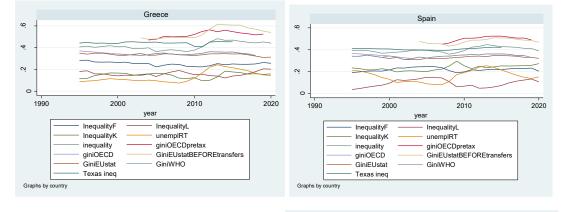


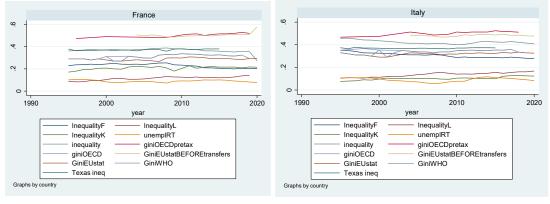
In the following figures, we can observe the temporal trend of inequality using the total inequality index, all the calculated types of inequality indexes, as well as the Gini indexes from Eurostat, OECD, Texas University, and the UN.

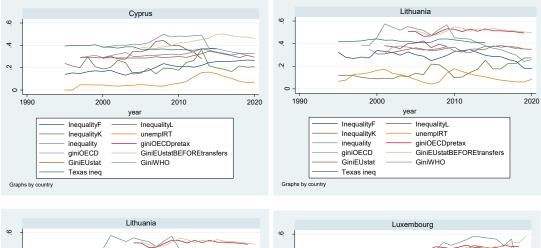
Figure 14

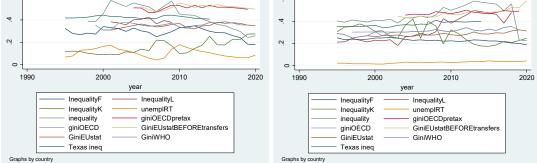


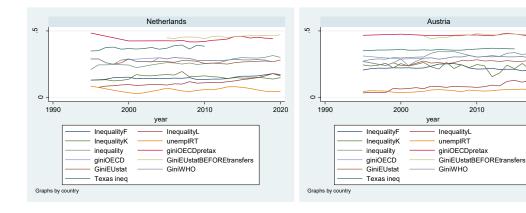


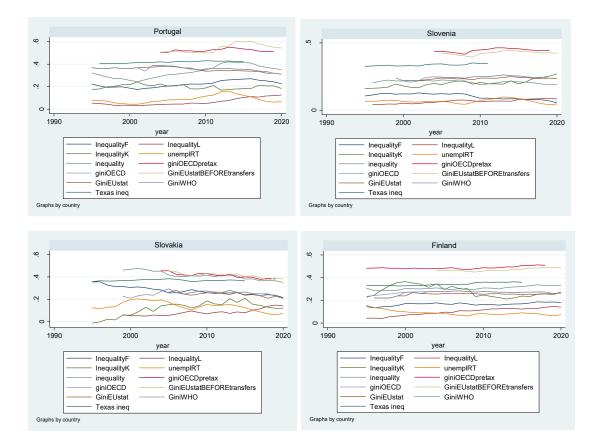












Other variables

Finally, Table 16 presents other variables used in the models as explanatory variables, following the literature and the theoretical models presented in chapters 4 and 5.

Table 16

other variables	description	source	label
Bargaining Power	Trade union density rate (%)	ILO	Bargaining
	Household debt, consolidated including Nonprofit		
Household dept	institutions serving households % of GDP	Eurostat	DebtH
	[TIPSPD22_custom_1527661]		
Gross domestic expenditure on R and D	GERD by sector of performance [rd_e_gerdtot]	eurostat	gerd
Current account balance	Balance of payments, Current account balance, annual [BOPCABA], GDP shares	UNCTAD	caPC
Exports	Exports, at current prices (UXGS)	Ameco	Х
Imports	Imports, at current prices (UMGS)	Ameco	М
FDI openness	FDIinflowPC + FDIoutflowPC	calculated	fdiopen
FDI inflows	Foreign direct investment, net inflows (% of GDP)	World Bank Indicators (WB WDI)	FDIinflowPC
FDI outflows	Foreign direct investment, net outflows (% of GDP) WB-WDI time series		FDIoutflowPC
ICT investment share	ICT shares in capital services	EU KLEMS database	ICT_cap
Non-ICT investment share	Non-ICT shares in capital services	EU KLEMS database	NonICT_cap
capital innovation rate	ICT investment share/nonICT investment share	calculated	k_inov
Financial Development	Financial Development Index	IMF	FD
General government expenditure on education	General government expenditure on education. (COFOG) (Percentage of gross domestic product (GDP))	Ameco	eduexpe

Results (Stata view)

Factor Inequality

Depended: ∆InequalityF

$$\Delta Inequality_{F_{it}} = a_{1_{it}} + a_2 \Delta l_{it} + a_3 \Delta \lambda_{it} + b_i + u_{it}$$
(7.3.1.1)

Instruments for differenced equation GMM-type: L(2/.).growthInequalityF Standard: D.growthWS D.growthl Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
growthWS	-2.8389191***	-2.8232209***	-2.8006095***	-2.8536332***
growthl	4.0685912***	4.1776805***	3.9363927***	4.0532853***
cou				
5			.00360678***	
6			01446586***	
7			00038763	
8			.0133927***	
9			.00249005	
10			.00264451*	
11			.00797052***	
12			.00424605	
13			00150099	
14 15			.00704047* .00099354	
15			.004561*	
18			.00119329	
20			.00260809	
21			01561133***	
22			.00832644**	
23			.00657064*	
year				
1996 1997			.01248055 .02846794	
1997			.01585159	
1999			.00707886	
2000			.00709779	
2001			.0068041	
2002			.01106986	
2003			.00914946	
2004			.00714525	
2005			.01811942	
2006			.00774328	
2007			.0047319	
2008			.00330221	
2009 2010			00131323 .01225373	
2010			.01225373	
2011			.00213782	
2012			.01092363	
2013			.01426879	
2015			.00854305	
2016			.00377995	
2017			.00871926	
2018			.00566734	
2019			00131459	
2020			02540004	
growthIneq~F L1.				01501685
±.				.01001000
_cons	00119031	00143693	01042085	00122503
N	457	457	457	421
r2	.81811889		.83989876	
r2 a	.81731765		.82280057	

Depended: ∆InequalityF

$$\Delta Inequality_{F_{it}} = a_{1_{it}} + a_2 \Delta l_{it} + a_3 \Delta w_{it} + a_4 \Delta A_{it} + b_i + u_{it}$$
(7.3.1.2)

Instruments for differenced equation
 GMM-type: L(2/.).growthInequalityF
 Standard: D.growthw D.growthproductivity D.growthl
Instruments for level equation
 Standard: _cons

[.] estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
growthw	82472426***	84522649***	-1.0605207***	79042558***
growthprod~y	.9083483***	.86782125***	1.0588542**	.68687105***
growthl	3.4081567***	3.4307379***	3.0187782***	3.0731965***
cou				
5			.0109766***	
6			00946052	
7			00629368	
8			001291	
9			.00936958**	
10			.01348604***	
11			.00738959***	
12			.02967166***	
13			.01733888	
14			.00639653	
15			.00224804	
17			.01700238***	
18			.00846691**	
20			.01079241***	
21			00705424*	
22			.01156084	
23			.02531683***	
year				
1996			0646191	
1997			04311589	
1998			06996452	
1999			08887984	
2000			04178891	
2001			06311448	
2002			08296828	
2003			07236516	
2004			05385024	
2005			08097152	
2006			06210016	
2007			08550268	
2008			04443293	
2009			08105251	
2010			08080483	
2011			06287423	
2012			06362394	
2013			05829803	
2014			064938	
2015			07745423	
2016			06622122	
2017			07043611	
2018			0709738	
2019			06294401	
2020			18418525*	
growthIneq~F				
L1.				11242281
_cons	01668679*	01433682**	.04974844	01073604**
Ν	457	457	457	421
r2	.21354653		.37345393	
r2 a	.20833823		.304854	

[.] estimates store gmmest

Depended variable: ∆w

Wage growth_{it} = $a_{1it} + a_2$ relative Labor Employment_{it} + a_3 bargaining power_{it}

 $+ a_4 technological change_{it} + a_5 financial oppenness_{it} + a_6 trade openness_{it}$

- $+ a_7 FDI \ oppenness_{it} + a_8 convergence_{it} + a_9 financial \ development_{it}$
- + $a_{10}house \ debth_{it} + a_{11}eurozone \ participation_{it} + a_{12}2008 \ financial \ crisis_{it}$

 $+ b_i + u_{it}$ (7.3.1.3)

Variable	fixed	random	pooled	gmmest
lnrelatL	03023922	00755471	.02350617	0267871
argainingL2	.17119345	02242761	.35339412*	.28584672*
k_inov	.35821583	.20245558	.07596906	.5662835**
fdiopen	.00539111	.00026888	.01016342*	.00818195*
inancial_~n	.0035409	.00456255	.00229362	.00953696
op	.04163294	.02311893*	.02252016	.06484378
eugini	24067024*	19292917*	29.313037	12861217
FD	04316618	02330073	12327373*	.00632188
DebtH	00128491***	00049422*	00123927***	00103546***
CaPC	00566978**	00268925	00550016**	00539308***
eurodumm	.01588307	00980332	.01925214	.0173923
crisisdumm	01079341	02173773***	25643279	00995789
cou				
5			.16985036	
6			.14043982	
7			.10939207*	
8			.02997351	
9			.17488466	
10			.17446348	
11			.05030483	
12			.01692711	
13			.10152518	
14			.11896518	
17			.22499691**	
18			.07392617	
20			.10673115	
21			.04206952	
22			.05349071	
23			02555941	
year				
2001			.11857411	
2002			.12751952	
2003			.21948104	
2004			.22214683	
2005			.25768964	
2006			.36326577	
2007			2.1922361	
2008			2.0170059	
2009			.67949832	
2010			.56834343	
2011			.74203747	
2012			1.2224288	
2013			.09553322	
2014			.00854027	
2015			07508437	
2016			00265494	
2017			.02577125	
2018			(omitted)	
2019			(omitted)	
growthw				
L1.				.19089813***
_cons	.04424056	.07814301**	-3.5368625	10823273
N	289	289	289	263
r2	.48042614		.69103078	
r2 a	.45783597		.63381426	

Depended variable: ∆productivity

Productivity growth

 $= a_{1_{it}} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$

- $+ a_4 technological change_{it} + a_5 financial oppenness_{it} + a_6 trade openness_{it}$
- $+ a_7 FDI \ oppenness_{it} + a_8 convergence_{it} + a_9 financial \ development_{it}$
- + $a_{10}house \ debth_{it} + a_{11}eurozone \ participation_{it} + a_{12}2008 \ financial \ crisis_{it}$
- $+ b_i + u_{it}$ (7.3.1.4)

Variable	fixed	random	pooled	gmmest
lnrelatL	02361914	00349656	.00395311	00701955
BargainingL2	.15356596	03242772	.17663525	.17919599
k_inov	.43355733*	.19414299	.32764301*	.71567581***
fdiopen	.01614332**	.0089794	.01608806*	.017541**
financial_~n	.0032794	.00220165	.00235108	.0061932
op	.08902012***	.04267147***	.04266221	.11562317***
eugini	10507176	02957511	1.0083202	143707
FD	03239156	.05011372*	10809667	08505653
DebtH	00095243***	0006949***	00110805***	00085592***
CaPC	00375645**	00243128*	003521**	00447861***
eurodumm	0270769	02991538	02415619	03241064*
crisisdumm	02267187***	02371835***	00118282	02365584***
cou				
5			.13561301*	
6			.06412314	
7			.09569037**	
8			.03580829	
9			.14807983	
10			.12201175	
11			.06713031	
12			.00878221	
13			.05168022	
14			.02459168	
17			.15431097**	
18			.05751827	
20			.11420301	
21			.02915286	
22			.02219194	
23			.03098505	
year				
2001			00392547	
2002			00547245	
2003			00097767	
2004			.0208854	
2005			.00991614	
2006			.03235527	
2007			.109441	
2008			.05338493	
2009			02048105	
2010			.03471963	
2011			.03202004	
2012			.03394974	
2013			00320077	
2014			00507446	
2015			.00254973	
2016			00936493	
2017			.00356968	
2018			(omitted)	
2019			(omitted)	
growthprod~y				
L1.				19106462**
_cons	01107547	.02707972	14946436	04800482
	289	289	289	263
N				
N r2 r2 a	.50116893		.70962214	

Depended variable: ∆WS

Wage Share growth

- $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade openness_{it} + a_7 FDI oppenness_{it} + a_8 convergence_{it}$
- $+ a_9 financial development_{it} + a_{10} house debth_{it}$
- + $a_{11}eurozone$ participation_{*it*} + $a_{12}2008$ financial crisis_{*it*} + b_i + u_{it} (7.3.1.5)

Variable	fixed	random	pooled	gmmest
lnrelatL	003246	00376445	.00783135	00490412
argainingL2	05294938	00222716	.00968002	01140478
k inov	0405528	.04456705	08026374	.0509096
fdiopen	00164495	.00043321	00015223	00008842
inancial ~n	00399355	00032033	00323592	00308503
_ op	02623058*	.00002167	01382393	02299153
eugini	0028851	0004387	8.7885545	00881485
FD	.02727606	00140225	.01835177	.03436719
DebtH	00043877**	00018916*	00042833**	00043684***
CaPC	0015097***	00111502***	0016944***	00152307***
eurodumm	.020013***	.01061416	.02026163***	.01881339***
crisisdumm	.00554259	.00090229	07232414	.0064429
cou				
5			00715345	
6			.00217728	
7			.00590818	
8			02470644	
9			02064257	
10			01911749	
11			02945516	
12			.0096606	
13			00470934	
14			.01483428	
17			.02346714	
18			01153605	
20			02873327	
21 22			01934984 0194235	
22			02180137	
23			02180137	
year 2001			.03661952	
2001			.05330357	
2002			.06849994	
2003			.05782701	
2004			.08107695	
2005			.10178002	
2007			.65331724	
2008			.5974852	
2000			.22101289	
2010			.17077263	
2011			.2187225	
2012			.36684941	
2013			.02985612	
2014			.00432721	
2015			01998316	
2016			.00067307	
2017			.00683618	
2018			(omitted)	
2019			(omitted)	
growthWS				
L1.				.05303931
_cons	.04899402	.00631577	-1.0099576	.02267238
N	289	289	289	263
r2	.13679002		.29295833	
12				

legend: * p<0.05; ** p<0.01; *** p<0.001

Depended variable: ΔI

Relative Labor Employment growth

- $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade openness_{it} + a_7 FDI oppenness_{it} + a_8 convergence_{it}$
- $+ a_9 financial development_{it} + a_{10} house debth_{it}$
- + $a_{11}eurozone$ participation_{it} + $a_{12}2008$ financial crisis_{it} + b_i
- $+ u_{it}$ (7.3.1.6)

Variable	fixed	random	pooled	gmmest
lnrelatL	00357631	0023082	00521092	00343376
BargainingL2	00961555	.00240279	01770902	0051638
k_inov	.03110225	.0009613	.04613261	.04989734
fdiopen	00122***	00077154	0014067**	00184097***
financial_~n	.00407665**	.00292508**	.00476026***	.00449911***
op	.00192132	.00213584	00015664	.00401187
eugini	0164316	00978822	-1.2216237	0132769
FD	.02086286	.00839105*	.02608126	.03253886**
DebtH	00013835**	00006484	00010231	00012326*
CaPC	00025993	00034635*	0001329	00030954*
eurodumm	00007726	.00052697	00139826	.00018848
crisisdumm	00044407	00030976	.00816079	00033516
cou				
5			00247441	
6			00148709	
7			.00210008	
8			.01506028	
9			00701993	
10			01106644	
11			.00112589	
12			.02378641***	
13			.00486256	
14			.00543504	
17			00202108	
18			00038127	
20			.00518526	
21			.00778519	
22			.01224281	
23			.00480328	
year			00550075	
2001			00553375	
2002			00602125	
2003			01448295*	
2004			01595879*	
2005			01088286	
2006			01794019	
2007			09236734	
2008			08113637	
2009			0328111	
2010			02386673	
2011			03161284	
2012			05332368	
2013			00821851	
2014			00150442	
2015			.00218948	
2016			.00001471	
2017				
2018 2019			(omitted) (omitted)	
growthl				
L1.				.16617655
_cons	00813369	00578486	.13325726	02266459
N	289	289	289	263
	.18345402		12022212	
r2	.10343402		.43923343	

Depended variable: ∆InequalityF

Factor Inequality growth

- $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade \ openness_{it} + a_7 FDI \ oppenness_{it} + a_8 convergence_{it}$
- $+ a_9 financial development_{it} + a_{10} house debth_{it}$
- + $a_{11}eurozone$ participation_{*it*} + $a_{12}2008$ financial crisis_{*it*} + b_i + u_{it} (7.3.1.7)

Variable	fixed	random	pooled	gmmest
lnrelatL	.00651168	.01229255	03784321	.00540998
BargainingL2	.11807578	.0287777	13226786	.04604131
k_inov	.36487045	10450149	.58049563	.13378973
fdiopen	.00048142	00120107	00581026	00377932
inancial_~n	.03694834*	.00490904	.03701163*	.0459657*
op	.10379117*	00205707	.05137795	.10606024*
eugini	.07145417	.11579489	-30.750224	.05155081
FD	00831128	.03075689	.0228753	.02786207
DebtH	.00074035**	.00043798	.00076769**	.00052998*
CaPC	.00355359***	.00123954	.00459007***	.00427958***
eurodumm	07380244***	02970271*	07832446***	08547401***
crisisdumm	01669647	.00120325	.23784411	00828446
cou				
5			.01597393	
6			0502483	
7			00678931	
8			.13558789	
9			.04433546	
10			.01008592	
11			.10808344	
12			.0836885*	
13			.00838996	
14			03768061	
17			08021177	
18			.02324351	
20			.10479684	
21			.07627981	
22			.09420503	
23			.10974019**	
year				
2001			13591887	
2002			18636608	
2003			26220016	
2004			23652636	
2005			2872171	
2006			37453059	
2007			-2.3008272	
2008			-2.0853528	
2009			7826834	
2010			58171154	
2011			76452789	
2012			-1.2924747	
2013			11279359	
2014			00868921	
2015			.07563581	
2016			.00019083	
2017			01525722	
2018			(omitted)	
2010			(omitted)	
growthIneg~F				
L1.				08498277
_cons	23035701	05415309	3.5039997	21443922
N	289	289	289	263
0	.11982981		.28981107	
r2 r2 a	.08156155		.1582946	

legend: * p<0.05; ** p<0.01; *** p<0.001

Labor Inequality

Depended variable: △ InequalityL

 $\Delta Inequality_{L_{it}} = a_{1_{it}} + a_2 \Delta q_{L_{it}} + a_3 \Delta \Lambda_L L dummy \mathbf{1}_{it} + a_4 \Delta \Lambda_L L dummy \mathbf{2}_{it} + b_i + u_{it} (7.3.2.1)$

Variable	fixed	random	pooled	gmmest
growthq	1.0360858**	.98224568**	.9597293**	1.0918711***
Ldummy1	1.8282078**	1.690398**	1.649792*	2.1048377***
Ldummy2	39766549**	38928674**	45568441**	31572818*
cou				
5			01270985**	
6			.00542516	
7			.01198507**	
8			01774668***	
9			.01159536*	
10			01302463**	
11			00490752	
12			.04629627*	
13			00785339	
14			.04992084*	
15			06519337*	
17			00102803	
18			.00175189	
20			.00016358	
21			00573302	
22			.00377566	
23			.01929899***	
year				
1996			03434597	
1997			04929081	
1998			04020906	
1999			03889695	
2000			04246295	
2001			03708296	
2002			08169609**	
2003			05332477	
2004			04845458	
2005			10628502*	
2006			00022037	
2007			02228477	
2008			03828426	
2009			15712967**	
2010			0701981*	
2011			01976451	
2012			07143401	
2013			07344272	
2014			03664762	
2015			02545241	
2016			04013558	
2017			00635936	
2018			05641894*	
2019			04605584*	
2020			05670274	
rowthIneq~L				
L1.				15324879
_cons	.00873933	.00907235	.05837631*	.01666114*
N	402	402	402	360
r2	.47097374		.52866841	
r2_a	.4669861		.46908998	

Depended variable: *Arelative labor employment*

 $\Delta \Lambda_{L_{it}} = a_{1it} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it} + a_4 capital \ innovation \ ratio_{it}$

 $+ a_5 financial oppenness_{it} + a_6 trade openness_{it} + a_7 fdi oppenness_{it}$

 $+ a_8 convergence_{it} + a_9 education expenditure_{it} + a_{10} euro dummy_{it}$

 $+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it}$ (7.3.2.3)

Variable	fixed	random	pooled	gmmest
lnq				
L1.	.11879201*	.00052348	.09107268*	.08774065
lngerd	06054271*	.00062947	07782532*	01301101
k_inov	.13608341	0032481	.08580011	.14458321
financial_~n	.00528096	.00891722	.00140836	.01756714
op	.1660144*	.01878482	.12927042	.12803815*
fdiopen	.00343046	.00247162	.00204216	.00621664
eugini	.03505421	.17166672	-6.9379105	.10252836
eduexpe2	85148245	30649743	11561723	94480574
eurodumm	00570193	0091896	.02930729	02663529
crisisdumm	00043721	01174009	02294805	01927783**
cou				
5			.28958094*	
6 7			20262802*	
8			12935845** 02591802	
8			.15537724	
10			.25535778*	
11			.16788956	
12			40478556**	
13			30226714**	
14			33322615**	
17			.06616574	
18			.03749921	
20			00013489	
21			15487665*	
22 23			23309452* .09302704	
23			.09502704	
year			02524070	
1997 1998			03534079 03827175	
1998			19794259	
2000			12565874	
2001			14244071	
2002			14947639	
2003			17686605	
2004			20992095	
2005			16880991	
2006			17717098	
2007			61133981	
2008			49784051	
2009			20017851	
2010 2011			16169371	
2011 2012			2068323 33014788	
2012			04203877	
2013			0410376	
2014			.01285015	
2016			00903202	
2017			01838387	
2018			(omitted)	
2019			(omitted)	
growthrelatL				
L1.				.05420576
_cons	.21925297	07397884**	1.3003362	1004417
Ν	361	361	361	329
r2	.08607221		.21262244	
r2 a	.05995999		.09439003	

Depended variable: ∆q

$$\begin{split} \Delta q_{L_{it}} &= a_{1_{it}} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it} + a_4 capital \ innovation \ ratio_{it} \\ &+ a_5 financial \ oppenness_{it} + a_6 trade \ openness_{it} + a_7 fdi \ oppenness_{it} \\ &+ a_8 convergence_{it} + a_9 education \ expenditure_{it} + a_{10} euro \ dummy_{it} \\ &+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it} \end{split}$$
(7.3.2.4)

Variable	fixed	random	pooled	gmmest
lnq				
L1.	25790434***	00644427	24477***	35533234***
lngerd	.01637226	00219117	.02022057	.0179685
k inov	.36050954**	.05637253	.29225571**	.22808222
inancial_~n	.04113869	.01273743*	.03940963	.05518051
op	.08224537	.02203092**	.0339595	.09601026
fdiopen	03707311***	03696971***	03561976**	04626999***
eugini	07651479	11275597	.08632446	10201112
eduexpe2	-3.2141589*	53726103	-1.3845667	-4.9539946**
eurodumm	01089526	0023353	01290383	00861149
crisisdumm	01593293	00614991	.01080942	01713946
cou 5			06870557	
6			00904001	
7			06063413	
8			.05851935	
9			05809672	
10			0604731	
11			.01178922	
12			.40625498**	
13			.20045924*	
14			.30740896**	
17			05203793*	
18			06017995	
20			01114083	
21			00165097	
22 23			.04577095 01642307	
year				
1997			01072485	
1998			00537073	
1999			.00513168	
2000			.01906747	
2001			.02195772	
2002			0107182	
2003			01174752	
2004			.02247144	
2005 2006			02590427 .02341878	
2008			.01437924	
2007			.01702034	
2000			07319567	
2010			03022307	
2011			01696402	
2012			02232477	
2013			050112	
2014			01832404	
2015			00343966	
2016			00604151	
2017			.00285095	
2018			(omitted)	
2019			(omitted)	
growthq L1.				0806407
	02710765	.02528313	- 08/30/31	
_ ^{cons}	.02719765		08438431	.13173934
N	359	359	359	323
r2	.2854321		.3737859	
r2_a	.26489854		.27914904	

Depended variable: △ InequalityL

 $\Delta Inequality L_{it} = a_{1it} + a_2 invest in R\&D_{it} + a_3 capital innovation ratio_{it}$

+ $a_4 financial oppenness_{it} + a_5 trade openness_{it} + a_6 fdi oppenness_{it}$ + $a_7 convergence_{it} + a_8 education expenditure_{it} + a_9 euro dummy_{it}$ + $a_{10} 2008 crisis dummy_{it} + b_i + u_{it} (7.3.2.5)$

Variable	fixed	random	pooled	gmmest
lnq				
L1.	60149639**	06487312**	56851052**	68197869***
lngerd	.07432758	00678444	.08748752	.05007922
k inov	.72321621*	.23276016	.61978446*	1.4979191*
financial ~n	.061507*	.01991852	.05760094*	.07236799
op	.07566467	.01257978	00396444	.04287738
fdiopen	.00857765	01422769	.01106899	00920781
eugini	.10417587	04868713	-2.0415092	00564224
eduexpe2	-5.8816438*	-1.5926023	-3.1489029	-10.617865*
eurodumm	01496177	.00434698	01620793	.00557039
crisisdumm	0495597	01174714	05639723	03483818
cou				
5			28166269	
6			.15803539	
7			05920091	
8			.15609442*	
9			18256251	
10			25461791	
11			035534	
12			.95490826*	
13			.62011131	
14			.86488198*	
17			15834474	
18			11833719	
20			.01202161	
21			.10176367	
22			.23440286	
23			05620171	
year				
1997			05009892	
1998			08191777	
1999			00732696	
2000			04838627	
2001			04398828	
2002			11015572	
2003			08905389	
2004			03936885	
2005			1716114	
2006			03896529	
2007 2008			22002507 12265307	
2008			18320662	
2009			18320662	
2010			06168438	
2011 2012			14937633	
2012			14937633	
2013			01005642	
2014			.00057959	
2015			01560452	
2010			.00838771	
2018			(omitted)	
2010			(omitted)	
growthIneq~L				
L1.				20986787
_cons	14089063	.13978113***	05116189	.28795686
N	359	359	359	323
r2	.16238401		.25134212	
10	.10200101		.13820089	

Profit inequality

Depended variable: ∆InequalityK

$\Delta Inequality_{K_{it}} = a_{1it} + a_2 \Delta q_{K_{it}} + a_3 \Delta \Lambda_{K_{it}} + b_i + u_{it}$ (7.3.3.1)

Variable	fixed	random	gmmest	pooled
growthrelatK	73852989***	71134871***	3730266**	70643144**
growthpremK	.87892723***	.88276458***	.83368362***	.88252905**
growthIneg~K				
L1.			02230484	
cou				
5				.00289636
6 7				00434082* 0022201
8				.00133016
9				00134662
10				00124061
11				.00271323**
12				00333661
13				.00931128
14				.00187625
15				00430404
17				.00010664
18				00099447
20 21				00161421 .0008774
21				.05992015**
23				00136701
year				
1996				04672451
1997				04730843
1998				07103581
1999 2000				.00264469 0593462
2000				04003915
2001				05370519
2003				05581455
2004				04311596
2005				07954752
2006				02793528
2007				05682456
2008				05362421
2009				05719971
2010 2011				06309331 05429921
2011				0655216
2012				03943216
2014				05002103
2015				05295021
2016				05939483
2017				05529639
2018				06025716
2019				05465261
2020				06364047
_cons	.00378484	.00397681	.00654638	.05250114
N	456	456	420	456
r2	.83523291			.84681544
r2 a	.83450546			.83041612

Depended variable: ∆ relatK

 $\Delta \Lambda_{K_{it}} = a_{1_{it}} + a_2 L.relat K_{it} + a_3 invest in R\&D_{it} + a_4 capital innovation ratio_{it}$

 $+ a_5 financial oppenness_{it} + a_6 trade openness_{it} + a_7 fdi oppenness_{it}$

 $+ a_8 convergence_{it} + a_9 financial development_{it} + a_8 convergence_{it}$

(7.3.3.2)

 $+ a_{11} euro \ dummy_{it} + a_{12} 2008 \ crisis \ dummy_{it} + b_i$

 $+ u_{it}$

Variable	fixed	random	pooled	gmmest
lnrelatK L1.	07744025**	- 023/3793*	0778633**	12505281***
	07744025	02343703	0778033	12303201
lnpremK				
L1.	00212011	00204602	00160552	00683672
lngerd	02712038	.00379656	03655434	01956105
FD	.02738084	02547183	.065661	00226242
k_inov	07111941	05337142	11732151	08063583
financial_~n	0115984**	01137443***	01519551**	02244698***
op	.07244781**	.01557889***	.06683736*	.06468906**
fdiopen eugini	00603158* .17606528	00933116** .20627865	00760093** 4.1210585	00643314 .11911937
eurodumm	.01291011	.01226949	.02334822	.02065608*
crisisdumm	00843095	01301512	01592923	01709056
cou				
5 COU			.08444465	
6			13950183	
7			07317302*	
8			.0283911	
9 10			.03325343 .07056639	
10			.1192905*	
12			19170174	
13			13622432	
14			11147798	
17			.02032728	
18			.01871757	
20			02023335	
21 22			06122885 11352599	
23			.00112274	
year 1997			.00698268	
1998			.02449779	
1999			.01623616	
2000			.01111457	
2001			.03803729	
2002			.04395873	
2003 2004			.07638059 .07443266	
2004			.05244535	
2006			.09121871	
2007			.33418535	
2008			.26372467	
2009			.10428108	
2010			.06438201	
2011 2012			.11408678 .18073998	
2012			.03130372	
2013			.01516234	
2015			.0056913	
2016			.00517327	
2017			.00568195	
2018			(omitted)	
2019			(omitted)	
growthrelatK				
L1.				.16401795
_ ^{cons}	.31659775*	.03017856	09380892	.44133223***
N	396	396	396	374
r2	.13419901		.28927346	
12	.10939742		.1909597	

Depended variable: ∆Kq

$$\begin{split} \Delta q_{K_{it}} &= a_{1_{it}} + a_2 L.relatK_{it} + a_3 invest \ in \ R\&D_{it} + a_4 capital \ innovation \ ratio_{it} \\ &+ a_5 financial \ oppenness_{it} + a_6 trade \ openness_{it} + a_7 fdi \ oppenness_{it} \\ &+ a_8 convergence_{it} + a_9 financial \ development_{it} + a_{10} euro \ dummy_{it} \\ &+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it} \end{split}$$ (7.3.3.3)

Variable	fixed	random	pooled	gmmest
lnrelatK				
L1.	.27180944***	01410062	.27291982***	.39660105***
lnpremK				
L1.	46372846***	13947613***	46642327***	68051296***
lngerd	.05048469	00741516	.02561751	.1533956*
FD	02711341	.05730945	01822066	09588395
k_inov	52141214	28831515	65138973	18479559
inancial_~n	05300305**	00170714	06370456*	11917058***
op	.25099755*	.04901115	.2057055	.1268164
fdiopen eugini	.01904621 .1657873	02319287* .56677226	.01944956 8.3570306	.02130447* .08806383
eurodumm	.03048398	.03295969	.05920743	.06943455
crisisdumm	09130896*	04501594*	02677614	16513952**
cou				
5			.22306569	
6			.69550791***	
7			.25956139***	
8			.16392656	
9			.31175032**	
10 11			.25841231	
11			.16237376	
13			.32970971	
14			.11520881	
17			00169115	
18			.27650796***	
20			.26447734*	
21			.18834935	
22 23			10820946 .38055374***	
23			.30033374	
year				
1997			.05113907	
1998 1999			.1175875 .08309381	
2000			.05479407	
2001			.0950628	
2002			.14882177	
2003			.17461409	
2004			.17078006	
2005			.22666281	
2006 2007			.20635015 .75279542	
2007			.54480073	
2000			.15847039	
2010			.12053733	
2011			.19556279	
2012			.30271586	
2013			.04666742	
2014			.01653145	
2015 2016			06880086 01683288	
2016			.00563521	
2017			(omitted)	
2019			(omitted)	
growthpremK				
L1.				00071725
_cons	42711207	.20730572	-1.4628462	89833459
N	396	396	396	369
r2	.26916647		.30120839	
r2 a	.24823113		.20454557	

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Depended variable: △ InequalityK

 $\Delta Inequality K_{it} = a_{1_{it}} + a_2 L. relat K_{it} + a_3 invest in R\&D_{it}$

 $+ a_4 capital innovation ratio_{it} + a_5 financial oppenness_{it}$

 $+ a_6 trade openness_{it} + a_7 f di oppenness_{it} + a_8 convergence_{it}$

 $+ a_9 financial development_{it} + a_{10} euro dummy_{it}$

+ $a_{11}2008 \ crisis \ dummy_{it} + b_i + u_{it}$

(7.3.3.4)

Variable	fixed	random	pooled	gmmest
lnrelatK				
L1.	.20789804**	01655754	.21437148**	.47121589***
1				
lnpremK L1.	43264361***	14968003***	44152736***	63647083***
lngerd	.06867003*	00945191	.04887712	.20162863**
FD	07959011	.07430364	11335443	26506986
k_inov	38209876 06176167**	24378766 01561811*	46746252 06761266**	.09154293 08075175*
inancial_~n op	.10105629	.02877574	.05787507	03857602
fdiopen	.01246157	01780197*	.01433713	.02530415**
eugini	01248138	.34290462	3.0812328	01011816
eurodumm	.02501781	.02555163	.03563662	.05212096
crisisdumm	07850337*	03811186**	00861874	13592422**
cou				
5			.04812716	
6			.65504825*	
7			.33268395***	
8			.10641011	
9			.18497967**	
10 11			.05800416 11989429	
12			.24658679	
13			.30960853	
14			.11640716	
17			02162269	
18			.17911348**	
20			.20409702	
21 22			.17301815 04119719	
23			.26113402**	
year				
1997			.03014437	
1998 1999			.03639513 .08672382	
2000			.00586461	
2001			.03744259	
2002			.0620768	
2003			.06061672	
2004			.08175067	
2005			.11412133	
2006 2007			.11778296 .32418997	
2008			.20362792	
2009			.02158962	
2010			.01589063	
2011			.05194624	
2012			.06749291	
2013 2014			.02716712	
2014 2015			.00966835 05809097	
2015			02569658	
2017			.00140411	
2018			(omitted)	
2019			(omitted)	
rowthIneq~K				00000072
L1.	23471137	.31376458**	59555587	.00092672
_cons	234/113/	.313/0438^*	1200208/	-1.3404884
Ν	394	394	394	367
r2	.25232487		.28765422	
r2 a	.23079496		.18854524	

total Inequality

Depended variable: total Inequality

$inequality_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i + u_{it} + b_i$

$+ u_{it}$ (7.3.4.1)

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	.69095134***	.69733751***	.65744165***	.55934004***
InequalityL	.57523917***	.57321844***	.62798751***	.49011404***
InequalityK	.04599946*	.04854399**	.06697842**	.04102038*
unemplRT	.71140598***	.70916117***	.75211993***	.62565589***
cou				
5			.0232967***	
6			.00361	
7			00902536	
8			00783506*	
9			.01263387**	
10			.017354***	
11			.01428426	
12			00433708	
13			0035211	
14			04000856*	
15			.02410195*	
17			00276684	
18			.01707686**	
20			.01936776**	
21			00979107	
22			.02446788***	
23			.00255732	
year				
1996			00147467	
1997			00057921	
1998			00026243	
1999			00059725	
2000			00006408	
2001			00264688	
2002			00068195	
2003			.00048589	
2004			0035837	
2005			00266362	
2006			00324699	
2007			00365497	
2008			00374435	
2009			00500294	
2010			0075688*	
2011			00914496*	
2012			00676527	
2013			00685369	
2014			00623506	
2015			00719725	
2016 2017			00950524 00795972*	
			00795972* 00593071	
2018 2019			00593071	
2019			00/18511	
inequality L1.				.10763409**
_cons	.06141908***	.05908287***	.05083117**	.07069465***
N	419	419	419	380
r2	.93587384		.9910418	
r2_a	.93525427		.98993406	

$inequality_{it} = a_{1it} + a_2 \Delta w_{it} + a_3 \Delta A_{it} + a_4 \Delta l_{it} + a_5 \Delta q_{Lit} + a_6 \Delta \Lambda_L L dummy \mathbf{1}_{it}$ $+ a_7 \Delta \Lambda_L L dummy 2_{it} + a_8 \Delta \Lambda_{K_{it}} + a_8 \Delta q_{K_{it}} + a_8 unemployment \ rate_{it}$ $+ b_i + u_{it} + b_i + u_{it}$ (7.3.4.8)

Instruments for differenced equation GMM-type: L(2/.).growthinequality Standard: D.growthw D.growthproductivity D.growth1 D.growthq D.Ldummy1 D.Ldummy2 D.growthrelatK D.growthpremK D.growthunemplRT Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
growthw	39619597**	36300697***	47685478**	38083998**
growthprod~y	.35033169**	.34850494**	.4044908*	.30724392*
growthl	3669167	02309559	.01763795	23854238
growthq	.2517339***	.23730898***	.20964238***	.25425886***
Ldummy1	.37515118**	.33448417**	.25156834*	.40504084***
Ldummy2	08641005*	0809441*	10411446**	08119673*
rowthrelatK	26196868	23033734*	14029533	24822907
growthpremK	03113927	03360584	04068616*	02988516*
growthunem~T	.11747825**	.12248781***	.15349153***	.12112102***
cou 5				
-			.0037905**	
6			.01204085*	
7			0003761	
8			.00240557	
9			0014553	
10			00886893***	
11			.00043509	
12			.01246381*	
13			.00984321*	
14			.02165385**	
15			01001725	
17			.00997525***	
18			00240752	
20			.00265661	
21			.00170244	
22			.0022267	
23			.00885005***	
year				
1996			02524393	
1997			01217036	
1998			02024524	
1999			02965788*	
2000			00482476	
2001			01843927	
2002			02857337	
2003			026239	
2004			02135942	
2005			02412808	
2006			01565477	
2007			01293911	
2008			0166456	
2009			05247531**	
2010			02889344*	
2011			02273297	
2011			01365034	
2012			02150593	
2013			0220688	
2014			03100147*	
2016			03025383	
2017			00456271	
2018			01368704	
2019 2020			01494151	
2020			07790892**	
rowthineq~y				
L1.				04620468
_cons	00307222**	00423384*	.01813969	00216341
			403	364
N	403	403		364
N r2	403 .48075816 .46886712	403	403 .56481764 .50158602	364

legend: * p<0.05; ** p<0.01; *** p<0.001

Depended variable: Inequality Eurostat

$\begin{aligned} Gini \ Eurostat_{it} &= a_{1_{it}} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i \\ &+ u_{it} + b_i + u_{it} \end{aligned}$

Instruments for differenced equation

GMM-type: L(2/.).GiniEUstat Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fired	xandom	maalad	ammo at	
Variable	fixed	random	pooled	gmmest	
InequalityF	.03661512	.05110462	.01780474	.05445214	
InequalityL	.01374528	.02442802	.05117015	02215972	
InequalityK	.01060766	.01849067	.03608438	02132802	
unemplRT	.05673742	.06552245	.03822015	.0497817	
cou					
5			.00909183		
6			.05628646***		
7			.03548362**		
8			.06440038***		
9			.06025271***		
10 11			.01798241** .05107878**		
12			.01436655		
13			.07936634***		
14			.05990224**		
15			0030013		
17			.00398023		
18			00192841		
20			.08516446***		
21			02788442		
22			02406571*		
23			01724311**		
year					
1996			00996515*		
1997			01787204**		
1998			01937555**		
1999			01626081**		
2000 2001			01931351** 02120011***		
2001			01869086**		
2003			00578164		
2004			01190225		
2005			01128237**		
2006			0100965*		
2007			01366914***		
2008			01287358*		
2009			0122058*		
2010			01397093*		
2011			01466975*		
2012			01254372		
2013			01162038		
2014 2015			00876758 01290085		
2015			01350454		
2010			0163966*		
2018	02131846*				
2019			0243533*		
2020			02776838*		
GiniEUstat					
L1.				.51719929***	
_ ^{cons}	.27953801***	.27325438***	.26330397***	.1343606***	
N	371	371	371	303	
r2	.01617526		.89036952		

Variable	fixed	random	pooled	gmmest
InequalityF	.30431499*	.27885447*	.40424091**	.05119056
InequalityL	.29879144***	.24914564***	.1521608*	.16965318***
InequalityK	.11686539	.10053833	.05675525	.01916474
unemplRT	.57259064***	.55242029***	.46205194**	.37202187***
cou				
5			.04651841**	
6			.00444566	
7			.03897884***	
8			.00358463	
9			05116356***	
10			.00247425	
11			04057698**	
12			10723988***	
13			02296496*	
14			04894284*	
15			04475333*	
17			.00529853	
18			00876916	
20			.04165156***	
21			00226086	
22			10274593***	
23			00353849	
year				
2004			.00114909	
2005			.00306042	
2006			.00530215	
2007			.00129173	
2008			00265312	
2009			00534329	
2010			.00227625	
2011			.00715482	
2012			.00960166	
2013			.01205745	
2014			.02251437	
2015			.01850311	
2016			.02135605	
2017			.0182822	
2018			.01667013	
2019			.01436688	
2020			.01268338	
;iniEUstat~s				
L1.				.56598722***
_cons	.2967875***	.30982957***	.32530423***	.13561057***
N	279	279	279	242
r2	.52733884		.89134654	
r2_a	.52043868		.87414308	
r2_a	.52043868		.87414308	

Depended variable: Inequality Eurostat before transfers

Gini Eurostat Before Taxes_{it}

$= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$

 $+ u_{it} + b_i + u_{it}$

Instruments for differenced equation GMM-type: L(2/.).GiniEUstatBEFOREtransfers Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT

Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	.30352995*	.27864187*	.40532983**	.04521537
InequalityL	.29407832***	.24625945***	.143833333*	.16239447***
InequalityK	.11769891	.1012287	.0570523	.0194527
unemplRT	.57086036***	.55135885***	.45948196**	.37139519***
cou				
5			.04612548**	
6			.00378604	
7			.03844212***	
8			.00368466	
9			05155443***	
10			.00211938	
11			04079536**	
12			10553485***	
13			02215299*	
14			04706438*	
15			04417128*	
17			.00496209	
18			00943553	
20			.04092305***	
21			00296764	
22			10330297***	
23			00393035	
year				
2004			.00129757	
2005			.00318814	
2006			.00550454	
2007 2008			.00149825	
2008				
			0050349	
2010 2011			.00258954	
2011			.01000267	
2012			.01246175	
2013			.02193994	
2014			.01900244	
2015			.02186624	
2016			.01878036	
2017			.01726651	
2018			.01491523	
2019			.01319116	
2020			.01319110	
GiniEUstat~s				
L1.				.55926783***
_cons	.29736171***	.31026086***	.32631614***	.14096318***
N	280	280	280	244
r2	.52694555		.89091811	

Depended variable: Gini oecd

$Gini \ OECD_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i + u_{it} + b_i + u_{it}$

Instruments for differenced equation GMM-type: L(2/.).giniOECD Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	.05472802	.07680521	.02479548	01441153
InequalityL	.0082722	.02292225	.03459109	02288631
InequalityK	.03950029	.04658281	.05767921	.02816089
unemplRT	.12523323*	.13275429*	.11952671	.07233185*
cou 5			.01910569	
6			.02969712*	
7			.03780751***	
8			.05432397*** .04994862***	
10			.0322533***	
			.06201471***	
11				
12 13			.02796398 .06264525***	
13			.06158993**	
14			.0259295	
15			.00663643	
1/			.0198328*	
20			.07578105***	
20			03147372*	
21			02510105*	
23			01634315**	
20			01034313	
year				
1996			.02370077*	
1997			0173883	
1998			.0132276	
1999			00685123	
2000			00584831	
2001			00702525	
2002 2003			00878581 00486736	
2003			00453588	
2004			00453588	
2005			00692436	
2008			00683832	
2008			00537438	
2009			00670284	
2005			0088705	
2010			0059011	
2011			00465211	
2012			00154656	
2013			00763116	
2014			00645683	
2015			00953598	
2017			01109396	
2018			01089973	
giniOECD L1.				.53907503***
цц.				.3390/303***
_ ^{cons}	.28303769***	.2748262***	.26160715***	.13909927***
Ν	290	290	290	230
r2 r2_a	.10241673		.89606778 .8774024	

Depended variable: Gini pre tax oecd

Gini OECD pre tax _{it}

 $= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$

```
+ u_{it} + b_i + u_{it}
```

Instruments for differenced equation GMM-type: L(2/.).giniOECDpretax Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	.00581652	.00507526	.05433461	04312893
InequalityL	.14293612*	.13517762**	04035592	.00980893
InequalityK	.05718547	.05537119	00441279	03067206
unemplRT	.45587783***	.45131353***	.38030255***	.2521518***
cou				
5			.01379025	
6			01521401	
7			.0501523***	
8			.00208974	
9			0323702***	
10			.0100905	
11			.00688313	
13			0088951	
14			.0168523	
15			.01412746	
17			04423119***	
18			00765416	
20			.01888633	
21			03799264***	
22			10047093***	
23			.00227331	
year				
1996			.00075936	
1997			.01147985	
1998			.01368323	
1999			.0173537	
2000			.01809558*	
2001 2002			.02232636 .01794652	
2002			.01839897	
2003			.03067157*	
2004			.03055746*	
2005			.02980298*	
2007			.0279622	
2008			.03179173*	
2009			.03195697*	
2010			.03311781*	
2011			.03769538**	
2012			.03755147*	
2013			.0399389**	
2014			.03850006**	
2015			.03977425*	
2016			.03843147*	
2017			.04074529**	
2018			.04063693*	
2019			.04468806**	
2020			.04677636*	
giniOECDpr~x				
L1.				.41675971***
_cons	.4089195***	.41095079***	.41956698***	.27447383***
N	250	250	250	195
r2	.50566845		.91388359	
r2_a	.49759773		.89488732	
4				

Depended variable: Gini UN

$Gini \ UN_{it} = a_{1_{it}} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i + u_{it} + b_i + u_{it}$

Instruments for differenced equation
 GMM-type: L(2/.).GiniWHO
 Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT
Instruments for level equation
 Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	02848134	01004498	03717289	.04861369
InequalityL	.12772158*	.13160185*	.06293571	.0071497
InequalityK	.09427159*	.0964407*	.04705352	.04994342
unemplRT	.16232457**	.16636462***	.12106018	.09342871**
unempiri	.10232437	.10030402	.12100010	.09342071
cou				
5			.01906276	
6			.03335232*	
7			.03352938**	
8			.05192394***	
9			.05241562***	
10			.02740005***	
11			.06098126***	
12			.02037409	
13			.05907627***	
14			.05735687**	
15			.01530744	
17			.0031729	
18			.01249145	
20			.083002***	
21			03917406**	
22			03030899**	
23			02066613**	
year				
1996			00978292*	
1997			01908583**	
1998			01942445**	
1999			01168668*	
2000			.0063764	
2001			01111469	
2002			00342235	
2003			.01114654	
2004			.01229739*	
2005			.01215377*	
2006			.00947665	
2007			.00952678	
2008			.0106535	
2009			.00857063	
2010			.00652435	
2010			.00953549	
2011			.01061743	
2012			.01388994	
2013			.00749408	
2014			.00839113	
2015			.00517291	
2017			.00166804	
2018 2019			.00035164 01536798	
GiniWHO				
L1.				.54102039***
_cons	.26190679***	.25685923***	.25955969***	.11160312***
N	391	391	391	354
r2	.10628699		.87410924	
r2 a	.09702571		.85768871	

Depended variable: Gini Texas University

$Gini \ Texas \ University_{it} = a_{1it} + a_2 Inequality \\ F_{it} + a_3 Inequality \\ L_{it} + a_4 Inequality \\ L_{it} + a_5 Inequality \\ L_{it} +$

 a_4 Inequality $K_{it} + b_i + u_{it} + b_i + u_{it}$

Instruments for differenced equation GMM-type: L(2/.).Texasineq Standard: D.InequalityF D.InequalityL D.InequalityK D.unemplRT Instruments for level equation Standard: _cons

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
InequalityF	11595643	09945511	06914514	15233694**
InequalityL	.14375184**	.13972595***	.08073323	.09435307*
InequalityK	.03728733	.03293517	.01314834	.04517888*
unemplRT	.16938253**	.17158222***	.12865541	.14826244***
cou				
5			02372988*	
6			02646451**	
7			03452328***	
8			.04001038***	
9			.000385	
10			02617175***	
11			02268864	
12			04539859**	
13			01763653*	
14			.00853687	
15 17			0331859*	
			02336162*	
18			03174104*** .02471256***	
20 21			.024/1256***	
21			02856362**	
22			0594415***	
20			0394413	
year			0000050	
1996 1997			00322258	
1998			.00766866	
1999			00024454	
2000			.00205884	
2001			.00207004	
2002			.00195442	
2003			.00452959	
2004			.00318393	
2005			.00429054	
2006			.00575446	
2007			.00513535	
2008			.00725195	
2009			.01028802	
2010			.00905669	
2011			.00232798	
2012			.00915735	
2013			.00984008	
2014			.01057244	
2015			.00865583	
Texasineq				
L1.				.37744924***
_cons	.36409181***	.36074168***	.38571191***	.23498585***
N	319	319	319	265
r2 r2 a	.22431229		.87493875 .85642788	

[.] estimates store gmmest

Kuznets

Factor inequality

Inequality $F_{it} = a_{1it} + a_2 GDP$ per capit $a_{it} + a_3 GDP$ per capit $a_{it}^2 + b_i + u_{it}$ (7.3.14)

Instruments for differenced equation
 GMM-type: L(2/.).growthInequalityF
 Standard: D.lnGDPpcapita D.lnGDPpcapita2
Instruments for level equation
 Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
LnGDPpcapita	0426496	03818488	04541298	09067933
nGDPpcapi~2	00053163	.00520573	00301349	.00512983
cou				
5			00197979	
6			102202*	
7			.02633376**	
8			03466865	
9			01322722	
10			.00279553	
11			00571723	
12			.00260107	
13			09462666*	
14			10362562*	
15			.03414836*	
17			.01449998**	
18			.00674366	
20			03927615	
21			06420644*	
22			08699377*	
23			.02073442***	
year				
1996			11181648	
1997			06623286	
1998			07793955	
1999			09881479	
2000			04087958	
2001			06819403	
2002			08450695	
2003 2004			08134981 05304654	
2004			08176339	
2005			04652149	
2000			05999096	
2008			04662163	
2009			11279916	
2010			04163929	
2011			03278108	
2012			05266818	
2013			04511024	
2014			04469846	
2015			049367	
2016			05145228	
2017			04474793	
2018			04464915	
2019			05856034	
2020			12316372	
growthIneq~F				
L1.				10212585
_cons	.15355628	.06065211	.28467216	.25051491*
N	457	457	457	421
r2	.04798908		.20266249	
r2_a	.0437952		.11750994	

Labor inequality

Variable	fixed	random	pooled	gmmest
lnGDPpcapita	.36090691*	.18686191	.43248355*	.63126785*
lnGDPpcapi~2	05502542*	02583172	07181858*	09508129*
cou				
5			0292283*	
6			07408249	
7			.07536695***	
8			08056511	
9			02592533	
10			01268249	
10			02048182	
12			06839463	
			04997538	
13 14				
			06929353	
15			.10896273**	
17			.0160463*	
18			.02663935**	
20			05768094	
21			05917323	
22			0488473	
23			.02955886***	
year				
1996			11906526**	
1997			13672695**	
1998			1359566*	
1999			06379842	
2000			08763804*	
2001			08065361	
2002			13915706**	
2003			1132944*	
2004			01635113	
2005			16527789**	
2006			00206062	
2007			06792156	
2008			05798232	
2009			22644743**	
2010			13241582**	
2010			0506077	
2011			10629009	
2012			11108145*	
2013			05008191	
2014			04584532	
2015			06606999	
2016			04618233	
2017			03399217	
2019 2020			03444444 15727935**	
growthIneq~L				07000000
L1.				27898389*
_cons	53732197	30203698	46337243	96853078*
N	405	405	405	363
r2	.01869218		.16452591	
r2 a	.01381005		.06241241	

$Inequality L_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it} \ (7.3.15)$

Profit inequality

$Inequality K_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita_{it}^2 + b_i + u_{it} (7.3.16)$

Instruments for differenced equation
 GMM-type: L(2/.).growthInequalityK
 Standard: D.lnGDPpcapita D.lnGDPpcapita2
Instruments for level equation
 Standard: _cons

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

InGDPpcapita 18167479 16344246 17203275 28845477 InGDPpcapi-2 .02239322 .02088649 .02712746 .04251531 cou 5 .02256809 .04251531 f 00720636 .02800745 .02200745 g .016554226 .007306472 .01337476 10 00060856 .01137476 .003706472 13 .05144543 .04120799 .0112025 14 .03150007 .04843721 .03493177 20 .01712025 .0112025 .0112025 21 .03493177 .08443721 .03493177 22 .06443721 .03493177 .08443721 23 .00734752 .003493177 .0226663 1999 .11254087 .11820467 .11814455 2000 .18825769 .11814455 .001 .16174455 2001 .161744455 .11920449 .11920449 .11920449 .11920449 .2016 .21918755 .2016 .11920449 .2016 .21918755 .2016 .11920449 .11920449 .	Variable	fixed	random	pooled	gmmest
cou .02256809 6 00220461 7 00720636 8 .02800745 9 .01655426 10 00060856 11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 15599112 1996 134259 1997 15599112 1998 .14029663 1999 .14254087 2000 18825769 2011 .16170405 2022 .1315597 2033 131224087 2040 131272 2055 11920449 2066 22170615 2010 15832575 2011 15832575 2012 <td>lnGDPpcapita</td> <td>18167479</td> <td>16344246</td> <td>17203275</td> <td>28845477</td>	lnGDPpcapita	18167479	16344246	17203275	28845477
5 .02256809 6 00220636 7 .00720636 8 .02800745 9 .01655426 10 00060856 11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 0003767 20 .01712025 21 .003493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 14254087 2000 18825769 2011 16170405 2022 15315697 2033 18144455 204 1371272 205 132244 206 2321322 209 211358665 2001 .15832575 2012 .1583255 2013 .12246018 2014	lnGDPpcapi~2	.02239322	.02088649	.02712746	.04251531
5 .02256809 6 00220636 7 .00720636 8 .02800745 9 .01655426 10 00060856 11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 0003767 20 .01712025 21 .003493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 14254087 2000 18825769 2011 16170405 2022 15315697 2033 18144455 204 1371272 205 132244 206 2321322 209 211358665 2001 .15832575 2012 .1583255 2013 .12246018 2014	601				
6 00220461 7 00720636 8 .02800745 9 .01655426 10 00060856 11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 003767 20 .01712025 21 .03493177 22 .03493177 23 .00734752 year - 1996 154259 1997 15599112 1998 16204087 2000 18825769 2001 16170405 2002 .15315697 2003 18144455 2004 1371272 2005 11920449 2006 13218755 2007 11358665 2008 221120615 2010 15964513 2011 15953255 2013 12246018 2014 1481223				.02256809	
8 .02800745 9 .01655426 10 00060856 11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 00057238 18 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 11825769 2000 .15315697 2001 .16170405 2002 .15315697 2003 131272 2005 11920449 2006 1371272 2005 11358665 2007 15832752 2010 15832752 2011 15832752 2012 1953235 2013 1246018 2014 1246013 2					
9 .01655426 10 00060856 11 .01736472 13 .05144543 14 .0035007 15 04120799 17 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 134259 1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 18425769 2001 18125087 2002 .15315697 2003 18144455 2004 1322122 2005 11920449 2006 19218755 2007 .15864513 2010 15953255 2011 .12846018 2012 .19533255 2013 .12246018 2014 .1481223 2015 .20706613 2016 .17052685 2017 .1480214	7			00720636	
10 00060856 11 01537476 12 00544543 14 03150007 15 04120799 17 00057238 18 0033767 20 01712025 21 03493177 22 03443721 23 00734752 year 1996 134259 1997 15599112 1998 14029663 1999 14029663 1999 14029663 2000 18825769 2001 16170405 2002 15315697 2003 1371272 2004 1371272 2005 1920449 2006 2321322 2007 1385665 2010 1584513 2011 1582752 2012 19553255 2013 2246018 2014 1246018 2015 20006613 2016 17052685	8			.02800745	
11 .01537476 12 .00736472 13 .05144543 14 .03150007 15 04120799 17 00057238 18 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 14029663 1999 15599112 1998 14029663 2000 15315697 2001 16170405 2002 15315697 2003 181272 2005 11920449 2006 19218755 2007 1554513 2010 15964513 2011 15953255 2012 .19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 <t< td=""><td>9</td><td></td><td></td><td>.01655426</td><td></td></t<>	9			.01655426	
12 .00736472 13 .05144543 14 .03150007 15 04120799 17 0033767 20 .01712025 21 .03430177 22 .08443721 23 .00734752 year 15599112 1996 134259 1997 15599112 1998 1025063 2000 18825769 2001 16170405 2002 15315697 2003 1371272 2005 1371272 2006 1371272 2007 1388665 2008 2321322 2009 2170613 2011 15832752 2012 1953255 2013 12246018 2014 141223 2015 20706613 2016 17052685 2017 18529782					
13 .05144543 14 .03150007 15 003707 17 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 16170405 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 215964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 18529782					
14 .03150007 15 04120799 17 00057238 18 003767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 134259 1996 13599112 1997 15599112 1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 19218755 2007 13158665 2008 2321322 2009 211358665 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 18529782					
15 04120799 17 00057238 18 003767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 15315697 2001 16170405 2022 15315697 2003 11371272 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2221322 2009 217170615 2010 15963255 2011 15832752 2012 19553255 2013 2246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
17 00057238 18 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 .15599112 1998 14029663 1999 .11254087 2000 18825769 2001 16170405 2002 .15315697 2003 1134455 2004 1371272 2005 11920449 2006 19218755 2007 .1358665 2008 2321322 2009 27170615 2010 15964513 2011 .15832752 2012 .15953255 2013 12246018 2014 1481223 2015 20706613 2016 17052865 2017 .14860114 2018 1722407 2019 18529782					
18 0033767 20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 .15599112 1998 .14029663 1999 .11254087 2000 .18825769 2001 .16170405 2002 .15315697 2003 18144455 2004 1371272 2005 11920449 2006 1321322 2009 2321322 2009 2321322 2010 15964513 2011 15964513 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
20 .01712025 21 .03493177 22 .08443721 23 .00734752 year 1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 13218755 2007 11358655 2008 221322 2010 15964513 2011 15932752 2012 1953255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
21 .03493177 22 .08443721 23 .00734752 year 134259 1996 15599112 1997 15599112 1998 14029663 1999 .11254087 2000 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358655 2008 2321322 2009 1710615 2010 15832752 2012 19553255 2013 1481223 2014 1481223 2015 20706613 2016 17052865 2017 14860114 2018 1722407 2019 18529782					
22 .08443721 23 .00734752 year 134259 1996 15599112 1997 15599112 1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 158665 2008 2321322 2009 27170615 2010 15964513 2011 15832752 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
year 1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 1844455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 27170615 2010 15964513 2011 15964513 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782	22			.08443721	
1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 16825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 7170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 1705285 2017 1486014 2018 1722407 2019 18529782	23			.00734752	
1996 134259 1997 15599112 1998 14029663 1999 11254087 2000 16825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 21710615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 1486014 2018 1722407 2019 18529782					
1997 15599112 1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 1385665 2008 2321322 2009 27170615 2010 15832752 2012 15832752 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782	-			124050	
1998 14029663 1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 119218755 2007 1358665 2008 2321322 2009 27170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 1486014 2018 1722407 2019 18529782					
1999 11254087 2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 12218755 2007 11358665 2008 2321322 2009 27170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2000 18825769 2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 21710615 2010 15832752 2012 18582755 2013 14246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2001 16170405 2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 217170615 2010 15964513 2011 15953255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2002 15315697 2003 18144455 2004 1371272 2005 11920449 2006 19218755 2007 158665 2008 2321322 2009 27170615 2010 15964513 2011 15852255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2004 1371272 2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 27170615 2010 15964513 2011 15932752 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2005 11920449 2006 19218755 2007 11358665 2008 2321322 2009 2170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782	2003			18144455	
2006 19218755 2007 11358665 2008 2321322 2009 27170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782	2004			1371272	
2007 11358665 2008 2321322 2009 2170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2017 14860114 2018 1722407 2019 18529782					
2008 2321322 2009 27170615 2010 15964513 2011 15832752 2012 15953255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2009 27170615 2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2010 15964513 2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2011 15832752 2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2012 19553255 2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
2013 12246018 2014 1481223 2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
20141481223 201520706613 201617052685 201714860114 20181722407 201918529782					
2015 20706613 2016 17052685 2017 14860114 2018 1722407 2019 18529782					
201617052685 201714860114 20181722407 201918529782					
201714860114 20181722407 201918529782					
201918529782	2017			14860114	
	2018			1722407	
202014250989	2020			14250989	
growthIneg~K	growthIneg~K				
L119114824**					19114824**
		.3712915	.32587859	.42029257	.48770334
N 456 456 456 420	N	456	456	456	420
r2 .01518312 .08416655	r2				
r2_a .0108351401387888	r2_a	.01083514		01387888	

[.] estimates store gmmest

Total inequality

Instruments for differenced equation
 GMM-type: L(2/.).growthinequality
 Standard: D.lnGDPpcapita D.lnGDPpcapita2
Instruments for level equation
 Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
lnGDPpcapita	14738658	14287643	18411807	.02563525
lnGDPpcapi~2	.0145889	.01841131	.02402554	0147979
cou				
5			0065981	
6			01608091	
7			.00930975	
8			.01501509	
9			.014717	
10			0003038	
11			.01036209	
12			.00623371	
13			.0003434	
14			0356489	
15			020256	
17			.021123***	
18			.0182377*	
20			.01146416	
21			.00578907	
22			01971068	
23			.01767132*	
year			14600552	
1996 1997			14688553 13145307	
1997			14599227	
1998			16621596	
2000			12803677	
2000			13731852	
2001			14462559	
2002			14123531	
2003			11429212	
2004			15075675	
2005			13441767	
2000			14420584	
2008			11794892	
2000			11664387	
2005			13280254	
2011			12434486	
2012			10581637	
2013			12408415	
2014			15175359	
2015			14501301	
2015			15480375	
2017			14446662	
2018			1526356	
2019			19807661	
2020			15905577	
growthineq~y				
L1.				13179964**
_cons	.33560642	.26713475	.47649122	.10566629
N	435	435	435	393
				555
r2	.05904854		.17421586	

Stata test

Growth

Depended variable: ∆GDPper capita

$\Delta GDP percapita_{it}$

 $= a_{1it} + a_2L$. profit rate_{it} + a_3L . interest rate_{it} + a_4L . private dept_{it} $+ a_5 inequality_{it} + a_6 euro entrance_{it} + a_7 2008 financial crisis_{it} + b_i$ $+ u_{it}$ (7.3.17)

Instruments for differenced equation GMM-type: L(2/.).growthGDPpcapita Standardi LD.growthr LD.growthir LD.lnDebtHl D.inequality D.eurodumm D.crisiedumm Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
growthr				
L1.	.19339977***	.18564184***	.14142258***	.16445722***
growthir L1.	05465182	03711583	05210005	06156484*
L1.	05465182	03/11583	05210005	06156484^
lnDebtH1				
L1.	00814004	00794952***	02109288***	00544937
inequality	.01015369	01559051	04237723	.02821708
eurodumm crisisdumm	.00818106 02674982**	00016015 02301452***	00649107 01481813	.00051843 03197394***
Crisisdumm	026/4982^^	02301452^^^	01481813	0319/394^^^
cou				
5			.04429596***	
6			02538509*	
7			.01585607**	
8			03012166*** .02992883***	
10			.03347636***	
10			.02348327***	
12			05396476***	
13			04104284**	
14			02751577*	
15			04075019***	
17			.02691693** 00607433***	
20			0015154	
21			06176483***	
22			02531154*	
23			01224907***	
year				
1997 1998			00082006 00530406	
1999			.00177193	
2000			.03457886	
2001			.01670203	
2002			.01063842	
2003			.00994669	
2004			.02898648	
2005			.03159605 .05910959**	
2000			.06717368**	
2008			.04114117*	
2009			04421374*	
2010			.04556694***	
2011			.04326949**	
2012			.01701173	
2013			.03404487**	
2014			.05329996**	
2016			.03185686*	
2017			.05371117***	
2018			.04826358***	
2019			.04666955***	
2020			(omitted)	
rowthGDPp~a				
				.06845812
L1.				
L1.	.06949668***	.08225844***	.12790487***	.0585991**
L1. _cons	.06949668***	.08225844***	.12790487***	.0585991**
N	430	.08225844***	430	.0585991**
L1. _cons				

All types of inequalities

 $\Delta GDP percapita_{it}$

- $= a_{1it} + a_2L$. profit rate_{it} + a_3L . interest rate_{it} + a_4L . private dept_{it}
- $+ a_5 Inequality F_{it} + a_6 Inequality L_{it} + a_7 Inequality K_{it}$
- $+ a_8 unemployment \ rate_{it} + a_9 euro \ entrance_{it}$
- $+ a_{10} 2008 financial crisis_{it} + b_i + u_{it}$ (7.3.18)

Instruments for differenced equation GMM-type: L(2/.).growthGDPpcapita Standardi: LD.growthr LD.growthir LD.lnDebtH1 D.InequalityF D.InequalityL D.InequalityK D.unemplRT D.eurodumm D.crisisdumm Instruments for level equation Standard: _cons

. estimates store gmmest

. estimates table fixed random pooled gmmest , star stats(N r2 r2_a)

Variable	fixed	random	pooled	gmmest
growthr				
L1.	.16286678**	.20401624***	.13179143***	.1419968**
growthir				
L1.	03127404*	04236648	02938462	02544647*
lnDebtH1				
L1.	01280178*	00713741***	02403464***	01584503*
Teogualitur	.21436476*	.12668683	.1229499	.386773**
InequalityF InequalityL	.2590017***	02403379	.13335065*	.30384773***
InequalityK	.20440042*	.09703232	.12500724	.2957542***
unemplRT	27289671*	17149197	38746962**	29376438*
eurodumm	00290362	00347459	01653638	01706238
crisisdumm	02175528**	01720973***	01877804	02294062**
cou				
5			.03378351	
6 7			05392713* .02208281	
8			01788417*	
9			.06001448***	
10			.0404957**	
11			.02648783	
12			1045856***	
13			06606328**	
14			08338326***	
15			1152745***	
17			.03987528*** 01624545*	
18			01624545*	
20			05274336*	
22			01087731	
23			01150685	
year				
1997			00454014	
1998			01012885	
1999			.00976227	
2000 2001			.03007394	
2001			.00954977	
2002			.01065763	
2004			.0268444	
2005			.0274904	
2006			.05199127*	
2007			.0562994*	
2008			.03541611*	
2009			03017241	
2010				
			.06256646***	
2011			.05281171**	
2011 2012			.05281171** .03336926*	
2011			.05281171** .03336926* .04427593**	
2011 2012 2013			.05281171** .03336926* .04427593** .05258574***	
2011 2012 2013 2014			.05281171** .03336926* .04427593**	
2011 2012 2013 2014 2015			.05281171** .03336926* .04427593** .05258574*** .06722312***	
2011 2012 2013 2014 2015 2016 2017 2018			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692***	
2011 2012 2013 2014 2015 2016 2017 2018 2019			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692***	
2011 2012 2013 2014 2015 2016 2017 2018			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692***	
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692*** .04710235***	
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 growthGDPp~a			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692*** .04710235***	
2011 2012 2013 2014 2015 2016 2017 2018 2019			.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692*** .04710235***	05834477
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 growthGDPp~a L1.	- 00330627	04287419	.05281171+* .03336926* .04227593** .05258574+** .06722312*** .03886807* .05575692*** .04710235*** .04238505*** (omitted)	
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 growthGDPp~a	00339627	.04287618	.05281171** .03336926* .04427593** .05258574*** .06722312*** .03886807* .05575692*** .04710235***	05834477 03707087
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 rrowthGDPp-a L1. cons	00339627	.04287618	.05281171+* .03336926* .04227593** .05258574+** .06722312*** .03886807* .05575692*** .04710235*** .04238505*** (omitted)	
2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 rowthGDPp~a L1.			.05281171+* .03336926* .04227593* .05258574*** .0386807* .05575692*** .04710235*** .04710235*** (omitted)	03707087

InequalityF

Depended variable: ∆InequalityF

$\label{eq:linearized_states} \Delta Inequality_{F_{it}} = a_{1_{it}} + a_2 \Delta l_{it} + a_3 \Delta \lambda_{it} + b_i + u_{it}$ (7.3.1.1)

. describe \$id \$t \$ylist \$xlist

variable name	storage type	display format	value label	variable	label	
growthInequal growthWS growthl	double	%10.0g %10.0g %10.0g		growthIne growthWS growthl	quality	F
. summarize \$	id \$t \$y	list \$xlist				
Variable	01	bs M	ean Std	. Dev.	Min	Max
anouth Inca. P	4	57 0060	607 07	10000 41	5000	451720

growthIneq~F	457	0069697	.0718098	415333	.451739
growthWS	457	.0043803	.0219909	1271254	.1124499
growthl	465	.0019786	.0136038	0906467	.2328077

Variable		Mean	Std. Dev.	Min	Max	Observations
growth~F	overall between within	0069697	.0718098 .0134777 .0706054	415333 0282483 3940543	.451739 .0252856 .4730177	N = 457 n = 18 T-bar = 25.3889
growthWS	overall between within	.0043803	.0219909 .0043725 .0215788	1271254 000713 1372923	.1124499 .0158745 .102283	N = 457 n = 18 T-bar = 25.3889
growthl	overall between within	.0019786	.0136038 .003175 .0132496	0906467 0024879 0884096	.2328077 .0103275 .2244587	N = 465 n = 18 T-bar = 25.8333

. testparm i.cou

. testparm i.cou
(1) 5.cou = 0
(2) 6.cou = 0
(3) 7.cou = 0
(4) 8.cou = 0
(5) 9.cou = 0
(6) 10.cou = 0
(7) 11.cou = 0
(7) 11.cou = 0
(9) 13.cou = 0
(10) 14.cou = 0
(10) 14.cou = 0
(11) 15.cou = 0
(12) 17.cou = 0
(13) 18.cou = 0
(14) 20.cou = 0
(15) 21.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 23.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou =

F(3, 17) = 13.49 Prob > F = 0.0001

Factor over pooled OLS

. hausman fixed random

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthWS	-2.838919	-2.823221	0156982	.0101647
growthl	4.068591	4.177681	1090894	.0605455

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B) '[(V_b-V_B)^(-1)](b-B) = 4.77 Prob>chi2 = 0.0919

Random over fixed

.

Breusch and Pagan Lagrangian multiplier test for random effects

growthInequalityF[[cou,t] = Xb +	u[cou] + e[cou,t]
Estimated results:	Var	sd = sqrt(Var)
growthI~F e u	.0051566 .0009461 5.89e-06	.0718098 .0307591 .0024263
Test: Var(u) = 0) <u>chibar2(01)</u> Prob > chibar2	

Random over pooled OLS

Depended variable: ∆InequalityF

$$\Delta Inequality_{F_{it}} = a_{1it} + a_2 \Delta l_{it} + a_3 \Delta w_{it} + a_4 \Delta A_{it} + b_i + u_{it}$$
(7.3.1.2)

. describe \$id \$t \$ylist \$xlist

variable name	storage type	display format	value label	variable label		
growthInequal~ growthw growthproduct~ growthl	double	%10.0g %10.0g		growthInequalit growthw growthproductiv growthl		
. summarize \$i	d \$t \$yl	ist \$xlist				
Variable	Ob	s Me	an Std.	Dev. Min	М	Max

Variable	Obs	Mean	Std. Dev.	Min	Max
growthIneq~F	457	0069697	.0718098	415333	.451739
growthw	457	.0384328	.0544271	1298405	.3662896
growthprod~y	465	.0403902	.0551794	1109021	.4639426
growthl	465	.0019786	.0136038	0906467	.2328077

. xtdescribe						
Span (y	1996,, 2 year) = 1 ye ear) = 26 p	ar eriods	s each observ	Т	=	18 26
Distribution of T	_i: min 26	5% 2 26	25% 50 26 20		95% 26	max 26
Freq. Perce	nt Cum.	Pattern				
18 100.	00 100.00	1111111111	1111111111111	111111		
18 100.	00	*****		xxxxxx		
. xtsum \$t \$id \$y	list \$xlist					
Variable	Mean	Std. Dev.	Min	Max	Obse	rvations
growth~F overall between within	0069697		415333 0282483 3940543	.451739 .0252856 .4730177	N = n = T-bar =	
growthw overall between within	.0384328	.0544271 .0320828 .0446096		.3662896 .1077623 .3037861	n =	457 18 25.3889
gro~vity overall between within	.0403902	.0551794 .0298193 .0469135	.0141569	.4639426 .105498 .3988348	N = n = T-bar =	
growthl overall between within	.0019786	.003175	0906467 0024879 0884096		N = n = T-bar =	18

Breusch and Pagan Lagrangian multiplier test for random effects

growthInequalityF[cou,t]	= Xb + u[cou]	+ e[cou,t]
--------------------------	---------------	------------

Estimate	d results:		
		Var	sd = sqrt(Var)
g	rowthI~F	.0051566	.0718098
	e	.0041004	.0640344
	u	0	0
Test:	Var(u) = 0		
		chibar2(01)	= 0.00
	1	Prob > chibar2	= 1.0000

. testparm i.cou

(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(б)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	15.cou = 0
(12)	17.cou = 0
(13)	18.cou = 0
(14)	20.cou = 0
(15)	21.cou = 0
(16)	22.cou = 0
(17)	23.cou = 0
	Constraint 1 dropped
	Constraint 4 dropped
	Constraint 5 dropped
	Constraint 6 dropped
	Constraint 7 dropped
	Constraint 8 dropped
	Constraint 9 dropped
	Constraint 11 dropped
	Constraint 12 dropped
	Constraint 13 dropped
	Constraint 14 dropped
	Constraint 15 dropped
	Constraint 17 dropped
	F(4, 17) = 23.10
	Prob > F = 0.0000

factor over pooled

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthw	8247243	8452265	.0205022	.0350381
growthprod~y	.9083483	.8678212		.0248399
growthl	3.408157	3.430738	0225812	.1429344

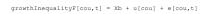
 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 3.20 Prob>chi2 = 0.3613

Random over fixed

Breusch and Pagan Lagrangian multiplier test for random effects



Estimated results:	Var	sd = sqrt(Var)
growthI~F	.0051566	.0718098
e	.0041004	.0640344
ц	0	0
Test: Var(u) = 0)	
	chibar2(01)	= 0.00
	Prob > chibar2	= 1.0000

Random over pooled OLS

Depended variable: Δw

Wage growth_{it} = $a_{1it} + a_2$ relative Labor Employment_{it} + a_3 bargaining power_{it}

- $+ a_4 technological change_{it} + a_5 financial oppenness_{it} + a_6 trade openness_{it}$
- $+ a_7 FDI \ oppenness_{it} + a_8 convergence_{it} + a_9 financial \ development_{it}$
- $+ a_{10}house \ debth_{it} + a_{11}eurozone \ participation_{it} + a_{12}2008 \ financial \ crisis_{it}$
- $+ b_i + u_{it}$ (7.3.1.3)

. describe \$id \$t \$ylist \$xlist

variable name	storage type	display format	value label	variable label
growthw	double	%10.0g		growthw
lnrelatL	double	%10.0g		lnrelatL
BargainingL2	double	%10.0g		BargainingL2
k_inov	double	%10.0g		k_inov
fdiopen	double	%10.0g		fdiopen
financial_open	double	%10.0g		financial_open
op	double	%10.0g		op
eugini	double	%10.0g		eugini
FD	double	%10.0g		FD
DebtH	double	%10.0g		DebtH
caPC	double	%10.0g		CaPC
eurodumm	byte	%10.0g		eurodumm
crisisdumm	byte	%10.0g		crisisdumm

Variable	Obs	Mean	Std. Dev.	Min	Max
growthw	457	.0384328	.0544271	1298405	.3662896
lnrelatL	446	.9175153	.5295423	0259337	2.343709
BargainingL2	312	.2793218	.1782628	.0449	.7661
k_inov	427	.0810127	.0470199	.0109361	.4950667
fdiopen	461	.1909102	.5714506	6764844	5.813815
financial_~n	420	1.966405	.8017374	-1.226155	2.321955
op	468	1.145204	.6537506	.3710993	4.122231
eugini	468	.1125057	.0221542	.0434832	.1532992
FD	450	.5361626	.2175712	.1004459	.9006572
DebtH	462	49.2671	28.12036	1.3	131.4
caPC	468	6865568	5.553381	-21.00853	11.77953
eurodumm	468	.6923077	.4620323	0	1
crisisdumm	468	.5	.500535	0	1

. xtdescribe

cou:	3, 5,, 23	n =	18
year:	1995, 1996,, 2020	т =	26
	Delta(year) = 1 year		
	Span(year) = 26 periods		
	(cou*year uniquely identifies each observation)		

Distribution of T	i: min	5%	25%	50%	75%	95%	max
	26	26	26	26	26	26	26

Freq.	Percent	Cum.	Pattern
18	100.00	100.00	111111111111111111111111111111111111111
18	100.00		*****

. xtsum \$t \$id \$ylist \$xlist

Variable		Mean	Std. Dev.	Min	Max	Observations
growthw	overall	.0384328	.0544271	1298405	.3662896	N = 457
	between		.0320828	.016342	.1077623	n = 18
	within		.0446096	1867685	.3037861	T-bar = 25.3889
lnrelatL	overall	.9175153	.5295423	0259337	2.343709	N = 446
	between		.4095628	.4658293	1.658096	n = 18
	within		.3488167	.0721636	1.868282	T-bar = 24.7778
Bargai~2	overall	.2793218	.1782628	.0449	.7661	N = 312
	between		.1713674	.07889	.696535	n = 18
	within		.0383941	.16161	.4220218	T = 17.3333
k_inov	overall	.0810127	.0470199	.0109361	.4950667	N = 427
	between		.0307734	.0315929	.1474466	n = 18
	within		.0362544	014006	.4286328	T = 23.7222
fdiopen	overall	.1909102	.5714506	6764844	5.813815	N = 461
	between		.3251203	.0125404	1.316872	n = 18
	within		.477895	-1.465011	4.687854	T-bar = 25.6111
financ~n		1.966405	.8017374	-1.226155	2.321955	N = 420
	between		.6206156	.3154293	2.321955	n = 17
	within		.5328385	3286934	3.44742	T = 24.7059
op	overall	1.145204	.6537506	.3710993	4.122231	N = 468
	between		.6281746	.5162591	3.121083	n = 18
	within		.2321872	1295407	2.146352	T = 26
eugini	overall	.1125057	.0221542	.0434832	.1532992	N = 468
	between		0	.1125057	.1125057	n = 18
	within		.0221542	.0434832	.1532992	т = 26
FD	overall	.5361626	.2175712	.1004459	.9006572	N = 450
	between		.2126841	.2118398	.8086902	n = 18
	within		.0672352	.2284112	.6877019	T = 25
DebtH	overall	49.2671	28.12036	1.3	131.4	N = 462
	between		24.5646	15.78077	100.9692	n = 18
	within		14.84495	7.624792	91.3871	T-bar = 25.6667
CaPC	overall	6865568	5.553381	-21.00853	11.77953	N = 468
	between		4.091556	-6.022415	6.79635	n = 18
	within		3.87239	-16.86258	12.20439	T = 26
eurodumm		.6923077	.4620323	0	1	N = 468
	between		.2258141	.2307692	.8461538	n = 18
	within		.4064624	1538462	1.461538	T = 26
crisis~m		.5	.500535	0	1	N = 468
	between		0	.5	.5	n = 18
	within	l	.500535	0	1	т = 26

. test	parm i.year
(1)	2001.year = 0
(2)	2002.year = 0
(2)	2002.year = 0
(4)	2003.year = 0
(5)	2005.year = 0
(6)	2006.year = 0
(7)	2007.year = 0
(8)	2008.year = 0
(9)	2009.year = 0
(10)	2010.year = 0
(11)	2011.year = 0
(12)	2012.year = 0
(13)	2013.year = 0
(14)	2014.year = 0
(15)	2015.year = 0
(16)	2016.year = 0
(17)	2017.year = 0
	Constraint 11 dropped
	R(10 10 10 00
	F(16, 16) = 12.66 Prob > F = 0.0000
	FIGD > F = 0.0000
. test	parm i.cou
	F
(1)	5.cou = 0
(1) (2)	
	5.cou = 0
(2)	5.cou = 0 6.cou = 0
(2) (3)	5.cou = 0 6.cou = 0 7.cou = 0
(2) (3) (4)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(2) (3) (4) (5)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(2) (3) (4) (5) (6)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(2) (3) (4) (5) (6) (7)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
 (2) (3) (4) (5) (6) (7) (8) 	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(2) (3) (4) (5) (6) (7) (8) (9)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 12.cou = 0 13.cou = 0
(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0
(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0
<pre>(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
<pre>(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0

(16, 16) = 1.4e+05Prob > F = 0.0000

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

pooled OLS over Random effects

	Coeffi	cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0302392	0075547	0226845	.0131941
BargainingL2	.1711934	0224276	.1936211	.0899214
k_inov	.3582158	.2024556	.1557602	.1292977
fdiopen	.0053911	.0002689	.0051222	.0016495
financial_~n	.0035409	.0045626	0010217	.0037722
op	.0416329	.0231189	.018514	.0190724
eugini	2406702	1929292	0477411	
FD	0431662	0233007	0198655	.0507879
DebtH	0012849	0004942	0007907	.0001763
CaPC	0056698	0026893	0029805	.000362
eurodumm	.0158831	0098033	.0256864	.0035031
crisisdumm	0107934	0217377	.0109443	.0037039

 $\label{eq:b} b \mbox{ = consistent under Ho and Ha; obtained from xtreg} \\ B \mbox{ = inconsistent under Ha, efficient under Ho; obtained from xtreg}$

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 128.23 Prob>chi2 = 0.0000 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0302392	0075547	0226845	.0153991
BargainingL2	.1711934	0224276	.1936211	.1031874
k_inov	.3582158	.2024556	.1557602	.1535611
fdiopen	.0053911	.0002689	.0051222	.0028371
financial_~n	.0035409	.0045626	0010217	.004834
op	.0416329	.0231189	.018514	.0221361
eugini	2406702	1929292	0477411	.0503221
FD	0431662	0233007	0198655	.0592847
DebtH	0012849	0004942	0007907	.0002121
CaPC	0056698	0026893	0029805	.0004858
eurodumm	.0158831	0098033	.0256864	.0061019
crisisdumm	0107934	0217377	.0109443	.0051033

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 74.36 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

	Coeffi	cients		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lnrelatL	0302392	0075547	0226845	.0134497
BargainingL2	.1711934	0224276	.1936211	.0901246
k_inov	.3582158	.2024556	.1557602	.1341214
fdiopen	.0053911	.0002689	.0051222	.0024779
financial_~n	.0035409	.0045626	0010217	.004222
op	.0416329	.0231189	.018514	.0193339
eugini	2406702	1929292	0477411	.0439517
FD	0431662	0233007	0198655	.0517797
DebtH	0012849	0004942	0007907	.0001853
CaPC	0056698	0026893	0029805	.0004243
eurodumm	.0158831	0098033	.0256864	.0053294
crisisdumm	0107934	0217377	.0109443	.0044573

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 97.48 Prob>chi2 = 0.0000

Fixed over random

Depended variable: Δproducticity

Productivity growth

- $= a_{1_{it}} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it} + a_6 trade openness_{it}$
- + $a_7 FDI$ oppenness_{it} + $a_8 convergence_{it}$ + $a_9 financial$ development_{it}
- $+ a_{10}house \ debth_{it} + a_{11}eurozone \ participation_{it} + a_{12}2008 \ financial \ crisis_{it}$

$$+ b_i + u_{it}$$
 (7.3.1.4)

. descri	be Sid St	Sylist Sx	list				
variable	sto name t	rage disp ype form	lay value at label	vari.	able label		
growthpr	oduct~y d	ouble %10.	0g	growi	thproductivi	ity	
Bargaini	nqL2 d	ouble %10.	0 a	Barga	ainingL2		
k_inov fdiopen		ouble %10. ouble %10.	0g	k_ind fdiot			
financia	1_open d	ouble %10.	0g	finar	ncial_open		
op		ouble %10. ouble %10.	0g	op			
eugini FD	d	ouble %10.	0 g	eugi: FD			
DebtH	d	ouble %10.	0g	Debti	н		
caPC eurodumm	d	ouble %10. yte %10.	0g Da	caPC euros	dumm.		
crisisdu	nn b	yte %10.	Og	cris	isdunn		
		t Sylist S					
Vari	able	Obs		Std. Dev.		Max	
growthpr			.0403902	.0551794 ·	1109021	.4639426	
lnre Bargaini		446 312	.9175153	.5295423 · .1782628	0259337 .0449	2.343709	
- k	inov	427	.0810127	.0470199	.0109361	.4950667	
fdi	open	461	.1909102	.5714506	6764844	5.813815	
financia	1_~n		1.966405	.8017374 -	-1.226155	2.321955	
	op	468	1 145204	.6537506	.3710993	4.122231	
eu	gini FD	468	.1125057	.0221542	.0434832	.1532992	
D	ebtH	462		28.12036	1.3	131.4	
	caPC	468 -	.6865568	5.553381 .	-21.00853	11.77953	
euro	iunn	468	.6923077	.4620323	0	1	
crisis		468	.5	.500535	0	1	
. xtdesc	ribe						
cou year	3, 5,	, 23 1996,,	2020		1	n = 7 =	18 26
Year	Delta(year) = 1 y ear) = 26	ear				÷
	Span (y	ear) = 26	periods				
			y identifies				
Distribu	tion of T	i: min 26		26 2	D% 751 26 26	95% 6 26	max 26
Fre	q. Perce				-		
	-						
1	8 100.	00 100.00	111111111	11111111111	1111111		
1	8 100.	00	XXXXXXXXXX		XXXXXXX		
		list Sxlist					
		list Sxlist Mean	Std. Dev.	Min	Мах	Obse	rvations
	overall		.0551794	1109021	.4639426	N =	
Variable	overall between	Mean	.0551794	1109021	.4639426	N = n =	465
gro-vity	overall between within	Mean .0403902	.0551794 .0298193 .0469135	1109021 .0141569 1760099	.4639426 .105498 .3988348	N = n = 7-bar =	465 18 25.8333
Variable	overall between within overall	Mean	.0551794 .0298193 .0469135	1109021 .0141569 1760099	.4639426 .105498 .3988348 2.343709	N = n = T-bar = N =	465 18 25.8333 446
gro-vity	overall between within overall between	Mean .0403902	.0551794 .0298193 .0469135 .5295423 .4095628	1109021 .0141569 1760099	.4639426 .105498 .3988348 2.343709	N = n = 7-bar = N = n =	465 18 25.8333 446 18
Variable gro-vity lnrelatL	overall between within overall between within	Mean .0403902 .9175153	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167	1109021 .0141569 1760099 0259337 .4658293 .0721636	.4639426 .105498 .3988348 2.343709 1.658096 1.868282	N = n = 7-bar = N = 7-bar =	465 18 25.8333 446 18 24.7778
Variable gro-vity lnrelatL	overall between within overall between within overall	Mean .0403902	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167 .1782628	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661	N = n = T-bar = N = T-bar = N =	465 18 25.8333 446 18 24.7778 312
Variable gro-vity lnrelatL	overall between within overall between within overall between	Mean .0403902 .9175153	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167 .1782628 .1713674	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .696535	N = n = 7-bar = N = 7-bar = N = n =	465 18 25.8333 446 18 24.7778 312 18
Variable gro-vity lnrelatL	overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .695535 .4220218	N = n = T-bar = T-bar = N = n = T =	465 18 25.8333 446 18 24.7778 312 18 17.3333
Variable gro-vity lnrelatL Bargai-2	overall between within overall between within overall overall	Mean .0403902 .9175153	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .696535 .4220218	N = n = T-bar = N = T-bar = N = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427
Variable gro-vity lnrelatL Bargai-2	overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218	.0551794 .0298193 .0469135 .5295423 .4095528 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161 .0109361 .0315929	.4639426 .105498 .3983348 2.343709 1.658096 1.868282 .7661 .695535 .4220218 .4950667 .1474466	N = n = T-bar = N = T-bar = N = T = N = n = n =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18
Variable gro-vity lnrelatL Bargai-2 k_inov	overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127	.0551794 .0298193 .0469135 .5295423 .4095628 .3488167 .178268 .17813674 .0383941 .0470199 .0307734 .0362544	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161 .0109361 .0315929 014006	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .696535 .4220218 .4950667 .1474466 .4286328	N = n = T-bar = N = T-bar = N = T = N = T = T = T =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222
Variable gro-vity InrelatL Bargai~2	overall between within overall between within overall between within overall	Mean .0403902 .9175153 .2793218	.0551794 .0298193 .0469135 .5295423 .4095828 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734 .0362544 .5714506	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161 .0109361 .0315929 014006 6764844	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .696535 .4220218 .4950667 .1474466 .4286328 5.813815	N = T-bar = T-bar = T-bar = T = T = N = T = N = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461
Variable gro-vity lnrelatL Bargai-2 k_inov	overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127	.0551794 .0298193 .0469135 .5295423 .4095528 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734 .0362544 .5714506 .3251203	1109021 .0141569 1760099 0259337 .4658293 .0721636 .07489 .0789 .16161 .0109361 .0315929 014006 6764844 .0125404	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .695535 .4220218 .4950667 .1474466 .4286328 5.813815	N = n = T-bar = N = T-bar = N = n = T = T = N = n = n =	465 18 25.8333 446 24.7778 312 18 17.3333 427 18 23.7222 23.7222 461
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen	overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127 .1909102	.0551794 .0298193 .0469135 .5295423 .4095628 .34881678 .1718674 .0383941 .0470199 .0307734 .0362544 .5714506 .2251203 .477895	1109021 .0141569 1760099 0259337 .4658293 .072168 .0449 .16161 .0109361 .0109361 014096 014006 6764844 .0125404 -1.465011	.4639426 .105498 .3988348 2.343709 1.656096 1.866235 .4220218 .450667 .147466 .4286328 5.813815 1.316872 4.687854	N = n = T-bar = N = T-bar = T = N = T = N = T = N = T = T = T = T =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen	overall between within overall between within overall between within overall between within overall	Mean .0403902 .9175153 .2793218 .0810127	.0551794 .0298193 .0469135 .4095628 .3488167 .1782628 .1713674 .0383941 .0363341 .0362544 .5714506 .3251203 .477855 .8017374	1109021 .0141569 1760099 0259337 .46529337 .0721636 .0449 .07889 .16161 .0109361 .031529 014006 6764844 .0125404 -1.455011 -1.425015	.4639426 .105498 .3988348 .3988348 .343709 1.658056 .4868282 .7661 .696335 .4220218 .4950647 .1437446 .4286328 5.813815 1.316872 4.687354 2.687354	N = n = T-bar = N = T-bar = T = T = N = T = N = T = T = T = T = T = N = T = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen	overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127 .1909102	.0551794 .0298193 .0469135 .5295423 .4095628 .34881678 .1718674 .0383941 .0470199 .0307734 .0362544 .5714506 .2251203 .477895	1109021 .0141569 1760099 0258337 .655293 .0721636 .0449 .07889 .16161 .003592 014006 6764844 .0125404 -1.465011 -1.226155 .3154293	.4639426 .105498 .3988348 2.343709 1.658096 1.868282 .7661 .666535 .422018 .422018 .422018 .4250667 .1474466 .4286328 5.813815 1.316872 4.687854 2.321955	N = n = T-bar = N = T-bar = N = n = T = T = N = n = T-bar = N = n = n = n =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ-n	overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405	.0551794 .0298193 .0469135 .4095628 .3488167 .1782628 .0383941 .0470199 .030734 .03251203 .477895 .8017374 .6206156 .5328385	1109021 .0141569 1760099 0259337 .4658233 .0721636 .07489 .16161 .0109361 .0315929 014006 5764844 -1.465011 -1.226155 .3154293 3286934	.4639426 .103498 .3988348 2.343709 1.658096 1.868282 .7661 .422018 .422018 .422018 .4250667 .1474466 .428655 .813815 1.316872 4.687854 2.321955 3.44742	N = n = T-bar = N = T-bar = N = n = T = N = n = T-bar = N = n = T = T = T = T = T = T = T	465 18 25.8333 446 18 24.7778 18 24.7778 18 17.3333 427 18 23.7222 461 18 25.6111 420 17 24.7059
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen	overall between within overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127 .1909102	.0551794 .0298193 .0499193 .2595423 .4095628 .3488167 .1713674 .0383941 .0470199 .0107134 .0362544 .5714506 .3251203 .477895 .8017374 .6205156 .522385 .5237506	1109021 .0141569 1760929337 .4658293 .0721636 .0449 .07889 .16161 .0109361 .0215929 014006 676484 .1.455011 -1.226155 .3154293 .2285934 .3710993	.4639426 .103498 .3989348 2.343709 1.656096 1.866282 .7661 .696335 .4220218 .4250667 1.474466 .4286328 5.813815 1.316872 4.687824 2.321955 2.321955 3.44742 4.122231	N = n = T-bar = N = n = T-bar = N = N = N = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 77 24.7059 468
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ-n	overall between within overall between within overall between within overall between within overall between within overall between within	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405	.0551794 .0298193 .0499193 .5295423 .4095628 .3485167 .1782628 .3486167 .1782628 .3713674 .0383941 .0470199 .030734 .0362544 .3251203 .477895 .8017374 .6206156 .5228385 .6337506 .6281766	1109021 .0141569 176099 0259337 .4655233 .0721636 .0449 .01899 .16161 .0109361 .0109361 014006 6764844 .0125404 .1.26101 -1.26103 .3154293 3286934 .3162934	.4639426 105498 3988348 2.343709 1.658096 1.668282 7.7661 .696535 .4220218 4.420018 1.457466 .4228428 5.813815 1.316872 4.687854 2.321955 3.44742 4.122231 3.42745	N = n = T-bar = N = T-bar = N = n = T = N = N = n = T = N = n = T = N = N = n = T = N = T = N = N = N = N = T = N = N = N = T = N = T = N = T = N = N = T = N = T = N = N = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17 24.7059 648 18
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ~n op	overall between within overall between within overall between within overall between within overall between within overall between within	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	.0551794 .0298193 .0469153 .5295423 .34054628 .348164 .0383941 .04701934 .0367344 .0362344 .5714506 .3251203 .477895 .8017374 .6206156 .5322835 .6357506 .6281766 .6281766 .6281766	1109021 .0141569 176025337 0253337 .0253337 .025337 .025337 .025337 .025449 .07889 .0169361 .0315929 014006 6764844 .0122604 -1.455011 -1.225453 .31542931 .31542931 3286934 .31562951 229407	.4639426 .103498 .398348 .398348 .658096 1.658096 1.658096 1.658096 .4520218 .4220218 .4220218 .4220218 .4220218 .4246828 .4220218 .1474466 .4285328 4.687854 2.321955 3.44742 4.687854 4.122231 3.44742	N = n = T-bar = T-bar = T-bar = N = n = T = N = T = N = T = N = T = N = T =	465 18 25.8333 446 8 24.7778 312 18 17.3333 427 28 461 8 25.6111 420 17 24.7059 448 8 25.6111 420 17
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ~n op	overall between within overall between within overall between within overall between within overall between within overall	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405	.0551794 .0298193 .0469153 .5295423 .34054628 .348164 .0383941 .04701934 .0367344 .0362344 .5714506 .3251203 .477895 .8017374 .6206156 .5322835 .6357506 .6281766 .6281766 .6281766	1109021 .0141569 1760099 0259337 .4658293 .0721636 .0449 .07889 .16161 .0109361 .0109361 .010936 14006 6764844 .0122404 .0122404 .1.450011 -1.42515 .3154293 .3286934 .3710993 .512591 .1295407 .0434822	.4639426 105498 2.398348 2.343709 1.658096 1.866225 1.866225 .4220218 .4250687 1.474466 .4286328 5.813815 2.813815 2.813815 2.812195 3.44742 4.687854 2.321955 3.44742 4.687854	N = n = T-bar = n = T-bar = n = n = T = N = n = T = N = n = n = T = N = n = n = n = T = N = n = n = T = N = n = N = n = T = N = n = N = n = N = n = T = N = T = T = N = N = T = T = N = T = T = N = T = N = T = N = T = N = T = T = N = T = T = N = T = N = N = T = N = N = N = N = T = N = N = N = N = N = N = N = T = N =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17 24.7059 468 88 86 66
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ~n op	overall between within overall between within overall between within overall between within overall between within overall between within overall between within	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	.0051794 .0299193 .0469135 .3295423 .4095628 .3488167 .1782628 .3488167 .0383941 .0470199 .007734 .0383941 .0470199 .007734 .0382344 .3714566 .3251203 .477895 .601374 .600156 .5328385 .6337566 .6281746 .2321872 .022152 .022152	1109021 .0141569 176039 0253337 .0253337 .0253337 .025337 .025337 .025337 .025337 .02539 014006 6764844 .0125404 -1.465011 -1.22542 .3154253 3256234 .31562551 225407 .044832 .11259407	.4639426 .105498 .398348 2.343709 1.658096 1.865222 .7661 .69635 .422018 4.4260128 5.81815 2.321955 2.321955 2.321955 2.321955 2.344742 4.122211 3.44742 4.122211 3.12103 2.146322 .132292	N = n = n = T-bar = n = n = T = N = T = N = n = T = N = n = T = n = T = N = n = T = N = T = N = T = N = N = N	465 18 25.8333 446 18 24.7778 312 18 23.7222 461 18 25.6111 420 17 24.7059 468 18 25.6111 420 17
Variable gro-vity InrelatL Bargal-2 k_inov fdiopen financ-n op eugini	overall between within between within overall between within overall between within overall between within overall between within	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057	.0551794 .0298193 .0469135 .4095628 .3488167 .1782628 .3488167 .0383941 .0470199 .0307734 .0382944 .3714506 .321203 .477895 .8017374 .600116 .407189 .5328385 .6337506 .2321872 .0221542	1109021 .0141569 1760099 0259337 .655293 .0721636 .07429 .07889 .16161 .0109361 .0315929 014006 6764844 .0129404 1.465011 -1.262634 .315429 .315459 .315429 .31545	.4639426 .105498 .398348 2.343709 1.658096 1.868222 .7661 .698535 .4220218 3.4450667 .4270218 5.813815 1.316872 4.687834 2.687834 2.687834 2.687834 2.621955 2.321955 2.321955 2.321955 2.344742 4.687834 3.44742 4.687834 2.122231 3.44742 4.122231 3.44742	N = n = n = T-bar = n = T = N = T = N = T = N = n = T = N = n = T = T = N = n = T = T = T = T = T = T = T	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17 24.7059 468 18 25.611 420 17 24.7059 48 25.613 18 25.613 26 25.613 26 25.613 26 25.613 26 25.613 26 25.613 26 25.613 26 25.613 27 27.778 27.7778 27.777778 27.7778 27.7778 27.77778 27.7777777777
Variable gro-vity InrelatL Bargal-2 k_inov fdiopen financ-n op eugini	overall between within overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	.0551794 .0298193 .0469135 .4995628 .3488167 .0383941 .0470159 .0307344 .0383941 .0477159 .030734 .0362544 .5714506 .3251203 .477855 .5372835 .5372835 .637706 .6281746 .2321282 .022152 .0221	1109021 .0141569 1760099 0259337 .6658293 .0721636 .0449 .07859 .16161 .0109361 .012909 014006 6764844 .0125406 .125406 -1.465011 -1.22615 .3154293 3154293 3154293 3154293 3154293 3154293 125047 .0434822	.4639426 .105498 .3988348 2.343709 1.658096 1.868222 .7661 .696533 .422018 .4250567 1.474466 .426838 .428538 .428538 .428538 .1316872 3.14742 4.687854 2.321955 3.44742 4.687854 4.122231 3.121033 2.145392 .13295572	N = n = 7-bar = N = n = 7-bar = N = n = 7 = N = N = N = N = N = N = N	465 2 18 333 3466 18 18 24.7778 312 24.7778 312 27.722 27.722 27.722 27.722 27.722 27.722 27.725 28.775 28.725 28
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ~n op	overall batuesn within overall batuesn within between within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn within overall batuesn batusn batuesn batusn	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057	.0551794 .0298193 .0468135 .4695628 .4695628 .4695628 .4685167 .1713674 .0283941 .02670199 .0307734 .0325344 .0325344 .251455 .6517566 .621746 .522435 .6517566 .621746 .2221872 .0221542 .0221542 .21279712 .212641	1109021 .0141569 1760099 0259337 .655293 .0721636 .0742636 .0742636 .07499 .16161 014006 6764844 .0129404 1.465011 -1.465011 3286934 .3156295 .3286934 .3156295 .12295407 .0434832 .1029482 .1029489	.4639426 .103498 .3988348 2.347709 1.65498 2.3487709 1.654962 .420028 .420028 3.420028 3.420028 2.342762 2.32195 3.42742 4.122231 3.121083 2.32195 3.42742 4.122231 3.121083 2.144322 .133592 2.142329 2.142329 .53392 .1532992	N = n = T-bar = N = T-bar = N = T = N = T = N =	465 3 18 25.3333 466 18 12 24.7778 312 28 17.3333 427 18 11 23.7222 461 18 18 25.6111 420 17 420 18 18 26 468 18 18 26 468 18 18 26 18 26
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626	.0551794 .0298193 .0468135 .4295423 .4095628 .43488167 .1718674 .083941 .06770199 .0207734 .0362344 .53244 .532436 .522385 .522385 .522385 .522385 .0221542 .0 .0221555 .0 .02215555 .0 .02215555 .0 .02215555 .0 .02215555 .0 .022155555 .0 .0 .022155555555555555555555555555555555555	1109021 .0141569 1760099 .0259337 .655293 .071163 .070163 .071630 .07899 .16161 .0109361 .0125404 .0125404 .0125404 .0125404 .0125404 .0125404 .0125405 .3155293 .565591 .1259507 .0434832 .125057 .044597 .12505757 .12505757 .125057577 .1250577575757575757575757575757	.4639426 .103498 .3988348 2.343709 1.656036 .1866220 .7661 .696353 .4220218 .4220218 .4250667 .1474466 .4286328 .131845 2.342955 2.342955 2.342955 2.342952 .345952 .3	N = n = T-bar = N = T-bar = T = N = T = N = T = N = T =	465 18 25,8333 4466 18 24,7778 322 18 17,3333 427 17,3333 427 17,3333 427 17,3333 427 17,3333 427 17,3333 427 17,222 461 18 11 420 17,722 461 18 18 12 420 17,722 461 18 18 25,633 461 18 18 25,633 461 18 26,772 461 18 21,772 461 18 22,7722 47,772 47,772 47,7722 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,7777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,777 47,7777 47,7777 47,7777 47,7777 47,7777 47,77777 47,77777777
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD	overall between within overall between overall between vithin overall between vithin overall between vithin overall between vithin overall vithin vithin overallo	Nean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057	.0551794 .0298193 .0469152 .4095423 .4095423 .4095423 .4095423 .4095424 .0383941 .0470139 .0107134 .0383941 .0373244 .0362544 .20155 .8017374 .2021542 .2021542 .0221542 .0221542 .2175712 .2175428 .2175728 .2175728 .217578 .21757888 .2175788 .2175	1109021 .0141569 1760099 .02517 .0455233 .0721636 .0459 .01899 .16161 .019361 .031529 014006 .031529 014006 .031529 076484 .0228404 .1465011 -1.226155 .3346233 .1225407 .0434822 .120597 .0434822 .120597 .0434822 .121598	.4439426 .103498 .3988148 2.348709 1.658006 .868222 .7661 .696355 .4220218 .420028 .420028 .420028 .420028 .3114072 4.68784 .468784 4.68784 2.321955 2.321955 2.321955 2.321955 2.3424742 .468784 .468784 .468784 .1122011 3.14632 .1122047 .1532992 .1120077 .532992 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .8086902 .408788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .409788 .4097888 .4097888 .40978888 .4097888 .4097888 .4097888 .4097888 .4097888 .4097888 .4097888 .409788 .409788 .4	N = n = T-bar = N = T-bar = T - N = N =	455 18 25.833 4466 18 24.7778 32 24.7778 19 23.7222 461 18 23.7222 23.7222 24.7059 26.6111 18 25.6111 18 26.611 18 26.611 18 26.611 18 26.707 24.7059 26.611 18 26.707 24.7059 26.611 18 26.707 24.7059 26.611 18 26.707 24.7059 26.611 18 26.707 24.7059 26.611 18 26.707 24.7059 26.611 27.707 24.7059 26.611 27.707 26.707 27.707
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626	.0551794 .0298193 .0468135 .4295423 .4095628 .43488167 .1718674 .083941 .06770199 .0207734 .0362344 .53244 .532436 .522385 .522385 .522385 .522385 .0221542 .0 .0221555 .0 .02215555 .0 .02215555 .0 .02215555 .0 .02215555 .0 .022155555 .0 .0 .022155555555555555555555555555555555555	1109021 .0141569 1760099 0259337 .6058293 .072165 .0702165 .0709 .16161 .00399 014006 6764844 .0125404 .0125404 .0125404 .1252615 .3354293 .3354293 .3256293 .3262591 .1229407 .0434822 .122947 .0434822 .122947 .0434822 .122947 .2129477 .2129477 .2129477 .212947	.4439426 .105498 .3988144 2.348709 1.65006 1.65006 1.650056 1.650056 1.650056 1.696355 .4220218 .450026 .4280228 5.813815 1.314872 4.428028 2.429555 3.447426 4.627345 2.321955 3.44742 4.122213 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.122143 3.121143 3.	N = n = n = T-bar = N = n = T = N	455 18 18 25.833 445 18 24.7778 12 17.3333 427 18 18 12 23.7222 4611 18 18 23.7222 4617 18 18 24.7778 48 18 24.7778 48 18 25.8131 18 26 21.7059 24.7778 24.7778 24.7778 25.811 18 25.811 25.811 26.811 26.811 27.812 26.811 27.812 2
Variable gro-vity InrelatL Bargai-2 K_inov fdiopen financ-n op eugini FD DebtH	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin	34ean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626 49.2671	.0051794 .029133 .0469135 .4095628 .3489167 .1795628 .1795628 .047785 .057734 .057774 .057734 .05777474 .057774 .05777474 .057774 .05777474 .05777474 .05777474 .05777	1109021 .0141569 1760099 .025337 .0721636 .0449 .07819 .07819 .01406 6756864 .0125404 1.455011 1.25603 3156253 3286934 .3156253 3286934 .3156253 .0284037 .0484822 .01044822 .01044822 .01044823 .121578077 .0446824 .13578077	.4439426 .103498 .3982144 .3982144 .3982144 .696335 .4220218 .486242 .1474466 .696335 .4220218 .4450467 .1474466 .5813815 .314072 .468784 .468784 .468784 .468784 .468784 .147446 .468784 .468784 .147446 .468784 .147446 .147	8 =	465 18 25.833 446 18 24.7778 24.7778 21.7222 461 17 23.722 462 18 18 25.6667 455 25.6667
Variable gro-vity InrelatL Bargai-2 K_inov fdiopen financ-n op eugini FD DebtH	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	Mean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626	.0551794 .0298193 .0469153 .4095628 .3488167 .1713674 .0383941 .04075109 .007734 .0362344 .3714506 .3221203 .477495 .307734 .4202156 .522536 .6235766 .522536 .0221542 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	1109021 .0141569 1760093 .025337 .022636 .0449 .07889 .07889 .07889 .07889 .07889 .07899 .07899 .07899 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .135809400000000000000000000000000000000000	.4439426 .105498 2.3498146 2.3498146 2.3498146 2.45006 1.65006 1.65006 1.65006 1.65006 1.65006 1.696335 .420018 450067 1.3174466 4.687385 2.321955 3.44742 4.687384 2.321955 3.44742 4.687384 2.321955 3.44742 1.122195 3.44742 1.122195 3.44742 1.122195 3.44742 1.122195 3.44742 1.122057 1.12205	8 = 8 6 = 1 7 - bar = 1 8 = 8 7 - bar = 1 8 = 8 7 = 1 8 = 1 7 = 1 8 = 1 7 = 1 8 = 1 7 = 1 8 = 1 7 = 1 8 =	455225.63334 181224.7778 181224.7778 181234 181234 18123 18123 18135 18135 18135 18135 18135 18135 18135 18135 18135 18135 18135 18135 18135 18135 18155 18155 18155 181
Variable gro-vity InrelatL Bargai-2 K_inov fdiopen financ-n op eugini FD DebtH	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin	34ean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626 49.2671	.0551794 .0298193 .0469153 .4095628 .3488167 .1713674 .0383941 .04075109 .007734 .0362344 .3714506 .3221203 .477495 .307734 .4202156 .522536 .6235766 .522536 .0221542 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0	1109021 .0141569 1760093 .025337 .022636 .0449 .07889 .07889 .07889 .07889 .07889 .07899 .07899 .07899 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .07809 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .0434822 .125097 .135809400000000000000000000000000000000000	.4439426 .105498 2.3498146 2.3498146 2.3498146 2.45006 1.65006 1.65006 1.65006 1.65006 1.65006 1.696335 .420018 450067 1.3174466 4.687385 2.321955 3.44742 4.687384 2.321955 3.44742 4.687384 2.321955 3.44742 1.122195 3.44742 1.122195 3.44742 1.122195 3.44742 1.122195 3.44742 1.122057 1.12205	8	465 18 25.833 446 18 24.777 19 17.333 427 18 19 23.722 461 17 17 23.722 461 17 24.0703 420 25.6667 468 25.6667 468 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 468 18 25.6667 18 18 18 18 18 18 18 18 18 18
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD DabtH caFC	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	Naan .0403902 .9175133 .2793218 .0810127 .1909102 .1345204 .1145204 .1145204 .3361426 49.2671	.0551794 .0798193 .0469135 .4095628 .4095628 .1788648 .1718674 .0383941 .04770189 .0407744 .0383941 .0378244 .0378244 .0378244 .0378244 .0378254 .6378263 .437826 .2378726 .23	1109021 .0141569 1760099 .025337 .0721636 .0449 .07819 .07819 .01406 6756864 .0125404 1.455011 1.25603 3156253 3286934 .3156253 3286934 .3156253 .0284037 .0484822 .01044822 .01044822 .01044823 .121578077 .0446824 .13578077	.439426 .136549 .3388544 .63996 .63996 .438954 .4492221 .4492221 .4492221 .4492221 .4492221 .134842 .21929 .11149 .219292 .219292 .144922 .144	N =	465 18 25,833 446 18 14 17,333 427 17,333 427 17,333 427 18 12 24,7772 420 18 12 25,6667 466 18 18 26 420 25 420 18 18 26 420 18 18 26 420 18 18 18 25 420 18 18 18 25 420 18 18 18 25 420 18 18 18 25 420 18 18 18 18 18 18 18 18 18 18
Variable gro-vity InrelatL Bargai-2 K_inov fdiopen financ-n op eugini FD DebtH	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin between vithin between vithin between vithin between vithin between vithin voreall between voreall between voreall between voreall between voreall	34ean .0403902 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1125057 .5361626 49.2671	.0051794 .00951794 .0066115 .4095628 .4095628 .1718626 .1718674 .071399 .007734 .071397 .07734 .071397 .07734 .071395 .071734 .071735 .071734 .071735 .071734 .071795 .021142 .022142 .022142 .022142 .022142 .2217972 .222641 .0722342 .0722142 .2217972 .222641 .072335 .073734 .071742 .0722441 .072356 .073745 .072374 .07235 .072374 .072374 .072375 .072374 .072375 .072374 .072375 .072374 .072375 .072374 .072375 .072374 .072375 .072374 .072375 .07257575 .07257575 .0725757575 .0725757575757575757575757575757575757575	1109021 .011300 .011300 .011500 .0015000 .0000000000	.403926 .10599 .10599 .10599 .405999 .405999 .405999 .40599 .405999 .405999 .4059999 .405999	8	465, 38 18, 25, 8333 446 19, 19, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD DabtH caFC	overall between vithin overall between vithin	Naan .0403902 .9175133 .2793218 .0810127 .1909102 .1345204 .1145204 .1145204 .3361426 49.2671	.0551794 .079193 .0469135 .409528 .3489528 .3489528 .3178674 .0383941 .0479199 .0477119 .0477119 .0477119 .040774 .0323941 .2321026 .477352 .6337506 .6337506 .6337506 .6337506 .2321872 .0072152 .0072152 .0077352 .047352 .047352 .047352 .047352 .047352 .047352 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .0475555 .04755555 .04755555 .0475555555 .04755555 .04755555 .04755555 .04755555555555 .047555555555555555555555555555555555555	1109021 .0113009 .0113009 .0113009 .0113009 .0113009 .011300 .0114000 .01140000 .01140000000000	.4039426 .16499426 .2,34799 .4,648946 .4,648466 .4,648946.4,648946 .4,648946.4,648946 .4,648946.4,64894	N =	465 3 18 33 446 18 18 33 446 18 19 312 24,773 23,7222 461 18 17,3333 427 78 23,7222 461 18 18 25 468 38 18 25 469 18 18 25 18 25 1
variable gro-vity inrelati Bargai-2 k_inov fdiopen financ-n op eugini FD DabtH caPC eurodumm	overall between within overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall v	Naan .003902 .9175133 .2799218 .0810127 .199502 1.966405 .1125057 .5361426 49.2671 6863568	.0551794 .029193 .0469135 .4095628 .4095628 .1788648 .1713674 .0383941 .0407189 .0407189 .0407189 .0407184 .040544 .221203 .477995 .4017187 .401795 .4	1109021 .0.1139 .0.110099 .0.203307 .0.116099 .0.203307 .0.10464 .0.7049 .0.404923 .0.10464 .0.7049 .0.404923 .0.10464 .0.104647 .0.103547 .0.10	.433926 .164392 2.349234 .164394 1.463936 .1.463936 .1.463936 .1.463936 .1.463936 .1.464393 .1.4644393 .1.464393 .1.464393 .1.464393 .1.464393 .1.464393 .1.464393 .1.	8 = 7 - bar = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 7 = 8 = 7 =	465 18 18 25, 133 4 446 4 24, 1778 12 12, 1222 13 12, 1222 13 12, 1222 14 17, 13 18 12, 1222 15, 6111 16 16 16 16 16 16 16 16 16
Variable gro-vity inrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD DabtH caFC	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	Naan .0403902 .9175133 .2793218 .0810127 .1909102 .1345204 .1145204 .1145204 .3361426 49.2671	.0551794 .029193 .0469135 .4095628 .4095628 .1788648 .1713674 .0383941 .0407189 .0407189 .0407189 .0407184 .040544 .221203 .477995 .4017187 .401795 .4	1109021 .0113009 0113009 020307 .071240 .040323 .071240 .040323 .011400 .011400 .011400 .011400 .011400 .011400 .011400 .011400 .0114000 .0114000 .0114000 .0114000 .011400	.433922 .10499 2.339854 4.63996 4.63996 4.63996 4.63996 4.63996 4.63996 2.32199 2.32195 2.3219	8 = 8 7-bar = 9 7-bar = 9 7-bar = 9 7 - bar = 9 7 - ba	465 18 25.833 24.7778 322 24.7778 32 32.7222 33.7222 23.7222 23.7222 24.035 461 25.611 25.611 26 26 26 26 26 26 26 26 26 26 26 26 26
Variable gro-vity InrelatL Bargai-2 k_inov fdiopen financ-n op eugini FD DebtH caPC eurodumm	overall between within overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall v	Naan .003902 .9175133 .2799218 .0810127 .199502 1.966405 .1125057 .5361426 49.2671 6863568	.0551794 .029193 .0469135 .4095628 .4095628 .1788648 .1713674 .0383941 .0407189 .0407189 .0407189 .0407184 .040544 .221203 .477995 .4017187 .401795 .4	1109021 .0.1139 .0.110099 .0.203307 .0.116099 .0.203307 .0.10464 .0.7049 .0.404923 .0.10464 .0.7049 .0.404923 .0.10464 .0.104647 .0.103547 .0.10	.433926 .164392 2.349234 .164394 1.463936 .1.463936 .1.463936 .1.463936 .1.463936 .1.464393 .1.4644393 .1.464393 .1.464393 .1.464393 .1.464393 .1.464393 .1.464393 .1.	8 = 7 - bar = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 8 = 7 = 7 = 8 = 7 =	465 28 46

. test	parm i.year
(1)	2001 waar - 0
(1) (2)	2001.year = 0 2002.year = 0
(2)	2002.year = 0
(4)	2004.year = 0
(5)	2005.year = 0
(6)	2006.year = 0
(7)	2007.year = 0
(8)	2008.year = 0
(9)	2009.year = 0
(10)	2010.year = 0
(11)	2011.year = 0
(12)	2012.year = 0
(13)	2013.year = 0
(14)	2014.year = 0
(15)	2015.year = 0
	2016.year = 0
(17)	2017.year = 0
	Constraint 5 dropped
	F(16, 16) = 27.87
	Prob > F = 0.0000
+ +	
. test	parm i.cou
. test	parm i.cou 5.cou = 0
(1)	5.cou = 0
(1) (2)	5.cou = 0 6.cou = 0
(1) (2) (3)	5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4) (5) (6)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 16.cou = 0 17.cou = 0 20.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 22.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 22.cou = 0

fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

Pooled OLS over random effects

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0236191	0034966	0201226	.0116767
BargainingL2	.153566	0324277	.1859937	.0833099
k_inov	.4335573	.194143	.2394143	.110319
fdiopen	.0161433	.0089794	.0071639	.0015743
financial_~n	.0032794	.0022017	.0010777	.0030493
op	.0890201	.0426715	.0463487	.0172055
eugini	1050718	0295751	0754967	.019162
FD	0323916	.0501137	0825053	.0461316
DebtH	0009524	0006949	0002575	.0001509
caPC	0037565	0024313	0013252	.0002955
eurodumm	0270769	0299154	.0028385	.003455
crisisdumm	0226719	0237183	.0010465	.0033458

b = consistent under Ho and Ha; obtained from xtreg ${\tt B}$ = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 64.62 Prob>chi2 = 0.0000 (V_b-V_B is not positive definite)

. . hausman fixed random, sigmamore

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0236191	0034966	0201226	.0128688
BargainingL2	.153566	0324277	.1859937	.0901638
k_inov	.4335573	.194143	.2394143	.1239177
fdiopen	.0161433	.0089794	.0071639	.0022252
financial_~n	.0032794	.0022017	.0010777	.0036796
op	.0890201	.0426715	.0463487	.0188315
eugini	1050718	0295751	0754967	.0413558
FD	0323916	.0501137	0825053	.0506182
DebtH	0009524	0006949	0002575	.0001709
caPC	0037565	0024313	0013252	.0003689
eurodumm	0270769	0299154	.0028385	.00485
crisisdumm	0226719	0237183	.0010465	.0041127

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 47.57 Prob>chi2 = 0.0000 Prob>chi2 =

. hausman fixed random, sigmaless

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coeffi	cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0236191	0034966	0201226	.0119206
BargainingL2	.153566	0324277	.1859937	.0835206
k_inov	.4335573	.194143	.2394143	.1147875
fdiopen	.0161433	.0089794	.0071639	.0020612
financial_~n	.0032794	.0022017	.0010777	.0034085
op	.0890201	.0426715	.0463487	.017444
eugini	1050718	0295751	0754967	.0383087
FD	0323916	.0501137	0825053	.0468886
DebtH	0009524	0006949	0002575	.0001584
caPC	0037565	0024313	0013252	.0003417
eurodumm	0270769	0299154	.0028385	.0044926
crisisdumm	0226719	0237183	.0010465	.0038097

b = consistent under Ho and Ha; obtained from xtreg ${\tt B}$ = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) 55.44 0.0000 Prob>chi2 =

Fixed over pooled

Depended variable: ∆WS

Wage Share growth

- $= a_{1_{it}} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it} + a_6 trade openness_{it}$
- $+ a_7 FDI \ oppenness_{it} + a_8 convergence_{it} + a_9 financial \ development_{it}$
- $+ a_{10}house \ debth_{it} + a_{11}eurozone \ participation_{it} + a_{12}2008 \ financial \ crisis_{it}$

 $+ b_i + u_{it}$ (7.3.1.5)

variable	st name	orage type	displ forma			lable label		
growthWS lnrelatL		double double	%10.0 %10.0	la la		wthWS alatL		
Bargaini	ngL2	double	\$10.0	lg	Barg	gainingL2		
k_inov fdiopen		double double	%10.0 %10.0	lg la	k_i: fdid	nen		
financia	1_open	double	\$10.0	lg	fina	ancial_open		
op eugini		double double	%10.0 %10.0	lg la	op eug:	in i		
FD		double	\$10.0	lg	FD			
DebtH caPC		double double	%10.0 %10.0	lg la	Deb1 caP0			
eurodumm		byte	\$10.0	la la	euro	odumm		
crisisdu		byte	%10.0		cris	isdunn		
. sunnar	ize Sid	St Syl	ist Sa	list				
Vari	able	Ob		Mean	Std. Dev.	Min	Max	
grow	+ 1-520	45	7	0043803	.0219909	- 1271254	.1124499	
lnre	latL	4.4	6.	9175153	.5295423	0259337	2.343709	
Bargaini	ngL2 inov	31	2.	2793218 0810127	.1782628	.0449	.7661	
fdi		46		1909102	.5714506		5.813815	
		47		.966405	.8017374		2.321955	
financia	00	46	8 1	145204	.6537506	.3710993	4.122231	
eu	gini	46	8 .	1125057	.0221542	.0434832	.1532992	
D	FD ebtH	45 46	2	5361626 49.2671	.2175712 28.12036	.1004459	.9006572 131.4	
	CAPC	46		6865568	5.553381		11.77953	
euro	dumm	46	8.	6923077	.4620323	0	1	
crisis		46		.5	.500535	0	1	
. xtdesc	ribe							
	ribe : 3, 5, : 1995, Delta Span (cou*						-	18
year	: 1995,	1996,	, a	020		n	2	26
	Delta	(year)	= 1 ye	ar				
	(cou	year un	iquely	/ identifie	s each obse	ervation)		
Distribu	tion of	T 1.	min	5.8	25%	50% 75%	95%	nax
			26	26		26 26		26
			Cun.	Pattern				
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	q. Pero							
Fre	· · · ·	ent			11111111111	1111111		
	8 10			11111111				
1	8 100 8 100	1.00 10	0.00	11111111				
l	8 100 8 100 8 100	1.00 10	0.00 xlist	*****	000000000000000000000000000000000000000	0000000	1	
1 . xtsum Variable	8 100 8 100 St Sid 1	1.00 10 1.00 Wyliat S	0.00 xlist Mean	11111111 XXXXXXXXX Std. Dev	. Mir	XXXXXXXX) Max		vations
l	8 100 8 100 St Sid : overal:	1.00 10 1.00 Iylist S	0.00 xlist	11111111 XXXXXXXXX Std. Dev .0219909	. Min	CXXXXXXX Max .1124499	N =	457
1 . xtsum Variable	8 100 8 100 St Sid 1	1.00 10 1.00 Iylist S	0.00 xlist Mean	11111111 XXXXXXXXX Std. Dev	. Min	CXXXXXXX Max .1124499		457
1 . xtsum Variable growthWS	8 100 8 100 St Sid : overal: between within	1.00 10 1.00 1.00 1.00	0.00 xlist Mean 43803	11111111 XXXXXXXXX Std. Dev .0219909 .0043725 .0215788	. Min 1271254 000711 1372923	XXXXXXXX M Max 1.1124499 3.0158745 3.102283 1.02283	N = n = T-bar =	457 18 25.3889
1 . xtsum Variable	8 100 8 100 St Sid 1 between within overall between	1.00 10 1.00 1.00 1.00 1.00	0.00 xlist Mean	11111111 XXXXXXXXX Std. Dev .0219909 .0043725 .0215788 .5295423 .4095528	. Min 1271254 000711 1372921 025933 .4658291	XXXXXXXX M Max 1 .1124499 3 .0158745 3 .102283 7 2.343709 3 1.658096	N = n = T-bar = N = n =	457 18 25.3889 446 18
1 . xtsum Variable growthWS	8 100 8 100 St Sid 9 overal: between within overal:	1.00 10 1.00 1.00 1.00 1.00	0.00 xlist Mean 43803	11111111 XXXXXXXXX Std. Dev .0219909 .0043725 .0215788	. Min 1271254 000711 1372921 025933 .4658291	XXXXXXX M Nax 1.1124499 3.0158745 3.102283 7 2.343709 3.1.658096	N = n = T-bar = N =	457 18 25.3889 446 18
llyariable growthWS lnrelatL	8 100 8 100 St Sid : between within overal: between within overal:		0.00 xlist Mean 43803	11111111 XXXXXXXX Std. Dev .0219909 .0043725 .0215788 .5295423 .4095528 .3488167 .1782628	. Min 127125- 00071: 137292: 025933 .465829: .0721634	XXXXXXXX A .1124499 3 .0158745 3 .102283 7 2.343709 3 1.658096 5 1.868282 9 .7661	N = n = T-bar = N = n = T-bar = N =	457 18 25.3889 446 18
1 . xtsum Variable growthWS	8 100 8 100 St Sid 1 between within overall between within overall between		0.00 xlist Mean 43803 75153	11111111 XXXXXXXXX Std. Dev .0219909 .0043725 .0215788 .5295423 .4095628 .3488167 .1782628 .1782628	. Min 1271254 000711 1372921 025933 .4658291 .0721634 .0788	CXXXXXXX A .1124499 3 .0158745 3 .102283 7 2.343709 3 1.658096 5 1.868282 9 .7661 9 .69535	N = n = T-bar = N = T-bar = N =	457 18 25.3889 446 18 24.7778 312 18
llyariable growthWS lnrelatL	8 100 8 100 St Sid : between within overal: between within overal:		0.00 xlist Mean 43803 75153	11111111 XXXXXXXX Std. Dev .0219909 .0043725 .0215788 .5295423 .4095528 .3488167 .1782628	. Min 1271254 000711 1372921 025933 .4658291 .0721634 .0788	CXXXXXXX A .1124499 3 .0158745 3 .102283 7 2.343709 9 1.658096 1.868282 9 .7661 9 .696535 1.4220218	N = n = T-bar = N = T-bar = N =	457 18 25.3889 446 18 24.7778 312
llyariable growthWS lnrelatL	8 100 8 100 8 100 8 t Sid 1 between within overall between within overall between within		0.00 xlist Mean 43803 75153	11111111 XXXXXXXX Std. Dav .0219909 .0043725 .0215788 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199	. Min 127125- 00071 137292 .072163 .072163 .072163 .0444 .0788 .16165	CXXXXXXX A .1124499 3 .0158745 3 .0128745 3 .0128745 1 .658096 5 1.868282 9 .7661 1 .696535 1 .4220218 4 .4950667	N = n = T-bar = N = T-bar = N = n = T = N =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427
1 1 . xtsum Variable growthWS InrelatL Bargai~2	8 100 8 100 8 100 St Sid 3 overal: betwees within overal: betwees within		0.00 xlist Mean 43803 75153 93218	11111111 XXXXXXXXX Std. Dev .0219909 .0043725 .021578 .4095628 .4095628 .3488167 .1782628 .1713674 .0383941	. Min 127125 00071 137292 .072163 .072163 .072163 .0788 .16163 .01582	XXXXXXXX A Max 4 .1124499 3 .0158745 3 .0158745 3 .0158745 3 .0158745 3 .102833 7 2.343709 3 1.658096 1 .658096 5 .696535 1 .4220218 4 .4220218 1 .474666	N = n = T-bar = N = T-bar = N = n = T = N = n = n =	457 18 25.3889 446 18 24.7778 312 18 17.3333
1 . xtsum Variable growthWS InrelatL Bargai~2 k_inov	8 100 8 100 8 100 St \$id : betwees within overal: betwees within overal: betwees within overal:		0.00 x11st Kean 43803 93218 10127	11111111 XXXXXXXXX Std. Dev .021972 .004372 .0215788 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734 .0362544	. Min 127125 00071 137292 .0721630 .044 .0788 .0721630 .0444 .0788 .010936 .010936 .010936 .010936 .010936	A Max 4 .1124499 3 .058745 3 .012833 7 2.343709 3 1.658096 5 .696535 1 .4590667 9 .7661 1 .4595667 9 .1274466 9 .1474465 9 .1274466	N = n = T-bar = N = T-bar = N = n = T = N = n = T = T =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222
1 1 . xtsum Variable growthWS InrelatL Bargai~2	8 100 8 100 8 100 \$t \$id ! betwees within overal: betwees within		0.00 xlist Mean 43803 75153 93218	11111111 XXXXXXXXX Std. Dev .0043725 .0043725 .0215788 .5295423 .4095628 .348167 .1782628 .1713674 .0383941 .0470199 .04670199 .0362544 .5714506	. Min 127125. 000711 127259 0259333 .4658292 .0721630 .0444 .0788 .16163 .0109367 .0109367 .0109364 16764844	A Max 1 Max 4 .1124499 3 .0158746 3 .0158746 3 .0158746 3 .0158746 3 .058746 3 .1658066 3 .7661 3 .7661 4 .202016 4 .202016 4 .202016 4 .202016 4 .202016 4 .5.813815	N = T-bar = T-bar = T-bar = T-bar = N = T = N = T = N = T =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461
1 . xtsum Variable growthWS InrelatL Bargai~2 k_inov	8 100 8 100 8 100 St \$id : betwees within overal: betwees within overal: betwees within overal:		0.00 x11st Kean 43803 93218 10127	11111111 XXXXXXXXX Std. Dev .021972 .004372 .0215788 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734 .0362544	 Min - 127125- - 025933 - 025933 - 025933 - 025933 - 025933 - 025933 - 025633 - 025633 - 025634 - 0441 - 0768 - 019365 - 019365 - 019365 - 019400 - 076844 - 0125400 	A Max 1 .1124499 3 .0158745 3 .0158745 3 .0158745 3 .102283 1 .186282 3 .1658065 1 .4895067 1 .4290567 1 .4280567 3 .1474466 4 .1481465 4 .188128 4 .181815	N = n = T-bar = N = T-bar = N = n = T = N = n = T = T =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18
1 1 	8 100 8 100 8 100 St Sid : batwees within overal: batwees within	1.00 10 1.00 10 1.0	0.00 xlist 43803 75153 93218 10127	11111111 XXXXXXXXXXX Std. Dev .0219909 .0043725 .0215788 .4095628 .4488167 .1782628 .1713674 .0383941 .0470199 .030734 .0362544 .511562 .477895 .477895	 Min - 127125- - 025933 - 025933 - 025933 - 025933 - 025933 - 025633 - 025633 - 025633 - 025633 - 025633 - 025634 - 0193652 - 0193652 - 014001 - 056484 - 0125400 - 1.465013 	A Max 1 .1124499 3 .0158745 4 .0128745 3 .0128745 3 .102283 3 .102283 1 .658055 1 .4580667 1 .4220218 1 .4590667 1 .1474465 4 .5813815 1 .1263426 1 .126426 1 .147445 4 .5813815 1 .1268428	N = n = T-bar = N = n = T =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111
1 . xtsum Variable growthWS InrelatL Bargai~2 k_inov	8 100 8 100 8 100 St Sid : batwees within overal: batwees within	1.00 10 1.00 1.00 	0.00 x11st Kean 43803 93218 10127	11111111 xxxxxxxxxx 0219909 0043725 0215788 -5295423 -4095628 -3488167 -1786628 -3488167 -1718674 -0383941 -0470199 -0307734 -0362544 -5714506 -3251203 -47785 -8013374	 Min - 127125 - 000711 - 137292 - 025933 - 02400 - 0440 - 03400 - 04400 - 0450 - 014000 - 046484 - 012540 - 1 226151 	Max 1 Max 3 .1124499 3 .0158745 3 .012283 7 2.343709 3 .1658096 3 .162283 3 .162283 1 .658096 3 .162283 3 .1628036 4.696535 .696535 1 .4450667 3 .1474466 5 .1248328 1 .116872 1 .118672 2 .21985784 5 .2267854	N = n = T-bar = N = n = T = N	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17
1 1 	8 100 8 100 8 100 8 100 9 100 100 100 100 100 100 100 100 100 100	1.00 10 1.00 1.00 	0.00 xlist 43803 75153 93218 10127	11111111 XXXXXXXXXXX Std. Dev .0219909 .0043725 .0215788 .4095628 .4095628 .4488167 .1782628 .1713674 .0383941 .0470199 .030734 .0362544 .511562 .477895 .477895	. Min 127125- .000711 137292 .0721631 .072631 .072631 .07861 .06464 .0109361 .0619361 .0109361 .0109361 .0109361 .0109361 .0109361 .0109361 .0109361 .0109361 .0109361 .0125400 125400 -1.465011 -1.226151 .3154291	Max 1 Max 3 .1124499 3 .0158745 3 .012283 7 2.343709 3 .1658096 3 .162283 3 .162283 1 .658096 3 .162283 3 .1628036 4.696535 .696535 1 .4450667 3 .1474466 5 .1248328 1 .116872 1 .118672 1 .118672 2 .219857	N = n = T-bar = N = n = T = N	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420
1 1 	8 100 8 100 8 100 8 100 8 100 9 100 100 100 100 100 100 100 100 100 100	1.00 100 1.	0.00 xlist 43803 75153 93218 10127	11111111 XXXXXXXXX Std. Dev .0219909 .004775 .0215788 .5295423 .4095628 .1782628 .178668 .178668 .178668 .178667668 .178667668 .178667666666666666666666666666666666666	Min 127125: 00071: 137292: .072168299; .072168299; .072168299; .072681; .07881; .07881; .010936; .031592; .010900; .01090; .01090; .01090; .012540; .0125	A Max 1 1.1124499 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 3 0.158745 4 4.850667 3 0.147446 5 1.452064 3 4.268328 4 4.268328 4 4.268328 3 2.421955 3 2.422195 4 4.42723 4 4.42742 4 4.42742	N = n = T-bar = N = n - T-bar = N = n = T = N = n = T = N = n = T = N =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17
l . xtsum Variable growthWS InrelatL Bargai-2 k_inov fdiopen financ~n	overall overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees bet	1.00 10 1.00 10 1.00	0.00 x11st Mean 43803 93218 10127 09102 666405	11111111 XXXXXXXXX Std. Dev .0219909 .004372 .0215788 .5295423 .4095628 .101574 .4488167 .171567 .0383941 .0383941 .0362544 .514506 .3362544 .514506 .532535 .63174 .6205156 .5328355	 Min 127125- 00071: 127125: 025933: 465292: 025933: 044 .01636: .010936: .010936: .010936: .010936: .010936: .010936: .010936: .012644 .012540: .124551 .124551 .124551 .124551 .124553 .124554 .124	Alax Max 1 1124499 3 .0158746 3 .0158746 3 .0158746 3 .102283 7 2.343709 1 .658056 1 .658056 1 .658056 1 .658056 4 .658136 4 .4595667 5 .6181815 4 .618485 2 .212555 3 .346742 3 .342712 4 .212231 1 .122231	N = n = T-bar = N = n - T-bar = N = n = T = N = n = T - bar = N = n = T = N =	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420 17 24.7059 48
l . xtsum Variable growthWS InrelatL Bargai-2 k_inov fdiopen financ~n	overall overall overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within	1.00 10 1.00 10 1.00	0.00 xlist Kean 43803 75153 93218 10127 09102 466405 45204	11111111 XXXXXXXXX 38td. Dev .219909 .219909 .2219708 .2499628 .4499628 .1499628 .1499628 .1499628 .1499628 .1499628 .1116674 .0382941 .111674 .0362544 .5714506 .2551203 .477885 .8017374 .6206166 .32231872 .6387546 .6387546 .6387546 .2321872	. Min 127125- 00071: 127125- 00071: 137282: 025933: .465829: .072163 .0788: .16161 .010936: .010	Alax Max 1 .1124499 0.1124499 .0158745 1 .012283 1 .012283 1 .012283 1 .0126745 1 .012283 1 .058976 1 .68635 1 .68635 1 .4620218 1 .11672466 1 .11672466 2 .212955 3 .4470218 3 .2421955 3 .344742 3 .212455 3 .342742 3 .212211 3 .212455	N = n = n = - n = n =	457 18 25.3889 446 18 18 32 24.7778 32 427 18 223.7222 461 18 18 225.6111 18 225.6111 17.224.7059 468 18 26
l . xtsum Variable growthWS InrelatL Bargai-2 k_inov fdiopen financ~n	A state of the second secon	1.00 10 1.0	0.00 x11st Mean 43803 93218 10127 09102 666405	11111111 XXXXXXXXX Std. Dev .0219909 .004372 .0215788 .5295423 .4095628 .101574 .4488167 .171567 .0383941 .0383941 .0362544 .514506 .3362544 .514506 .532535 .63174 .6205156 .5328355	- Min 127125 00071 127125 00071 137222 025933 044 .07268 .1616 .031552 01400 676484 .012540 125615 .315425 3354293 .516259 127645 .1261566 .1261566 .1261566 .1261566 .12	All Max 1 Max 2 1.124499 3 0.058745 3 0.058745 3 0.058745 3 1.02283 7 2.142499 3 0.58745 4.680282 3 5 1.6580667 1.348752 4.4850667 1.31472466 2.221955 4.487854 2.221955 3 4.47223 3 4.24722 3 4.242231 3 3.221935 3 3.221935 3 3.221935 3 4.24722 3 4.12231 4 4.687854	N = n = n = n = n = n = T - bar = N = n = T = N =	457 18 48 446 18 18 312 18 18 424.7778 18 427.778 461 18 23.7222 461 18 223.7222 461 18 223.7222 461 8 420 77 775 420 8 8 8 9 420 420 17 8 9 420 18 9 420 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 446 18 9 42 47778 18 9 42 47778 18 9 42 47778 18 9 42 47778 18 9 42 47778 18 9 42 47778 18 18 18 18 18 18 18 18 18 18 18 18 18
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1 1 1 1 variable growthWS growthWS harelatL harelatL Bargai-2 k_inov fdiopen financ-n op eugini	overall style="text-align: center;">	0.00 10 1.00 10 1.00 10 1.00 10 1.01 10 1.02 10 1.11 10 1.11 10 1.11 10 1.11 10 1.11 10	0.00 x1ist Moan 43803 93218 10127 09102 45204 25057	11111111 200000000 38td. Dev 0219909 0219788 10219788 10219788 10219788 10219788 10219788 10219788 10219788 10219788 10319788 1031978 10310000000000000000000000000000000000	- Mil 127125 000711 137292 0552 .072163 .045529 .072163 .045529 .010936 .010956 .01256 .010956 .01256 .01096 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566 .012566	Max 1 Max 1 .1124499 0 .0158745 1 .0158745 1 .0158745 2 .0158745 3 .0158745 3 .0158745 3 .0158745 3 .7611 3 .696357 4 .420218 4 .4286328 5 .1174466 5 .2121955 4 .4647841 2 .2121955 3 .47422 3 .1210431 3 .1210431 3 .1210431 3 .1210432 2 .131292057 1.13292057 .131292057 1.1329320 .131292057 3 .132192057 3 .132192057 3 .132192057 3 .90065722 3 .6006902	N = n = n = n = n = n = T - bar = N = n = T = N = n = T = N = N = N = T = T = N = T =	457 18 25.3889 446 447 778 312 18 23.7222 461 18 23.7222 461 18 23.7222 461 18 18 23.7222 461 18 18 23.7222 461 18 23.7222 461 18 24 77 18 24.779 18 23.7222 24.779 18 24.779 18 24.779 18 25.389 26 27.389 27.399 27.299 27.399 27.299 27.499 2
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1 1 1 1 1 1 1 1 1 1 1 1 1 1		<pre>1.00 10 1.00 1.00 1.00 1.00 1.00 1.00 1.</pre>	0.00 xlist Kean 75153 93218 10127 09102 66405 45204 25057 61626	1111111 10000000 10.01990 10.0190	 Niki - 1.7715-0. - 1.0715-0. - 1.0715-0. - 1.0725-0. - 1.0725-0. - 1.0725-0. - 0.0100 - 0.01000	Max 1 Max 1 Jaka 2 Jaka 3 Jaka 4 Jaka 3 Jaka 4 Jaka 4 Jaka 5 Jaka 5 Jaka 5 Jaka 5 Jaka 5 <td>N</td> <td>457 18 445 18 446 18 446 18 424.7778 18 18 18 18 18 18 18 18 18 1</td>	N	457 18 445 18 446 18 446 18 424.7778 18 18 18 18 18 18 18 18 18 1
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1 1 1 1 Variable growthWS margai-2 k_inov fdiopen financ-n op eugini FD DebtH caPC	- - - - - - - - - - - - - -	4.00 10 1.00 1.00 	0.00 xlist Moan 43803 75153 93218 10127 09102 45204 25057 61626 .2671 65568	1111111 1111111 1111111 111111 111111	. Rill 	A Max 1 1.12449 2 1.025745 3 1.025745 3 1.025745 3 1.025745 3 1.025745 3 1.025745 3 1.452067 3 1.452067 3 1.452067 4 4506278 4 4506278 4 4280288 5 1.252057 4 3.122231 4 4.222315 3 3.44742 3 4.212231 4 3.122037 7 2.1532952 3 4.64322 9 9.664572 2 9.664572 2 9.664572 2 9.664572 2 9.664572 2 9.664572 2 9.664572 2 9.664572 3 9.664572 3 9.664572 <t< td=""><td>N = N = N = T-bar = T-bar = N =</td><td>457 18 445 18 446 18 18 18 18 18 18 18 18 18 18</td></t<>	N = N = N = T-bar = T-bar = N =	457 18 445 18 446 18 18 18 18 18 18 18 18 18 18
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1 1 1 1 Variable growthWS margai-2 k_inov fdiopen financ-n op eugini FD DebtH caPC	- - - - - - - - - - - - - -	1.00 10 1.0	0.00 xlist Moan 43803 75153 93218 10127 09102 45204 25057 61626 .2671 65568	1111111 1111111 1111111 111111 111111	. 11113 - 00113 - 00113 - 00113 - 00113 - 00125 - 0010	Max 1 Max 1 Joseph 2 Joseph 3 Joseph 3<	N = N = N = T-bar = T-bar = N =	457 18 445 18 446 18 18 18 18 18 18 18 18 18 18
1 1 1 1 1 1 1 1 1 1 1 1 1 1	- cverall stuess within overall betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within overall overall overall overall overall overall overall overall overall	1.00 10 1.00 1.00 	0.00 x11st K6an 43803 75153 93218 10127 09102 45204 45204 452057 61626 2671 65568 23077	1111111 10000000 10010000000 10010000000	 NIII AIIII AIIIII AIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Max Max 1 Max 1 1.12444 1 1.12444 1 1.125745 1 1.125745 1 1.125745 1 1.125745 1 1.125745 1 1.125745 1 1.662325 1 1.662325 1 1.662325 1 1.662325 1 1.4250218 1 1.116472466 2 1.212083 1 1.212083 1 1.212083 2 1.212083 2 1.212083 3 1.212083 3 1.212083 2 1.1323922 3.9006902 1.12493793 3 1.9794393 1 1.9794393 1 1.9794393 3 1.2764398 3 1.2764393 3 1.46435388	N =	457 18 446 18 18 18 18 18 18 18 18 18 18
1 1 1 1 Variable growthWS margai-2 k_inov fdiopen financ-n op eugini FD DebtH caPC	- cverall stuess within overall betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within overall betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within betwees within overall overall overall overall overall overall overall overall overall	1.00 10 1.00 1.00 .00	0.00 xlist Moan 43803 75153 93218 10127 09102 45204 25057 61626 .2671 65568	1111111 10000000 1000000 10000000 1000000	HLI	Max Max 1 1.12449 3 1.12449 3 1.0223 4 1.0273 5 1.62745 5 1.62745 5 1.6276 5 1.6276 6 1.6276 1 4.6306 1 4.6307 1 4.20218 1 1.12087 1 1.22211 1 1.22211 1 1.22231 1 1.22087 1.12087 1.12287 1.12087 1.12287 1.12087 1.12287 1.20087 1.12287 1.20087 1.12287 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1.20087 1.22897 1	N = 1 n = 1 T-bar = 1 N = 1 T - bar = 1 N = 1	457 18 445 18 446 18 18 18 18 18 18 18 18 18 18

end of do-file

. testparm i.ye	ar
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(1)	2001.year = 0
(2)	2002.year = 0
(3)	2003.year = 0
(4)	2004.year = 0
(5)	2005.year = 0
(6)	2006.year = 0
(7)	2007.year = 0
(8)	2008.year = 0
(9)	2009.year = 0
(10)	2010.year = 0
(11)	2011.year = 0
(12)	2012.year = 0
(13)	2013.year = 0
(14)	2014.year = 0
(15)	2015.year = 0
(16)	2016.year = 0
(17)	2017.year = 0
	F(17, 16) = 6.5e+06
	Prob > F = 0.0000
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	17.cou = 0
(12)	18.cou = 0
(13)	20.cou = 0
(14)	21.cou = 0
(15)	22.cou = 0
(16)	23.cou = 0
	F(16 16) =12357.87

F(16, 16) =12357.87 Prob > F = 0.0000

fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

random over pooled OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	003246	0037644	.0005184	.0074283
BargainingL2	0529494	0022272	0507222	.0523452
k_inov	0405528	.044567	0851198	.0711523
fdiopen	0016449	.0004332	0020782	.0012286
financial_~n	0039936	0003203	0036732	.0020797
op	0262306	.0000217	0262523	.0108947
eugini	0028851	0004387	0024464	.021928
FD	.0272761	0014023	.0286783	.0292755
DebtH	0004388	0001892	0002496	.000098
caPC	0015097	001115	0003947	.0002073
eurodumm	.020013	.0106142	.0093988	.0026802
crisisdumm	.0055426	.0009023	.0046403	.002321

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 21.28 Prob>chi2 = 0.0465 (V_b-V_B is not positive definite)

. . hausman fixed random,sigmamore

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	003246	0037644	.0005184	.0075945
BargainingL2	0529494	0022272	0507222	.0533051
k_inov	0405528	.044567	0851198	.0730366
fdiopen	0016449	.0004332	0020782	.0013116
financial_~n	0039936	0003203	0036732	.0021649
op	0262306	.0000217	0262523	.0111217
eugini	0028851	0004387	0024464	.0244008
FD	.0272761	0014023	.0286783	.0299012
DebtH	0004388	0001892	0002496	.0001008
caPC	0015097	001115	0003947	.0002171
eurodumm	.020013	.0106142	.0093988	.0028586
crisisdumm	.0055426	.0009023	.0046403	.0024239

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 19.39 Prob>chi2 = 0.0544

. hausman fixed random, sigmaless

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	003246	0037644	.0005184	.0074619
BargainingL2	0529494	0022272	0507222	.0523744
k_inov	0405528	.044567	0851198	.0717615
fdiopen	0016449	.0004332	0020782	.0012887
financial_~n	0039936	0003203	0036732	.0021271
op	0262306	.0000217	0262523	.0109275
eugini	0028851	0004387	0024464	.0239748
FD	.0272761	0014023	.0286783	.0293792
DebtH	0004388	0001892	0002496	.000099
caPC	0015097	001115	0003947	.0002133
eurodumm	.020013	.0106142	.0093988	.0028087
crisisdumm	.0055426	.0009023	.0046403	.0023816

 ${\tt b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 20.09 Prob>chi2 = 0.0442

Fixed over Random

Depended variable: ∆l

Relative Labor Employment growth

- $= a_{1_{it}} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade openness_{it} + a_7 FDI oppenness_{it} + a_8 convergence_{it}$
- $+ a_9 financial development_{it} + a_{10}house debth_{it}$
- + $a_{11}eurozone$ participation_{*it*} + $a_{12}2008$ financial crisis_{*it*} + b_i
- $+ u_{it}$ (7.3.1.6)

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Between within	Variable growth1 InrelatL Bargai~2	overall between within overall between within overall between within	.001	Mean 19786 75153 93218	Std. Dev .0136038 .003175 .0132496 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734	- M1 090646 002487 088409 025933 .465829 .072163 .0788 .1616 .013592	n Max 7 .2328077 9 .0103275 6 .2244587 7 2.343709 3 1.658096 6 1.868282 9 .7661 9 .696535 1 .4220218 1 .4950667 1 .4950667	N = n = T-bar = N = T-bar = n = T = N = N = n =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18
Between within	Variable growth1 lnrelatL Bargai~2 k_inov	overall between within overall between within overall between within	.001	Mean 19786 75153 93218 10127	Std. Dev .0136038 .003175 .0132496 .5295423 .4095628 .3488167 .1782628 .1713674 .0383941 .0470199 .0307734 .0362544	. M1 090646 002487 088409 025933 .465829 .072163 .072163 .0748 .1616 .010936 .031592 01400	n Max 7 .2328077 6 .0103275 6 .2244587 7 2.343709 3 1.658096 1 .888282 9 .7661 9 .666535 1 .4220218 1 .4950667 1 .47466 6 .4286328	N = n = T-bar = N = T-bar = N = T = N = n = T = N = n = T =	465 18 25.8333 446 18 24.7778 312 18 17.3333 427 18 23.7222
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between within 24,5464 15,78077 100,802 n = 1 acarC owrexil between within -6465546 5,43381 -10,033 11,7733 H = 464 acarC within -6462546 5,43381 -10,033 11,7733 H = 464 between within -642207 0 1 H = 464 -1207692 -861138 n = 11 between within -622077 0 1 H = 464 -1207692 -861138 n = 11 crisit=normerall -5207692 -861138 n = 11 -7 -7 crisit=normerall 5 500335 0 -5 5 n = 11	Variable growthl InrelatL Bargai-2 k_inov fdiopen financ-n op eugini	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin between vithin overall between vithin between vithin overall between vithin between vithin overall between vithin between vithin overall between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin overall between vithin vithin vithin vithin vithin vithin vithin vithin vithin vi	.001 .001 .917 .274 .081 .190 1.94 1.94 1.14	Mean 19786 33218 10127 99102 56405 45204 25057	8td. bwv -0.136038 -0.0122466 -0.1322465 -0.1322465 -0.1322465 -0.132245 -0.132245 -0.032544 -0.470199 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.035244 -0.03524 -0.035	 Mil 0906460 022933 022933 02263 02263 .046522 .02464 .01868 .01868	n 84x 7 2.234709 6 .2244587 7 2.343709 1 .65296 6 1.66296 1 .66296 1 .66296 1 .4950667 9 .1474466 6 .4286138 1 .316672 1 .429218 1 .321955 3 .221955 4 .314742 2 .1532982 2 .1532982 9 .9005572 9 .8006572 9 .8006572	N - N -	465 18 25,833 24,6778 32 24,7778 32 31 23,722 427 18 23,722 427 23,722 461 18 25,6111 17 20,705 5 468 8 18 26 468 18 26 468 18 26 468 18 26 468 26 450 24 24,77877 24,77877778 24,7777777777777777777777777777777777
within 14.84655 7.624752 9.1.871 T-bar 2.25.662 caPC overall -655568 5.25381 -21.0627 9.1.875 N = 466 batwamn within -655568 5.25381 -21.0627 N = 467 batwamn -645568 5.23381 -10.0627 N = 467 batwamn -0.25394 -1.2327692 -1.8138 n = 11 batwamn 253814 20582 0 1 N = 466 batwamn 253814 2327692 .641338 n = 11 - 46424 batwamn 253814 2327692 .641338 n = 11 - 464 batwamn 0542442 138442 .138442 .13847 - 21 crisis-moverall 503335 0 1 N = 464 batwamn - 5 5 n = 11	Variable growthl InrelatL Bargai-2 k_inov fdiopen financ-n op eugini	overall between vithis overall vithis overall between vithis overall between vithis overall vithis overall between vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis overall vithis	.001 .001 .917 .274 .081 .194 1.94 1.94 1.14 .112 .534	Mean 19786 75153 93218 10127 09102 666405 45204 45204 51626	8td. bw/ .013603 .0117466 258542 .3488167 .3488167 .3488167 .3488167 .3488167 .3488167 .3488167 .3495528 .3495528 .3017374 .251552 .8017374 .2521872 .251542 .2321872 .221542 .2121641 .2	 Mil 0.000464 0.02247 0.02247 0.02248 0.02268 0.02268 0.0268 0.0268<td>n Max 7 2.222077 6 2.244587 7 2.344587 7 2.344587 7 2.344587 9 .76615 1 .462028 9 .76615 1 .462028 9 .1474466 4 .48238 4 .9.21355 3 .2.21955 3 .2.21955 3 .2.21955 2 .2.21955 3 .2.21955 2 .2.21955 3 .2.21</td><td>N - n -</td><td>465 18 25.333 4466 18 17.333 427 17.333 427 428 425.611 18 23.7222 461 17 18 25.611 18 25.611 17 420 17 17 468 8 26 468 8 8 26 468 18 26 26 30 30 30 30 30 40 40 10 10 10 10 10 10 10 10 10 10 10 10 10</td>	n Max 7 2.222077 6 2.244587 7 2.344587 7 2.344587 7 2.344587 9 .76615 1 .462028 9 .76615 1 .462028 9 .1474466 4 .48238 4 .9.21355 3 .2.21955 3 .2.21955 3 .2.21955 2 .2.21955 3 .2.21955 2 .2.21955 3 .2.21	N - n -	465 18 25.333 4466 18 17.333 427 17.333 427 428 425.611 18 23.7222 461 17 18 25.611 18 25.611 17 420 17 17 468 8 26 468 8 8 26 468 18 26 26 30 30 30 30 30 40 40 10 10 10 10 10 10 10 10 10 10 10 10 10
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within 3,7733 -16,46258 12,0409 7 - within .6522077 .642213 0 1 8 464 within .2525141 .2207692 .86138 n 1 7 7 within .6522077 .2027692 .46138 n n 1 7 7 within .500335 .0533462 .146138 n 1 1 7 7 within .500335 .0 .5 .5 n 1 1 4	Variable growthl InrelatL Bargai-2 k_inov fdiopen financ=n op eugini 7D	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin vi	.001 .001 .917 .274 .081 .194 1.94 1.94 1.14 .112 .534	Mean 19786 75153 93218 10127 09102 666405 45204 45204 51626	Std. bwv 0.10638 .0123496 .0123496 .023496 .023496 .023542 .023544 .033944 .033944 .033944 .033944 .0329444 .0329444 .0329444 .0329444 .0329444 .0329444 .03	441	n Max 7 2.2228077 9 0.010227 6 2.2244587 7 2.44379 1 4.650567 9 .7661 9 .7661 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 1 .422021 2 .42702 1 .422021 2 .42702 1 .422021 2 .42702 1 .422021 2 .42702 2 .44702 2 .44702 2 .44702 2 .44702 2 .44702 2 .44702 2 .44702 2 .44702 2 .4470	N = n =	465 18 25.833 466 18 24.7778 12 12 12 12 12 12 12 12 12 12
within 3.87239 -16.46258 12.2409 7 - 2 within .622077 .642253 0 1 = 464 within .223541 .2207692 .86138 n = 41 within .2235424 .2207692 .46138 n = 17 crisis-moreall .500335 0 .5 .5 n 11 between .5 .00335 .5 .5 n 11	Variable growthl InrelatL Bargai-2 k_inov fdiopen financ=n op eugini 7D	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween batween vithin overall batween batween vithin overall batween batween vithin overall batween batween batween batween vithin overall batween batween vithin overall batween batween batween vithin overall batween batween vithin overall batween batween vithin overall batween batween batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin vithin overall batween vithin vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall vithin overall vithin overall vithin overall vithin overall vithin vi	.001 .001 .917 .279 .081 .190 1.94 1.14 .534 49.	Mean 19786 33218 10127 39102 66405 45204 25057 61626 22671	Std. bw/ 10.3032 .0123496 .012349	4. H41 -	n Max 7 2.2347 6 .24487 7 2.4487 7 2.4487 9 .6653 1 .45806 1 .68828 9 .6653 1 .45906 1 .458267 9 .4487 9 .6653 1 .459067 9 .4487 9 .6653 1 .459067 9 .4487 1 .459067 9 .428128 3 .428223 1 .459067 2 .24379 2 .42877 2 .128377 2 .128377 2 .128397 2 .12	N -	465 18 25.833 4466 18 24.7778 12 12 17.3333 42 7 18 12 25.611 11 18 25.611 11 22 25.611 11 24.7059 24.7059 26 26 26 26 26 26 26 26 26 26 26 26 26
between within .2258141 .2307692 .8461538 n = 16 .0464624 1538462 1.461538 T = 24 crisis-noverall .5 .500535 0 1 N = 466 between 0 .5 n = 1.461538 1.461538 1.461538	Variable growth1 InrelatI Bargal-2 k_inov fdiopen financ-n op eugini FD DebtH	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin batween vithin batween vithin batween vithin batween vithin batween	.001 .001 .917 .279 .081 .190 1.94 1.14 .534 49.	Mean 19786 33218 10127 39102 66405 45204 25057 61626 22671	8td. bwv 013603 003175 023266 0258623 023266 024266 024666 024666 024666 024666 024666	 Mil .00046 .00248 .00248	n Max 7 2.323 6 .2244807 7 2.34370 8 .244807 7 2.34270 1 .66309 1 .66430 1 .66430 1 .66430 4 .513167 4 .5131677 1 .459567 1 .422323 1 .223053 3 .474223 1 .123067 1 .1332929 9 .50060522 8 .50060522 9 .5006573 3 .137492 1 .1339293 1 .137993 1 .1379933	N - N - T-bar - N - T-bar - N -	455 18 25,833 446 18 18 312 24,7778 427 17 312 18 11 22,722 461 18 12 22,1722 461 18 12 420 17 9 468 18 26 468 468 468 26 468 26 468 26 26 25 462 21 26 26 26 26 26 26 26 26 26 26 26 26 26
between within .2258141 .2307692 .8461538 n = 16 .0464624 1538462 1.461538 T = 24 crisis-noverall .5 .500535 0 1 N = 466 between 0 .5 n = 1.461538 1.461538 1.461538	Variable growth1 InrelatI Bargal-2 k_inov fdiopen financ-n op eugini FD DebtH	overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin overall batween vithin batween vithin batween vithin batween vithin batween vithin batween	.001 .001 .917 .279 .081 .190 1.94 1.14 .534 49.	Mean 19786 33218 10127 39102 66405 45204 25057 61626 22671	8td. bwv 013603 003175 023266 0258623 023266 024266 024666 024666 024666 024666 024666	 Mil .05046 .02024 .020248 .020248 .020248 .020248 .020248 .020248 .021240 .0	n Max 7 2.323 6 .2244807 7 2.34370 8 .244807 7 2.34270 1 .66309 1 .66430 1 .66430 1 .66430 4 .513167 4 .5131677 1 .459567 1 .422323 1 .223053 3 .474223 1 .123067 1 .1332929 9 .50060522 8 .50060522 9 .5006573 3 .137492 1 .1339293 1 .137993 1 .1379933	N - N - T-bar - N - T-bar - N -	465 18 25.833 4466 18 24.7778 12 12 17.3333 42 7 18 12 25.611 11 18 25.611 11 22 25.611 11 24.7059 24.7059 26 26 26 26 26 26 26 26 26 26 26 26 26
within .40646241538462 1.461538 T = 26 crisis-m overall .5 .500555 0 1 N = 466 between 0 .5 .5 n = 468	Variable growth1 InrelatI Bargai-2 k_inov fdiopen financ~n op eugini FD DebtH caPC	overall batteen vithin vithin overall batteen vithin vithin overall batteen vithin	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 33218 10127 39102 45204 45204 45204 25057 55568	8td. Ewy 015037 012504 02504554 02504554 00	441 03044 02443 02443 044543 .0445434 .0445434 .0445434 .0445443 .0445434 .0445434 .0445444 .04454444444	n Max 7 2.3207 6 2.24487 7 2.34370 6 2.24487 7 2.34270 8 1.66292 9 7.619 9 .66539 4 5.21953 4 1.316872 1 4.22213 1 4.22213 1 3.24493 7 2.14570 1 3.44742 7 1.312892 9 .508602 1 3.21955 1 3.21955 2 1.312927 1 1.312892 9 .508602 1.312929 .508602 2 .508602 2 .508602 3 .177933 3 .177933 3 .17893 3 .77833 3 .77833 3 .77833 4	N -	455 18 25,833 446 18 18 312 24,7778 427 17 312 18 11 22,722 461 18 12 22,1722 461 18 12 420 17 9 468 18 26 468 468 468 26 468 26 468 26 26 25 462 21 26 26 26 26 26 26 26 26 26 26 26 26 26
between 0 .5 .5 n = 18	Variable growth1 InrelatI Bargai-2 k_inov fdiopen financ~n op eugini FD DebtH caPC	overall between vithin overall vithin overall vithi	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 33218 10127 39102 45204 45204 45204 25057 55568	814. Ber 0.12603 0.12603 0.1275 0.12264 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.20214 0.202142 0.	. 444 - 0.00448 - 0.02487 - 0.	n Max 7 .2.244707 6 .244507 7 .2.44707 7 .2.44707 7 .2.44707 9 .4.65026 1 .66222 9 .66513 1 .42520218 1 .42520218 1 .42520218 1 .4252021 1 .4252021 1 .4252021 2 .2.1355 3 .2.21355 4 .2.21355 3	H = 1 H	455 38 18 446 18 8 24.7778 41 18 24.7778 421 17.333 427 18 17.333 427 18 17.333 427 18 18 23.7222 421 18 18 24.7759 428 428 428 428 428 428 429 429 429 429 429 429 429 429
between 0 .5 .5 n = 18	Variable growth1 InrelatI Bargai-2 k_inov fdiopen financ~n op eugini FD DebtH caPC	overall between vithin overall vithin overall vithi	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 33218 10127 39102 45204 45204 45204 25057 55568	814. Ber 0.12603 0.12603 0.1275 0.12264 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.255422 0.20214 0.202142 0.	. 444 - 0.00448 - 0.02487 - 0.	n Max 7 .2.244707 6 .244507 7 .2.44707 7 .2.44707 7 .2.44707 9 .4.65026 1 .66222 9 .66513 1 .42520218 1 .42520218 1 .42520218 1 .4252021 1 .4252021 1 .4252021 2 .2.1355 3 .2.21355 4 .2.21355 3	H = 1 H	455 18 18 18 18 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 17 18 18 12 17 18 18 18 18 18 18 18 18 18 18 18 18 18
within .500535 0 1 T = 26	Variable growth1 InrelatI Bargal-2 k_inov fdiopen financ-n op eugin1 FD DebtH caPC eurodumn	overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 75153 93218 10127 99102 66405 45204 45204 25057 51626 .2671 55568	81d. Ewy 012603 012603 01276 012262 012762 012262 012777 012762 012777 012762 0127777 0127777 0127777 0127777 0127777 0127777 0127777 0127777 0127777 01277777 0127777 0127777 012777777 01277777 01277777777 012777777777777777777777777777	 441 00244 00248 01039 	n Max 7 .224370 6 .224377 6 .244377 7 .243470 3 .1.68006 1 .68006 9 .76533 1 .45006 4 .28131 2 .24137 9 .76533 1 .45006 4 .28131 1 .121083 7 .21453 2 .21953 3 .41222 1 .121083 7 .21453 2 .21955 3 .412128 3 .412128 2 .32195 3 .22195 3 .22195	8	455 18 25,833 446 18 24,777 12 23,7222 461 18 23,7222 461 18 23,7222 461 18 24,7059 468 18 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 26 465 12 12 12 12 12 12 12 12 12 12
	Variable growth1 InrelatI Bargal-2 k_inov fdiopen financ-n op eugin1 FD DebtH caPC eurodumn	Dowedl between within overall between within between within between within between within between within overall between between between overall between within overall between be	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 75153 93218 10127 99102 66405 45204 45204 25057 51626 .2671 55568	814. Dav 0.030037 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.030777 0.030777 0.030777 0.0307777 0.0307777 0.03077777 0.03077777 0.0307777 0.030777777777 0.0307777777777777777777	. 0.000 - 0.00248 - 0.0248 - 0.02	n Max 7 .2.24370 6 .2.24377 6 .2.24377 7 .2.4377 9 .1.65006 1 .662026 1 .66206 1 .66206 1 .66206 1 .66206 1 .6	3	465 3 18 3 446 4 18 3 446 18 3 24.7778 18 17.333 42.7722 25.611 18 3 420 25.611 18 3 420 17 420 17 400 17 400 17 400 17 400 1
	Yariable prowth1 inrelatL kargai-2 k_inov diopen diopen dinanc~n yp ugini 7D DebtH baPC vurodumm	Dowedl between within overall between within between within between within between within between within overall between between between overall between within overall between be	.001 .001 .917 .279 .081 .190 1.94 1.94 1.94 .191 .534 49. 684	Mean 19786 75153 93218 10127 99102 66405 45204 45204 25057 51626 22671 55568	814. Dav 0.030037 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.03077 0.030777 0.030777 0.030777 0.0307777 0.0307777 0.03077777 0.03077777 0.0307777 0.030777777777 0.0307777777777777777777	1.0004 1.00048 1.00	n Max 7 2.3207 6 2.24487 7 2.34370 6 2.24487 7 2.34270 8 1.66204 9 .7661 9 .7661 9 .1420218 1 .131427 4 .131487 1 .131427 1 .131427 1 .131427 1 .131427 1 .131427 1 .131427 1 .131427 1 .131427 2 .9016972 3 .177933 1 .120197 1 .445328 1 .445388 1 .445388 1 .145388 1 .145388 1 .145388 1 .145388 1 .145388 1 .1453888 1	3	465 3 18 446 18 19 14 466 18 19 12 25, 5333 424, 775 3 11 7, 3333 427, 78 12 23, 7222 24, 7055 12 25, 5667 468 18 12 26 468 18 12 26 468 26 468 27 468 28

. test	parm i.year
(1)	2001
(1) (2)	2001.year = 0
(2)	2002.year = 0 2003.year = 0
(3)	2003.year = 0 2004.year = 0
(4)	2004.year = 0 2005.year = 0
(6)	2006.year = 0
(7)	2007.year = 0
(8)	2008.year = 0
(9)	2009.year = 0
(10)	2010.year = 0
(11)	2011.year = 0
(12)	2012.year = 0
(13)	2013.year = 0
(14)	2014.year = 0
(15)	2015.year = 0
(16)	2016.year = 0
(17)	2017.year = 0
	Constraint 14 dropped
	F(16, 16) = 7.79
	Prob > F = 0.0001
. test	Prob > F = 0.0001 parm i.cou
	parm i.cou
(1)	parm i.cou 5.cou = 0
(1) (2)	parm i.cou 5.cou = 0 6.cou = 0
(1) (2) (3)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6) (7)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)</pre>	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

Pooled OLS over random effects

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0035763	0023082	0012681	.0019983
BargainingL2	0096156	.0024028	0120183	.0162474
k_inov	.0311022	.0009613	.0301409	.0174785
fdiopen	00122	0007715	0004485	.0003152
financial_~n	.0040767	.0029251	.0011516	.0004526
op	.0019213	.0021358	0002145	.00312
eugini	0164316	0097882	0066434	.0051516
FD	.0208629	.008391	.0124718	.0085823
DebtH	0001383	0000648	0000735	.0000245
caPC	0002599	0003463	.0000864	.0000476
eurodumm	0000773	.000527	0006042	.0006386
crisisdumm	0004441	0003098	0001343	.0005416

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 20.92 Prob>chi2 = 0.0029 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0035763	0023082	0012681	.0021049
BargainingL2	0096156	.0024028	0120183	.0167857
k_inov	.0311022	.0009613	.0301409	.0187918
fdiopen	00122	0007715	0004485	.0003692
financial_~n	.0040767	.0029251	.0011516	.000518
op	.0019213	.0021358	0002145	.0032574
eugini	0164316	0097882	0066434	.0068283
FD	.0208629	.008391	.0124718	.0089525
DebtH	0001383	0000648	0000735	.0000264
caPC	0002599	0003463	.0000864	.0000547
eurodumm	0000773	.000527	0006042	.0007623
crisisdumm	0004441	0003098	0001343	.0006155

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) 25.31 0.0082 Prob>chi2 =

. hausman fixed random, sigmaless

Note: the rank of the differenced variance matrix (11) does not equal the number of coefficients being tested (12); be sure this is what you expect, or there may be problems computing the test. Examine the output of your estimators for anything unexpected and possibly consider scaling your variables so that the coefficients are on a similar scale.

	——— Coeffi	cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0035763	0023082	0012681	.0020431
BargainingL2	0096156	.0024028	0120183	.0162927
k_inov	.0311022	.0009613	.0301409	.0182399
fdiopen	00122	0007715	0004485	.0003584
financial_~n	.0040767	.0029251	.0011516	.0005028
op	.0019213	.0021358	0002145	.0031617
eugini	0164316	0097882	0066434	.0066277
FD	.0208629	.008391	.0124718	.0086896
DebtH	0001383	0000648	0000735	.0000256
caPC	0002599	0003463	.0000864	.0000531
eurodumm	0000773	.000527	0006042	.0007399
crisisdumm	0004441	0003098	0001343	.0005974

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) 26.87 0.0048 Prob>chi2 =

Fixed over Random

. describe Sid St Sylist Sxlist

Depended variable: ∆InequalityF

Factor Inequality growth

- $= a_{1it} + a_2 relative Labor Employment_{it} + a_3 bargaining power_{it}$
- $+ a_4 technological change_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade openness_{it} + a_7 FDI oppenness_{it} + a_8 convergence_{it}$
- $+ a_9 financial development_{it} + a_{10}house debth_{it}$
- + $a_{11}eurozone$ participation_{*it*} + $a_{12}2008$ financial crisis_{*it*} + b_i

 $+ u_{it}$ (7.3.1.7)

	storag						
variable nam					able label		
growthInequa lnrelatL	l∼F doub doub	le %10.0)a	grow lnre	thInequality latL	F	
BargainingL2	aoup	10 %10.U)g	Barg	ainingL2		
k_inov fdiopen	doub)a	k_in fdio	pen		
financial_op		le %10.0)g	fina	ncial_open		
eugini	doub	le %10.0)a	eugi	ni		
FD 1nDebtH1		le %10.0)q	FD 1nDe	btH1		
caPC	doub	le %10.0)a	caPC			
eurodumm crisisdumm	byte byte				dumm isdumm		
. summarize	-						
. summarize Variable		Obs		Std. Dev.	Min	Max	
growthIneg~F			.0069697	.0718098	415333	.451739	
lnrelatL		446 .	9175153	.5295423	0259337	2.343709	
BargainingL2 k inov			0810127	.0470199	.0109361	.7661	
fdiopen			1909102	.5714506	6764844	5.813815	
financial_~n		420 1	1.966405	.8017374	-1.226155	2.321955	
op eugini		468 1	.145204	.6537506	.3710993	4.122231	
FD		450 .	5361626	.2175712	.1004459	.9006572	
1nDebtH1		462 4	1.006271	2.315389	-2.951883	7.639548	
caPC		468	6865568	5.553381	-21.00853	11.77953	
eurodumn crisisdumn		468 . 468	.6923077	.4620323	0	1	
		-00		. 300333	0	1	
. xtdescribe							
cou: 3	, 5,	, 23				-	18
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. xtaum St S Variable growth-F ove bat wit InrelatL ove bet wit Bargai-2 ove	rall - ween hin rall ween hin rall rall	t Sxlist Mean	Std. Dev .0718098 .0134777 .0706054 .5295423 .4095528 .3488167 .1782628	- Min 415333 0282483 3940543 0259337 .4658293 .0721636 .0449	Max .451739 .0252856 .4730177 2.343709 1.658056 1.868282 .7661	N = n = T-bar = N = n = T-bar = N =	457 18 25.3889 446 18 24.7778 312
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. xtsum %t % Variable growth-F ove wit InrelatL ove bet wit k_inov ove bet uit fdiopen ove bet financ-n ove	rall - ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin	t \$xliat Mean .0069697 .9175153 .2793218 .0810127 .1909102	Std. Dev .0718038 .0134777 .0706054 .4095628 .3488167 .1718674 .0383941 .0470139 .0362544 .5714506 .251203 .477885 .8017374	 Min - 415333 - 0282483 - 3940543 - 3940543 - 0259337 - 0259337 - 071636 . 0449 - 0404 - 0404 - 1465011 	Max .451739 .0252856 .4730177 2.343709 1.658050 1.868282 .4220218 .4220218 .4220218 .4250667 .1474466 .4270218 5.813815 1.316872 4.687844	N = n = 7-bar = N = n = T = N = N = N = N = N = N = N = N	457 18 25.3889 446 18 24.7778 312 18 17.3333 427 18 23.7222 461 18 25.6111 420
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. xtsum &t & & Variable growth-F ove bet uit Bargal-2 ove bet k_inov ove bet fdiopen ove bet uit financ-n ove wit op ove bet	id Şylis rall - ween hin rall ween hin	t \$xlist <u>Mean</u> .0069697 .9175153 .2793218 .0810127 .1909102 1.966405	Std. Dev . 0718088 .0134777 .0706054 .4095628 .3488167 .1738248 .0383941 .0470199 .0367344 .0362344 .5714506 .3251203 .477855 .8017374 .6206156 .5328385 .6371566 .6381764	. Min 415333 0382483 3940543 055337 .4658293 .0721636 .0449 .07899 .16161 .0109361 .0109361 .0109361 .0125040 6764844 .0125404 .01	Max .451739 .0252856 .4730177 2.343709 1.658638 .422018 .422018 .425018 .425018 .425018 .42518 .42518 .131872 4.68758 2.321955 3.44742 4.122231	N = n = 7-bar = N = 7-bar = N = n = 7 = N = N = N = N = N = N = N = N	457 18 25.3889 446 18 24.7778 312 18 24.7778 18 23.7222 461 18 25.6111 420 17 24.7059 468 18
. xtsum 0t 8 Variable growth-F ove bet uit lnrelatL ove bat uit k_inov ove bat uit fdiopen ove bat uit financ-n ove bat uit go ove	id Sylis rall - rall ween hin	t \$x11st Mean .0069697 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	Std. Dev .0718098 .0134777 .0708094 .5295423 .4095628 .1713674 .0383961 .0470199 .0307734 .0362544 .5718506 .25118506 .477895 .8017374 .5328385 .637506 .6281764 .2321872	 Min - 415333 - 0282483 - 0259337 - 4658293 - 0721636 - 0449 - 07899 - 16161 - 0109361 - 010366 - 6764844 - 0125406 - 1465011 - 1225455 - 3286934 - 3154293 - 3286934 - 3162433 - 1229407 	431739 .02226 .4730173 .4730177 2.34709 1.658096 1.868282 .7661 .669635 .4220218 .424466 .4226528 5.316872 4.68784 2.322955 3.24742 4.68784 2.322955 3.24742	N = r-bar = N = T-bar = T-bar = N = n = T = N = n = T = N = n = T = N = N = N = N = N = N = N = T = N = N = T = N = N = T = N = N = T = N = N = T = N = N = T = N = N = N = N = N = N = N = N	457 18 25.3889 446 18 24.7778 12 16 23.7222 461 18 25.6111 420 17 24.7059 468 8 26
. xtsum 6t 8 Variable growth-F over bet uit inrelatL over bet uit k_inov over bet uit fdiopen over uit ffinanc-n over bet uit financ-n over bet uit financ-n over bet uit	id Gylis rall - rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall r	t \$xlist <u>Mean</u> .0069697 .9175153 .2793218 .0810127 .1909102 1.966405	Std. Dev .0718098 .0134777 .0706034 .095603 .495603 .495603 .495603 .495603 .495603 .495603 .495603 .495603 .495603 .292103 .477855 .523505 .5237556 .653756 .653756 .653756 .2221872 .0099938	Min 415333 0282483 03940543 .072166 .072166 .07899 .16161 .010392 014006 6764844 .0125406 1465011 -1.25405 13154293 3154293 3154293 31545931 1295405	Как 4.51.739 4.252286 4.730.77 2.34709 1.638096 1.868262 7.66555 4.426528 5.813815 1.346724 4.678528 2.321955 3.44742 4.678295 3.44742 1.312095 3.44742 4.22231 3.42742 1.312095 3.44742 1.312095 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.42745 3.44742 3.447442 3.44742 3.447442 3.447442 3.44744444 3.44744444 3.4474	N = n = r-bar = N = r-bar = N = T = N = n = T = N =	457 18 25.3889 446 24.7778 312 18 17.3333 417 23.7222 461 18 25.6111 420 17 24.7059 468 18 26 468
. xtsum %t % Variable growth-F ove bet uit inrelatL ove bat bat dispen ove bat fdiopen ove uit fdiopen ove uit financ-n ove bat uit eugin ove	id Sylis rall - rall - rall - rall ween hin rall rall ween hin rall	t \$x11st Mean .0069697 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	Std. Dev .0718098 .0134777 .0708094 .5295423 .4095628 .1713674 .0383961 .0470199 .0307734 .0362544 .5718506 .25118506 .477895 .8017374 .5328385 .637506 .6281764 .2321872	Min 415333 0222483 03460341 03460341 .0721636 .0449 .0789 .16161 .010391 014006 6764844 .0125406 1254067 .3154293 3256334 .3154293 .315429 .315429 .31542	431739 .02228 .4730177 2.34700 1.658096 1.868282 .7661 .69635 4220218 .4220218 1.474466 4226539 3.447462 4.36755 2.32295 3.44742 4.122231 3.121083 3.24742 4.122231 3.121083 3.24742	N = n = r-bar = N = r-bar = N = T = N = n = T = N =	457 18 25.3889 446 24.7778 312 18 17.3333 417 23.7222 461 18 25.6111 420 17 24.7059 468 18 26 468
. xtsum 5: 5 Variable growth-F over the second seco	id Şylis rall rall veen hin rall ween hin rall rall ween hin rall rall ween hin rall rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin hin rall ween hin hin rall hin rall ween hin hin rall ween hin rall ween hin rall ween hin rall rall hin rall hin rall hin rall hin rall hin hin rall hin hin hin hin hin hin hin hin	t \$x11st <u>Wean</u> .00059597 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1047732	Std. Dev . 0718038 .014777 .0706034 .4095628 .4095628 .3388167 .7718678 .0307734 .0007938 .0007948 .0007948 .0007948 .0007948 .00079	- Min - 413333 - 0282483 - 3940334 - 0253337 - 0253337 - 0253337 - 0449 - 07829 - 014056 - 07829 - 014006 - 07829 - 014006 - 0782404 - 01292404 - 014006 - 0.26405 - 3154293 - 1285407 - 1295407 - 129557 - 1295577 - 12957	Аах .451739 .025286 .4730177 2.34709 1.65805 .42021 .4950667 .147462 .4268128 .4208128 .316875 3.446758 2.21283 3.242835 3.242835 3.242835 3.242835 3.242835 3.246935 .1459466 .222231 3.212083 3.246935 .1459466 .1459466 .1459466 .1459466 .1459466 .1459466 .1459466 .1459466 .1459466 .1459466 .145946	N = n = 7-bar = N = n = T = N = T = N = T = N = n = T = N = N = n = T = T = N = T	457 18 25.3889 446 18 24.7778 18 24.7778 18 23.7222 23.7222 23.7222 23.7222 23.7222 24.7759 428 18 26 24.7059 468 18 26
. xtsum 6t 6 Variable Variable growth-F over between the second s	id Sylis rall vaen hin rall rall rall rall rall rall rall ral	t \$x11st Mean .0069697 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204	Std. Dev . 0718038 .014777 .0706034 .4095628 .4095628 .4095628 .4095628 .4095628 .4095628 .4095628 .0383941 .0470199 .0307344 .03623444 .0363	- Min 41333 0282483 3940343 0253337 .0215337 .0449 .045923 .16161 .010361 .010361 .010364 .01025404 0125404 .0125404 .0125404 .1.226155 .3154293 .1228407 .2286394 .3710993 .542591 .1299407 .0902179 .1099	Как 4.51.738 4.252.256 4.730.777 2.4730.777 1.4730.777 1.4730.7761 1.452.052 4.4256.252 4.4256.252 4.4256.252 1.3168.752 3.3161.752 4.4272.053 3.442.252 3.442.2	N = n = 7-bar = n = r = 7 = N = T = N = 7 -bar = N = 7 -bar = N = N = N = N = T = N =	457 18 25.3889 446 18 24.7778 18 24.7778 18 23.7222 23.7222 23.7222 23.7222 23.7222 23.7222 24.7759 428 18 24.7759 468 18 24.7759 468 18 24.875 24.759 24.75
. xtsum 5: 6 Variabia growth-7 ove bet uinreiati ove bet uit Bargai-2 ove bet uit Bargai-2 ove bet uit faiopen ove bet uit faiopen ove bet uit faiono-n ove faiono-n ove faiono-n faio	id Sylis rall vaen hin rall rall rall rall rall rall rall ral	t \$x11st <u>Wean</u> .00059597 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1047732	Std. Dev 0116058 0136177 0136777 103677 103677 1036777 1036777 1036774 00403941 1040562 104	- Min - 41333 - 0282433 - 0282433 - 0282433 - 0259337 - 0259337 - 0259337 - 0259337 - 025937 - 02666 - 02699 - 016036 - 02699 - 016056 - 02695 - 0265 - 0265 - 02655 - 02695 - 02655 - 026555 - 02655 - 026555 - 026555 - 0265555 - 0265555 - 0265555 - 026555	Как 4.51.738 4.252.256 4.730.777 2.4730.777 1.4730.777 1.4730.7761 1.452.052 4.4256.252 4.4256.252 4.4256.252 1.3168.752 3.3161.752 4.4272.053 3.442.252 3.442.2	N =	457 18 457 18 18 18 12 12 12 12 12 12 12 12 12 12
. xtsum ft 6 Variable growth-F ove bet vit inrelatiove bet vit Bargai-2 vit sargai-2 vit sargai-2 vit sargai-2 vit thanov ove bet vit finance-n ove bet finance-n ove bet finance-n ove finance-n ove bet finance-n ove finance-n ove finance-n finance-n ove finance-n finance-n finance-n ove finance-n finance-n finance-n finance-n finance-n fina	rall rall rall rall rall rall rall rall	t \$x11st <u>Wean</u> .00059597 .9175153 .2793218 .0810127 .1909102 1.966405 1.145204 .1047732	Std. Dev .0118038 .01380777 .0706034 .295423 .4095628 .1388167 .1718674 .0383941 .0479459 .0302544 .514506 .525125 .522355 .523155 .523756 .523155	. Kin - (1333) - 0.282433 - 0.282433 - 0.252437 (465823) - 0.21264 - 0.2126 - 0.01296 - 0.01296 - 0.01406 - 0.01406 - 0.01406 - 0.012506 - 0.12506 - 0	۸۵× ۹۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰۰	N = n = 7-bar = 7-bar = 7-bar = N = n = T = N =	457 18 446 18 24.7778 12 24.7778 18 23.7222 23.7222 461 18 18 25.6111 18 18 25.6111 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 468 18 26 468 468 468 468 468 468 468 46
. xtsum ft 6 Variable growth-F ove built inrelatiove k_inov ove bet vit filopen ove bet vit filopen ove bet vit filopen ove bet vit inrelatiove bet vit filopen ove bet vit inrelatiove inrelatiove in	id Sylis rall	t \$x1ist Wean .0069697 .2793218 .0810127 .1909102 .1909102 .1909102 .194405 .364405 .364405	Std. Dav .011008 .012477 .02047 .0	- Min 1333 349453 349453 055337 .055337 .055377 .055377 .055377 .055377 .055377 .0449 .16161 .01036	المنتخاب	N = N = 7-bar = 7-bar = 7 -bar = N = 7 - N = 8 - N = N =	457 18 446 18 446 18 24.7778 424.7778 424.7778 421 18 23.7222 461 18 23.7222 461 17 420 18 420 17 420 18 420 17 17 420 17 420 17 18 26 420 17 17 420 18 26 420 17 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 45 18 26 45 18 26 18 18 18 18 18 18 18 18 18 18
. xtsum ft 6 V Variable growth-F ove bet urrelatiove k_incov ove bet vit k_incov ove bet vit fdiopen ove bet op ove per con ove bet internet financ-n ove bet vit vit vit vit vit vit vit vit vit vi	id Sylis rall	t \$x1ist Mean .0069697 .9175153 .2793218 .0810127 .1909102 .1909102 .1945204 .1047732 .5361626	Ed. Ser 0.711892 0.0134777 0.705054 0.0134777 0.705054 0.0134777 0.705054 0.013477 0.005734 0.007744 0.007744 0.00	444 01333 012434 022434 022434 022434 02244 02244 02244 0124	۸۵۲ ۰۹۰۲3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶3 ۰۹۰۶4 </td <td>N = 1 n = 7 -bar = 1 N = 1 n = 7 -bar = 1 N = 1 n = 7 T = 1 N = 1 n = 1 T = 1 N =</td> <td>457 18 446 18 18 18 18 18 18 18 18 18 18</td>	N = 1 n = 7 -bar = 1 N = 1 n = 7 -bar = 1 N = 1 n = 7 T = 1 N = 1 n = 1 T = 1 N =	457 18 446 18 18 18 18 18 18 18 18 18 18
. xtsum & t & d Variable Trouth-F ove bet uit arouth-F ove bet bet bet bet bet bet bet be	id Sylis rall - rall veen rall veen rall veen hin rall veen hin rall veen hin rall rall rall veen hin rall veen hin	t \$x1ist Wean .0069697 .2793218 .0810127 .1909102 .1909102 .1909102 .194405 .364405 .364405	Ed. Ber 0.013477 0.013477 0.013477 0.0259423 0.035942 0.035942 0.0359444 0.0359444 0.0359444 0.0359444 0.0359444 0.0359444	1.000000000000000000000000000000000000	Алан .431739 .022286 .470177 2.543709 2.543709 2.65096 .420011 .466338 .420011 .450067 .434706 .42011 .434766 .42021 .34672 .467784 .223195 .34672 .467784 .32955 .34672 .360909 .3609	N = 1 - bar = - N = - N = - N = - N = - 	457 18 446 18 446 18 24.7778 424.7778 424.7778 421 18 23.7222 461 18 23.7222 461 17 420 18 420 17 420 18 420 17 17 420 17 420 17 18 26 420 17 17 420 18 26 420 17 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 420 18 26 45 18 26 45 18 26 18 18 18 18 18 18 18 18 18 18
. xtsum ft 6 v Variabie growth-F ove bet uit larelati vit Bargal-2 ove bet bet bet bet bet bet bet be	rall - rall veen hin rall rall rall rall rall rall rall ral	t \$x1ist Mean .0069697 .9175153 .2793218 .0810127 .1909102 .1909102 .1945204 .1047732 .5361626	Ed. Ber 0.013477 0.013477 0.013477 0.0259423 0.035942 0.035942 0.0359444 0.0359444 0.0359444 0.0359444 0.0359444 0.0359444	844 01333 012434 022434 022434 022434 02244 02244 02244 0124	Алан .431739 .022286 .470177 2.543709 2.543709 2.65096 .420011 .466338 .420011 .450067 .434706 .42011 .434766 .42021 .34672 .467784 .223195 .34672 .467784 .32955 .34672 .360909 .3609	N = 1 - bar = - N = - N = - N = - N = - 	457 18 446 18 446 18 24.7778 18 24.7778 18 23.7222 421 18 18 18 23.7222 420 17 17 18 18 18 24.778 18 18 24.778 461 18 18 24.778 19 461 18 18 24.778 19 462 18 18 18 24.7778 19 462 19 462 18 18 18 18 18 18 18 18 18 18 18 18 18
. xtsum ft 6 V Variable growth-F ove bet urrelatiove k_incov ove bet vit sargai-2 ove bet vit fdiopen ove bet vit fdiopen ove bet vit financ-n ove bet vit segini ove segini ove bet vit segini ove bet vit segini ove segini ove segin	id Sylis rall - rall - rall - rall - sween - rall - ween - hin - rall - hin - rall - hin - rall - hin - rall - hin - - - - - - - - - - - - - -	t \$x11st Nean .0063637 .0175153 .2793218 .0810127 .1909102 .1909102 .1145204 .1047732 .5361626 4.006271 .6865568	Ed. Ber 0.013477 0.013477 0.013477 0.02552 0.03577 0.000714	1.000000000000000000000000000000000000	دین دین	N = 1 - bar = - N = - N = - N = - N = - 	457 18 446 457 18 18 18 18 18 18 18 18 18 18
. xtsum ft 6 v variable youth-F ove bet location ove location ove locati	id Sylis rall - rall - ral -	t \$x1ist Mean .0069697 .9175153 .2793218 .0810127 .1909102 .1909102 .1945204 .1047732 .5361626	Ed. Dev 0.013477 0.013477 0.013477 0.0258423 0.03574 0.035774 0.035774 0.035774 0.035777 0.035777 0.035777 0.0357777 0.0357777 0.0357777 0.03577777777777777777777777777777777777	1	۸۸۸۲ ۸۰۵۲۲۵۶ ۸۰۵۲۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵ ۸۰۵۶۵ ۲۰۰	N = 0 N = 0 T-bar = 0 T-bar = 0 T -bar = 0 T -bar = 0 T -bar = 0 N = 0 T -bar = 0 N =	457 18 446 18 446 18 18 424.7778 424.7778 421 427.722 421.722 421.722 422 420 420 420 420 420 420 420 420 4
. xtsum ft 6 v variable youth-F ove bet location ove location ove locati	id Sylis rall - rall veen hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall rall ween hin rall rall ween hin rall rall ween hin rall rall ween hin rall rall ween hin rall rado rall rall rado rall rado rall rado rall rado	t \$x11st Nean .0063637 .0175153 .2793218 .0810127 .1909102 .1909102 .1145204 .1047732 .5361626 4.006271 .6865568	5.5. Ber 0.71809 0.71809 0.71809 0.71809 0.71809 0.7295422 0.7295422 0.7295422 0.7295422 0.7295422 0.729542 0.729542 0.729542 0.721826 0.721826 0.721827 0.72187 0.721	ل الله	۸۸۸۲ ۸۰۵۲۲۵۶ ۸۰۵۲۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵۶ ۸۰۵۶۵ ۸۰۵۶۵ ۲۰۰	N = N = N = N = N = N = N = N = N = N =	457 18 457 18 466 18 18 312 13 13 12 23.7222 24.7779 24.7709 2
. xtsum ft & V variable growth-F ove bet unrelatio ove bet funnelatio ove bet tinnelatio ove bet unt flinnov ove bet flinnov ove bet unt flinnov ove bet flinnov ove flinnov ove flinnov flinn	id Sylis sail sween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall ween hin rall rall ween hin rall rall ween hin rall	t \$x11st Nean .0063637 .0175153 .2793218 .0810127 .1909102 .1909102 .1145204 .1047732 .5361626 4.006271 .6865568	Ed. Dev 0.013477 0.013477 0.013477 0.0258423 0.03574 0.035774 0.035774 0.035774 0.035777 0.035777 0.035777 0.0357777 0.0357777 0.0357777 0.03577777777777777777777777777777777777	۲۵۱۲ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹ ۲۰۱۹	دین دین	N = n =	457 18 457 18 466 18 466 18 312 17 333 427 718 18 23 722 461 18 18 25 423 722 424 7039 468 18 25 468 18 18 25 468 18 18 18 18 18 18 18 18 18 18 18 18 18
<pre>. xtsum ft f v Variable growth-F ove bet urt and the vision provide the vision provide the vision provide the vision op ove bet urt dinanc-n ove bet urt financ-n ove bet urt financ-n ove bet urt financ-n ove bet urt financ-n ove bet urt op ove bet urt caPC ove bet urt urt caPC ove bet urt urt urt caPC ove bet urt urt urt urt urt urt urt urt urt ur</pre>	id Sylis rail rail veen hin rail rail veen hin rail veen hin rail veen hin rail veen hin rail rail veen hin rail	t \$x11st Mean .0069697 .9175153 .2793218 .0810127 .1909102 .1.145204 .1.145204 .1.145204 	5.5. Ber 0.71109 0.0134777 .770505 .0259422 .4259522 .4259522 .4259522 .025942 .0259422 .4259522 .0259422 .0259522 .0259522 .235852	للله المراجع الم المراجع المراجع المرا مراجع المراجع المرا عربي المراجع المرا	دین دین	N =	457 18 446 18 446 18 18 17 3333 424.7778 23.7222 24.7259 25.6677 25.722 25.6777 25.7222 25.6777 25.7222 25.6777 25.7222 25.67777 25.7222 25.757777 25.72777777777777

. test	parm i.year
(1)	2001.year = 0
(2)	2002.year = 0
(3)	2003.year = 0
(4)	2004.year = 0
(5)	2005.year = 0
(6)	2006.year = 0
(7)	2007.year = 0
(8)	2008.year = 0
(9)	2009.year = 0
(10)	2010.year = 0
(11)	2011.year = 0
(12)	2012.year = 0
(13)	2013.year = 0
(14)	2014.year = 0
(15)	2015.year = 0
(16)	2016.year = 0
(17)	2017.year = 0
	Constraint 6 dropped
	F(16, 16) = 230.46
	F(16, 16) = 230.46 Prob > F = 0.0000
	FIOD > F = 0.0000
toet	parm i.cou
. cesc	paim 1.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(9) (10) (11)	13.cou = 0
(10)	13.cou = 0 14.cou = 0
(10) (11)	13.cou = 0 14.cou = 0 17.cou = 0
(10) (11) (12)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0
(10) (11) (12) (13)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
(10) (11) (12) (13) (14) (15)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
(10) (11) (12) (13) (14) (15)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
(10) (11) (12) (13) (14) (15)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
(10) (11) (12) (13) (14) (15)	13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0

Fixed effects over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

	Var	sd = sqrt(Var)
growthI~F	.0034816	.059005
e	.003138	.0560182
u	0	0
Test: Var(u) = 0)	
iest: var(u) = t	, chibar2(01)) = 0.00
	Prob > chibar	2 = 1.0000

Random effects over pooled OLS

	Coeffi			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0246722	.0126217	0372939	.0274299
BargainingL2	.0221185	.014239	.0078795	.1838344
k_inov	.4487612	0895148	.538276	.2620537
fdiopen	0000548	.0057268	0057816	.0057159
financial_~n	.0361504	.0040915	.0320589	.0079337
op	.0897083	.0050449	.0846635	.0360257
eugini	9914678	.3022455	-1.293713	.4731434
FD	.0410297	.120313	0792833	.0949311
lnDebtH1	0061487	0051251	0010236	.0099369
CaPC	.0031368	.0013728	.001764	.000707
eurodumm	0644897	0311337	033356	.0094454
crisisdumm	0197081	.0091507	0288589	.0109006

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 31.24 Prob>chi2 = 0.0018 (V_b-V_B is not positive definite)

. hausman fixed random,sigmamore

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0246722	.0126217	0372939	.0286261
BargainingL2	.0221185	.014239	.0078795	.1911144
k_inov	.4487612	0895148	.538276	.274638
fdiopen	0000548	.0057268	0057816	.0061544
financial_~n	.0361504	.0040915	.0320589	.0084574
op	.0897083	.0050449	.0846635	.0375449
eugini	9914678	.3022455	-1.293713	.5238467
FD	.0410297	.120313	0792833	.0997985
lnDebtH1	0061487	0051251	0010236	.0104545
CaPC	.0031368	.0013728	.001764	.0007696
eurodumm	0644897	0311337	033356	.0106577
crisisdumm	0197081	.0091507	0288589	.0116484

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 33.89 Prob>chi2 = 0.0007

. hausman fixed random, sigmaless

	Coeffi	cients ——		
	(b) (B)		(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnrelatL	0246722	.0126217	0372939	.0275536
BargainingL2	.0221185	.014239	.0078795	.1839539
k_inov	.4487612	0895148	.538276	.2643482
fdiopen	0000548	.0057268	0057816	.0059238
financial_~n	.0361504	.0040915	.0320589	.0081406
op	.0897083	.0050449	.0846635	.0361382
eugini	9914678	.3022455	-1.293713	.5042198
FD	.0410297	.120313	0792833	.0960593
lnDebtH1	0061487	0051251	0010236	.0100628
CaPC	.0031368	.0013728	.001764	.0007408
eurodumm	0644897	0311337	033356	.0102584
crisisdumm	0197081	.0091507	0288589	.011212

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(12) = (b-B) '[(v_b-v_B)^(-1)](b-B) = 36.58 Prob>chi2 = 0.0003

Fixed effects over random effects

Depended variable: ∆InequalityL

$\Delta Inequality_{L_{it}} = a_{1_{it}} + a_2 \Delta q_{L_{it}} + a_3 \Delta \Lambda_L L dummy 1_{it} + a_4 \Delta \Lambda_L L dummy 2_{it} + b_i + u_{it} (7.3.2.1)$

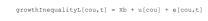
. describe \$id \$t \$ylist \$xlist

growthInequal~L de	ouble %10.0	q	aro	wthInequal	ityL		
	ouble %10.0			wthq			
Ldummy1 de	ouble %10.0	a	Ldu	mmy1			
Ldummy2 de	ouble %10.0	a	Ldu	mmy2			
. summarize \$id \$	t \$ylist \$x	list					
Variable	Obs	Mean	Std. Dev.	Mir	1	Max	
growthIneq~L	405 .	0270131	.1440789	716658	1.15	59001	
growthq	404 .	0111698	.108794	6867072	1.21	13311	
Ldummy1		0064165	.0326163			02902	
Ldummy2	428	0359111	.0854824	6549544	.786	61568	
. xtdescribe							
cou: 3, 5,	, 23				n =		18
year: 1995,	1996,, 2	020			т =		26
	year) = 1 ye						
	ear) = 26 p						
(cou*ye	ear uniquely	identifies	s each obs	ervation)			
Distribution of T	i: min	5% 2	25%	50%	75%	95%	max
	26		26	26	26	26	26
Freq. Perces		26					
Freq. Percer							
		26 Pattern		26			
	nt Cum.	26 Pattern 11111111	26	26			
18 100.0 18 100.0	nt Cum.	26 Pattern 11111111	26	26			
18 100.0 18 100.0	nt Cum. 00 100.00 00 list \$xlist	26 Pattern 111111111 XXXXXXXXX	26	26 11111111 xxxxxxxx	26	26	26
18 100.0 18 100.0	nt Cum.	26 Pattern 11111111	26	26 11111111 xxxxxxxx		26	
18 100.0 18 100.0	nt Cum. 00 100.00 00 list \$xlist	26 Pattern 111111111 XXXXXXXXX Std. Dev.	26	26 11111111 XXXXXXXX n N	26 Iax	26	26
18 100.0 18 100.0 . xtsum \$t \$id \$y: Variable	nt Cum. 00 100.00 00 list \$xlist Mean	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949	26 1111111111 XXXXXXXXXXXX . Min 71665 001335	26 11111111 XXXXXXXX n N 8 1.1590 1 .04751	26 fax 001 36	26 Obser	26 vations
18 100.1 18 100.1 . xtsum \$t \$id \$y: Variable growt-yL overall	nt Cum. 00 100.00 00 list \$xlist Mean	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949	26 11111111111 xxxxxxxxxxx . Mi: 71665	26 11111111 XXXXXXXX n N 8 1.1590 1 .04751	26 fax 001 36	26 Obser N =	26 vations 405
18 100. 18 100. . xtsum \$t \$id \$y Variable growt-yL overall between within	nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949 .143235	26 1111111111 XXXXXXXXXXXX . Mi: 71665: 001335 697883	26 11111111 XXXXXXXX n N 8 1.1590 1 .04751 1 1.1786	26 Max 101 .36 .58 T-	26 Obser N = n = -bar =	26 vations 405 18 22.5
18 100.1 18 100.4 . xtsum \$t \$id \$y; Variable growt-yL overall between within growth overall	nt Cum. 00 100.00 00 list \$xlist Mean	26 Pattern 11111111 XXXXXXXX Std. Dev. .1440789 .0169949 .143235 .108794	26 1111111111 XXXXXXXXXXX . Min 71665 001335 697883 69787	26 11111111 xxxxxxxxxx 8 1.1590 1 .04751 1 1.1784 2 1.2133	26 Max 001 .36 558 T- 811	26 Obser N = n = -bar = N =	26 vations 405 18 22.5 404
18 100. 18 100. . xtsum \$t \$id \$y Variable growt-yL overall between within	nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	26 Pattern 111111111 XXXXXXXX Std. Dev. .1440789 .0169949 .143235 .108794 .0283214	26 1111111111 XXXXXXXXXXXX . Mi: 71665: 001335 697883	26 11111111 XXXXXXXX n N 8 1.1590 1 .04751 1 1.1784 2 1.2133 9 .12200	26 fax 001 .36 .58 T- .311 .593	26 Obser N = n = -bar =	26 vations 405 18 22.5 404 18
18 100.1 18 100.4 . xtsum \$t \$id \$y. Variable growt-yL overall between within growthq overall between within	nt Cum. 00 100.00 00 11ist \$xlist Mean .0270131 .0111698	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949 .143235 .108794 .0283214 .1057557	26 1111111111 . Min 71655 001355 697883 686707; 006033 797606	26 11111111 XXXXXXXX n N 8 1.1590 1 .04751 1 .1784 2 1.2133 9 .12206 8 1.1024	26 4ax 001 336 558 T- 311 393 112 T-	26 Obser N = -bar = N = -bar =	26 vations 405 18 22.5 404 18 22.4444
18 100.1 18 100.1 18 100.1 . xtsum \$t \$id \$y Variable growt-yL overall between within growthq overall between within Ldummy1 overall	nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	26 Pattern 11111111 XXXXXXXX Std. Dev. .1440789 .016949 .143235 .108794 .0283214 .1057557 .0326163	26 . Mii 71665. 01335 687077. 6867077. 006003 797606 401815	26 111111111 xxxxxxxxx 8 1.159(1 1 .04751 1 .1784 2 1.2133 9 .1220(8 8 1.1024 8 .24025	26 4ax 001 36 558 T- 311 993 112 T- 002	26 Obser N = -bar = N = -bar = N = N = N =	26 vations 405 18 22.5 404 18 22.4444 431
18 100.1 18 100.1 . xtsum \$t \$id \$y: Variable growt-yL overall between within growthq overall between within Ldummy1 overall between	nt Cum. 00 100.00 00 11ist \$xlist Mean .0270131 .0111698	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .016949 .143235 .108794 .0283214 .00283214 .0326163 .0312997	26 1111111111 (XXXXXXXXXXX 71665 001335 697883 686707: 06003 797606 401815 033075	26 111111111 XXXXXXXXX 8 1.1590 1 .04751 1 .1784 2 1.2133 9 .12206 8 1.1024 8 2.4025 4	26 4ax 001 36 558 T- 311 593 112 T- 902 0	Obser N = -bar = N = n = -bar = N = N = n =	26 vations 405 18 22.5 404 18 22.4444 431 18
18 100.1 18 100.1 18 100.1 . xtsum \$t \$id \$y Variable growt-yL overall between within growthq overall between within Ldummy1 overall	nt Cum. 00 100.00 00 10ist \$xlist Mean .0270131 .0111698	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .016949 .143235 .108794 .0283214 .00283214 .0326163 .0312997	26 . Mii 71665. 01335 687077. 6867077. 006003 797606 401815	26 111111111 XXXXXXXXX 8 1.1590 1 .04751 1 .1784 2 1.2133 9 .12206 8 1.1024 8 2.4025 4	26 4ax 001 36 558 T- 311 593 112 T- 902 0	26 Obser N = -bar = N = -bar = N = N = N =	26 vations 405 18 22.5 404 18 22.4444 431 18
18 100.1 18 100.1 18 100.1 . xtsum \$t \$id \$y; Variable growt-yL overall between within growthq overall between within Ldummy1 overall between within Ldummy2 overall	nt Cum. 00 100.00 00 10ist \$xlist Mean .0270131 .0111698	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949 .143235 .108794 .0283214 .0036163 .0326163 .0112997 .0308239 .0854824	26 1111111111 (XXXXXXXXXXX 71665 001335 697883 686707 006003 797606 797606 401815 378688 654954	26 111111111 XXXXXXXX 8 1.1590 1 .04751 1 .1784 2 1.2133 9 .12206 8 1.1024 8 1.1024 8 1.1024 1 .26341 4 .78615	26 4ax 1001 301 3158 T- 311 903 T- 302 0 7.79 T- 368	Obser N = n = -bar = N = n = N = n = N = N = N = N =	26 vations 405 18 22.5 404 48 22.4444 431 18 23.9444 428
18 100.1 18 100.1 . xtsum \$t \$id \$y; Variable growt-yL overall between within growthq overall between within Ldummyl overall between within	nt Cum. 00 100.00 00 list \$xlist .0270131 .0111698 0064165	26 Pattern 111111111 XXXXXXXXX Std. Dev. .1440789 .0169949 .0169949 .0169949 .0169949 .01692214 .0283214 .005757 .0308239 .0308249 .03084824 .021188	26 1111111111 (XXXXXXXXXX 71665 001335 697883 66707 066003 797666 00603 797666 03075 378688	26 111111111 XXXXXXXXX n b 8 1.150 1 0.04751 1 0.04751 1 1.04751 1 1.0475 1 .0475 1 1.0475 1 .0475 1 .0465 1 .0475 1 .0465 1 .	26 4ax 001 36 58 11 93 112 7- 002 0 0 7-9 7- 568 221	Obser N = -bar = N = n = -bar = N = n = -bar =	26 vations 18 22.5 404 22.4444 431 18 23.9444 428 18

. test	parm i.year
(1)	1006
(2)	1996.year = 0 1997.year = 0
(3)	1998.year = 0
(4)	1999.year = 0
(5)	2000.year = 0
(6) (7)	2001.year = 0 2002.year = 0
(8)	2002.year = 0 2003.year = 0
(9)	2004.year = 0
(10)	2005.year = 0
(11)	2006.year = 0
(12)	2007.year = 0
(13) (14)	2008.year = 0 2009.year = 0
(14)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18)	2013.year = 0
(19)	2014.year = 0
(20) (21)	2015.year = 0 2016.year = 0
(21)	2010.year = 0
(23)	2018.year = 0
(24)	2019.year = 0
(25)	2020.year = 0
	Constraint 1 dropped
	Constraint 5 dropped
	Constraint 6 dropped Constraint 7 dropped
	Constraint 9 dropped Constraint 16 dropped
	Constraint 16 dropped
	constraint zo dropped
	Constraint 23 dropped
	constraint 25 dropped
	F(17, 17) = 8.36
. test	F(17, 17) = 8.36
	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou
. test (1) (2)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0
(1)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou
(1) (2) (3) (4)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0 18.cou = 0 18.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 17.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 20.cou = 0 18.cou = 0 20.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0 18.cou = 0 18.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 21.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0 C3.cou = 0 C3.cou = 0 C3.cou = 0 C3.cou = 0 C4.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 4 dropped Constraint 5 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 8.36 Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 4 dropped Constraint 5 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>F(17, 17) = 8.36</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>F(17, 17) = 8.36</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>F(17, 17) = 8.36</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>F(17, 17) = 8.36</pre>

fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects



Estimated results:	Var	sd = sqrt(Var)
growthI~L	.0203849	.1427758
e u	.0112197	.1059232
Test: Var(u) = (
	<u>chibar2(01)</u> Prob > chibar2	

random over pooled

	Coeffi			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
growthq	1.036086	.9822457	.0538401	.017653
Ldummy1	1.828208	1.690398	.1378098	.0706397
Ldummy2	3976655	3892867	0083788	.0140204

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 9.48 Prob>chi2 = 0.0236

fixed over pooled

Depended variable: ∆relative labor employment

$$\begin{split} \Delta\Lambda_{Lit} &= a_{1it} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it} + a_4 capital \ innovation \ ratio_{it} \\ &+ a_5 financial \ oppenness_{it} + a_6 trade \ openness_{it} + a_7 fdi \ oppenness_{it} \\ &+ a_8 convergence_{it} + a_9 education \ expenditure_{it} + a_{10} euro \ dummy_{it} \\ &+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it} \end{split}$$
(7.3.2.3)

. descril	be Sid S	t Sylis	rt Sxli	st				
variable	at name		displa format		vari	able label		
growthre:	latL	double	%10.0g	,	grow	rthrelatL		
lnq lngerd		double	%10.0g		lnq			
k inov		double	\$10.00		k in			
financia.	1_open	double	%10.0g			incisl_open		
op fdiopen			₹10.0g ₹10.0g		op			
eugini			\$10.0g		eugi			
eduexpe2			%10.0g		edue			
eurodumm crisisdus		byte	%10.0g %10.0g		euro	dumm ixdumn		
. summar					CF18	1.8 dumm		
Vari		St Syls Obs			Std. Dev.	Min	Max	
arowthre		434		403526	.0951862	6549544	.7861568	
	lng	422	: .6	437305	.4029339	.1012905	2.92957	
ln	gerd	433	3 7	54516	2 150039	2.882172	11.60847	
k_: financia	inov	427		810127	.0470199	.0109361	.4950667	
financia.	1_~n	420) 1.				2.321955	
	op	468		145204	.6537506	.3710993	4.122231	
fdi		461	1	909102	.5714506	6764844	5.813815	
	gini	468	1	125057	.0221542	.0434832	.1532992	
edue: euro:	dunn	468	6	1512692 1923077	.4620323	.031	.073	
crisis		468		.5	.500535			
		468		.5	.300535	0	1	
. xtdesc								
cou	: 3, 5,	, 23						18
year	: 1995,	1996, .	, 20	20				26
	Delta Snar/	(year) = year) =	1 yea	rioda				
	(cou*	year uni	guely	identifies	each obse	(rvation)		
Distribu	tion of		in 26			26 21		max 26
Fre	r. Perc		in I	Pattern				
1	8 100	.00 100	0.00	111111111	1111111111	1111111		
1	8 100	.00		****	000000000000000000000000000000000000000	DOCKERSE		
11 . xtsum 1			dist	200000000	0000000000			
. xtsum 1	St Sid S	ylist Ça		Std. Dev.			Obse	rvations
. xtsum : Variable	St Sid S	ylist Sx	Nean	Std. Dev.		a Max	Obse	
. xtsum : Variable	St Sid S overall between	ylist Sx	Nean	Std. Dev.	Nin 6549544 0718447	. Nax .7861568 .0070854	N -	434
. xtsum : Variable	St Sid S	ylist Sx	Nean	Std. Dev.	Nin 6549544	. Nax .7861568 .0070854	N -	434
. xtsum : Variable growt-tL	St Sid S overall between within	ylist 5x	Nean	Std. Dev. .0951862 .018339 .0935498	Min 6549544 0718447 6443039	. Nex .7861568 .0070854 .7525574	N - n - T-bar -	434 18 24.1111
. xtsum : Variable growt-tL	St Sid S overall between within overall	ylist 5x	Nean	Std. Dev.	Min 6549544 0718447 6443039 .1012905	Nax .7861568 .0070854 .7525574 2.92957	N - n - T-bar - N -	434
. xtsum : Variable growt-tL	St Sid S overall between within	ylist 5x	Nean	Std. Dev. .0951862 .018339 .0935498 .4029339	Min 6549544 0718447 6443039	Nax .7861568 .0070854 .7525574 2.92957 1.644975	N - n - T-ber - N - n -	434 18 24.1111 422
. xtsum : Variable growt-tL lnq	St Sid S overall between within overall between within	040 .643	Nean 13526 87305	Std. Dev. .0951862 .018339 .0935498 .4029339 .4350003 .173684	Nin 6549544 0718447 6443039 .1012905 .3168834 .0782745	 Nex .7861568 .0070854 .7525574 2.92957 1.644975 2.013491 	N = n = T-bar = N = n = T-bar =	434 18 24.1111 422 18 23.4444
. xtsum : Variable growt-tL	overall between within overall between within overall	ylist 8× 040 .643 7.5	Nean	Std. Dev. .0951862 .018339 .0935498 .4029339 .4350003 .173684 2.150039	Nin 6549544 0718447 6443039 .1012905 .3168034 .0782745 2.882172	 Nax .7861568 .0070854 .7525574 2.92957 1.644975 2.013491 11.60847 	N = n = T-bar = N = T-bar = N =	434 18 24.1111 422 18 23.4444 433
. xtsum : Variable growt-tL lnq	St Sid S overall between within overall between within overall between	ylist 8× 040 .643 7.5	Nean 13526 87305	Std. Dev. .0951862 .018339 .0935498 .4029339 .4350003 .173684	Nin 6549544 0718447 6443039 .1012905 .3168834 .0782745 2.882172 4.127116	 Nax .7861568 .070854 .7525574 2.92957 1.646975 2.013491 11.60847 11.07295 	N = n = T-bar = N = T-bar = N = N = n =	434 18 24.1111 422 18 23.4444
. xtsum : Variable growt-tL lnq lngerd	overall between within overall between within overall between within	ylist 5x 040 .643 7.5	Nean 23526 37305 54516	Std. Dev. .0951862 .018339 .0935498 .4029339 .4350003 .173684 2.150039 2.135548 .5305817	Min 6549544 0718447 6443039 .1012905 .3168834 .0782745 2.882172 4.127116 5.573098	 Max .7861568 .0070854 .7525574 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 	N = n = T-bar = N = T-bar = N = n = T =	434 18 24.1111 422 18 23.4444 433 18 24.0556
. xtsum : Variable growt-tL lnq	overall between within overall between within overall between within	ylist 5x 040 .643 7.5	Nean 23526 37305 54516	Std. Dev. .0951862 .018339 .4029339 .435003 .173684 2.150039 2.135548 .5305817 .0470199	Nin 6549544 0718447 6443039 .1012905 .316854 .0782745 2.882172 4.127116 5.573039	 Max .7661568 .0070854 .7525574 2.92957 1.644975 2.013491 1.60847 1.60847 1.07295 8.670162 4920667 	N - n = T-bar = N - n = T-bar = N - n = T - N -	434 18 24.1111 422 18 23.4444 433 18 24.0556 427
. xtsum : Variable growt-tL lnq lngerd	cverall between within overall between within overall between within overall between	ylist 5x 040 .643 7.5	Nean 23526 37305 54516	5td. Dev. .0951862 .018339 .0935498 .4029339 .435003 .173684 2.150039 2.135548 .5305817 .5305817 .0470199 .0307734	Min 6549544 0718447 6443039 .1012905 .316854 .0782745 2.882172 4.127116 5.573098 .0109361 .0315929	 Nax .7861568 .0070854 .7525576 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4930867 .1249566 	N - n = T-bar = N - T-bar = N - T = N - N - T =	434 18 24.1111 422 18 23.4444 433 18 24.0556 427 18
. xtsum : Variable growt-tL lnq lngerd	overall between within overall between within overall between within	ylist 5x 040 .643 7.5	Nean 23526 37305 54516	Std. Dev. .0951862 .018339 .4029339 .435003 .173684 2.150039 2.135548 .5305817 .0470199	Nin 6549544 0718447 6443039 .1012905 .316854 .0782745 2.882172 4.127116 5.573039	 Nax .7861568 .0070854 .7325574 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .450667 .450667 	N - n = T-bar = N - T-bar = N - T = N - N - T =	434 18 24.1111 422 18 23.4444 433 18 24.0556 427
. xtsum : Variable growt-tL lnq lngerd	St Sid S overall between within overall between within overall between within	ylist 5x 040 .643 7.5 .081	Nean 33526 87305 84516 80127	5td. Dev. .0951862 .018339 .0935498 .4029339 .435003 .173684 2.150039 2.135548 .5305817 .5305817 .0470199 .0307734	Min 6549544 011847 6443039 .101905 3368834 .0782745 2.882172 4.127116 5.573088 .003927 .019929 019006 -1.226155	 Max Max .0070854 .0070854 .022857 1.444975 2.013491 11.60847 11.07255 8.670162 .4950667 .1474466 .4286326 2.212955 	N = n = T-bar = T-bar = N = N = T = N = n = T =	434 18 24.1111 422 18 23.4444 433 24.0556 427 18 23.7222
. xtsum : Variable growt~tL lnq lngerd k_inov	St Sid S overall between within overall between within overall between within overall between within	ylist 5x 040 .643 7.5 .081	Nean 33526 87305 84516 80127	Std. Dev. .0951862 .01839 .093349 .435003 .13884 2.15039 2.13558 .5303817 .0470199 .030734 .0362544 .8017374	Min 6549544 0712447 .1012905 .3168834 .0782745 2.882745 2.577308 .0109361 .011929 010406 -1.226155 .3154293	 Max 761568 7523574 2,92857 44975 2,01241 11,60847 11,07295 8,6701627 .1474466 .4280328 2,321955 	N = T-bar = T-bar = N = T-bar = N = N = N = N = N = N = N = N = N =	434 18 24.1111 422 18 23.4444 433 24.0556 427 18 23.7222 23.7222 420 17
. xtsum : Variable growt~tL lnq lngerd k_inov	overall between within overall between within overall between within overall	ylist 5x 040 .643 7.5 .081	Nean 33526 87305 84516 80127	Std. Dev. .0951862 .018339 .0935498 .402903 .4350039 .173684 2.150039 2.135548 .5305817 .0367354 .0362544 .8017374	Min 6549544 011847 6443039 .101905 3368834 .0782745 2.882172 4.127116 5.573088 .003927 .019929 019006 -1.226155	 Max 761568 7523574 2,92857 44975 2,01241 11,60847 11,07295 8,6701627 .1474466 .4280328 2,321955 	N = T-bar = T-bar = N = T-bar = N = N = N = N = N = N = N = N = N =	434 18 24.1111 422 18 23.4444 433 24.0556 427 18 23.7222 420
. xtsum : Variable growt-tL Inq Ingerd k_inov financ-n	St Sid S overall between within overall between within overall between within overall between within	ylist 5× 040 .643 7.5 .081 1.96	Nean 23526 37305 34516 20127 56405	Std. Dev. .0951862 .01839 .035349 .435003 .17388 .5305817 .0470199 .0307734 .0362544 .6206156 .5328385	Min 6549544 0718447 .1012905 .316834 .0782745 2.882745 4.127126 5.573098 .0109361 .0315929 -1.2261592 -1.2261592 -33554293 3286934	Max .784356 .070357 .0270357 .2.9287 .1.444975 .1.1.64847 .1.1.64847 .1.1.63847 .1.1.44695 .2.9287 .1.47456 .2.21955 .2.321955 .3.44742	N = n = T-bar = N = n = T = N = N = N = N = N = N = T = N = T = N = T = N = T = N = N	434 18 24.1111 22 18 23.4444 433 24.0556 427 18 23.7222 420 17 24.7059
. xtsum : Variable growt~tL lnq lngerd k_inov	St Sid S overall between within overall between within overall between within overall between within	ylist 5× 040 .643 7.5 .081 1.96 1.14	Nean 23526 37305 34516 20127 56405	Std. Dev. .0951862 .018339 .0233498 .4350033 .133848 2.150039 .33548 2.150039 .33548 2.35548 .335488 .335488 .335488 .335488 .335488 .335488 .335488	Min 6549544 0712447 .1012905 .3168834 .0782745 2.882745 2.577308 .0109361 .011929 010406 -1.226155 .3154293	 Max .7861568 .0070854 .07225574 .2.02357 .2.013401 .1.644975 .2.013401 .1.648475 .4050667 .1.074466 .4285128 .2.321955 .3.44742 .4.122231 	N = n = T-bar = N = T-bar = N = N = N = N = N = N = T = N = N	434 18 24.1111 22 18 23.4444 433 24.0556 427 18 23.7222 420 17 24.7059
. xtsum : Variable growt-tL Inq Ingerd k_inov financ-n	St Sid S overall between within overall between within overall between within overall between within overall	ylist 5× 040 .643 7.5 .081 1.96 1.14	Nean 23526 37305 34516 20127 56405	Std. Dev. .0931862 .018339 .0335498 .4029339 .435003 .133644 2.15039 2.135548 .5303817 .0470199 .0362344 .8017374 .620636 .5328385 .6537306	Min 654954 011647 6443039 .1012905 .366854 .0782745 2.882122 4.127116 5.573078 .0109361 .0109361 .3154293 3286934 .3710993	1 Max 1 .7463568 .0070854 .7525574 1 .644975 2 .013461 1 .644975 2 .613461 1 .60847 1 .670462 .4286328 2 .321955 2 .321955 3 .44742 4 .322291 3 .42742 4 .122291	N = n = T-bar = N = T-bar = N = N = N = N = N = N = T = T = N	434 18 24.1111 422 18 23.4444 433 18 24.0556 427 18 23.722 420 17 24.7059 468
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xtaum i Araka a mangerd araka a mangerd araka a mangerd araka ar	St Sid S St Sid S overall between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin between vithin overall between vithin between vithin overall between verall between vithin overall between vithin overall	ylist \$x 040 .643 7.5 .081 1.94 .081 1.94 .190 .190 .190 .191 .192	Nean 33526 57305 54516 55405 55204 79102 55057 12692	5td. Dev. 0.08146 0.08130 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082300 0.082000 0.082000 0.0820000000000000000000000000000000000	1411 0.131441 0.131441 0.131441 0.131441 0.13144 0.13144 0.1314 0.1	1	8 = 1 7 - bar = 1 8 = 1 7 - bar = 1 8 = 1 7 - bar = 1 8 = 1	4344 18 18 422 18 433 18 433 18 24,0355 433 17 18 18 18 24,0355 420 17 17 18 18 18 26 466 18 18 26 466 18 18 26 466 18 18 26 466 18 18 26 466 466 466 466 466 466 466 466 466

. testparm i.year

(1)	1997.year = 0
(2)	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2004.year = 0
(9)	2005.year = 0
(10)	2006.year = 0
(11)	
(12)	-
(13)	2009.year = 0
(14)	2010.year = 0
(15)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
(20)	2016.year = 0
(21)	2017.year = 0
	Constraint 10 dropped
	Constraint 14 dropped
	Constraint 16 dropped
	Constraint 17 dropped
	Constraint 20 dropped
	F(16, 16) = 6.35
	Prob > F = 0.0003
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	17.cou = 0
(12)	18.cou = 0
(13)	20.cou = 0
(14)	21.cou = 0
(15)	22.cou = 0
(16)	23.cou = 0

F(16, 16) = 1.1e+07 Prob > F = 0.0000

fixed over pooled

Breusch and Pagan Lagrangian multiplier test for random effects

Random over pooled

	Coeffi	cients ———		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	.118792	.0005235	.1182685	.0418371
lngerd	0605427	.0006295	0611722	.0172047
k_inov	.1360834	0032481	.1393315	.0844207
financial_~n	.005281	.0089172	0036363	.0075825
op	.1660144	.0187848	.1472296	.0381643
fdiopen	.0034305	.0024716	.0009588	.0040342
eugini	.0350542	.1716667	1366125	
eduexpe2	8514825	3064974	544985	1.013774
eurodumm	0057019	0091896	.0034877	.0068739
crisisdumm	0004372	0117401	.0113029	.0090447

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 20.27 Prob>chi2 = 0.0268 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	.118792	.0005235	.1182685	.0434056
lngerd	0605427	.0006295	0611722	.0177905
k_inov	.1360834	0032481	.1393315	.0929168
financial_~n	.005281	.0089172	0036363	.0081647
op	.1660144	.0187848	.1472296	.0395609
fdiopen	.0034305	.0024716	.0009588	.0046663
eugini	.0350542	.1716667	1366125	.039941
eduexpe2	8514825	3064974	544985	1.059205
eurodumm	0057019	0091896	.0034877	.0078555
crisisdumm	0004372	0117401	.0113029	.0096637

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 30.59 Prob>chi2 = 0.0007

. hausman fixed random, sigmaless

	Coeffi	cients ———		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	.118792	.0005235	.1182685	.0420449
lngerd	0605427	.0006295	0611722	.0172328
k_inov	.1360834	0032481	.1393315	.0900041
financial_~n	.005281	.0089172	0036363	.0079087
op	.1660144	.0187848	.1472296	.0383208
fdiopen	.0034305	.0024716	.0009588	.00452
eugini	.0350542	.1716667	1366125	.0386889
eduexpe2	8514825	3064974	544985	1.026002
eurodumm	0057019	0091896	.0034877	.0076092
crisisdumm	0004372	0117401	.0113029	.0093608

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 32.61 Prob>chi2 = 0.0003

fixed over random

Depended variable Δq

 $\Delta q_{L_{it}} = a_{1_{it}} + a_2 wage \ premium_{it} + a_3 invest \ in \ R\&D_{it} + a_4 capital \ innovation \ ratio_{it}$

 $+ a_5 financial oppenness_{it} + a_6 trade openness_{it} + a_7 fdi oppenness_{it}$

 $+ a_8 convergence_{it} + a_9 education expenditure_{it} + a_{10} euro dummy_{it}$

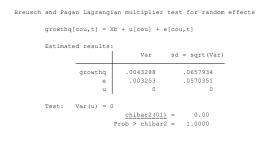
 $+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it}$ (7.3.2.4)

. describ								
variable	sto name t	rage di ype fo	isplay ormat	value label		able label		
growthq	c	iouble %1	10.0g		grow	thq		
lnq			10.0g		lnq	- 4		
lngerd k inov	ć		10.0g 10.0g		lnge k in	ov		
financia:	L_open d	louble %1	10.0g			ncial_open		
op fdiopen		iouble %] iouble %]			op fdio			
eugini		iouble %1			eugi			
eduexpe2	ć	iouble %1	10.0g		edue	xpe2		
eurodumm			10.0g		euro	dumm		
crisisdur	nm b	yte %]	10.0g		cris	isdumm		
. summar:	ize \$id \$	t Şylist	t \$xlist	t				
Varia	able	Obs	1	Mean	Std. Dev.	Min	Мах	
grou	vthq lnq	404	.0113	1698	.108794	6867072	1.213311 2.92957	
lno	gerd	422	. 64.3	4516	2.150039	.1012905 2.882172	11.60847	
k_	Lnov	427	.0810	0127	.0470199	.0109361	.4950667	
financia	L_~n	420	1.96	6405	.8017374	-1.226155	2.321955	
	op	468	1.14	5204	.6537506	.3710993	4 122231	
fdia	open	461	.190	9102	.5714506	6764844		
eug	gini	468	.104	7732	.0099938	.0902179	.1369049	
eduer	cpe2	468	.0512	2692	.0089968	.031	.073	
euroo	iumm	468	. 692.	3077	.4620323	0	1	
crisis	iumm	468		.5	.500535	0	1	
. xtdesc:	ribe							
cou	3, 5,	, 23					n =	18
year	: 1995, Delta	1996,	., 2020 1 vear				c =	26
	Span ()	rear) = 2	26 perio					
					s each obse	rvation)		
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		26				26 2	5 26	2.6
5+	a. Perce	nt C	m. Pa	attern				
18	3 100.	00 100.0	00 13	11111111	111111111111	1111111		
1.0	3 100	0.0	X	******	******	******		
18				*****	0000000000	XXXXXXX		
		00 dist \$xli		*****	000000000000000000000000000000000000000	*****		
		list \$xli	ist				Obse	rvations
. xtsum : Variable	Şt Şid Şş	vlist Şxli Me	ist ean Si	td. Dev.	. Min	Маж		
. xtsum 3	St Sid Sy overall	vlist Şxli Me	ist ean Si	td. Dev.	. Min	Max 1.213311	N =	404
. xtsum : Variable	St Sid Sy overall between	vlist Şxli Me	ist ean St 698	td. Dev.	. Min 6867072 0060039	Max 1.213311 .1220693	N = n =	404
. xtsum : Variable	St Sid Sy overall	vlist Şxli Me	ist ean St 698	td. Dev.	. Min	Max 1.213311 .1220693	N = n =	404
. xtsum 3 Variable growthq lnq	St Sid Sy overall between within overall	list \$xli	ist ean St 698 .(td. Dev. .108794 0283214 1057557 4029339	. Min 6867072 0060039 7976068 .1012905	Max 1.213311 .1220693 1.102412 2.92957	N = n = T-bar = N =	404 18 22.4444 422
. xtsum 3 Variable growthq lnq	overall between within overall between	list \$xli	ist ean St 698 305 .4	td. Dev. .108794 0283214 1057557 4029339 4350003	. Min 6867072 0060039 7976068 .1012905	Max 1.213311 .1220693 1.102412 2.92957	N = n = T-bar = N = n =	404 18 22.4444 422 18
. xtsum 3 Variable growthq lnq	St Sid Sy overall between within overall	list \$xli	ist ean St 698 305 .4	td. Dev. .108794 0283214 1057557 4029339	6867072 0060039 7976068 .1012905 .3168834	Max 1.213311 .1220693 1.102412 2.92957	N = n = T-bar = N = n =	404 18 22.4444 422
. xtsum : Variable growthq lnq	overall between within overall between	.64373	ist ean Si 698 305	108794 283214 1057557 4029339 4350003 .173684	. Min 6867072 0060039 7976068 .1012905	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491	N = n = T-bar = N = n = T-bar =	404 18 22.4444 422 18 23.4444
. xtsum 3 Variable growthq lnq lngerd	overall between within overall between within overall between	.64373	ist 698 .(305 .(516 2	td. Dev. 108794 0283214 1057557 4029339 4350003 .173684 .150039	6867072 0060039 7976068 .1012905 .3168834 .0782745 2.882172	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491 11.60847	N = n = T-bar = n = T-bar = N = n =	404 18 22.4444 422 18 23.4444 433 18
. xtsum 3 Variable growthq lnq lngerd	<pre>>t \$id \$y overall between within overall between within overall</pre>	.64373	ist 698 .(305 .(516 2	td. Dev. 108794 0283214 1057557 4029339 4350003 .173684 .150039	- Min 6867072 0060039 7976068 .1012905 .3168834 .0782745	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491 11.60847	N = n = T-bar = n = T-bar = N = n =	404 18 22.4444 422 18 23.4444 433
. xtsum 4 Variable growthq lnq lngerd	overall between within overall between within overall between within	.01116	ist ean St 698 305 516 2 2. 	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817	Min 	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162	N = n = T-bar = N = T-bar = N = n = T =	404 18 22.4444 422 18 23.4444 433 18 24.0556
. xtsum 3 Variable growthq lnq lngerd	overall between within overall between within overall between within overall	.01116	ist ean SI 698 305 516 2 2 2 127	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199	 Min 6867072 0060039 7976068 .1012905 .3168334 .0782745 2.882172 4.127116 5.573098 .0109361 	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4950667	N = n = T-bar = N = T-bar = N = n = T = N = N =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427
. xtsum 4 Variable growthq lnq lngerd	overall between within overall between within overall between within	.01116	ist ean SI 698 305 516 2 2 2 127	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199	Min 	Max 1.213311 .1220693 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4950667	N = n = T-bar = N = T-bar = N = n = T = N = N =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427
. xtsum : Variable growthq lnq lngerd k_inov	overall between within overall between within overall between within overall between within	<pre>/list \$x1i</pre>	ist ean St 698 305 516 2 2 127 	108794 0283214 1057557 4029339 435003 .173684 .150039 .135548 5305817 0470199 0307734 0362544	. Min 6867072 0060039 797606834 .0182705 2.882172 4.127116 5.57302 .0109361 .0315929 014006	Max 1.213311 .1220693 1.102412 2.92957 2.013491 11.60847 11.07295 8.670162 .4950667 .4476466 .4286328	N = n = T-bar = N = T-bar = N = n = T = N = T = N = T =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222
. xtsum : Variable growthq lnq lngerd k_inov financ~n	overall between within overall between within overall between within overall between	<pre>/list \$x1i</pre>	ist ean SI 698	td. Dev. 108794 2083214 1057557 4029339 4350033 173684 .150039 135548 5305817 0470199 0307734 0362544 8017374	. Min 6867072 060039 7976068 .1012905 .3168834 .0782745 2.882172 4.127116 5.573098 .0109361 .013929 014006 - 1.226155	Max 1.213311 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4950667 .1474466 .4286328 2.321955	N = n = T-bar = T-bar = N = n = n = n = T = N = N = N = N = N = N = N = N	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222 420
. xtsum : Variable growthq lnq lngerd k_inov financ~n	overall between within overall between within overall between within overall between within	<pre>/list \$x1i</pre>	ist ean SI 698	td. Dev. 108794 2083214 1057557 4029339 4350033 173684 .150039 135548 5305817 0470199 0307734 0362544 8017374	. Min 6867072 060039 7976068 .1012905 .3168834 .0782745 2.882172 4.127116 5.573098 .0109361 .013929 014006 - 1.226155	Max 1.213311 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4950667 .1474466 .4286328 2.321955	N = n = T-bar = T-bar = T-bar = N = T = T = N = T = N = n =	404 18 22.4444 422 433 23.4444 433 23.4444 433 24.0556 18 24.0556 18 23.7222 23.7222 23.7222 21 727
. xtsum : Variable growthq lnq lngerd k_inov financ~n	overall between within overall between within overall between within overall between	<pre>/list \$x1i</pre>	ist ean St 698	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199 0307734 0362544 8017374 6206156 5328385	 Min - 6867072 - 0060033 - 7976068 - 1012905 - 3168834 - 0782745 2.882172 4.127116 5.57304 - 0130561 - 0130561 - 014006 - 1.226155 - 3154293 - 3286934 	Max 1.21331 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .495067 .495067 .474466 .4286328 2.321955 3.44742	N = n = T-bar = N = T-bar = N = n = T = N = n = n = T = N = n = T = N = T = N = T =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222 420
. xtsum : Variable growthq lnq lngerd k_inov financ~n	overall between within overall between within overall between within overall between within overall between within	<pre>/list \$x1i</pre>	ist ean St 698	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199 0307734 0362544 8017374 6206156 5328385	 Min - 6867072 - 0060033 - 7976068 - 1012905 - 3168834 - 0782745 2.882172 4.127116 5.57304 - 0130561 - 0130561 - 014006 - 1.226155 - 3154293 - 3286934 	Max 1.21331 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .495067 .495067 .474466 .4286328 2.321955 3.44742	N = n = T-bar = N = n = T-bar = N = n = n = T = N = n = T = N = N = N = N = N = N = N = N	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222 420 17 24.7059 468
<pre>xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	overall between within overall between within overall between within overall between within overall between within	<pre>/list \$x1i</pre>	ist ean St 698	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199 0307734 0362544 8017374 6206156 5328385	 Min - 6867072 - 0060033 - 7976068 - 1012905 - 3168834 - 0782745 2.882172 4.127116 5.57304 - 0130561 - 0130561 - 014006 - 1.226155 - 3154293 - 3286934 	Max 1.21331 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .495067 .495067 .474466 .4286328 2.321955 3.44742	N = n = T-bar = N = n = T = N = n = N = n = T = N	404 18 22.4444 422 18 23.4444 433 23.4444 433 23.4444 433 23.4444 433 23.4240 18 23.7222 420 17 24.7059 24.7059 468 18
<pre>xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	overall between within overall between within overall between within overall between within overall between within	<pre>/list \$x1i</pre>	ist ean St 698	108794 0283214 1057557 4029339 4350003 .173684 .150039 .135548 5305817 0470199 0307734 0362544 8017374 6206156 5328385	. Min 6867072 060039 7976068 .1012905 .3168834 .0782745 2.882172 4.127116 5.573098 .0109361 .013929 014006 - 1.226155	Max 1.21331 1.220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .495067 .495067 .474466 .4286328 2.321955 3.44742	N = n = T-bar = N = n = T = N = n = N = n = T = N	404 18 22.4444 422 18 23.4444 433 23.4444 433 23.4444 433 23.4444 433 23.424 18 23.7222 420 17 24.7059 24.7059 468 18
<pre>xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	Overall between within overall between within overall between within overall between within overall between within	<pre>.list \$x1; .01116 .64372 7.545 .08101 1.9666 1.1452</pre>	ist ean SI 698	Ltd. Dev. 108794 2283214 1057557 4029339 1173684 1150039 1173684 1150039 1173684 1150039 1173684 1150039 1173684 1150039 1173684 1150039 1173684 115548 115548 1155558 1155588 1155888 1155588 1155	. Min 6667072 006003 797668 .1012905 2.882172 4.12716 5.573058 014006 -1.226155 -3.328934 .310993 328934 .310993 1295407	Max 1.213311 .220633 1.102412 2.92957 1.644975 2.013491 11.60847 11.67295 8.670162 .4256067 .127456 .2321955 3.44742 4.122231 3.121033 2.146352	N = n = T-bar = N = T-bar = N = n = T = N = n = T = N = T = N = T = T = T = T = T = T = T =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222 420 17 24.7059 468 18 23.7222
<pre>. xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	Overall between within overall between within overall between within overall between within overall between within overall between within	<pre>.list \$x1; .01116 .64372 7.545 .08101 1.9666 1.1452</pre>	ist ist 698	Ld. Dev. 108794 2023214 2023214 202329 20239 202329 202529 202529 202529 202529 202	. Min 6667072 006003 797668 .1012905 .3168834 .0782745 2.882172 4.127116 5.573098 014006 -1.226155 .3154293 3286934 .311993 .5162591 1295407 6764844 .0125400	Max 1.213311 .220633 1.00412 2.92957 1.644975 2.013401 11.60847 11.07255 8.670162 .4950667 .1474466 2.321955 2.321955 2.427422 4.122231 3.447422 4.122231 3.427425 5.613815 5.613815	N = n = T-bar = N = T-bar = N = n = T = N = n = T = N = N = N = N = N = N = N = N	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 18 23.7222 420 17 24.7059 468 18 23.222 420 17 24.7059
<pre>xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	Overall between within overall between within overall between within overall between within overall between within overall between within overall	<pre>.list \$x1; .01116 .64372 7.545 .08101 1.9666 1.1452</pre>	ist ist 698	Ld. Dev. 108794 2023214 2023214 202329 20239 202329 202529 202529 202529 202529 202	 Min - 6867072 - 0060039 - 7976068 - 1012905 - 3166844 - 0782745 2.882172 - 013592 - 014006 - 1.226155 - 3154233 - 3286934 - 3710993 - 1229407 6764844 	Max 1.213311 .220633 1.00412 2.92957 1.644975 2.013401 11.60847 11.07255 8.670162 .4950667 .1474466 2.321955 2.321955 2.427422 4.122231 3.447422 4.122231 3.427425 5.613815 5.613815	N = n = T-bar = N = T-bar = N = n = T = N = n = T = N = N = N = N = N = N = N = N	404 18 22.4444 422 18 23.4444 433 23.4444 433 8 24.0556 427 18 23.7222 420 17 24.7059 448 24.7059 448 24.7059 448 24.7059
variable growthq lnq lngerd k_inov financ~n op fdiopen	St \$id \$y overall between within overall between within overall between within overall between within overall between within overall between within	<pre>clist \$x1i</pre>	ist Steen SI Steen St	Ltd. Dev. 108794 2083214 2023219 4350003 173684 150039 0307734 0305254 8017374 801748 80174	. Min 6867072 066033 797606 .1012905 .316834 .078274 4.127116 .0109361 .0135293 010006 -1.328155 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3154934 .3125404 .3125404 12555404 12555404 12555404 1255404 1255555555 -	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.60847 11.60847 11.60847 11.60847 11.60847 11.60847 12.01295 2.321955 2.321955 2.321955 2.42721 3.44742 4.22231 3.42742 4.12221 4.12221 4	N = n = T-bar = N = n = T = N = T = N = T	404 18 22.4444 422 18 23.4444 433 18 24.0556 468 18 23.7222 420 7 24.7059 468 18 23.7222 407 24.7059 468 18 26 18 18 26 18
<pre>xtsum : Variable growthq lnq lngerd k_inov financ~n op</pre>	St Sid Sy overall between within overall between within overall between within overall between within overall between within overall	<pre>.list \$x1; .01116 .64372 7.545 .08101 1.9666 1.1452</pre>	ist Steen SI Steen St	Ltd. Dev. 108794 1057557 4029339 4350003 173644 402939 435003 173648 8017374 8017374 8017374 8017374 8026156 55328365 1087557 1087557 1087557 108557 10957 1095777 109577 109577 109577 10957777 10957777 109577777 109577777 10957777777 1095777777777777777777777777777777777777	 Min 6667072 0606039 797606 1012905 316834 .0782745 2.882172 4.12716 5.27186 .0103361 .0131929 .010056 1226155 .3154293 3286934 .3310933 .5125407 125407 6766444 .0125404 125404 .0125404 .0125404	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.6725 8.670162 .475466 .475466 2.321955 2.321955 2.321955 2.321955 2.321955 2.321955 2.34742 .472231 3.122083 2.146322 5.613415 1.11672 4.67364 .1369049	N = n = T-bar = T-bar = T-bar = N = n = T = N = N = N = N = N = N = N = N	404 18 22.4444 422 18 23.4444 433 24.0556 427 18 23.7222 40.056 10 7 24.7059 468 18 23.7222 468 18 18 24.25.6111 18 18 26
variable growthq lnq lngerd k_inov financ~n op fdiopen	St \$id \$y overall between within overall between within overall between within overall between within overall between within overall between within	<pre>clist \$x1i</pre>	ist Side and	L108794 108794 4029321 4029321 4029339 4350003 4350039 4350039 4350039 4350039 430734 4352544 8037374 402937 5328385 5532835 5532835 5532835 553285 55355 55355 55355 55355 55355 553555 553555 55355555 553555555	 Min 6667072 0606039 797606 .1012905 .316834 .0782765 2.882172 4.127116 5.27308 .0100351 .0131529 .0100361 .013512 .0100361 .0129407 .6764844 .0129407 66764844 .0129407 6764844 .0129407 6764844 .0229404 4650111 .0002179 	Max 1.213311 .22063 1.102412 2.92957 1.644975 2.013491 11.60847 11.07295 8.670162 .4950667 .1474466 2.921955 2.92	N = n = T-bar = N = n = T = N = T = N = T = N = T = N = T = T = N = T	404 404 18 22.4444 422 18 23.4444 433 18 24.0556 4405 4405 4405 4405 4405 4405 4405
. xtsum 1 Variable growthq lnqerd k_inov financ~n op fdiopen eugini	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within between within between within overall between within overall between within overall between within overall between within between within between within between within between within between within between within between within between within between between within	11111 Salia Merica Salia .01114 .64373 7.544 .08101 1.9666 1.1452 .19091 .10477	ist sean \$1 ean \$1 	L108794 108794 435003 435003 113554 8305817 435003 435039 435039 435039 437034 435039 437034 435039 437034 435039 43714 43704 43714 477855 477456 477855 477456 4778577 4778577 4778577 47785777 47785777 477857777777777	. Min 6867072 006003 7976066 .1012905 .316854 .0782745 2.882172 4.12716 5.57309 01005 1295607 1295407 1295407 1295407 1465011 .002179 .0002179	Max 1.213311 .22063 1.02412 2.92957 1.644975 2.013491 11.60847 11.6025 8.670162 .4950667 .1474466 2.321955 2.21955 2.21955 2.344742 4.22231 3.44742 4.122231 3.44742 4.122231 3.12103 2.146352 5.613815 1.116672 4.687854 .1369049	N = n = T-bar = N = T-bar = N = T =	404 18 22.4444 422 18 23.4444 433 18 24.0356 427 18 23.7222 420 17 24.7059 468 18 23.722 420 17 24.7059 468 18 25.6111 18 25.6111 18 25.6111
variable growthq lnq lngerd k_inov financ~n op fdiopen	St \$id \$y overall between within overall between within overall between within overall between within overall between within overall between overall overall between overall overall between overall o	<pre>clist \$x1i</pre>	ist sean S1 (,,,,,,,	ttd. Dev., 108794 1087557 10283214 1057557 1029339 1135548	. Min 	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.07295 8.670162 .4950667 .1474466 4.285328 2.321955 3.44742 4.282328 2.321955 3.44742 4.282328 3.42742 4.282328 3.42742 4.282328 3.41742 4.282328 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.28238 3.44742 4.67758 1.064772	N =	404 18 22.4444 422 18 23.4444 433 18 24.0556 427 428 23.7222 420 17 24.0556 428 25.611 18 26 468 26 468 18 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 26 468 468 468 468 468 468 468 46
. xtsum i Variable growthq lngerd k_inov financ~n op fdiopen eugini	It \$id \$j overall between within between within between within overall between within overa	11111 Salia Merica Salia .01114 .64373 7.544 .08101 1.9666 1.1452 .19091 .10477	ist State St	Ltd. Dev. 108794 108794 1023214 1037557 4029339 113564 135003 113564 135568 113568	. Min 6867072 006003 7976066 .1012905 .3168834 .0782745 2.882172 4.12716 5.57309 01006 - 1.226155 0109361 .3154293 1295407 1295407 1295407 168501 .0125407 168501 .010777 .01077 .01077 .010777 .010777 .0107777 .01077777	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 2.321955 2.321955 3.44742 4.122211 3.12103 2.146352 5.613815 1.116672 4.687854 .1369049 .04782 .04782	N = n = T-bar = T-bar = N = n = T = T = N = T = T = N = T = T = N = T = N = T = T = N = T = T = T = T = T = T = T = N = T = T = N = T =	4040 18 18 22,4444 4222 18 18 18 23,4444 4333 18 24,0556 427 17 17 17 17 24,7055 420 18 18 18 24,0556 427 427 420 18 18 18 18 18 18 18 18 18 18
. xtsum i Variable growthq lnq hlngerd k_inov financ>n op fdiopen eugini eduexpe2	It \$id \$; overall between within between within overall between with		ist	Ltd. Dev. 108794 108794 1023214 1037557 1035003 117364 1135003 117364 1135545 1135545 1135545 1135545 1135545 1135545 1135545	. Min 6867072 0606033 7976066 .1012905 .316834 .0782745 2.882172 4.12716 5.37309 .01006 -1.226155 .312623 1295407 67646011 .002179 .002179 .002179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0302179 .0310923 .0310923 .032308 .037230	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 2.321955 2.321955 2.4285138 2.428513 2.44552 4.687854 .1369049 .043752 1.66949 .043952 .045921	N = n = T-bar = N = T - bar = N = N = N = N = N = T =	4040 18 18 22,4445 18 18 18 18 18 24,0556 433 18 24,0556 433 24,0556 433 24,0556 433 24,0556 18 18 26 26 46 18 18 26 46 18 18 18 18 18 18 18 18 18 18 18 18 18
. xtsum i Variable growthq Inq Ingerd k_inov fdiopen eugini eduexpe2	overall between vithin overall between vithin vithin vithin vithin vithin vithin between vithin vi vi vi vi vi vi vi vi vi vi vi vi vi	11111 Salia Merica Salia .01114 .64373 7.544 .08101 1.9666 1.1452 .19091 .10477	ist	Ld. Devv 1.1087547 2283214 1057557 4353003 1.13664 1.50039 435305817 1.5548 53355817 470199 470199 470199 470199 5332544 8037374 4037374 5332624 533262544 8037374 533262544 8037374 53326254 8037555 8037555 8037555 8037555 80375555 80375555 80375555 8037555555555555555555555555555555555555	 Min - 6667072 - 0606039 - 797606 - 10119905 - 316834 - 0782764 - 212105 - 31354293 - 104066 - 1.226155 - 3136434 - 3136434 - 1236107 - 125407 - 125407 - 125407 - 104772 - 002179 - 104772 - 002179 - 014772 - 01472 - 01474	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.6725 8.67162 .44955 2.013401 1.0725 8.67162 .478466 .4284328 2.21955 3.44742 .4284328 2.21955 3.44742 .4284328 1.102428 .419261 .101672	N =	404 18 18 12 22 442 18 422 18 422 18 433 18 18 433 18 18 433 18 18 433 18 18 433 18 18 433 18 18 433 18 18 433 18 18 437 24 455 437 442 27 443 18 18 437 437 447 457 457 457 457 457 457 45
. xtsum i Variable growthq i Ing Ingerd k_inov fdiopen eugini eduexpe2	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between bet	.001161 Salih Mei .01116 .64372 7.541 .08101 1.9666 1.1452 .19097 .0477 .05124	ist	Ld. Dev. 108794 108794 105757 105757 105757 105039 105548 105039 105548 105039 105548 105039 105548 105039 105059 1050	. Min 6867072 - 0060039 7976066 .1012905 .3168834 0782745 2.882172 4.127116 .517308 01006 - 1.226155 .3154293 012066 - 1.226155 .3154293 012656 1289640 1299640 1289640 12996400 12996400 12996400 12996400 12996400 12996400 12996400 	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 4.286338 2.321955 2.321955 2.321955 3.44742 4.282313 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.146352 1.369049 .0373 .0426453 .0459541 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .04595231 .1464555 .04595231 .1464555 .04595231 .1464555 .04595231 .1464555 .045954 .1465552 .1465552 .1465552 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .04555555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .04555555 .04555555 .04555555 .045555555 .045555555 .045555555 .04555555555555555555555555555555555555	N = n = T-bar = N = T-bar = N = N = N = N = T =	4040 18 48 22,444 422 23,444 433 24,055 433 24,055 463 23,222 24,055 463 23,222 24,055 463 18 26 43 18 18 26 43 18 18 26 46 18 18 26 46 18 18 26 46 18 18 18 26 46 18 18 18 18 18 18 18 18 18 18
. xtsum i Variable growthq i Ing Ingerd k_inov fdiopen eugini eduexpe2	overall between vithin overall between vithin vithin vithin vithin vithin vithin between vithin vi vi vi vi vi vi vi vi vi vi vi vi vi	.001161 Salih Mei .01116 .64372 7.541 .08101 1.9666 1.1452 .19097 .0477 .05124	ist	Ld. Dev. 108794 108794 105757 105757 105757 105039 105548 105039 105548 105039 105548 105039 105548 105039 105059 1050	 Min - 6667072 - 0606039 - 797606 - 10119905 - 316834 - 0782764 - 212105 - 313629 - 01006 - 1.226155 - 3136293 - 123607 - 12360	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 4.286338 2.321955 2.321955 2.321955 3.44742 4.282313 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.121083 3.146352 1.369049 .0373 .0426453 .0459541 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .1369049 .0373 .0426453 .04595231 .1464555 .04595231 .1464555 .04595231 .1464555 .04595231 .1464555 .045954 .1465552 .1465552 .1465552 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .04555555 .0455555 .0455555 .0455555 .0455555 .0455555 .0455555 .04555555 .04555555 .04555555 .045555555 .045555555 .045555555 .04555555555555555555555555555555555555	N =	4040 18 48 22,444 422 23,444 433 24,055 433 24,055 463 23,222 24,055 463 23,222 24,055 463 18 26 43 18 18 26 43 18 18 26 46 18 18 26 46 18 18 26 46 18 18 18 26 46 18 18 18 18 18 18 18 18 18 18
. xtsum i Variable growthq i Ing Ingerd k_inov fdiopen eugini eduexpe2	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within		List List List List List List List List	Ld. Dev. 108794 108794 105757 105757 105757 105039 105548 105039 105548 105039 105548 105039 105548 105039 105059 1050	. Min 6867072 - 0060039 7976066 .1012905 .3168834 0782745 2.882172 4.127116 .517308 01006 - 1.226155 .3154293 012066 - 1.226155 .3154293 012656 128964 .012566 128964 .01266611 .002179 .0372308 .0372308 0 .0372308 0 .0126655 .0372308 .03	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 4.286338 2.321955 3.44742 4.22231 3.42742 4.22231 3.42742 4.687854 .1365049 .073 3.0629615 .0659231 1 1 .064538 1.461538	N = n = T-bar = N = T-bar = N = N = N = N = T =	404 184 422 184 422 18 1444 433 18 12 12 12 12 12 12 12 12 12 12 12 12 12
. xtsum 1 Variable growthq lnq lngerd k_inov fdiopen eugini eduexpe2 eurodumm	overall between within overall between between between between between between between between between between between between between between between vera between vera between vera between vera between vera between vera vera vera vera vera vera vera vera		List List List List List List List List	td. Dev. 1108794 1283214 1025357 1025357 1025357 1025357 1035557 1035557 103558 1035	. Mim 6867072 - 0060039 7976066 .1012905 .316834 0782745 2.882172 4.12716 5.57308 .0109361 .013929 01006 -1.226155 .311093 .311093 .311093 328894 .311093 328894 .311093 .3110	Max 1.213311 .122063 1.102412 2.92957 1.644975 2.013401 11.60847 11.0725 8.670162 .4950667 .1474466 4.286338 2.321955 3.44742 4.28233 3.44742 4.28233 3.44742 4.28233 3.44742 4.687854 .158049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 1.3166049 .0459231 .045	N = n = T-bar = N = T-bar = N = T = T = N = T = T = N = T = T = N = T = T = T = N = T = T = N = T = T = T = N = T = T = T = N = T =	404 184 422 22,444 422 23,444 433 18 24,0556 427 13,122 24,0556 427 17 12 24,0556 427 18 225,6111 426 468 225,6111 4668 226 468 468 226 468 18 225,6111 4688 226 468 18 226,611 4688 226 226 4688 226 226 4688 226 226 4688 226 226 4688 226 226 226 226 226 226 226 226 226
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. test	parm i.year
(1)	1997.year = 0
(2)	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2004.year = 0
(9)	2005.year = 0
(10)	2006.year = 0
(11)	2007.year = 0
(12)	2008.year = 0
(13)	2009.year = 0
(14)	2010.year = 0
(15)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
(20)	2016.year = 0
(21)	2017.year = 0
	Constraint 1 dropped
	Constraint 4 dropped
	Constraint 17 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	F(16, 16) = 21.15
	Prob > F = 0.0000
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(10)	17.cou = 0
(11)	18.cou = 0
(12)	20.cou = 0
(13)	20.cou = 0 21.cou = 0
(14)	21.cou = 0 22.cou = 0
(15)	22.cou = 0 23.cou = 0
(10)	Constraint 13 dropped
	constraint is dropped

F(15, 16) = 5230.76 Prob > F = 0.0000

Random over Pooled OLS



Random over pooled OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	2707986	0049827	2658159	.036364
lngerd	.0170184	0033444	.0203628	.0135921
k_inov	.3533687	.0594512	.2939175	.0729792
financial_~n	.043096	.0134468	.0296492	.0065752
op	.0591101	.0196299	.0394801	.0320532
fdiopen	0359187	0348927	001026	.0031798
eugini	1.254754	1.365284	11053	.1027521
eduexpe2	-2.76055	4209995	-2.33955	.8724692
eurodumm	002612	.002918	00553	.0057026
crisisdumm	0104988	0021768	0083219	.0071082

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 96.25 Prob>chi2 = 0.0000 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

	Coeffi			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.lnq	2707986	0049827	2658159	.0403456
lngerd	.0170184	0033444	.0203628	.0149897
k_inov	.3533687	.0594512	.2939175	.091453
financial_~n	.043096	.0134468	.0296492	.0078538
op	.0591101	.0196299	.0394801	.0354899
fdiopen	0359187	0348927	001026	.0048802
eugini	1.254754	1.365284	11053	.2795157
eduexpe2	-2.76055	4209995	-2.33955	.9801693
eurodumm	002612	.002918	00553	.007999
crisisdumm	0104988	0021768	0083219	.0086482

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 70.29 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

	Coeffi			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	TIXED	Landon	DITIETence	5.5.
L.lnq	2707986	0049827	2658159	.036714
lngerd	.0170184	0033444	.0203628	.0136404
k inov	.3533687	.0594512	.2939175	.083221
financial_~n	.043096	.0134468	.0296492	.0071468
op	.0591101	.0196299	.0394801	.0322953
fdiopen	0359187	0348927	001026	.004441
eugini	1.254754	1.365284	11053	.2543555
eduexpe2	-2.76055	4209995	-2.33955	.8919406
eurodumm	002612	.002918	00553	.007279
crisisdumm	0104988	0021768	0083219	.0078698

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 84.88 Prob>chi2 = 0.0000

Fixed over random

Depended variable: Δ InequalityL

 $\Delta Inequality_{L_{it}} = a_{1it} + a_2 invest in R\&D_{it} + a_3 capital innovation ratio_{it}$

 $+ a_4 financial oppenness_{it} + a_5 trade openness_{it} + a_6 fdi oppenness_{it}$

 $+ a_7 convergence_{it} + a_8 education expenditure_{it} + a_9 euro dummy_{it}$ $+ a_9 2008 \ crisis \ dummy_{it} + b_i + u_{it} (7.3.12.)$

. testparm i.year

(1)	1997.year = 0
(2)	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2003.year = 0
(9)	2004.year = 0
(10)	
(10)	2006.year = 0 2007.year = 0
	-
(12)	2008.year = 0
(13)	2009.year = 0
(14)	2010.year = 0
(15)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
(20)	2016.year = 0
(21)	2017.year = 0
	Constraint 1 dropped
	Constraint 6 dropped
	Constraint 7 dropped
	Constraint 17 dropped
	F(17, 16) = 8.8e+07
	F(17, 16) = 8.8e+07 Prob > F = 0.0000
. test	
. test	Prob > F = 0.0000
. test	Prob > F = 0.0000
	Prob > F = 0.0000 parm i.cou
(1)	Prob > F = 0.0000 parm i.cou 5.cou = 0
(1) (2)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0
(1) (2) (3)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6) (7)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 18.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	<pre>Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 18.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0</pre>
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 18.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	<pre>Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 18.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0</pre>
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 20.cou = 0 21.cou = 0 21.
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 18.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0

Random over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

Random over pooled OLS

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	2579043	0064443	2514601	.0361419
lngerd	.0163723	0021912	.0185634	.0138249
k_inov	.3605095	.0563725	.304137	.0731715
financial_~n	.0411387	.0127374	.0284013	.0066819
op	.0822454	.0220309	.0602145	.0310342
fdiopen	0370731	0369697	0001034	.0032422
eugini	0765148	112756	.0362412	
eduexpe2	-3.214159	537261	-2.676898	.8540404
eurodumm	0108953	0023353	00856	.0047126
crisisdumm	0159329	0061499	009783	.0069413

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 100.84 Prob>chi2 = 0.0000 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

	Coeffi			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	2579043	0064443	2514601	.0401511
lngerd	.0163723	0021912	.0185634	.0152585
k_inov	.3605095	.0563725	.304137	.0919932
financial_~n	.0411387	.0127374	.0284013	.0079898
op	.0822454	.0220309	.0602145	.034412
fdiopen	0370731	0369697	0001034	.004954
eugini	0765148	112756	.0362412	.0366116
eduexpe2	-3.214159	537261	-2.676898	.9614431
eurodumm	0108953	0023353	00856	.0071843
crisisdumm	0159329	0061499	009783	.008474

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 70.70 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnq	2579043	0064443	2514601	.0365052
lngerd	.0163723	0021912	.0185634	.0138729
k_inov	.3605095	.0563725	.304137	.08364
financial_~n	.0411387	.0127374	.0284013	.0072643
op	.0822454	.0220309	.0602145	.0312873
fdiopen	0370731	0369697	0001034	.0045041
eugini	0765148	112756	.0362412	.0332872
eduexpe2	-3.214159	537261	-2.676898	.8741416
eurodumm	0108953	0023353	00856	.006532
crisisdumm	0159329	0061499	009783	.0077046

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 85.53 Prob>chi2 = 0.0000

fixed over Random

Depended variable: ∆ InequalityK

$\Delta Inequality_{K_{it}} = a_{1_{it}} + a_2 \Delta q_{K_{it}} + a_3 \Delta \Lambda_{K_{it}} + b_i + u_{it}$ (7.3.11)

. describe \$id \$t \$ylist \$xlist

. accorrace qua qu	+y1100 +A1	100				
sto: variable name t	rage displ ype forma		variab	le label		
	ouble %10.0 ouble %10.0 ouble %10.0	g	growth growth growth		x	
. summarize \$id \$	t \$ylist \$x	list				
Variable	Obs	Mean Std	l. Dev.	Min	Max	
growthIneq~K growthrelatK growthpremK	465	0070282 .06	26881 543164 739107	8362134	L.470415 .5429749 .7700615	
. xtdescribe						
Span (ye	1996,, 2 year) = 1 ye ear) = 26 p	ar	ich observ	т	=	18 26
Distribution of T	26	5% 25% 26 26	50% 26			max 26
Freq. Percer	nt Cum.	Pattern				
18 100.0	00 100.00	111111111111	.1111111111	11111		
18 100.	00	*****		XXXXX		
. xtsum \$t \$id \$y	list \$xlist					
Variable	Mean	Std. Dev.	Min	Max	Obse	rvations
growt~yK overall between within	.0177396	.1726881 .0219224 .1714091	0085433	.0754785	N = n = T-bar =	
growt~tK overall between within	0070282	.0643164 .0147827 .062712	0385275	.5429749 .0265513 .535717	N = n = T-bar =	
growt~mK overall between within	.0094547	.1739107 .0179815 .1730391	0311956		N = n = T-bar =	

. test	parm i.year
(1)	1996.year = 0
(2)	1997.year = 0
(3) (4)	1998.year = 0 1999.year = 0
(5)	2000.year = 0
(6)	2001.year = 0
(7) (8)	2002.year = 0
(8) (9)	2003.year = 0 2004.year = 0
(10)	2005.year = 0
(11)	2006.year = 0
(12) (13)	2007.year = 0 2008.year = 0
(13)	2008.year = 0 2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18) (19)	2013.year = 0 2014.year = 0
(20)	2015.year = 0
(21)	2016.year = 0
(22)	2017.year = 0
(23) (24)	2018.year = 0
(24)	2019.year = 0 2020.year = 0
	Constraint 2 dropped
	Constraint 5 dropped
	Constraint 2 dropped Constraint 5 dropped Constraint 7 dropped Constraint 9 dropped
	Constraint 9 dropped Constraint 14 dropped
	Constraint 20 dropped
	Constraint 24 dropped
	F(17, 17) = 6.11
	P(1), 1) = 0.11 Prob > F = 0.0003
	Prob > F = 0.0003
. test	Prob > F = 0.0003
(1)	Prob > F = 0.0003 parm i.cou 5.cou = 0
(1) (2)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0
(1) (2) (3)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5) (6)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)</pre>	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0 18.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 21.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 2 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 2 dropped Constraint 3 dropped</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 23.cou = 0 23.
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 droped Constraint 1 droped Constraint 3 dropped Constraint 3 dropped Constraint 5 dropped Constraint 6 dropped</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 2 dropped Constraint 5 dropped Constraint 5 dropped Constraint 5 dropped Constraint 6 dropped Constraint 6 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 3 dropped Constraint 4 dropped Constraint 5 dropped Constraint 6 dropped Constraint 6 dropped Constraint 7 dropped Constraint 7 dropped Constraint 7 dropped Constraint 1 dropped Constraint 1 dropped Constraint 7 dropped Constraint 1 dropped Constraint 1 dropped Constraint 7 dropped Constraint 7 dropped Constraint 1 dropped Constraint 11 dropped</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 5 dropped Constraint 6 dropped Constraint 1 dropped Constraint 12 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0003 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 Constraint 1 dropped Constraint 3 dropped Constraint 5 dropped Constraint 1 dropped Co</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 6 dropped Constraint 1 dropped Constra
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0003 purm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.c</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0003 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 6 dropped Constraint 1 dropped Constra

Fixed effects over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

growthInequalityK[cou,t] = Xb + u[cou] + e[cou,t]

Estima	ted resul	ts:	Var	sd = sqrt(Var)
		K e u	.0298212 .005052 0	.1726881 .0710774 0
Test:	Var(u)	= () <u>chibar2(01)</u> Prob > chibar2	

Random over pooled OLS

. hausman fixed random

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthrelatK	7385299	7113487	0271812	.0140896
growthpremK	.8789272	.8827646	0038374	

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B) '[(V_b-V_B)^(-1)](b-B) = 5.85 Prob>chi2 = 0.0538

end of do-file

. do "C:\Users\addez\AppData\Local\Temp\STD01000000.tmp"

. hausman fixed random, sigmamore

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthrelatK	7385299	7113487	0271812	.0139078
growthpremK	.8789272	.8827646	0038374	.0017327

 ${\tt b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthrelatK	7385299	7113487	0271812	.0139184
growthpremK	.8789272	.8827646	0038374	.001734

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 6.33 Prob>chi2 = 0.0422

Choose random over fixed

Depended variable: ∆ relatK

 $\Delta \Lambda_{K_{it}} = a_{1_{it}} + a_2 L. relat K_{it} + a_3 invest in R\&D_{it} + a_4 capital innovation ratio_{it}$

 $+ a_5 financial oppenness_{it} + a_6 trade openness_{it} + a_7 f di oppenness_{it}$

 $+ a_8 convergence_{it} + a_9 financial development_{it} + a_{10} euro dummy_{it}$

(7.3.3.2)

 $+ a_{11}2008 \ crisis \ dummy_{it} + b_i + u_{it}$

variable	st name	type	displa format	ay valu t labe		iable label		
growthrel	atK	double	\$10.00	g	qro	wthrelatK		
lnrelatK lnpremK		double	%10.0¢	g	lnr	elatK		
lnpremK lngerd		double double	%10.00	g q	lnp	remK erd		
FD		double	%10.0¢	g	FD			
FD k_inov financial		double	%10.00	g a	k_i	nov ancial open		
financial op	_open	double	\$10.00	g	op	anciai_open		
fdiopen		double	%10.0¢	g	fdi	open		
eugini eurodumm		double byte	%10.00	g	eug	ini odumm		
crisisdum	m	byte	\$10.00	a		sisdumm		
. summari	ze \$id	St Syl	lst \$x	list				
Varia	ble	Ob	3	Mean	Std. Dev.	Min	Max	
growthrel	atK	46	50	0070282	.0643164	8362134	.5429749	
lnrel	atK		3 2	.492184	.4222285	1.563131	3.579892	
lnpr		46	3 1	.585921	.3796331	1074219 2.882172	3.142471	
lng	erd FD	43 45				2.882172		
k_i		42	1.1	0810127	.0470199	.0109361 =1.226155 .3710993	.4950667	
financial		42) 1. 3 1	.966405	.8017374	-1.226155	4.122231	
fdio	pen	46		1909102	.5714506	6764844	5.813815	
eug	ini	46	.:	1125057	.0221542	.0434832	.1532992	
eurod crisisd		46 46		6923077	.4620323	0	1	
		-					-	
. xtdescr	ibe							
		, 2					n =	18
year:	1995, Dolt	1996,	, 20	020 ar			т =	26
		(year) (year)						
	(cou*	year un	iquely	identifie	s each obs	ervation)		
Distribut	ion of	T_i: :	nin	5%	25%	50% 75 26 2	s 95%	
			26	26	26	26 2	6 26	
Freq	. Perc	ent	um.	Pattern				
						11111111		
18	100	0.00 10	0.00	11111111				
	100	0.00 10	0.00					
18	100	0.00 10	0.00	11111111				
18 18 . xtsum \$	100	0.00 10 0.00 Sylist \$:).00	111111111 xxxxxxxx	000000000	****		
18	100	0.00 10 0.00 Sylist \$:).00	11111111	000000000	XXXXXXXX	Obse	ervations
18 18 . xtsum \$	100 100 t \$id \$).00 10).00 Sylist \$	0.00 clist Mean	11111111 XXXXXXXXX Std. Dev	000000000 . Mi	n Max		
18 18 . xtsum \$ Variable growt~tK	100 100 t \$id \$ overall between	0.00 10 0.00 Sylist \$:	0.00 clist Mean	11111111 XXXXXXXX Std. Dev .0643164 0147827	836213 038527	XXXXXXXX n Max 4 .5429749 5 .0265513	N - n -	465
18 18 . xtsum \$ Variable growt~tK	100 100 t \$id \$ overall	0.00 10 0.00 Sylist \$:	0.00 clist Mean	11111111 XXXXXXXX Std. Dev .0643164 0147827	836213	XXXXXXXX n Max 4 .5429749 5 .0265513	N -	465
18 18 . xtsum \$ Variable growt~tK	100 100 t \$id \$ overall betweer within	0.00 10 0.00 Sylist \$:).00 klist Mean 70282	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712	Mi 836213 038527 804714	n Max 4 .5429749 5 .0265513 2 .535717	N - n - T-bar -	465 18 25.8333
18 18 . xtsum \$ Variable growt~tK InrelatK	100 100 t \$id \$ overall betweer within	0.00 10 0.00 5ylist \$:).00 klist Mean 70282	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285	. Mi 836213 038527 804714 1.56313	xxxxxxxx n Max 4 .5429749 5 .0265513 2 .535717 1 3.579892	N - n - T-bar - N -	465 18 25.8333 468
18 18 . xtsum \$ Variable growt~tK lnrelatK	100 100 t \$id \$ overall betweer within overall	0.00 10 0.00 5ylist \$ 100).00 klist Mean 70282	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285	. Mi 836213 038527 804714 1.56313	n Max 4 .5429749 5 .0265513 2 .535717	N - n - T-bar - N -	465 18 25.8333 468 18
18 18 . xtsum \$ Variable growt-tK lnrelatK	100 100 t \$id \$ overall betweer within overall betweer within	0.00 10 0.00 5ylist \$.	0.00 klist Mean 70282 92184	11111111 XXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285 .4029183 .1569219	Mi 836213 038527 804714 1.56313 1.68147 1.99374	xxxxxxxxx n Max 4 .5429749 5 .0265513 2 .535717 1 3.579892 3 3.346412 1 2.985862	N - n - T-bar - N - n - T -	465 18 25.8333 468 18 26
Variable growt-tK lnrelatK	100 100 t \$id \$ overall betweer within overall betweer within overall	0.00 10 0.00 5ylist \$.	0.00 klist Mean 70282 92184	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285 .4029183 .1569219 .3796331	. Mi 836213 038527 804714 1.56313 1.68147 1.99374 107421	n Max 4 .5429749 5 .0265513 2 .55717 1 3.579892 3 3.346412 1 2.985862 9 3.142471	N - n - T-bar - n - T - N -	465 18 25.8333 468 18 26 468
18 18 . xtsum \$ Variable growt~tK lnrelatK lnpremK	100 100 t \$id \$ overall betweer within overall betweer within	0.00 10 0.00 5ylist \$: 100 1 2.4 1 1.5	0.00 klist Mean 70282 92184	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285 .4029183 .1569219 .3796331	. Mi 836213 038527 804714 1.56313 1.68147 1.99374 107421	xxxxxxxxx n Max 4 .5429749 5 .0265513 2 .535717 1 3.579892 3 3.346412 1 2.985862	N - n - T-bar - n - T - N -	465 18 25.8333 468 18 26 468 468 18
18 18 . xtsum \$ Variable growt-tK lnrelatK lnpremK	100 100 t \$id \$ overall betweer within overall betweer within).00 10).00 Sylist \$: 	0.00 (list Mean 70282 92184 85921	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .422285 .4029139 .1569219 .3796331 .3111824 .2290647	- Mi 836213 038527 804714 1.56313 1.66147 1.99374 107421 .954260 .524239	n Max 4 .5429749 5 .0265512 2 .535717 1 3.579892 1 2.985862 9 3.142471 3 2.237374 1 2.491018	N - n - T-bar - N - T - N - T - T -	465 18 25.8333 468 18 26 468 468 18 26
18 18 . xtsum \$ Variable growt-tK InrelatK InpremK Ingerd	100 100 t \$id \$ overall betweer within overall betweer within overall betweer within).00 10).00 Sylist \$: 100 1 2.4 1 1.5	0.00 (list Mean 70282 92184 85921	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .422285 .4029183 .1569219 .3796331 .3111824 .2290647 .21150039	- Mi 836213 038527 804714 1.56313 1.66147 1.93344 107421 .954260 .524239 2.88217	n Max 4 .5429749 5 .0265513 2 .535717 1 3.579892 3 .346412 1 2.985862 9 3.142471 3 2.237374 1 2.491018 2 11.60847	N - n - T-bar - N - T - N - T - T - N - N -	465 18 25.8333 468 18 26 468 18 26 433
18 18 . xtsum \$ Variable growt~tK lnrelatK lnpremK lngerd	100 100 t \$id \$ overall betweer within overall betweer within overall betweer).00 10).00 Sylist \$: 100 1 2.4 1 1.5	0.00 (list Mean 70282 92184 85921	11111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .422285 .4029183 .1569219 .3796331 .3111824 .2290647 .21150039	- Mi 836213 038527 804714 1.56313 1.66147 1.93344 107421 .954260 .524239 2.88217	n Max 4 .5429749 5 .0265513 2 .535717 1 3.579892 3 .346412 1 2.985862 9 3.142471 3 2.237374 1 2.491018 2 11.60847	N - n - T-bar - N - T - N - T - T - N - N -	465 18 25.8333 468 18 26 468 18 26 433
18 18 . xtsum \$ Variable growt~tK InrelatK InpremK Ingerd	100 100 t \$id \$ overall betweer within overall betweer within overall betweer within).00 10).00 Sylist \$. 100 1 2.4 1 1.5 1 7.).00 klist Mean 70282 92184 95921	111111111 XXXXXXXX Std. Dev .0643164 .0147827 .062712 .4022183 .1569219 .3796331 .311624 .2290647 2.150039 2.135548 .5305817	<pre>Mi836213038527804714 1.56313 1.68147 1.99374107421 954260 .524239 2.88217 4.12711 5.57309</pre>	n Max 4 .5429749 5 .026513 2 .535717 1 3.579892 3 3.346412 2 .95856 9 3.142471 3 2.237374 1 2.491018 2 .11.60847 1 1.07295 8 8.670162	N - N - T-bar - N - T - N - T - N - T - N - T - T - N - T - T - N - T	 465 18 25.8333 468 18 26 468 18 26 468 18 26 433 18 24.0556
18 18 . xtsum \$ Variable growt-tK InrelatK InpremK Ingerd FD	100 100 t \$id \$ overall betweer within overall betweer within overall betweer within overall betweer within	0.00 10 0.00 Sylist \$ 100 1 2.4 1 1.5 1 7. 1 .53).00 klist Mean 70282 92184 95921	111111111 XXXXXXXXX Std. Dev .0643164 .0147827 .062712 .4222285 .4029183 .1569219 .3796331 .3111824 .2290647 2.1550039 2.135548 .5305817 .2175712	 Mi 836213 038527 804714 1.56313 1.68147 1.99374 107421 .524239 2.88217 4.12711 5.57309 .100445 	NXXXXXXXXX n Max 4 .5429749 5 .0265512 1 .5579892 3 .346412 1 2.95862 9 3.142471 2.491018 2.237374 2 11.60847 6 11.07258 9 .9006572	N - n - T-bar - N - T - N - T - N - T - N - N - N - N -	 465 18 25.8333 468 18 26 468 18 26 468 18 26 468 18 24.0556 450
18 18 . xtsum \$ Variable growt~tK InrelatK InpremK Ingerd FD	100 100 t \$id \$ overall betweer within overall betweer within overall betweer within overall betweer	0.00 10 0.00 Sylist \$: 100 1 2.4 1 1.5 1 7. 1 .53).00 klist Mean 70282 92184 95921	11111111 XXXXXXXX Std. Dev .0643164 .0147827 .4222285 .4029183 .1569219 .3796331 .311824 .2290647 .2155039 2.155048 .5305817 .215548	 Mi 836213 038527 038527 1.66147 1.99374 107422 .954260 .524239 2.88217 4.12711 5.57309 .100445 .211839 	n Max 4 .5429743 5.026513 2 .535717 1 .3.579892 3 .3.45442 9 .3.142471 3 .2.237374 1 .2.98586 9 .3.142471 3 .2.237374 6 .11.07295 8 .6.670162 9 .8.0866002	N - T-bar - N - N - T - N - T - N - T - N - N - N - N - N - N - N - N	- 465 - 18 - 25.8333 - 468 - 26 - 468 - 18 - 26 - 433 - 18 - 24.0556 - 450 - 18
18 18 . xtsum \$ Variable growt~tK InrelatK InpremK Ingerd FD	100 100 t \$id \$ overall betweer within overall betweer within overall betweer within overall betweer within	0.00 10 0.00 Sylist \$: 100 1 2.4 1 1.5 1 7. 1 .53).00 klist Mean 70282 92184 95921	11111111 XXXXXXXX Std. Dev .0643164 .0147827 .4222285 .4029183 .1569219 .3796331 .311824 .2290647 .2155039 2.155048 .5305817 .215548	 Mi 836213 038527 804714 1.56313 1.68147 1.99374 107421 .524239 2.88217 4.12711 5.57309 .100445 	n Max 4 .5429743 5.026513 2 .535717 1 .3.579892 3 .3.45442 9 .3.142471 3 .2.237374 1 .2.98586 9 .3.142471 3 .2.237374 6 .11.07295 8 .6.670162 9 .8.0866002	N - T-bar - N - N - T - N - T - N - T - N - N - N - N - N - N - N - N	- 465 - 18 - 25.8333 - 468 - 26 - 468 - 18 - 26 - 433 - 18 - 24.0556 - 450 - 18
18 18 18 18 Variable growt-tK InrelatK InpremK Ingerd FD k_inov	10(10(verall betweer within overall betweer within overall betweer within overall betweer within overall overall	0.00 10 Sylist \$. 100 1 2.4 1 1.5 1 .53 1 .53).00 Mean 70282 92184 954516 51626	11111111 XXXXXXXX Std. Dev .0643164 .0147827 .062712 .4022183 .1569219 .3796331 .3111824 .2290647 2.1550039 2.135548 .5305487 .2175712 .2126841 .0672352 .06470199	Mi Mi .836213 .038527 .804714 1.56313 1.68147 1.93744 .107421 .954260 .524239 2.88217 4.12711 5.57309 .100445 .21849 .228411 .010936 	Maxx n Maxx 4 .5429749 5 .0265512 1 .5579892 3 .34612 2 .985862 9 .3.142471 2 .491018 2 .11.60841 6 .67102 9 .9006572 2 .687019 1 .4950667	N - n - T-bar - N - T - T - T - T - T - T - T - T	- 465 - 18 - 25.8333 - 468 - 18 - 26 - 468 - 18 - 26 - 468 - 18 - 26 - 433 - 18 - 24.0556 - 450 - 18 - 25 - 450 - 18 - 26 -
18 18 18 variable growt-tK lnrelatK lnpremK lngerd FD k_inov	10(100 t t \$id \$ overall betweer within overall betweer within overall betweer within overall betweer within overall betweer	0.00 10 0.00 i00 i00 i 2.4 i 1.5 i 1.5 i .53 i .08).00 Mean 70282 92184 954516 51626	11111111 xxxxxxxx 5td. Dev 0643164 .0147827 .062712 .422285 .422285 .3796331 .3111824 .2135548 .3305817 2.135548 .5305817 .2175712 .2126841 .0672352 .0470199 .0307734	<pre>Mi836213038527804714 1.55313 1.66147 1.99374107421 .954260 .524239 2.88217 4.12711 5.57445 .211839 .228411 .010936 .031592</pre>	n Max 4 .5429745 5 .0265513 2 .553717 1 .3.579992 3 .3.346412 2 .985662 9 .9006572 8 .670162 9 .9006572 8 .68770162 1 .4299667 9 .1474466	N - n - T-bar - N - n - T - N - n - T - N - T - N - T - N - N - N - N - N - N - N - N	- 465 - 18 - 25.8333 - 468 - 18 - 26 - 468 - 468 - 26 - 458 - 457 - 458 - 457 - 577 - 457 - 45
18 18 18 variable growt-tK lnrelatK lnpremK lngerd FD k_inov	10(10(verall betweer within overall betweer within overall betweer within overall betweer within overall overall	0.00 10 0.00 i00 i00 i 2.4 i 1.5 i 1.5 i .53 i .08).00 Mean 70282 92184 954516 51626	11111111 xxxxxxxx 5td. Dev 0643164 .0147827 .062712 .422285 .422285 .3796331 .3111824 .2135548 .3305817 2.135548 .5305817 .2175712 .2126841 .0672352 .0470199 .0307734	Mi Mi .836213 .038527 .804714 1.56313 1.68147 1.93744 .107421 .954260 .524239 2.88217 4.12711 5.57309 .100445 .21849 .228411 .010936 	n Max 4 .5429745 5 .0265513 2 .553717 1 .3.579992 3 .3.346412 2 .985662 9 .9006572 8 .670162 9 .9006572 8 .68770162 1 .4299667 9 .1474466	N - n - T-bar - N - n - T - N - n - T - N - T - N - T - N - N - N - N - N - N - N - N	- 465 - 18 - 25.8333 - 468 - 18 - 26 - 468 - 18 - 26 - 468 - 18 - 26 - 450 - 18 - 25 - 450 - 18 - 25 - 450 - 18 - 26 - 26
18 18 . xtsum \$ Variable growt-tK InrelatK InpremK Ingerd FD k_inov	100 100 100 100 100 100 100 100 100 100	0.00 10 5ylist % 1 2.4 1.5 1.5 1.53 .08	0.00 klist Mean 70282 35921 54516 51626 10127	11111111 xxxxxxxx 5td. Dev 0643164 .0147827 .062712 .4029183 .1569219 .3796331 .3111824 .2290647 2.135548 .5305817 .2175712 .2125841 .0672352 .0470199 .0307734 .0352544	<pre>Mi836213038527804714 1.56313 1.66147 1.99374107421 .954260 .524233 2.88217 4.12711 5.5733 2.108445 .211839 .228411 .010936 .03159201400</pre>	n Max 4 .5429745 5 .0265513 2 .553717 1 .3.579992 3 .3.346412 2 .985662 9 .9006572 8 .670162 9 .9006572 8 .68770162 1 .4299667 9 .1474466	N - n - T-bar - N - n - T - N - n - T - N - n - T - N - T	- 465 - 18 - 25.8333 - 468 - 26 - 468 - 26 - 468 - 26 - 468 - 26 - 468 - 26 - 450 - 450 - 450 - 450 - 450 - 450 - 450 - 25.833 - 468 - 26 - 468 - 450 - 450 - 450 - 488 - 26 - 427 - 188 - 23.7222
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18 18 20 20 20 20 20 20 20 20 20 20 20 20 20	100 100 100 100 100 100 100 100	0.00 10 0.00 Sylist % 1 2.4 1.5 1.5 . 7. 53 08 08	0.00 klist Mean 70282 35921 54516 51626 10127	11111111 xxxxxxxx 5td. Dev 0643164 .0147827 .062712 .4029183 .1569219 .3796331 .3111824 .2290647 2.135548 .3305817 .2175712 .2125841 .0672352 .0470189 .0367354 .0362544 .8017374 .6206156	. Mii 836213 038527 804513 1.66147 1.99374 1.99374 10742 .954260 .524239 2.86217 4.12711 5.57309 .100445 .211839 .228411 .010936 .031592 01400	n Max n Max 5 .026513 2 .535717 3 .579892 3 .346412 2 .985862 9 .2.42749 3 .142471 2 .491018 2 .11.60847 1 .2.491018 2 .11.60847 1 .2.491018 2 .11.60847 1 .2.491018 3 .42471 2 .491018 3 .42471 1 .4950667 9 .1474466 6 .4286325 5 .2.321955	N - n - T-bar N - N - T - T - T - T - T - T - T - T	- 465 - 18 - 25.8333 - 468 - 18 - 26 - 468 - 18 - 26 - 48 - 18 - 26 - 48 - 18 - 26 - 48 - 18 - 26 - 433 - 18 - 24.0556 - 450 - 18 - 25 - 420 - 18 - 26 - 468 - 26 - 450 - 26 - 450 - 26 - 450 - 26 - 423 - 26 - 427 - 25 - 427 - 26 - 427 - 427 - 427 - 26 - 427 - 427 - 26 - 427 - 27 - 27 - 27 - 27 - 27 - 27 - 27 -
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18 18 18 18 18 10 growt-tK InrelatK InpremK ingerd FD k_inov financ~n op fdiopen eugini eurodumm	1000 1000 t t \$id { betweer within overall overall).00 klist Mean 70282 22184 355921 355921 355921 355921 10127 356405 356405 35204 399102 25057 23077	11111111 xxxxxxxxx 5td. Dev .0643164 .0147827 .062712 .422205 .3102913 .1569219 .3796331 .3111824 .2250647 2.135548 .3305817 .2175712 .2125641 .0672352 .0470199 .030734 .0362544 .0362544 .8017374 .6266156 .5328385 .6537566 .5231262 .532835 .6537566 .5231262 .521520 .521522 .521520 .221542 .0221542 .6221542 .6221542 .6221542 .622542 .6221542 .622542 .622542 .6221542 .622542 .6221542 .622542 .6221542 .6221542 .622542 .622154 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .6221544 .622154 .6221544 .622154 .6221544 .622154 .6221544 .624154 .6251544 .645444 .645444 .64544 .64544 .64544 .645444 .6454444 .6454444 .6454444	Mi 836213 836213 03652 80471 1.954260 .54239 954260 .54239 2.86217 4.12711 5.57309 .20445 .218439 .228411 .010936 .031592 01400 -1.226429 125409 1254	n Max 4 .5429745 5 .0265513 2 .5359717 3 .346412 1 2.99562 9 .9026513 2 .3142471 2 .491018 2 .16.0847 6 1.02258 8 .670162 9 .9006572 8 .670162 9 .9006572 4 .54296267 1 .4426328 2 .2321955 3 .344742 3 .122231 1 .249571 3 .122231 1 .3120137 1 .3120137 1 .31252927 1 .4635292 2 .1532992 0 1 2 .8461538 2 .8461538	N - T-bar - N - T - N	 465 2 25.833 25.833 26.63 18 26 468 23.7222 4705 488 24.055 433 24.055 450 23.7222 420 18 24.055 468 26 25.6111 468 18 26.611 468 18 26 468 <
18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 18 19 10 10 10 10 10 10 10 11 11 11 11 11 11 11 11 11 11 11 11 11 12 12 13 14 15 15 16 16 17 16 17 16 17 16 17 16	10(0 10(0 t \$id { overall betweer within overall overa).00 klist Mean 70282 22184 355921 355921 355921 355921 10127 356405 356405 35204 399102 25057 23077	11111111 xxxxxxxxx 5td. Dev 0643164 0147827 .062712 422285 4022183 .156912 .3796331 .311824 .2250647 2.15568 .5305817 2.15548 .5305817 .215542 .212684 .0367244 .0362544 .8017374 .6206156 .5328385 .6537506 .6281746 .2321872 .571566 .2321872 .571566 .2321872 .571566 .2321872 .571566 .2321872 .571567 .2251203 .477895 .0221542 .0221542 .4260233 .225844	Mi 836213 836213 03652 80471 1.954260 .54239 954260 .544239 2.86217 4.12711 5.57309 .20445 .218439 .228411 .010936 .031592 01400 -1.226429 125409 125	n Max 4 .5429745 5 .0265513 2 .5359717 3 .346412 1 2.99562 9 .9026513 2 .3142471 2 .491018 2 .16.0847 6 1.02258 8 .670162 9 .9006572 8 .670162 9 .9006572 4 .54296267 1 .4426328 2 .2321955 3 .344742 3 .122231 1 .249571 3 .122231 1 .3120137 1 .3120137 1 .31252927 1 .4635292 2 .1532992 0 1 2 .8461538 2 .8461538	N - N - T - bar - N - T - N - N - T - N - N - T - N - N - T - N -	465 1 2 4 2 2 2 2 2 2 2 2 2

. test	parm i.year
(1)	1007
(1) (2)	1997.year = 0 1998.year = 0
(2)	1990.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2004.year = 0
(9)	2005.year = 0
(10)	2006.year = 0
(11)	2007.year = 0
(12)	2008.year = 0
(13)	2009.year = 0
(14)	2010.year = 0
(15)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
(20) (21)	2016.year = 0 2017.year = 0
(21)	Constraint 3 dropped
	Constraint 4 dropped
	Constraint 6 dropped
	Constraint 8 dropped
	Constraint 8 dropped Constraint 16 dropped
	Constraint 16 dropped
	Constraint 16 dropped F(16, 16) = 2.83
	Constraint 16 dropped
. test	Constraint 16 dropped F(16, 16) = 2.83
. test (1)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225
	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou
(1)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 17.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 18.cou = 0 18.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 17.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 17.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped
<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)</pre>	Constraint 16 dropped F(16, 16) = 2.83 Prob > F = 0.0225 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0

Fixed over pooled OLS

F(12, 16) = 5987.45 Prob > F = 0.0000

Breusch and Pagan Lagrangian multiplier test for random effects

growthrelatK[cou,t] = Xb + u[cou] + e[cou,t]

Estimated results:	Var	sd = sqrt(Var)
growthr~K e u	.0019901 .0016593 0	.04461 .0407342 0
Test: Var(u) = () <u>chibar2(01)</u> Prob > chibar2	

random effects over pooled OLS

hausman	fixed	random

	Coeffi	cients		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.lnrelatK	0774403	0234378	0540024	.0180779
L.lnpremK	0021201	002046	0000741	.0101831
lngerd	0271204	.0037966	0309169	.0085874
FD	.0273808	0254718	.0528527	.0390547
k_inov	0711194	0533714	017748	.044527
financialn	0115984	0113744	000224	.0037965
op fdiopen	.0724478	.0155789	.0568689	.0198265
	.1760653	.2062786	0302134	.0453604
eugini eurodumm	.1/60653	.0122695	0302134	0034458
crisisdumm	008431	0130151	.0045842	.0045708
в				; obtained from xtree ; obtained from xtree
Test: Ho:	difference i	n coefficients	not systematic	
		(b-B) "[(V_b-V_ 32.65	B)^(-1)](b-B)	
	= Prob>chi2 =	0.0006 not positive d	- 41 - 14 - 1	
	(V_D=V_B 15	not positive d	efinite)	
. hausman fixe	ad random,sigma	more		
	Coeffi			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.lnrelatK	0774403	0234378	0540024	.0187544
L.lnpremK	0021201	002046	0000741	.0106791
lngerd	0271204	.0037966	0309169	.0088934
FD	.0273808	0254718	.0528527	.040753
k_inov	0711194	0533714	017748	.0479311
inancial_~n	0115984	0113744	000224	.0040361
op	.0724478	.0155789	.0568689	.0205509
fdiopen	0060316	0093312	.0032996	.0032713
eugini	.1760653	.2062786	0302134	.0538682
eurodumm	.0129101	.0122695	.0006406	.0040098
crisisdumm				
в				<pre>v obtained from xtree v obtained from xtree</pre>
Test: Ho:	difference i	n coefficients	not systematic	
	chi2(11) =	(b-B) "[(V_b-V_ 35.90	B)^(-1)](b-B)	
	Prob>chi2 =	0.0002		
. hausman fixe	ed random, sigm	aless		
		cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnrelatK	0774403	0234378	0540024	.0181483
L.lnpremK	0774403	0234378	0540024	.0181483
L.lnpremK lngerd	0774403 0021201 0271204	0234378 002046 .0037966	0540024 0000741 0309169	.0181483 .010334 .008606
L.lnpremK lngerd FD	0774403 0021201 0271204 .0273808	0234378 002046 .0037966 0254718	0540024 0000741 0309169 .0528527	.0181483 .010334 .008606 .0394361
L.lnpremK lngerd FD k_inov	0774403 0021201 0271204 .0273808 0711194	0234378 002046 .0037966 0254718 0533714	0540024 0000741 0309169 .0528527 017748	.0181483 .010334 .008606 .0394361 .0463822
L.lnpremK lngerd FD k_inov Sinancial_~n	0774403 0021201 0271204 .0273808 0711194 0115984	0234378 002046 .0037966 0254718 0533714 0113744	0540024 0000741 0309169 .0528527 017748 000224	.0181483 .010334 .008606 .0394361 .0463822 .0039057
L.lnpremK Ingerd FD k_inov Sinancialn op	0774403 0021201 0271204 .0273808 071194 0115984 .0724478	0234378 002046 .0037966 0254718 0533714 0113744 .0155789	0540024 0000741 0309169 .0528527 017748 000224 .0568689	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868
L.lnpremK lngerd FD k_inov financialn op fdiopen	0774403 0021201 0271204 .0273808 0711194 0115984 .0724478 0060316	0234378 002046 .0037966 0254718 0533714 0113744 .0155789 0093312	0540024 0000741 0309169 .0528527 017748 000224 .0558689 .0032996	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868 .0031656
L.lnpremK lngerd FD k_inov inancialn op fdiopen eugini	0774403 0021201 0271204 .0273808 0711194 0115984 .0724478 0060316 .1760653	0234378 002046 .0037966 0254718 0533714 0113744 .0155789 0093312 .2062786	0540024 0000741 0309169 .0528527 017748 000224 .0568689 .0032996 0302134	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868 .0031656 .0521275
L.lnpremK lngerd FD k_inov financialn op fdiopen	0774403 0021201 0271204 .0273808 0711194 0115984 .0724478 0060316	0234378 002046 .0037966 0254718 0533714 0113744 .0155789 0093312	0540024 0000741 0309169 .0528527 017748 000224 .0558689 .0032996	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868 .0031656
L.lnpremK lngerd FD k_inov financial_~n op fdiopen eugini eurodumm	0774403 0021201 0271204 .0271308 0711194 0115984 .0724478 0060316 .1760653 .0129101 008431	0234378 002046 .0037966 0254718 013744 .0113744 .0155789 0093312 .2062786 .0122695 0130151	0540024 000741 0309169 .0528527 017748 000224 .0568689 .032996 0302134 .0006406 .0045842	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868 .0031656 .0521275 .0038802 .0038802 .0047537
L.lnpremK lngerd FD k_inov financialn op fdiopen eugini eurodumm crisisdumm	0774403 0021201 0271204 .0273808 0711194 0115984 .0125984 0060316 .1760653 .0129101 008431	0234378 002046 .0037966 0254718 0533714 .0153789 0093312 .2062786 .0122695 0130151 = consistent	0540024 0000741 0309169 .0528527 017748 000224 .058689 .032996 0302134 .0006406 .0045842 under Ho and Ha	.0181483 .010334 .008606 .0394361 .0463822 .0039057 .0198868 .0031656 .0521275 .0038802 .0047537 .0038802
L.lnpremK lngerd FD k_inov financialn op fdiopen eugini eurodumm crisisdumm	0774403 0021201 0271204 .0271204 .0711194 0115984 .0724478 0060316 .1760653 .0129101 008431 b = inconsistent : difference i	0234378 002046 .0037966 0254718 0533714 013374 0.0155789 0093312 .2062786 .0122695 0130151 = consistent under Ha, eff	0540024 0000741 0309169 .0528527 017748 00224 .0056069 .0322996 0302134 .0006406 .0045842 under Ho and Ha icient under Hc not systematic	.0181483 .010334 .008606 .0394361 .04643822 .0039057 .0138668 .0031656 .0031656 .0031856 .0038802 .0038802 .0038802 .0038802 .0038802 .0047537
L.lnpremK lngerd FD k_inov financialn op fdiopen eugini eurodumm crisisdumm	0774403 0021201 0271204 .0273208 0711194 0115984 015984 0060316 .1760653 .0129101 008431 b = inconsistent : difference i chi2(11) =	0234378 002046 .0037966 0254718 0333714 0113744 .0155789 0093312 .2062786 .0122695 0130151 = consistant under Ha, eff n coefficients (b-B)*[(V_b-V_	0540024 0000741 0309169 .0528527 017748 00224 .0056069 .0322996 0302134 .0006406 .0045842 under Ho and Ha icient under Hc not systematic	.0181483 .010334 .008606 .0394361 .04643822 .0039057 .0138668 .0031656 .0031656 .0031856 .0038802 .0038802 .0038802 .0038802 .0038802 .0047537
L.lnpremK Ingerd FD k_inov inancialn op fdiopen eugini eurodumm crisisdumm	0774403 0021201 0271204 .0271204 .0711194 0115984 .0724478 0060316 .1760653 .0129101 008431 b = inconsistent : difference i	0234378 002046 .0037966 0254718 0333714 .0137744 .0155789 0093312 .2062786 .0122695 0130151 = consistent under Na, eff n coefficients (b=B) {(v_b-v_ 38.34-v_)}	0540024 0000741 0309169 .0528527 017748 00224 .0056069 .0322996 0302134 .0006406 .0045842 under Ho and Ha icient under Hc not systematic	.0181483 .010334 .008606 .0394361 .04643822 .0039057 .0138668 .0031656 .0031656 .0031856 .0038802 .0038802 .0038802 .0038802 .0038802 .0047537

Fixed over random

Depended variable: ΔpremK

$$\begin{split} \Delta q_{K_{it}} &= a_{1it} + a_2 L. relat K_{it} + a_3 invest \ in \ R \& D_{it} + a_4 capital \ innovation \ ratio_{it} \\ &+ a_5 financial \ oppenness_{it} + a_6 trade \ openness_{it} + a_7 fdi \ oppenness_{it} \\ &+ a_8 convergence_{it} + a_9 financial \ development_{it} + a_{10} euro \ dummy_{it} \\ &+ a_{11} 2008 \ crisis \ dummy_{it} + b_i + u_{it} \end{split}$$
 (7.3.3.3)

. describe \$id \$t \$ylist \$xlist

growthpre		ype for	mat labe	e var:	iable label		
		ouble %10			√thpremK		
lnrelatK lnpremK		ouble %10 ouble %10		lnre lnpi	elatK cemK		
lngerd	d	ouble %10	.0g	lnge			
FD k inov		ouble %10 ouble %10		FD k in	nov		
financial	_open d	ouble %10	.0g	fina	ancial_open		
op fdiopen		ouble %10 ouble %10		op fdia	nen		
eugini	d	ouble %10	.0g	eug	ini		
eurodumm crisisdum		yte %10 vte %10			odumm sisdumm		
		t Şylist	-	CII	SISCUMUM		
Varia		Obs	Mean	Std. Dev.	Min	Max	
growthpr	remK	458	.0094547	.1739107	7347902	.7700615	
lnrel		468			1.563131		
lnpr lng	gerd	468 433	1.585921 7.54516		1074219 2.882172		
	FD	450	.5361626	.2175712	.1004459	.9006572	
k i	inov	427	.0810127	.0470199	.0109361	.4950667	
financial	_~n	420	1.966405	.8017374	-1.226155	2.321955	
fdic	op	468 461			.3710993 6764844		
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eurod crisisd		468 468	.6923077	.4620323	0	1	
. xtdescr					·	· ·	
	3, 5,	22			_	=	18
		, 23 1996,,	2020			=	26
	Delta(year) = 1	year				
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Distribut	ion of "	j. mir	5%	25%	50% 75%	95%	max
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Freq	1. Perce	nt Cum.	Pattern				
18	3 100.	00 100.00	11111111	.11111111111	11111111		
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. xtsum \$	St \$id \$y	list \$xlis	t				
Variable		Mea	n Std. Dev	7. Mir	n Max	Obsei	rvations
growt~mK		.009454	7 .1739107	7 - 7347903			
	between					N =	
	within			50311950	.0466506	n =	18
	within		.1730391	50311950 L7399868	.0466506 .7648649	n = T-bar =	18 25.4444
	overall	2.49218	.1730391	50311950 L7399868 5 1.563133	6 .0466506 8 .7648649 1 3.579892	n = T-bar = N =	18 25.4444 468
		2.49218	.1730391 4 .4222285 .4029183	50311950 17399868 5 1.563133 3 1.681473	.0466506 .7648649	n = T-bar =	18 25.4444 468 18
	overall between within		.1730391 4 .4222285 .4029183 .1569219	0311956 7399868 1.563133 1.681473 1.993743	5 .0466506 3 .7648649 1 3.579892 3 .346412 1 2.985862	n = T-bar = N = n = T =	18 25.4444 468 18 26
lnpremK	overall between within overall	2.49218	. 1730391 4 . 4222285 . 4029183 . 1569219 1 . 3796331	 0311956 7399868 1.563132 1.681472 1.993742 1074219 	 .0466506 .7648649 .579892 .346412 .985862 .142471 	n = T-bar = N = T = N =	18 25.4444 468 18 26 468
lnpremK	overall between within		.1730391 4 .4222285 .4029183 .1569219 1 .3796331 .3111824	 0311956 7399868 1.563132 1.681472 1.993742 1074219 	5 .0466506 .7648649 1 3.579892 3 3.346412 2.985862 9 3.142471 3 2.237374	n = T-bar = N = n = T =	18 25.4444 468 18 26
lnpremK	overall between within overall between within	1.58592	.1730391 4 .4222285 .4029183 .1569219 1 .3796331 .3111824 .2290647	 0311950 7399868 1.563133 1.681473 1.993743 1074214 9542603 .5242393 	5 .0466506 .7648649 1 3.579892 3 3.346412 2.985862 9 3.142471 3 2.237374 1 2.491018	n = T-bar = N = T = N = n = T =	18 25.4444 468 18 26 468 18 26
lnpremK lngerd	overall between within overall between within	1.58592	.1730391 4 .422285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.150039	 0311956 7399864 1.563133 1.681477 1.993741 1074214 9542603 .5242392 2.882172 	5 .0466506 .7648649 1 3.579892 3 3.346412 2.985862 9 3.142471 3 2.237374	n = T-bar = N = T = N = N = n =	18 25.4444 468 18 26 468 18 26 433
lnpremK lngerd	overall between within overall between within overall	1.58592	.1730391 4 .4222285 .4029183 .1569219 1 .3796333 .3111824 .2290647 6 2.150039 2.135548	 0311956 7399866 1.563133 1.681473 1.993743 1074214 .9542603 .5242393 2.882172 4.127116 	 .0466506 .7648649 .7648649 .3.579892 .3.346412 2.985862 3.142471 2.237374 2.491018 11.60847 	n = T-bar = N = T = N = T = N = N = N = n =	18 25.4444 468 18 26 468 18 26 433
lnpremK lngerd	overall between within overall between within overall between within	1.58592 7.5451	.1730391 4 .422285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.150039 2.135546 .5305817	 0311954 7399863 1.563133 1.681472 1.993742 1074219 9542602 7.5242392 2.882172 4.127114 7.5573094 	 .0466506 .7648649 3.579892 3.346412 2.985862 3.142471 2.237374 2.491018 11.60847 11.07295 8.670162 	n = T-bar = N = T = N = T = N = N = n = T = T =	18 25.4444 468 18 26 468 18 26 433 18 24.0556
lnpremK lngerd FD	overall between within overall between within overall between	1.58592 7.5451	.1730391 4 .4222285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.150035 2.135546 .5305817 6 .2175712	 0311954 7399863 1.563133 1.681472 1.993742 1074219 9542602 7.5242392 2.882172 4.127114 7.5573094 	 .0466506 .7648649 .3.579892 .3.346412 2.985862 3.142471 2.237374 2.437018 11.60847 11.07295 8.670162 .9006572 	n = T-bar = N = T = N = T = N = N = N = n =	18 25.4444 468 26 468 18 26 433 18 24.0556 450
lnpremK lngerd FD	overall between within overall between within overall between within overall	1.58592 7.5451	.1730391 4 .4222285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.150035 2.150354 .5305817 6 .2175712 .2126841	 0311954 7399861 1.563133 1.681477 1.993743 1.993743 074213 .542600 .5242393 2.882177 4.127114 5.573094 2.1004455 	 .0466506 .7648649 .3579892 .3.346412 2.98562 3.142471 2.237374 2.491018 11.60847 11.60847 8.670162 .9006572 .8086902 	n = T-bar = N = T = N = n = T = N = n = T = N = N =	18 25.4444 468 26 468 18 26 433 18 24.0556 450 18
lnpremK lngerd FD	overall between within overall between within overall between within	1.58592 7.5451 .536162	.1730391 4 .4222285 .4029183 .1569219 1 .3796333 2.1311824 .2290647 6 2.150039 2.135546 .5305817 6 .2175712 .2126841 .0672352	 0311954 7399861 7399863 1.563133 1.681472 1.993742 1.993742 1074212 9.5242602 .5242393 2.882177 4.127114 5.573094 .1004453 .2183942 .2284112 	 .0466506 .7648649 .3,579892 .3,346412 2,985862 3,142471 2,237374 2,491018 11,60847 11,07295 8,670162 .9006572 .8086902 .6877019 	n = T-bar = N = T = T = N = T = N = T = N = T = N = n =	18 25.4444 468 18 26 468 26 433 18 24.0556 450 18 25
lnpremK lngerd FD k_inov	overall between within overall between within overall between within overall between	1.58592 7.5451 .536162	.1730391 4 .4222285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.155045 2.155045 6 .2175712 .2126841 .0672352 7 .0470195	 0311954 7399861 7399863 1.563133 1.681472 1.993742 1.993742 1074212 9.5242602 .5242393 2.882177 4.127114 5.573094 .1004453 .2183942 .2284112 	 .0466506 .7648649 .7648649 .3,579892 .3,346412 2,985862 3,142471 2,237374 2,491018 11,60847 11,07295 8,670162 .9006572 8086902 .6877019 .4950667 .474466 	n = T-bar = T-bar = T n = T T = T	18 25.4444 468 18 26 468 18 26 433 18 24.0556 450 18 25 427 18
lnpremK lngerd FD k_inov	overall between within overall between within overall between within overall	1.58592 7.5451 .536162	 .1730391 .4 .4222285 .4029183 .1569219 .311824 .2290647 6 2.150035 2.135546 .5305817 6 .2175712 .2126841 .0672352 7 .0470199 .0307734 	 031195; 739986; 1.56313; 1.68147; 1.99374; 107421; .954260; .524239; 2.88217; 4.12711; 5.57309; 2.88217; 4.12711; 5.57309; 2.28411; .010936; 	 .0466506 .7648649 .7648649 .3,579892 .3,346412 2,985862 3,142471 2,237374 2,491018 11,60847 11,07295 8,670162 .9006572 8086902 .6877019 .4950667 .1474466 	n = T-bar = T-bar = T n = T T = T	18 25.4444 468 18 26 468 18 26 433 18 24.0556 433 18 24.0556 425
lnpremK lngerd FD k_inov	overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012	.1730391 4 .4222265 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 2.155045 2.15545 .5305817 6 .2175712 .2126841 .0672352 7 .0470199 .0307734 .0362544	5031195, 739986 5 1.56313 3 1.68147; 9 1.99374 4 .954260; 7 .524239; 9 2.88217; 8 4.127114 7 5.573094 2 .21839; 2 .21839; 2 .228411; 9 .010936; 4 .031592; 401404	 .0466506 .7648649 .7648649 .3,579892 .3,346412 2,985862 3,142471 2,237374 2,491018 11,60847 11,07295 8,670162 .9006572 8086902 .6877019 .4950667 .1474466 	n = T-bar = T-bar = T n = T T = T	18 25.4444 468 18 26 468 26 468 26 433 18 24.0556 450 18 25 427 18 23.7222
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lnpremK lngerd FD k_inov financ~n	overall between within overall between within overall between within overall between within overall	1.58592 7.5451 .536162 .081012	 .1730391 .4 .422285 .4029183 .1569219 .311824 .229647 6 2.155032 .2125546 .5305817 6 .2175712 .2126841 .0672352 7 .0470198 .0307734 .0362544 5 .8017374 .6206156 	 0311954 7399861 7399863 1.563133 1.681477 1.993742 .9524203 .5242392 2.882177 4.127114 5.573094 .1004451 .218394 .2284112 .0104654 .0315924 .014004 -1.226155 	5 .0466506 .7648649 1 3.579892 3 3.346412 2 9.8562 3 3.142471 2 2.98562 3 3.142471 2 2.37374 2 4.91018 2 11.60847 5 8.670162 9 .9006572 8.0806902 .6877019 1 .4950667 9 .1474466 5 .4286328 5 2.321955 2.321955	n = T-bar = N = T = N = T = N = T = N = T = N = T = N = T = N = N = N = N = N = N = N = N =	18 25.4444 468 18 26 468 18 26 433 18 24.0556 450 18 25 427 18 23.7222 420
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lnpremK lngerd FD k_inov financ~n op fdiopen	overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910	 .1730391 .4 .422285 .4029183 .1569219 .3796331 .3111824 .2290647 6 2.150035 2.135546 .5305817 6 .2175712 .2126841 .0672352 7 .0470199 .0307734 .0362544 5328385 4 .6537506 .6537506 .6281744 .2321872 2 .5714506 .3251203 .477895 	 0311954 7399861 7399861 1.563133 1.681473 1.993743 1074214 9542603 .5242393 2.882172 4.127114 5.573094 .218394 	5 .0466506 .7648649 3.579892 3.346412 2.985862 9 3.142471 2.237374 2.491018 2 11.60847 11.07295 8.670162 9 9.006572 9.006572 9.006572 2.080502 2.080502 2.028532 2.321955 2.321955 2.321955 3.44746 3.122083 7 2.146352 4.5813815 1.316872 4.687854	n = T-bar = T = T = T = T = T = T = T = T = T =	18 25.4444 468 18 26 433 18 24.0556 450 17 23.7222 420 17 24.7059 468 18 26 461 18 25.6111
lnpremK lngerd FD k_inov financ~n op fdiopen eugini	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520	 .1730391 .4 .4222285 .4029183 .1569219 .3796333 .111824 .220647 6 2.150035 .2175712 .2126841 .0672352 .0307734 .0362544 .6231746 .6231746 .221872 .5714506 .3251200 .477892 7 .0221542 	 031195; 7399861 7399863 1.56313; 1.993741 1074211 .9542600; .5242391 2.88217; 4.127111 .573091 .218392 .2284112 .0109362; .0109362; .0109362; .0109362; .0109362; .0109362; .0109362; .0109362; .3286934 .3710992; .1255402; .1255402; .1255402; .1255402; .1255402; .1255402; .1465012; .0434833; 	5 .0466506 .7648649 .3579892 3.346412 2.98562 3.142471 2.237374 2.491018 2.1.60847 1.1.60847 1.1.07295 8.670162 9.9006572 .8086902 .6877019 1.4950667 9.1474466 2.321955 2.321955 3.44742 3.121083 4.122231 3.1210835 4.513815 4.368784 1.316872 4.687854 2.1532992	n = T-bar = 0 T-bar = 0 n = T = 0 T =	18 25.4444 468 18 26 468 26 433 18 24.0556 450 18 25 420 17 24.7059 468 26 420 17 24.7059 468 26 420 17 24.7059 468 26 25.6111
lnpremK lngerd FD k_inov financ~n op fdiopen eugini	overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910	 .1730391 .4 .422285 .4029183 .1569219 .1569219 .311824 .2290647 6 2.150032 .135546 .5305817 6 .2175712 .0470199 .0307734 .0362544 5.328385 4 .6537506 .6281746 .2321872 2 .5714506 .3251203 .477895 7 .0221542 	 0311954 7399861 7399861 1.563133 1.681473 1.993743 1074214 9542603 .5242393 2.882172 4.127114 5.573094 .218394 	5 .0466506 .7648649 .3579892 3.346412 2.98562 3.142471 2.237374 2.491018 2.11.60847 11.07295 3.8670162 9.9006572 .8086902 .6877019 1.474466 .4286328 2.21955 3.412231 3.121083 7.2.146352 4.5.813815 4.122231 3.121083 7.146352 4.5.813815 1.316872 4.687854 2.1552992 7.1125057	n = T-bar = T = T = T = T = T = T = T = T = T =	18 25.4444 468 18 26 468 18 26 433 18 24.0556 433 24.0556 25 427 18 23.7222 420 17 24.7059 468 18 26 461 18 25.6111 18
lnpremK lngerd FD k_inov financ~n op fdiopen eugini	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910 .112505	 .1730391 .4 .4222285 .4029183 .1569219 .311824 .2290647 6 2.150033 2.135546 .5305817 6 .2175712 .2126841 .0672352 .0307734 .0362544 .6231760 .6281746 .2321872 2.5714506 .3251200 .477895 7 .0221542 .0221542 	5 031195; 739986; 5 1.56313; 5 1.68147; 9 9.9374; 1 954260; 7 .524239; 9 2.88217; 4 .57309; 2 .100445; 2 .100445; 2 .100445; 2 .010936; .010936; .010936; .010936; .31592; - .010036; .315429; .010936; .315429; .328693; 5 .3516259; 2 .12555; 2 .12540; 5 .043483; 012540; .043483;	5 .0466506 .7648649 3 .579892 3 .346412 2 .98562 3 .142471 2 .298562 3 .142471 2 .237374 2 .491018 2 11.60847 5 11.07295 8 .670162 9 .9006572 .8086902 .6877019 1 .4950667 .1474466 5 2.321955 3 .44742 3 .121083 7 .146352 4 .1316872 4 .687854 2 .1532992 7 .1125057 .1532992 .1532992	n = T-bar = N = n = T = T	18 25.4444 468 18 26 433 18 24.0556 427 18 23.7222 420 18 23.7222 420 18 23.7222 420 18 23.7222 420 18 23.7222 420 18 25 421 18 26 461 18 26 461 18 26 461 18 26 468 18 26 468 18 26 468 18 26 450 18 27 26 26 450 18 26 26 450 18 26 26 26 450 18 26 26 26 26 26 26 26 26 26 26 26 26 26
lnpremK lngerd FD k_inov financ~n op fdiopen eugini eurodumm	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910 .112505	 .1730391 .4 .422285 .4029183 .1569219 .1569219 .311824 .2290647 6 2.150032 .135546 .5305817 6 .2175712 .0470199 .0307734 .0362544 5.328385 4 .6537506 .6281746 .2321872 2 .5714506 .3251203 .477895 7 .0221542 	5 031195, 739986 5 1.56313, 3 1.68147, 9.9974 .954260, 7 .524239, 9 2.88217, 3 4.127114, 7 5.57309, 2 .88217, 3 4.127114, 7 5.57309, 2 .21839, 2 .228411, 9 .010936, 1 .013592, 1 01400, 4 -1.22615, 5 .315429, 5 .315429, 5 .516259, 2 .12540, 5 67648,4 .012540, .146501, 5 .043483, .12505, .043483, .12505, .043483, .12505, .043483,	5 .0466506 .7648649 3 .579892 3 .346412 2 .98562 9 .3.142471 3 .2.237374 2 .491018 2 .11.60847 11.07295 8 .670162 9 .9006572 9 .9006572 9 .9006572 9 .0906572 9 .0906572 9 .0906572 9 .0906572 9 .4950667 9 .1474466 5 .4286328 5 .2.321955 3 .34742 3 .121083 7 .146352 4 .122231 3 .121083 7 .146352 4 .13168754 4 .5813815 4 .13168754 4 .1532992 2 .11532992 0 1	n = T-bar = T = T = T = T = T = T = T = T = T =	18 25.4444 468 18 26 433 18 24.0556 433 24.0556 427 18 23.7222 420 17 24.7059 468 18 26 461 18 25.6111 468 18 26 461
lnpremK lngerd FD k_inov financ~n op fdiopen eugini eurodumm	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910 .112505	 .1730391 .4 .422285 .4029183 .1569219 .1569219 .3796333 .2135546 .5305817 6 .2175712 .2126841 .0307734 .0362544 .6337506 .6281746 .2321872 .5714506 .3251203 .47789 7 .0221542 .0221542 .2258141 	5 031195, 739986 5 1.56313, 3 1.68147, 9.9974 .954260, 7 .524239, 9 2.88217, 3 4.127114, 7 5.57309, 2 .88217, 3 4.127114, 7 5.57309, 2 .21839, 2 .228411, 9 .010936, 1 .013592, 1 01400, 4 -1.22615, 5 .315429, 5 .315429, 5 .516259, 2 .12540, 5 67648,4 .012540, .146501, 5 .043483, .12505, .043483, .12505, .043483, .12505, .043483,	5 .0466506 .7648649 3.579892 3.346412 2.985862 9 3.142471 2.237374 2.491018 2 1.60847 1.07295 8.670162 9 9.006572 9.006572 9.006572 9.006572 9.206572 9.321955 2.321955 2.321955 3.44742 3.4122231 3.121083 7 1.316872 4.687854 1.316872 4.687854 1.312083 7 1.125057 1.125057 1.125057 1.532992 1 2 1 2 1 2 3.532992 1 2 3.461538	n = T-bar = N = T = T = T = T = T = T = T = N = T = N = T = N = T	18 25.4444 468 18 26 433 18 24.0556 450 18 25 427 18 23.7222 420 17 24.7059 468 26 26 450 17 24.7059 468 18 26 461 18 26 461 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 18 26 468 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 26 450 18 27 26 26 26 26 26 26 26 26 26 26 26 26 26
lnpremK lngerd FD k_inov financ~n op fdiopen eugini eurodumm	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910 .112505 .692307	. 1730391 4 .422285 .4029183 .1569219 1 .3796331 .3111824 .2290647 6 .2.150035 2.135546 .5305817 6 .2175712 .0307734 .03672352 7 .0470199 .0307734 .0362544 5 .8017374 .6206156 .5328385 4 .6537506 .6231746 .2321872 2 .5714506 .3251200 .477895 7 .0221542 7 .0221542 7 .4620323 .2258141 .4064624	5 031195, 739986 5 1.56313, 3 1.68147, 9.9974 .954260, 7 .524239, 9 2.88217, 3 4.127114, 7 5.57309, 2 .88217, 3 1.104451, 2 .100452, 2 .21839, 2 .228411, 9 .010936, 1 .0122641, 9 .315429, 2 .516259, 2 .129540, 5 .676484, .012540, 5 .043483, .112505, .043483, .12552, .043483, .1230769, .13846,	5 .0466506 .7648649 3.579892 3.3346412 2.98562 9 9 12.237374 2.491018 2 11.60847 11.07295 8.670162 9 9 9 9 142471 11.07295 8.670162 9 9 9 9 147456 5 2.321955 3 4 3.121083 7 1.316872 4 4.687854 1.316872 4.687854 1.32992 11.32697 1.532992 12 .8461538 1.461538	n = T-bar = T = T = T = T = T = T = T = T = T =	18 25.4444 468 18 26 433 18 24.0556 450 18 25 427 18 23.7222 420 17 24.7059 468 18 26 461 18 25.6111 468 18 26 461 18 25.6111
lnpremK lngerd FD k_inov financ~n op fdiopen eugini eurodumm crisis~m	overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within	1.58592 7.5451 .536162 .081012 1.96640 1.14520 .190910 .112505 .692307	 .1730391 .4 .422285 .4029183 .1569219 .1569219 .3796333 .2135546 .5305817 6 .2175712 .2126841 .0307734 .0362544 .6337506 .6281746 .2321872 .5714506 .3251203 .47789 7 .0221542 .0221542 .2258141 	5 031195; 739986; 739986; 5 1.56313; 1.954260; 7 .524239; 9 2.88217; 4 .12711; 7 .557309; 2 .88217; 4 .12711; 7 .557309; 2 .100445; 2 .100445; 2 .100445; 2 .010936; 3 .010936; 3 .315429; 5 .315429; 6 014001; 6 12555; 2 .012540; 5 .043483; 6 200769; 2 .043483; 9 .043483; 9 .230769; 1.230769; .230769; 1.230764; 153846; 6 230769;	5 .0466506 .7648649 .3,579892 3 .346412 2 .985862 3 .142471 2 .298582 3 .142471 2 .237374 2 .491018 2 .160847 1 .07295 9 .9006572 .8080902 .6877019 1 .4950667 9 .1474466 5 2.321955 3 .4122231 3 .121083 7 .146352 4 .5132992 1 .1532992 2 .1532992 1 .8461538 1 .461538 1 .461538 1 .461538 1 .461538 1 .461538 1 .5	n = T-bar = N = T = N = T = N = T = N = N = N = N = T = N = T = N = T = N = T = N = T = N = T = N = N = T = N = N = N = N = T = N = N = N = N = T = N	18 25.4444 468 18 26 433 24.0556 450 18 25 427 18 23.7222 420 17 24.7059 468 26 26 450 17 24.7059 468 18 26 461 18 26 468 18 26 468 26 468 26 468 26 26 26 26 26 26 26 26 26 26 26 26 26

. testparm i.year

(1)	1997.year = 0
	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2004.year = 0
(9)	2005.year = 0
(10)	2006.year = 0
(11)	2007.year = 0
(12)	2008.year = 0
(13)	2009.year = 0
(14)	2010.year = 0
(15)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
	-
(20)	2016.year = 0
(21)	2017.year = 0
	Constraint 4 dropped
	Constraint 6 dropped
	Constraint 7 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	F(16, 16) = 4.81
	Prob > F = 0.0016
tost	parm i.cou
. test	parm r.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	
	17 200 - 0
(12)	17.cou = 0
(13)	18.cou = 0
	18.cou = 0 20.cou = 0
(14)	18.cou = 0
(14) (15)	18.cou = 0 20.cou = 0
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0
	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped
(15)	<pre>18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 12 dropped F(12, 16) = 371.81</pre>
(15)	18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 12 dropped Constraint 16 dropped

Fixed effects over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

<pre>growthpremK[cou,t] = Xb + u[cou] + e[cou,t</pre>				
Estimated results:				
	Var	sd = sqrt(Var)		
growthp~K	.025888	.1608975		
e	.0200997	.1417735		
u	0	0		
Test: Var(u) = ()			
	<u>chibar2(01)</u>	= 0.00		
	Prob > chibar2	= 1.0000		

Random over pooled OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnrelatK	.2718094	0141006	.2859101	.062482
L.lnpremK	4637285	1394761	3242523	.0344906
lngerd	.0504847	0074152	.0578999	.0297726
FD	0271134	.0573094	0844229	.133541
k_inov	5214121	2883152	233097	.1428052
financial_~n	0530031	0017071	0512959	.0125105
op	.2509975	.0490111	.2019864	.0686307
fdiopen	.0190462	0231929	.0422391	.0091548
eugini	.1657873	.5667723	400985	.1036869
eurodumm	.030484	.0329597	0024757	.0086869
crisisdumm	091309	0450159	046293	.0147115

 \mbox{b} = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 92.20 Prob>chi2 = 0.0000 (V_b-V_B is not positive definite)

. hausman fixed random, sigmamore

	Coeffi			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnrelatK	.2718094	0141006	.2859101	.0688559
L.lnpremK	4637285	1394761	3242523	.0392079
lngerd	.0504847	0074152	.0578999	.0326518
FD	0271134	.0573094	0844229	.1496229
k_inov	5214121	2883152	233097	.175977
financial_~n	0530031	0017071	0512959	.0148186
op	.2509975	.0490111	.2019864	.0754519
fdiopen	.0190462	0231929	.0422391	.0120106
eugini	.1657873	.5667723	400985	.1977748
eurodumm	.030484	.0329597	0024757	.0147217
crisisdumm	091309	0450159	046293	.018036

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 74.07 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

	(b) (b) fixed	Cients (B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.lnrelatK	.2718094	0141006	.2859101	.0631644
L.lnpremK	4637285	1394761	3242523	.035967
lngerd	.0504847	0074152	.0578999	.0299528
FD	0271134	.0573094	0844229	.1372554
k_inov	5214121	2883152	233097	.1614311
financial_~n	0530031	0017071	0512959	.0135937
op	.2509975	.0490111	.2019864	.0692152
fdiopen	.0190462	0231929	.0422391	.0110178
eugini	.1657873	.5667723	400985	.1814272
eurodumm	.030484	.0329597	0024757	.0135048
crisisdumm	091309	0450159	046293	.0165452

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 88.02 Prob>chi2 = 0.0000

Fixed over random

Depended variable: △ InequalityK

 $\Delta Inequality K_{it} = a_{1_{it}} + a_2 L. relat K_{it} + a_3 invest in R\&D_{it}$

- $+ a_4 capital innovation ratio_{it} + a_5 financial oppenness_{it}$
- $+ a_6 trade \ openness_{it} + a_7 f di \ oppenness_{it} + a_8 convergence_{it}$

(7.3.3.4)

- $+ a_9 financial development_{it} + a_{10} euro dummy_{it}$
- + $a_{11}2008 \ crisis \ dummy_{it} + b_i + u_{it}$

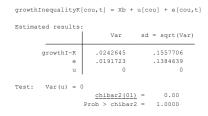
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Number of the second						cris	isdumm		
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batween .2258141 .2307692 .8461538 n = 18 within .4064624 1538462 1.461538 T = 26 is-m overall .5 .500535 0 1 N = 468 batween 0 .5 .5 n = 18	1 Artsum Aariable growt-yK inrelatK ingerd 7D tinanc-n yp	8 1000 000000000000000000000000000000000	1.00 10 1.10 10 1.11 10 1.15 10 1.15 10 1.15 10 1.15 10 1.15 10 1.15 10 1.15 10 1.11 10 1.11 10 1.11 10	xlist Mean 77396 92184 85921 54516 61626 10127 666405 45204 09102	2000000000 816. bay 1.77688 2.72681 2.77623 1.774031 2.1004 2.1	Him 599931.0000000 599931.0000000 0000000000 0000000000000 0000000000	Max 1 .470413 1 .470413 1 .470413 1 .422961 1 .422961 2 .48662 2 .48662 3 .472985 3 .474412 2 .485662 3 .474412 2 .439142 2 .233734 3 .4762018 6 .67012 1 .6085902 .4875047 .4875047 2 .4280138 2 .4280138 2 .4280138 2 .4280138 2 .4280138 2 .4280138 3 .427018 3 .4280138 3 .427018 3 .4280138 3 .4280138 3 .4280138 3 .4280138 3 .1204332 3	N = 0 n = 1 n	455 18 25,333 468 18 26 468 18 26 455 45 455 455 455 455 455 25,455 17 22 23,722 24,705 95 468 88 26 25,651 11 18 25,651 18 25,651 18 25,651 18 25,651 25,651 18 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,651 25,755 26,755 26,755 26,755 26,755 26,755 27,755 27,755 27,755 27,755 27,755 27,755 26,755 27,7555 27,7555 27,7555 27,7555 27,7555 27,7555 27,
within .4064624 1538462 1.461538 T = 26 sis-m overall .5 .500535 0 1 N = 468 between 0 .5 .5 n = 18	1 x xtsum rrowt-yK inrelatK ingerd rp rp c inov financ-n yp diopen sugini	8 1000 8 1000 overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin between vithin between vithin overall between vithin vithin overall between vithin	.00 10 .00 .00 .01 .01 .01 .01 .01 .01 .01	x11st Nean 77396 92184 85921 54516 61626 10127 666405 45204 09102 47732	200000000 81d. Bwy .011524 .01	HI HI 59981 59984 57368 57468	Max 1	N = 0 	456 18 25.3333 468 18 26 468 18 26 450 18 25 420 17 18 23.7222 420 17 18 23.7222 420 17 18 24.055 56 11 18 26 26 46 10 17 12 24.055 56 46 18 18 26 26 40 10 18 21 21 21 21 21 21 21 21 21 21 21 21 21
is-moverall .5 .500535 0 1 N = 468 between 0 .5 .5 n = 18	1 x xtsum rrowt-yK inrelatK ingerd rp rp c inov financ-n yp diopen sugini	8 100 8 100 8 100 00verall between within 00verall between within 00verall between within 00verall between within 00verall between within 00verall between within 00verall between within 00verall between within 00verall between within 00verall 00verall 00verall 00verall	.00 10 .00 .00 .00 .01 .01 .01 .01 .01 .01	x11st Nean 77396 92184 85921 54516 61626 10127 666405 45204 09102 47732	200000000 85d. bwv. -174641 -174641 -12	HII 90813 90813 90813 91844 91844 91844 91844 91844 91844 9184	Max 1 Max 1 Max 1 1.470415 1 1.470415 1 1.42191 1 1.42211 1 1.42211 2 1.98842 2 1.98842 1 1.62291 1 1.62291 2 1.162471 2 1.900572 1 1.62295 4 4.900572 2 4.922924 3 4.922955 3 1.92295 4 3.42721 3 3.922955 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 3 4.922943 4.94792 1.94772466 4.94792 <td>H = 1 H = 1 H</td> <td>455 18 18 26 465 18 18 18 18 24 24 55 433 18 18 24 25 455 18 18 22 455 17 17 17 17 17 18 18 22 455 18 18 18 18 18 22 455 18 18 18 18 18 18 18 18 18 18 18 18 18</td>	H = 1 H	455 18 18 26 465 18 18 18 18 24 24 55 433 18 18 24 25 455 18 18 22 455 17 17 17 17 17 18 18 22 455 18 18 18 18 18 22 455 18 18 18 18 18 18 18 18 18 18 18 18 18
between 0 .5 .5 n = 18	1 xtaum fariable rowt-yK npremK ngerd D inanc-n yp diopen ugini	8 100 0 verall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin verall between vithin verall between vithin verall between verall between verall between vithin verall between vithin verall between vithin verall between verall veral	.00 10 .00 .00 .00 .01 .01 .01 .01 .01 .01	x11st Nean 77396 92184 85921 54516 61626 10127 666405 45204 09102 47732	200000000 81.6. bwy. 20172481 20172441 20172441 2017244 2017244 2017244 2017244 2017244 2017244 2017244 201724 200	HI 59981 09833 08343 08343 08343 08343 03423 197421	Max	N =	455 18 25.333 468 468 18 26 450 18 24.0555 450 18 22.427 420 17 24.7052 420 17 24.7052 420 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 18 25.0575 40 17 24.0555 40 25.0575 40 20 20 20 20 20 20 20 20 20 20 20 20 20
between 0 .5 n = 18 within .500535 0 1 T = 26	1 xtaum fariable rowt-yK npremK ngerd D inanc-n yp diopen ugini	8 100 0 verall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin overall between vithin verall between vithin verall between vithin verall between verall between verall between vithin verall between vithin verall between vithin verall between verall veral	.00 10 .00 .00 .00 .01 .01 .01 .01 .01 .01	x11st Mean 77396 92184 85921 54516 61626 10127 66405 45204 09102 47732 23077	200000000 81.6. bwy. 20172481 20172441 20172441 2017244 2017244 2017244 2017244 2017244 2017244 2017244 201724 200	HI 59981 09833 08343 08343 08343 08343 03423 197421	Max	N =	455 18 25.333 468 468 18 26 450 18 24.0555 450 18 22.427 420 17 24.7052 420 17 24.7052 420 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 18 22.420 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 17 24.0555 450 18 25.0575 40 17 24.0555 40 25.0575 40 20 20 20 20 20 20 20 20 20 20 20 20 20
within .500535 0 1 2 = 26	1 xtaum ariable rowt-yK nrelatK ngerd D inov inanc-n p p diopen ugini	8 1000 overall stream within overall between were between were between were between were were between were between were between were between were between were between were between were between were between were between were between were between were between were between were between were between were between were between were between were were between were between were were were were were were were	.00 10 .00 .00 .01 .01 .01 .01 .01 .01 .03 .03 .03 .03 .03 .03 .03 .03 .03 .03	x11st Mean 77396 92184 85921 54516 61626 10127 66405 45204 09102 47732 23077	200000000 81d. bwv. 	Hir 0000100000 0000110 1.0017 .000011 1.0017 .00001 .0000000000	Max 1 Max 1 1.47048 1 1.47048 1 1.422961 1 1.422961 1 1.422961 1 1.424411 2 2.93962 2 2.237374 2 2.49018 3 8.67012 3 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 4 8.67012 5 4.147446 4 8.48328 5 4.41832 5 1.16877 5 1.1369749 5 1.359649 5 1.469792 5 1.469792 5 1.469792 5 1.4	N = 1 7 - bar = 1 N =	455 18 25,333 18 26 468 18 26 468 468 18 26 40 24,055 427 18 23,7222 40 20 23,7222 23,7222 24,705 9 468 18 18 25 427 25,411 468 18 18 26 40 26 40 26 40 20 40 20 40 20 40 20 40 20 40 20 40 40 40 40 40 40 40 40 40 40 40 40 40
	l itsum (iable wt-yK elatK erd nov anc~n open (ini odumm	8 1000 0 verall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between within overall between bet	.00 10 .00 .00 .01 .01 .01 .01 .01 .01 .03 .03 .03 .03 .03 .03 .03 .03 .03 .03	x11st Mean 77396 92184 85921 54516 61626 10127 66405 45204 09102 47732 23077	200000000 8fd. bwy. 0.079641 4.02228 4.0228 4	HII 	Max 1 Advis	N = 0 	456 18 25,333 468 18 18 26 468 468 43 23,222 4,7055 427 18 24,2055 427 19 18 22,222 42,705 18 18 22,22 42,055 18 18 24,055 18,055 18

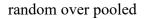
. test	parm i.year
(1)	1997.year = 0
(2)	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6)	2002.year = 0
(7)	2003.year = 0
(8)	2004.year = 0
(9) (10)	2005.year = 0
(10)	2006.year = 0 2007.year = 0
(12)	2007.year = 0
(12)	2009.year = 0
(13)	2009.year = 0
(14)	2010.year = 0 2011.year = 0
(15)	2011.year = 0 2012.year = 0
(17)	2012.year = 0
(18)	2014.year = 0
(19)	2015.year = 0
(20)	2016.year = 0
(21)	2017.year = 0
	Constraint 5 dropped
	Constraint 6 dropped
	Constraint 11 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	F(16, 16) = 5.76
	Prob > F = 0.0006
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	17.cou = 0
(12)	18.cou = 0
(13)	20.cou = 0
(14)	21.cou = 0
(15)	22.cou = 0
(16)	23.cou = 0
	Constraint 1 dropped
	Constraint 5 dropped
	Constraint 12 dropped Constraint 16 dropped
	constratut to gropped

F(12, 16) = 1868.31 Prob > F = 0.0000

Fixed over pooled

Breusch and Pagan Lagrangian multiplier test for random effects





	Coeffi	cients			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))	
	fixed	random	Difference	S.E.	
L.lnrelatK	.2081925	0184027	.2265952	.0613005	
L.lnpremK	4334593	1524899	2809694	.0340515	
lngerd	.0671759	0107534	.0779293	.0290712	
FD	019905	.0828835	1027885	.1316097	
k_inov	4218735	254747	1671265	.1637545	
financial_~n	0627114	0160134	046698	.0124683	
op	.0878523	.0266269	.0612254	.0687977	
fdiopen	.0142996	0175134	.031813	.00945	
eugini	1.148596	1.629199	4806025	.4493639	
eurodumm	.0264824	.027915	0014326	.0091036	
crisisdumm	0727918	0304832	0423086	.0150893	

 $\label{eq:b} b \ = \ \text{consistent under Ho and Ha; obtained from xtreg} \\ B \ = \ \text{inconsistent under Ha, efficient under Ho; obtained from xtreg} \\$

Test: Ho: difference in coefficients not systematic

chi2(11) =	(b-B)'[(V_b-V_B)^(-1)](b-B)
=	86.01
Prob>chi2 =	0.0000
(V_b-V_B is	not positive definite)

. . hausman fixed random,sigmamore

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnrelatK	.2081925	0184027	.2265952	.0661209
L.lnpremK	4334593	1524899	2809694	.0376427
lngerd	.0671759	0107534	.0779293	.0312431
FD	019905	.0828835	1027885	.1437595
k_inov	4218735	254747	1671265	.1888913
financial_~n	0627114	0160134	046698	.0141972
op	.0878523	.0266269	.0612254	.0740389
fdiopen	.0142996	0175134	.031813	.0115574
eugini	1.148596	1.629199	4806025	.6731096
eurodumm	.0264824	.027915	0014326	.0136097
crisisdumm	0727918	0304832	0423086	.0176554

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 61.75 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

	Coeffi	cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.lnrelatK	.2081925	0184027	.2265952	.0618216
L.lnpremK	4334593	1524899	2809694	.0351952
lngerd	.0671759	0107534	.0779293	.0292116
FD	019905	.0828835	1027885	.1344121
k inov	4218735	254747	1671265	.1766094
financial_~n	0627114	0160134	046698	.0132741
op	.0878523	.0266269	.0612254	.0692249
fdiopen	.0142996	0175134	.031813	.0108059
eugini	1.148596	1.629199	4806025	.6293434
eurodumm	.0264824	.027915	0014326	.0127247
crisisdumm	0727918	0304832	0423086	.0165074

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha; efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(11) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 70.64 Prob>chi2 = 0.0000

Fixed over random

Depended variable: total Inequality

$$\label{eq:inequality} \begin{split} inequality_{it} &= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} \\ &+ a_4 Inequality K_{it} + b_i + u_{it} + b_i + u_{it} \end{split}$$

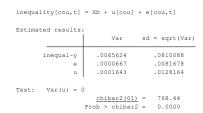
. describe \$id \$t \$ylist \$xlist

	ype format	t label	vari	able label		
InequalityF do InequalityL do InequalityK do	ouble %10.00 ouble %10.00 ouble %10.00 ouble %10.00	a a a	Ineq Ineq Ineq	uality ualityF ualityL ualityK		
	ouble %10.00		unem	plRT		
. summarize \$id \$t	t Şylist Şx	list				
Variable	Obs	Mean	Std. Dev.	Min	Max	
inequality InequalityF InequalityL InequalityK unemplRT	468 419 468	3574031 .21256 1393459 2156319 0892579	.0804257 .0597226 .0922131 .0880923 .0446446	.1889477 .0548225 .0236261 0127943 0	.5817417 .3568762 .4972983 .6496873 .2536703	
. xtdescribe						
Span (ye		ar eriods	each obse		n = T =	18 26
Distribution of T	26	26		0% 75 26 2		max 26
Freq. Percer		Pattern				
	00 100.00	111111111	11111111111	1111111		
18 100.0						
	00	******	*****	xxxxxx		
. xtsum \$t \$id \$y]	I.	*****	*****	*****		
. xtsum \$t \$id \$y] Variable	I.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX			Obse	rvations
-	list \$xlist			Max .5817417 .4515983	N = n =	450 450 18 25
Variable inequa~y overall between	list \$xlist Mean	Std. Dev. .0804257 .0694712	Min .1889477 .2093809	Max .5817417 .4515983 .4975451 .3568762 .3068195	N = n = T-bar = N = n =	450 18
Variable inequa~y overall between within Inequa~F overall between	list \$xlist Mean .3574031	Std. Dev. .0804257 .0694712 .0437959 .0597226 .0548904 .0267419 .0922131 .1019473	Min .1889477 .2093809 .1309115 .0548225 .1028658	Max .5817417 .4515983 .4975451 .3568762 .3068195 .2961591 .4972983 .386775	N = n = T-bar = n = T = N = n =	450 18 25 468 18
Variable inequa-y overall between within Inequa-F overall between within Inequa-L overall between	list \$xlist Mean .3574031 .21256	Std. Dev. .0804257 .0694712 .0437959 .0597226 .0548904 .0267419 .0922131 .1019473	Min .1889477 .2093809 .1309115 .0548225 .1028658 .1037394 .0236261 .0650486	Max .5817417 .4515983 .4975451 .3568762 .3068195 .2961591 .4972983 .386775 .3054036 .6496873 .4444758	N = n = T-bar = N = n = T = N = n = T-bar = N = n = n =	450 18 25 468 18 26 419 18

. test	parm i.year
(1)	1996.year = 0
(2)	1997.year = 0
(3)	1998.year = 0
(4)	1999.year = 0
(5)	2000.year = 0
(6)	2001.year = 0
(7) (8)	2002.year = 0 2003.year = 0
(9)	2003.year = 0 2004.year = 0
(10)	2009.year = 0
(11)	2006.year = 0
(12)	2007.year = 0
(13)	2008.year = 0
(14)	2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18)	2013.year = 0
(19) (20)	2014.year = 0 2015.year = 0
(21)	2015.year = 0
(22)	2017.year = 0
(23)	2018.year = 0
(24)	2019.year = 0
(25)	2020.year = 0
	Constraint 1 dropped Constraint 7 dropped
	Constraint 9 dropped
	Constraint 11 dropped
	Constraint 15 dropped
	Constraint 17 dropped
	Constraint 17 dropped Constraint 20 dropped
	Constraint 17 dropped
	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99
	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped
. test	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033
. test	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99
. test	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033
	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0
(1) (2) (3)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 17.cou = 0 17.cou = 0 2.cou = 0 10.cou = 0 2.cou = 0 10.cou = 0 10.cou = 0 10.cou = 0 2.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14) (15)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 21.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 23 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 22.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14) (15)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 Constraint 4 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 12.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 4 dropped Constraint 14 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 Constraint 14 dropped Constraint 15 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 12.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 4 dropped Constraint 14 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 Constraint 14 dropped Constraint 15 dropped Constraint 15 dropped Constraint 17 dropped F(13, 17) = 5.7e+06
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (12) (14) (15) (16)	Constraint 17 dropped Constraint 20 dropped Constraint 20 dropped F(17, 17) = 3.99 Prob > F = 0.0033 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 Constraint 4 dropped Constraint 15 dropped Constraint 17 dropped

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects



Pooled OLS over random

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.6909513	.6973375	0063862	.0053177
InequalityL	.5752392	.5732184	.0020207	.0042292
InequalityK	.0459995	.048544	0025445	.0029309
unemplRT	.711406	.7091612	.0022448	.0019572

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(v_b-v_B)^(-1)](b-B) = 10.74 Prob>chi2 = 0.0296

Fixed over random

В

. describe \$id \$t \$ylist \$xlist

		pe form	at label	vari	iable label		
growthinequa	al~v do:	ible %10	0a	grou	thinequality		
growthw		uble %10.		groi			
growthproduc					thproductivi	ty	
growthl		uble %10.		grow			
growthq		uble %10.		gro			
Ldummy1 Ldummy2		uble %10. uble %10.		Ldur Ldur			
growthrelatH					nmyz «threlatK		
growthpremK	dou	uble %10.	0g		thpremK		
growthunempl	lRT dou	uble %10.	0 g		thunemplRT		
. summarize	\$id \$t	\$ylist \$	xlist				
Variable	e	Obs	Mean	Std. Dev.	Min	Max	
growthineq~j growth					8765261	.8245583	
growthprod~j						.4639426	
growthi				.0136038	0906467	.2328077	
growthe			.0111698	.108794	6867072	1.213311	
Ldummy						.2402902	
Ldummy2 growthrelatH						.7861568	
growthrelath growthpremH			.0070282	.1739107		.5429749	
growthunem~1				.1595351	3598715	.9105727	
. xtdescribe							
cou:	3, 5,	, 23				-	18
year:	1995, 19	996,,	2020				26
1	Delta(ye	ear) = 1 y	ear				
		ar) = 26					
	(cou*yea	ar uniquel	y identifies	each obse	ervation)		
Distribution	n of T_i	i: min 26			0% 75% 26 26		max 26
Freq.	Percent	t Cum.	Pattern				
			1				
	100.5	100 57					
18	100.00	0 100.00	111111111	111111111	11111111		
18	100.00		111111111				
18	100.00	D	*****				
	100.00	D	*****				
18	100.00	D ist \$xlist	*****	*****	2000000	Obsern	rations
18 . xtsum \$t \$ Variable	100.00 Şid Şyli	D ist Şxlist Mear	Std. Dev.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		Obsern N =	rations 435
18 . xtsum \$t \$ Variable gro-lity ove	100.00 Şid Şyli	D ist Şxlist Mear	Std. Dev.	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	xxxxxxxx 1 Max	N =	
18 . xtsum \$t \$ Variable gro~lity ove	100.00 Sid Syli	D ist Şxlist Mear	Std. Dev.	XXXXXXXXXX Mir 8765261	Max 1 .8245583 9 .0405596		435 18
18 . xtsum \$t \$ Variable gro-lity ove bet wit	100.00 Sid Syl: erall tween thin	0 ist \$xlist Mear 0009907	Std. Dev. .0796395 .0135844 .0785065	Mir 8765261 0232379 8542789	Max 1 .8245583 9 .0405596 9 .783008	N = n = T-bar = 2	435 18 24.1667
18 . xtsum \$t \$ Variable gro~lity ove bet wit growthw ove	100.00 Sid Syls erall tween thin erall	0 ist \$xlist Mear 0009907	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271	Mir 8765261 0232379 8542789 1298403	Max 1 .8245583 2 .0405596 3 .783008 3 .3662896	N = n = T-bar = 2 N =	435 18 4.1667 457
Variable gro~lity ove wit growthw ove bet	100.00 \$id \$y1: erall tween thin erall tween	0 ist \$xlist Mear 0009907	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828	Mir 8765261 0232379 8542789 1298409 .016342	xxxxxxxx 1 .8245583 0405596 0 .783008 5 .3662896 2 .1077623	N = n = T-bar = 2 N = n =	435 18 4.1667 457 18
Variable gro~lity ove wit growthw ove bet	100.00 Sid Syls erall tween thin erall	0 ist \$xlist Mear 0009907	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828	Mir 8765261 0232379 8542789 1298403	xxxxxxxx 1 .8245583 0405596 0 .783008 5 .3662896 2 .1077623	N = n = T-bar = 2 N =	435 18 4.1667 457 18
IB . xtsum %t % Variable gro~lity ove bet wit growthw ove bet wit	100.00 \$id \$y1: erall tween thin erall tween thin	0 ist \$xlist Mean 0009907 .0384328	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0783065 .0544271 .0320828 .0446096	Mir 8765261 0232379 8542789 1298409 .016342 1867689	xxxxxxxx Max 1 .8245583 9 .0405596 .78308 5 .3662896 2.1077623 5 .3037861 1 .4639426	N = n = T-bar = 2 N = n =	435 18 4.1667 457 18
IB . xtsum \$t { Variable gro-lity ove bef wit growthw ove bef gro-vity ove bef bef	100.00 \$id \$y1: tween thin erall tween thin erall tween thin	0 ist \$xlist Mean 0009907 .0384328	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828 .0446096 .0551794 .0298193	Mir 8765261 023237 8542783 129400 016342 1867683 1109021 .0141561	xxxxxxxxx 1 .8245583 9 .0405596 9 .783008 5 .3662896 2 .1077623 5 .3037861 1 .4639426 1 .05498	N = n = T-bar = 2 N = T-bar = 2 N = n =	435 18 24.1667 457 18 25.3889 465 18
IB . xtsum \$t { Variable gro-lity ove bef wit growthw ove bef gro-vity ove bef bef	100.00 \$id \$y1; erall tween thin erall tween thin erall	0 ist \$xlist Mean 0009907 .0384328	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828 .0446096 .0551794 .0298193	Mir 8765261 0232375 8542785 1298405 016342 1867685 1109021	xxxxxxxxx 1 .8245583 9 .0405596 9 .783008 5 .3662896 2 .1077623 5 .3037861 1 .4639426 1 .05498	N = n = T-bar = 2 N = T-bar = 2 N = N =	435 18 24.1667 457 18 25.3889 465 18
18 . xtsum \$t { Variable gro~lity ove bet wi growthw ove bet wi gro~vity ove wit	100.00 \$id \$yl: erall tween thin erall tween thin erall tween thin	0 ist \$xlist Mear 0009907 .0384328 .0403902	Std. Dev. Std. Dev. 0796395 0135844 0785065 0544271 0320828 0446096 0551794 0298193 0469135	Mir 8765261 022377 8542785 1298409 .016342 1867685 1109021 .0141569 1760095	xxxxxxxx 1 .8245583 9 .0405596 9 .783008 5 .3662896 2 .107548 3 .3037861 1 .4639426 9 .105498 9 .3988348	N = $n = $ $T-bar = 2$ $N = $ $n = $ $T-bar = 2$ $N = $ $T-bar = 2$	435 18 4.1667 457 18 5.3889 465 18 25.8333
I8 . xtsum \$t { Variable gro-lity ove bet wit growthw ove bet wit gro-vity ove bet wit growthl ove	100.00 \$id \$y1; erall tween thin erall tween thin erall tween thin erall	0 ist \$xlist Mean 0009907 .0384328	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828 .0446096 .0551794 .0298193 .0469135 .0136038	Mir - 8765261 - 0232373 - 8542785 - 129840 - 016341 - 1867685 - 1109021 .0141565 - 11760095 - 0906467	xxxxxxxx 1 .8245583 0.0405596 0.783008 2 .1077623 5 .3662896 2 .1077623 5 .3037861 1 .4639426 9 .105498 9 .3988348 7 .2328077	N = n = n = 2 $T-bar = 2$ $N = n = 2$ $N = 0$ $N = 0$ $N = 0$	435 18 24.1667 457 18 25.3889 465 18 25.8333 465
18 18 . xtsum %t % Variable gro-lity over betwin growthw over betwin gro-vity over betwin growthy over betwin betw	100.00 \$id \$y1: erall tween thin erall tween thin erall tween thin thin erall tween	0 ist \$xlist Mear 0009907 .0384328 .0403902	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828 .0446096 .0551794 .0298193 .0469135 .0136038 .003175	Mir 8765261 023237 8542785 129840 .016342 1867685 1109021 .0141565 1760095 0906467 002487	xxxxxxxx Max 2445583 0.2445583 0.2445596 0.783008 5.3662896 2.1077623 3.3037861 1.4639426 1.05498 0.3988348 7.2328077 .0103275	N = $n = $ $T-bar = 2$ $N = $ $T-bar = 2$ $N = $ $T-bar = 2$ $N = $ $N =$	435 18 24.1667 457 18 25.3889 465 18 25.8333 465 18
18 18 . xtsum %t % Variable gro-lity over betwin growthw over betwin gro-vity over betwin growthy over betwin betw	100.00 \$id \$y1; erall tween thin erall tween thin erall tween thin erall	0 ist \$xlist Mear 0009907 .0384328 .0403902	XXXXXXXXXX Std. Dev. .0796395 .0135844 .0785065 .0544271 .0320828 .0446096 .0551794 .0298193 .0469135 .0136038 .003175	Mir - 8765261 - 0232373 - 8542785 - 129840 - 016341 - 1867685 - 1109021 .0141565 - 11760095 - 0906467	xxxxxxxx Max 2445583 0.2445583 0.2445596 0.783008 5.3662896 2.1077623 3.3037861 1.4639426 1.05498 0.3988348 7.2328077 .0103275	N = n = n = 2 $T-bar = 2$ $N = n = 2$ $N = 0$ $N = 0$ $N = 0$	435 18 24.1667 457 18 25.3889 465 18 25.8333 465 18
IR IR Xtsum &t & Variable gro-lity ove bet wit gro-vity ove bet wit gro-vity ove bet wit gro-vity ove bet wit growth ove over bet wit growth over bet wit growth over bet wit growth over bet bet wit growth over bet bet wit growth over bet bet wit growth over bet bet bet bet bet bet bet bet	100.00 \$id \$y1: erall tween thin erall tween thin erall tween thin erall tween thin erall	0 ist \$xlist Mear 0009907 .0384328 .0403902	xxxxxxxxxxx Std. Dev. .0796195 .0135844 .0785065 .0544271 .0202828 .0446096 .0551794 .0298193 .0499135 .0136038 .0136038 .013175 .01324266 .108794	Mir 8765261 023237 8542789 129400 .016344 1867689 1109022 .0141569 176099 0906467 0984094 0884094 6867072	Max 1 Max 2 .04052502 3 Max 1 .0405556 3 .0405563 3 .0405562 3 .0405556 3 .0405562 3 .0405562 3 .0405562 3 .0405562 3 .037861 1 .4639426 3 .1988348 7 .2328077 5 .2244587 5 .2244587 5 .2244587 2 .224311	N = $N = $ $T-bar = 2$ $N = $ $N = $ $N =$	435 18 24.1667 457 18 25.3889 465 18 25.8333 465 18 25.8333 404
It is a set of the set	100.00 \$id \$yli transformed by the second transformed by the second tra	0 ist \$x1ist Mean 0009907 .0384328 .0403902 .0019786	\$2222222222222222222222222222222222222	Mir 8765261 023237 1298404 1298404 186768 1109021 0141561 1760099 090646 ⁻ 0024879 0984094 6884094	Max 1 Rax 2 Max 3 Max 3 0.405596 3 0.405596 3 0.405596 3 0.20286 3 3.622896 1 .043986 3 3.037861 1 .0439426 3.988348 .0328637 2 .2244587 2 .1220637 2 .12213311	N = n = T-bar = 2 N = T-bar = 2 N = T-bar = 2 N = T-bar = 2 N = N = N = N = N = N =	435 18 4.1667 457 18 5.3889 465 18 5.8333 465 18 5.8333 404 18
It is a set of the set	100.00 \$id \$y1: erall tween thin erall tween thin erall tween thin erall tween thin erall	0 ist \$x1ist Mean 0009907 .0384328 .0403902 .0019786	\$2222222222222222222222222222222222222	Mir 8765261 023237 8542789 129400 .016344 1867689 1109022 .0141569 176099 0906467 0984094 0884094 6867072	Max 1 Rax 2 Max 3 Max 3 0.405596 3 0.405596 3 0.405596 3 0.20286 3 3.622896 1 .043986 3 3.037861 1 .0439426 3.988348 .0328637 2 .2244587 2 .1220637 2 .12213311	N = $N = $ $T-bar = 2$ $N = $ $N = $ $N =$	435 18 4.1667 457 18 5.3889 465 18 5.8333 465 18 5.8333 404 18
Is Is variable growthy over growthy over wing growthy over growthy over wing growthy over growthy over growthy over growthy over growthy over growthy over growthy over growthy over growthy over growthy over wing growthy over growthy over wing growthy over growthy over growth	100.00 \$id \$yli erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin) ist Sxlist Mear .0009907 .0384326 .0403902 .0403902 .0019786 .0111698	\$\text{Std. Dev.} \$\text{Std. Dev.} \$\text{orgstsstart} \$orgsts	Mir 8765261 023237 129440 .016342 186768 119002 .014156 1760093 0906467 002487 008409 088409 0996400 09964000 099640000000000000000000000000000000000	Max 1 .8245583 2 .040556 3 .040556 3 .3662866 2 .107623 3 .3662866 2 .107863 1 .4639426 3.988348 .105492 2 .224657 2 .2244587 2 .2244587 2 .123311 3 .120428 3 .120428 3 .120428	$\begin{array}{c} \mathbf{N} = \\ \mathbf{n} = \\ \mathbf{n} = \\ \mathbf{T}\text{-bar} = 2 \\ \mathbf{N} = \\ \mathbf{n} = \\ \mathbf{T}\text{-bar} = 2 \\ \mathbf{N} = \\ \mathbf{T}\text{-bar} = 2 \\ \mathbf{N} = \\ \mathbf{T}\text{-bar} = 2 \\ \mathbf{N} = \\ \mathbf{n} = \\ \mathbf{T}\text{-bar} = 2 \end{array}$	435 18 44.1667 457 18 55.3889 465 18 55.8333 465 18 55.8333 404 18 22.4444
It is a set of the set	100.00 Sid Syli erall tween thin erall tween twoen	0 ist \$x1ist Mean 0009907 .0384328 .0403902 .0019786	8td. Dev. 0796395 013584 0785065 054271 022028 046696 0551794 0298193 0469155 0136496 1016038 003175 0132466 108794 0283214 1087957 0326163	Mir - 8765261 - 0323277 - 8542789 - 1298409 - 189622 - 1109022 - 1109022 - 0141563 - 0024877 - 0084094 - 6867077 - 0084094 - 97976061 - 79776061 - 79776061 - 79776061	Max 1 .8245583 2 .005596 3 .6405596 3 .6405596 3 .783008 5 .3662896 2 .1077623 3 .3037861 1 .4639426 3 .3988346 7 .2328077 2 .3988346 7 .2226077 2 .2245877 2 .2242677 1 .1222122 2 .1273311 1 .1222693 3 .120412 3 .2402902	N = n = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = T-bar = 2 N = N =	435 18 44.1667 457 455.3889 465 18 55.8333 465 18 55.8333 404 18 22.4444 431
Is Is variable gro-lity over growthw over wing growthw over wing growthy over growthy over g	100.00 \$id \$yli erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin) ist Sxlist Mear .0009907 .0384326 .0403902 .0403902 .0019786 .0111698	\$\text{Std. Dev.} \$\text{Std. Dev.} \\ \$\text{Std. Dev.} \\ \$\tex	Mir 8765261 0232377 8542783 1294401 .016342 1109022 .0141565 1760099 0004467 0024877 0884094 00646772 0864097 0864097 0864097 0864094 00601151 4011515 0330754	Max a Max b .8245583 a Max b .0405596 b .783008 c .13662896 c .1362896 c .1365498 c .13047861 c .13988346 c .13989346 c .13989348 c .1206333 c .12206333 c .12204212 c .2204232 d .202022 d .402902	N = n = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = n = n = n = n = n =	435 18 44.1667 457 18 55.3889 465 18 55.8333 465 18 55.8333 404 18 22.4444 18
IS IS Variable gro-lity over between growthy over between growth over between growth over between be	rall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin thin	0009907 .0384328 .0403902 .0403902 .0019786 .0111698	8td. Dev. 0796395 0135844 0785065 0544271 032028 0464915 0132496 108794 108794 108794 108794 108794 108794 108794 108794 108794 1087957 02226183 0112997 0308239	Min 8765261 0232377 8542781 129440 .016344 1867682 1109021 .0414561 1760092 0906467 0024873 0978668	Max a Max b .8245583 a Max b .0405596 b .783008 c .13662896 c .137621 .14639426 .105498 b .105498 c .105498 c .105498 c .102633 1.102412 .12204533 c .2204252 c .2243179	N = n n = 2 T-bar = 2 N = -2 T-bar = 2 N = -2 T-bar = 2 N = -2 N = -2	435 18 44.1667 457 18 55.3889 465 18 55.8333 465 18 55.8333 404 18 22.4444 18
IS IS Variable growity over between growthy over between growthy over between growthy over between with growthy over between	rall verall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall) ist Sxlist Mear .0009907 .0384326 .0403902 .0403902 .0019786 .0111698	8td. Dev. 0796395 0135844 0785065 0446096 0551794 022828 0466035 01364038 003175 0132486 003175 0132486 003175 0132486 023214 1057557 0226128 023214	Mir 8765261 0233377 8542785 129400 .016344 1867685 1160095 014566 0024877 0024870	Max Max 1 .6245583 2 .626556 3 .660556 7.83008 .783008 3 .367861 1 .6245583 3 .367861 1 .439426 9 .1037861 1 .4239426 9 .103983 9 .102483 9 .1220633 1 .1024212 1 .2424587 1 .1220633 1 .102412 1 .2426317 1 .2426317 1 .2426317 1 .2426317 1 .2426317	N = n = 1 n = 1 T-bar = 2 N = 1 n = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 N =	435 18 24.1667 457 18 25.3889 465 18 25.8333 465 18 25.8333 404 18 22.444 18 22.4444 431 18 23.9444
Is Is Variable gro-lity over between growthy over between growthy over between growth over between b	100.00 Sid Syl: erall tween thin erall tween erall tween erall tween erall tween erall tween erall tween erall tween erall erall erall tween erall	0009907 .0384328 .0403902 .0403902 .0019786 .0111698	8td. Dev. 0796395 0135844 0785065 0544271 032028 0464905 0464905 0136466 108704 03175 0132496 108704 0308219 0308239 0308239 0558244 02188	Mir - 8765261 - 023227 - 8542785 - 1298401 - 013342 - 11867685 - 11998405 - 1190821 - 0141565 - 0024877 - 0884094 - 6867072 - 0908467 - 0024877 - 00884094 - 6867072 - 37876661 - 4011515 - 33786881 - 6334544 - 6354544 - 6354544	Max 1 .8245583 2 .0605596 3 .783008 2 .1077623 3 .336281 1 .4639426 3 .3337861 1 .4639426 3 .3327861 1 .4232077 2 .213311 1 .102412 1 .220039 1 .102412 2 .233111 1 .244587 1 .2634179 2 .263158 3 .065586	N = n = 1 n = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 n = 1 T-bar = 2 N = 1 n = 1 T-bar = 2 N = 1 N =	435 18 4.1667 457 18 5.3889 465 18 5.8333 404 18 22.4444 431 18 3.9444 431 18 3.9444
Is Is Variable gro-lity over between growthy over between growthy over between growth over between b	rall verall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall	0009907 .0384328 .0403902 .0403902 .0019786 .0111698	8td. Dev. 0796395 0135844 0785065 0544271 032028 0464905 0464905 0136466 108704 03175 0132496 108704 0308219 0308239 0308239 0558244 02188	Mir 8765261 0233377 8542785 129400 .016344 1867685 1160095 014566 0024877 0024870	Max 1 .8245583 2 .0605596 3 .783008 2 .1077623 3 .336281 1 .4639426 3 .3337861 1 .4639426 3 .3327861 1 .4232077 2 .213311 1 .102412 1 .220039 1 .102412 2 .233111 1 .244587 1 .2634179 2 .263158 3 .065586	N = n = 1 n = 1 T-bar = 2 N = 1 n = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 T-bar = 2 N = 1 N =	435 18 4.1667 457 18 5.3889 465 18 5.8333 404 18 22.4444 431 18 3.9444 431 18 3.9444
IS IS Variable gro-lity over between growthw over between growthy over between with Ldummy1 over between bet	100.00 Sid Syl: erall tween thin erall tween tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween tw	0064165	8td. Dev. 0.796395 0.135844 0.795055 0.544271 0.32028 0.466905 0.0136038 0.0136038 0.0136038 0.022163 0.022163 0.022263 0.022263 0.022263 0.022263 0.022263 0.022263 0.022263 0.022263 0.02263	Mir - 8765261 - 023237 - 8542781 - 129840 - 1196768 - 1196768 - 1196768 - 1196768 - 1196768 - 1196768 - 002487 - 002487 - 008409 - 0884094 - 0884094 - 0884094 - 0884094 - 0884094 - 0884094 - 030754 - 378688 - 5378688 - 551503	Max 1 .8245583 2 .060556 3 .600556 3 .783008 2 .107763 3 .3367861 1 .4639426 3 .337861 1 .42322077 3 .3288344 1 .2224357 2 .213311 1 .220207 1 .122412 1 .224357 2 .213311 1 .2424127 2 .213311 1 .2424127 2 .2634179 4 .765156 7 .0263221 4 .765156 7 .0263231	N = n = n = T-bar = 2 N = n = T-bar = 2 N = T-bar = 2	435 18 44.1667 457 18 55.3889 465 5.833 465 18 18 5.833 404 18 12.4444 431 18 13.3444 433 18 18 18 18 18 18 18 18 18 18 18 18 18
Is Is Variable growity over between growity over between growity over between with growity over between betw	100.00 Sid Syli erall tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween twoen twee	0009907 .0384328 .0403902 .0403902 .0019786 .0111698	8td. Dev. 0796395 013584 0785065 0644271 0320838 046696 046696 046696 046695 0132486 108794 0238133 0469135 0132486 108794 0238134 0132456 108794 0238124	Mir 8765261 023237 2342781 129400 .016342 1109021 .0141561 1109021 098409 0864097 0986409 08667072 0086409 08667072 0086409 3786681 3786681 3786821 5545544 551533 5545544	Max Max 1 .6245583 2 .626556 3 .626556 7.783008 .783008 3 .3667863 3 .3667863 3 .367861 1 .439426 9 .1037861 1 .423426 9 .103983 9 .102483 1 .1220633 1 .1220633 1 .1224521 1 .2424571 1 .2242577 2 .22425749 2 .22425749	N = n = n = T-bar = 2 N = T T-bar = 2 N	435 18 44.1667 18 5.3809 465 18 5.8333 465 18 5.8333 465 18 18 18 23.9444 431 18 18 3.9444 431 18 18 3.7778 465
Is Is Variable gro-lity over between growthw over wing growthy over between wing growthy over between wing Ldummy1 over between betw	100.00 Sid Syl: erall tween thin erall tween tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween tw	0064165	8td. Dev. 0.796395 0.135844 0.795055 0.544271 0.22028 0.464095 0.464095 0.132466 1.037557 0.122466 1.087547 0.022163 0.038239 0.054824 0.030637 0.036637 0.026486 0.030637 0.0367	Mir - 8765261 - 023237 - 8542781 - 129840 - 1196768 - 1196768 - 1196768 - 1196768 - 1196768 - 1196768 - 002487 - 002487 - 008409 - 0884094 - 0884094 - 0884094 - 0884094 - 0884094 - 0884094 - 030754 - 378688 - 5378688 - 551503	Max 1 .8245583 2 .060556 3 .6245583 3 .040556 3 .783008 2 .1077633 3 .3337861 1 .463426 3 .3337861 2 .2017633 3 .3337861 1 .463426 3 .3337861 1 .463426 1 .988348 3 .3987814 1 .102492 1 .1224593 1<.102412	N = n = n = T-bar = 2 N = T T-bar = 2 N = T T-	435 18 44.1667 457 18 55.3889 465 18 55.833 465 18 55.833 465 18 18 18 18 18 18 13.9444 428 18 18 13.9444 428 18 18 18 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19
IS IS Variable gro-lity over between growthw over between growthy over between with growth over between betw	100.000 Sid Syli erall tween thin erall	0 1 st \$x11st Mmar 0009007 .0384328 .0403902 .011696 .011696 .011696 .011696 .011696 .0159111	8td. Dev. 0.796395 0.135844 0.795055 0.544271 0.22028 0.464095 0.464095 0.136946 1.012696 1.012696 1.012696 1.012697 0.022463 0.0308239 0.058224 0.030637 0.0284824 0.030637 0.0464164 0.02162 0.047827 0.062712	Hito Action Control Co	A Max 1 .8245583 2 .005596 3 .000556 7.783008 .3662896 2 .1077633 3 .3037861 1 .4639426 3 .3337861 3 .3328814 3 .3288344 7 .2328077 3 .2244597 1 .102412 1 .102413 2 .2244591 1 .102413 2 .2244591 1 .102413 2 .2244591 3 .2402902 0 .2634179 4 .765568 7 .2629749 5 .0265513 5 .0265513 .535717	N = n = T-bar = 2 N = N = T-bar = 2 N =	435 18 44.1667 457 18 55.3889 465 18 55.833 465 18 55.833 465 18 18 18 18 18 18 13.9444 428 18 18 13.9444 428 18 18 18 18 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19
Is Is Variable growity over between growity over between growity over between wing growth over between wing growth over between wing growth over between wing growth over between be	rall sid Sylf tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall	0 1 st \$x11st Mmar 0009007 .0384328 .0403902 .011696 .011696 .011696 .011696 .011696 .0159111	Std. Dev. Std. Dev. .0796395 .013584 .0785065 .0544271 .0708065 .0466964 .0466964 .0466964 .0466964 .0469696 .0132496 .0132496 .0132496 .023214 .023214 .023214 .023214 .023214 .02463 .012496 .02464 .024814 .024827 .0846344 .0447827 .064314 .064314 .0447827 .064314 .064448 .064	Minovokoo Minovo	Max 1 .8245583 2 .000556 3 .040556 3 .040556 3 .040556 3 .040556 3 .040556 3 .040556 3 .05286 3 .05486 3 .05486 3 .05456 3 .05456 3 .05456 3 .05456 3 .05456 3 .024657 3 .1226633 1 .102412 2 .1226531 3 .0545251 3 .75525754 3 .5535717 3 .5355717 3 .5355717 3 .5355717 3 .5355717	N = n = n = T-bar = 2 N = n = T-bar = 2 N = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = N = N = N = N = N = N =	435 18 44.1667 457 18 55.3889 465 18 55.8333 465 18 55.8333 404 42 431 18 43.3.9444 431 18 43.3.9444 431 18 43.3.9445 8 55.8333 4458
Is Is vtsum %t { Variable growlity over betwint growthw over wint growthy over betwint growthl over betwint betwint growthl over betwint growthl over betwint growt-th over growt-th over growt-the over	100.00 \$id \$yli erall tween thin erall tween tween thin erall tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween tw	0 1 st \$x11st Mmar 0009007 .0384328 .0403902 .011696 .011696 .011696 .011696 .011696 .0159111	8td. Dev. 0.796395 0.135844 0.795055 0.544271 0.22028 0.464095 0.464095 0.136946 1.012046 1.012046 1.012046 1.012047 0.022163 0.0308239 0.054624 0.030637 0.022163 0.030637 0.0463164 0.0147927 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712	<pre>XXX00XXX00 Nii 256526263 02327 129800 .06434 110902 .041465 110902 0044674 0044674 0044674 004667 004667 004667 004667 004667 003057 075666 01305 013645 0136</pre>	A Max 1 .8245583 2 .005596 3 .0405596 3 .0405596 3 .783008 2 .1077633 3 .3367861 4 .4439426 3 .3337861 1 .4639426 3 .3327861 1 .42328077 3 .22245871 3 .102412 1 .102412 3 .2220633 3 .102412 3 .2402902 0 .2634179 3 .2402912 3 .24252749 5 .0265513 5 .0265513 5 .0265513 5 .0265513	N = n = T-bar = 2 N = N = N = N = T-bar = 2 N = N = N = N = T-bar = 2 N = N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = T-bar = 2 N = N = T-bar = 2 N =	435 18 435 18 45 5.3389 465 5.8333 465 18 5.8333 465 18 5.8333 404 418 12.4444 428 18 3.7778 18 5.8333 404 428 18 5.8333 405 18 18 18 18 18 18 18 18 18 18 18 18 18
Is Is vtsum %t { Variable growlity over betwint growthw over wint growthy over betwint growthl over betwint betwint growthl over betwint growthl over betwint growt-th over growt-th over growt-the over	rall sid Sylf tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall	0 1 st \$x11st Mmar 0009007 .0384328 .0403902 .011696 .011696 .011696 .011696 .011696 .0159111	8td. Dev. 0.796395 0.135844 0.795055 0.544271 0.22028 0.464095 0.464095 0.136946 1.012046 1.012046 1.012046 1.012047 0.022163 0.0308239 0.054624 0.030637 0.022163 0.030637 0.0463164 0.0147927 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712 0.012917 0.02712	Minovokoo Minovo	A Max 1 .8245583 2 .005596 3 .0405596 3 .0405596 3 .783008 2 .1077633 3 .3367861 4 .4439426 3 .3337861 1 .4639426 3 .3327861 1 .42328077 3 .22245871 3 .102412 1 .102412 3 .2220633 3 .102412 3 .2402902 0 .2634179 3 .2402912 3 .24252749 5 .0265513 5 .0265513 5 .0265513 5 .0265513	N = n = n = T-bar = 2 N = n = T-bar = 2 N = T-bar = 2 N = n = T-bar = 2 N = n = T-bar = 2 N = N = N = N = N = N = N =	435 18 435 18 45 5.3389 465 5.8333 465 18 5.8333 465 18 5.8333 404 418 12.4444 428 18 3.7778 18 5.8333 404 428 18 5.8333 405 18 18 18 18 18 18 18 18 18 18 18 18 18
IS IS Variable growity over between growthe over with growth over with growth over between with growth over between with growth over between with growth over between with growth over between with growth over between betw	100.00 \$id \$yli tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween t		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Min 876526.6 023237 03237 034278 129604 166768 126095 126095 004247 00	A Max a Max b .8245583 b .040556 b .040556 c .783008 c .366286 c .366286 c .303781 1 .463926	N = n = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N =	435 18 44.1667 457 18 55.3889 465 18 55.8333 465 18 12 404 18 13 3.9444 431 18 3.3.9444 431 18 3.3.9444 431 18 3.3.9444 431 18 5.6.8333 465 18 5.6.8345 18 18 18 18 18 18 18 18 18 18 18 18 18
Is Is Variable gro-lity over between growthw over between growthy over between growthl over between growthl over between growthl over between growthl over between growthl over between growthl over between between growthl over between growthl over between growthl over between growthl over between between growthl over between growthl over between growthl over between growthl over between growthl over between growthl over between growthl over between growthl over between between between growt-kt over between growt-kt over growt-kt over growt	100.00 \$id \$yli tween thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween t	0 1 st \$x11st Mmar 0009007 .0384328 .0403902 .011696 .011696 .011696 .011696 .011696 .0159111	Std. Dev. Std. Dev. .0796395 .013584 .0785065 .0544271 .02028 .0464996 .046496 .046496 .046496 .0464915 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .003175 .0132486 .0147877 .0178815 .1739107 .0179815 .1739107 .0179815 .1739351	Min 876526.6 023237 03237 034278 129604 166768 126095 126095 004247 00	Max 1 .8245583 2 .0005566 3 .640556 3 .640556 3 .642896 3 .3622806 3 .3622807 1 .4439426 3 .3037861 1 .4439426 3 .3037861 1 .4439426 3 .004257 3 .1034861 3 .1034861 3 .104421 2 .22634179 1 .226321 1 .2263513 2 .232351 2 .232351 2 .2365513 2 .7006151 2 .7056513 2 .70065513 3 .7646690 3 .7646690 3 .7646506 3 .7646506 3 .7646506	N = n = T-bar = 2 N = N = N = N = T-bar = 2 N = N = N = N = T-bar = 2 N = N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = N = T-bar = 2 N = T-bar = 2 N = N = T-bar = 2 N =	435 18 435 18 45 5.3389 465 5.8333 465 18 5.8333 465 18 5.8333 404 418 12.4444 428 18 3.7778 18 5.8333 404 428 18 5.8333 405 18 18 18 18 18 18 18 18 18 18 18 18 18

. test	parm i.year
(1)	1996.year = 0
(2)	1997.year = 0
(3)	1998.year = 0
(4)	1999.year = 0
(5)	2000.year = 0
(6)	2001.year = 0
(7)	2002.year = 0
(8)	2003.year = 0
(9)	2004.year = 0
(10)	2005.year = 0
(11)	2006.year = 0
(12)	2007.year = 0
(13)	2008.year = 0
(14)	2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18)	2013.year = 0
(19)	2014.year = 0
(20) (21)	2015.year = 0 2016.year = 0
(21)	2010.year = 0
(22)	2017.year = 0 2018.year = 0
(23)	2019.year = 0
(25)	2020.year = 0
(20)	Constraint 6 dropped
	Constraint 8 dropped
	Constraint 12 dropped
	Constraint 16 dropped
	Constraint 18 dropped
	Constraint 20 dropped
	Constraint 23 dropped
	Constraint 24 dropped
	F(17, 17) = 4.44
	Prob > F = 0.0018
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11) (12)	15.cou = 0
(12)	17.cou = 0 18.cou = 0
(13)	18.cou = 0 20.cou = 0
(14)	20.cou = 0
(16)	22.cou = 0
(17)	
	F(17, 17) = 1.7e+09

F(17, 17) = 1.76+09Prob > F = 0.0000

Fixed over pooled

Breusch and Pagan Lagrangian multiplier test for random effects

<pre>growthinequality[cou,t] = Xb + u[cou] + e[cou,t]</pre>								
Estimated results:								
	Var	sd = sqrt(Var)						
growthi~y	.0022747	.0476934						
e	.0012278	.0350406						
u	0	0						
Test: Var(u) = ()							
	chibar2(01)	= 0.00						
	Prob > chibar2	= 1.0000						

Random over pooled

	Coeffi	cients		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
growthw	396196	363007	033189	.0254628
growthprod~y	.3503317	.3485049	.0018268	.020191
growthl	3669167	0230956	3438211	.3201055
growthq	.2517339	.237309	.0144249	.0109089
Ldummy1	.3751512	.3344842	.040667	.0296301
Ldummy2	0864101	0809441	005466	.0060424
growthrelatK	2619687	2303373	0316313	.0404602
growthpremK	0311393	0336058	.0024666	.0036003
growthunem~T	.1174782	.1224878	0050096	.00573

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.76 Prob>chi2 = 0.8547

Random over fixed

Depended variable: Inequality Eurostat

$\begin{aligned} & Gini \ Eurostat_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i \\ & + u_{it} + b_i + u_{it} \end{aligned}$

		display format	v value label		iable label		
variable name			Tanet				
GiniEUstat	double				iEUstat		
InequalityF	double				qualityF		
InequalityL	double				qualityL		
InequalityK	double				qualityK		
unemplRT	double	%10.0g		uner	mplRT		
. summarize \$i	d \$t \$yli:	st \$xli	st				
Variable	Obs		Mean	Std. Dev.	Min	Max	
GiniEUstat	401	.29	84065	.0393419	.209	.389	
InequalityF	468		21256	.0597226	.0548225	.3568762	
InequalityL	419	.13	93459	.0922131	.0236261	.4972983	
InequalityK	468	.21	56319	.0880923	0127943	.6496873	
unemplRT	468	.08	92579	.0446446	0	.2536703	
. xtdescribe							
	r 00						1.0
	5,, 23					n =	18 26
	5, 1996, .					т =	26
	ta(year) =						
	n(year) =						
(co	ou*year unio	quely 1	dentifies	each obse	ervation)		
Distribution o	of Tit m	in	5% 2	5% !	50% 75	5% 95%	max
		26		26		26 26	2.6
Freq. Pe	ercent Ci	um.	Pattern				
18 1							
	00 00 100	0.0	111111111	111111111	11111111		
	.00.00 100		111111111				
	.00.00 100		111111111 xxxxxxxxx				
18 1	.00.00						
18 1 . xtsum \$t \$id	.00.00 i \$ylist \$x:	list	*****	******	*****		
18 1	.00.00 A \$ylist \$x:	list		******	*****	x Obse	rvations
18 1 . xtsum \$t \$id	00.00 1 \$ylist \$x:	list Mean	*****	******	xxxxxxxx n Max		
18 1 . xtsum \$t \$id Variable GiniEU~t overa	.00.00 1 \$ylist \$x: 11 .298	list Mean 4065	XXXXXXXXXX Std. Dev. .0393419	Min . 201	xxxxxxxx n Maj 9 .385	9 N =	401
18 1 . xtsum \$t \$id Variable	.00.00 A \$ylist \$x: 11 .298- 2en	list Mean 4065	XXXXXXXXXX Std. Dev.	Min	xxxxxxxx n Maj 9 .389 5 .3568235	9 N = 5 n =	401
18 1 . xtsum \$t \$id Variable GiniEU~t overa betwe withi	.00.00 i \$ylist \$x: .11 .298- 	list Mean 4065	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403	Min .201 .2352101 .2586141	xxxxxxxx n Max 9 .383 5 .356823 8 .341806	9 N = 5 n = 5 T-bar =	401 18 22.2778
18 1 . xtsum \$t \$id Variable GiniEU~t overa betwe withi Inequa~F overa	.00.00 I \$ylist \$x: ill .298 inn ill .298	list Mean 4065 1256	Std. Dev. .0393419 .0387538 .0149403 .0597226	Min .201 .235210 .2586141 .054822	n Max 9 .385 5 .3568235 8 .3418065 5 .3568762	9 N = 5 n = 5 T-bar = 2 N =	401 18 22.2778 468
18 1 . xtsum \$t \$id Variable GiniEU~t overa betwe withi Inequa~F overa betwe	.00.00 1 \$ylist \$x: 11 .298- .een .n .11 .22 .een	list Mean 4065 1256	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904	Min .209 .235210 .2586149 .0548229 .1028659	n Max 9 .384 5 .3568233 8 .3418065 5 .3568763 8 .3068195	9 N = 5 n = 5 T-bar = 2 N = 5 n =	401 18 22.2778 468 18
18 1 . xtsum \$t \$id Variable GiniEU~t overa betwe withi Inequa~F overa	.00.00 1 \$ylist \$x: 11 .298- .een .n .11 .22 .een	list Mean 4065 1256	Std. Dev. .0393419 .0387538 .0149403 .0597226	Min .201 .235210 .2586141 .054822	n Max 9 .384 5 .3568235 8 .3418065 5 .3568762 8 .3068195	9 N = 5 n = 5 T-bar = 2 N = 5 n =	401 18 22.2778 468 18
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi	.00.00 i \$ylist \$x: ill .298: een .n .n .n .22: 	list Mean 4065 1256	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904 .0267419	Min .209 .2352100 .2586140 .0548223 .1028650 .103739	xxxxxxxxx 9 .385 5 .3568233 8 .3418065 5 .3568762 8 .3068195 4 .2961595	9 N = 5 n = 5 T-bar = 2 N = 5 n = 1 T =	401 18 22.2778 468 18 26
18 1 . xtsum \$t \$id Variable GiniEU-t overa withi Inequa-F overa betwe withi Inequa-L overa	.00.00 i \$ylist \$x: ill .298 een .11 .298 ill .398 ill .3988 ill .3988 ill .3988 ill .3988 ill .3988 ill .3988 ill	list Mean 4065 1256 3459	XXXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904 .0267419 .0922131	Min .200 .2352100 .2586141 .0548220 .1028650 .1037394 .0236265	xxxxxxxxx 9 .383 5 .356823 8 .3418065 5 .3568766 8 .3068195 4 .2961595 1 .4972985	9 N = 5 N = 5 T-bar = 2 N = 5 n = 1 T = 3 N =	401 18 22.2778 468 18 26 419
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe	.00.00 i \$ylist \$x: iii .298- 	list Mean 4065 1256 3459	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904 .0267419 .0922131 .1019473	Min .200 .235210 .2586141 .054822 .1028651 .103739 .023626 .0650481	xxxxxxxxx 9 .38: 5 .356823: 8 .341806: 5 .36876: 4 .296159: 1 .497298: 6 .38677:	9 N = 5 N = 5 T-bar = 2 N = 1 T = 3 N = 5 n =	401 18 22.2778 468 18 26 419 18
18 1 . xtsum \$t \$id Variable GiniEU-t overa withi Inequa-F overa betwe withi Inequa-L overa	.00.00 i \$ylist \$x: iii .298- 	list Mean 4065 1256 3459	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904 .0267419 .0922131 .1019473	Min .200 .2352100 .2586141 .0548220 .1028650 .1037394 .0236265	xxxxxxxxx 9 .38: 5 .356823: 8 .341806: 5 .36876: 4 .296159: 1 .497298: 6 .38677:	9 N = 5 N = 5 T-bar = 2 N = 1 T = 3 N = 5 n =	401 18 22.2778 468 18 26 419
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa~F overa betwe withi Inequa~L overa betwe withi	.00.00 i \$ylist \$x: 1 111 .298+ n n .111 .29 .111 .29 .111 .29 .111 .139 .111 .139	11st Mean 4065 1256 3459	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .05548904 .0267419 .0922131 .1019473 .0373289	Min .201 .2552101. .2586141 .0548221 .1028651 .103739. .0236263 .0650481 .055481 .002073	xxxxxxxx 9 .384 5 .3568233 8 .3418063 5 .368876 4 .2961593 1 .4972983 6 .386775 1 .3054034	9 N = 5 T-bar = 2 N = 5 n = 1 T = 3 N = 5 n = 6 T-bar =	401 18 22.2778 468 18 26 419 18 23.2778
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe withi Inequa-K overa	.00.00 i \$ylist \$xi lil .298- men .n .11 .228- .139- .11 .139- .11 .215- .11 .215-	list Mean 4065 1256 3459 6319	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .05548904 .0267419 .0922131 .1019473 .0373289 .0880923	Min .201 .2556141 .024522102 .0548222 .1026651 .1026651 .0236261 .0650481 -0102072 -0127943	xxxxxxxxx 9 .385 5 .3568233 8 .3418065 5 .3568762 8 .3068195 4 .2961595 1 .4972983 6 .386777 1 .3054036 3 .6496873	3 N = 5 T-bar = 5 T-bar = 2 N = 5 T = 6 T-bar = 3 N = 6 T-bar = 3 N =	401 18 22.2778 468 18 26 419 18 23.2778 468
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe withi Inequa-K overa betwe	00.00 i \$ylist \$x: 1 2288 1 2288 1 2288 1 2288 1 1 2288 1 1 2288 1 1 2288 1 1 2288 1 1 1 2288 1 1 1 2288 1 1 1 1 2288 1 1 1 1 2288 1 1 1 1 2288 1 1 1 1 1 2288 1 1 1 1 1 1 2288 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11ist Mean 4065 1256 3459 6319	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .0548904 .0267419 .0922131 .1019473 .0373289 .0880923 .0795978	Mir .201 .2586141 .0548221 .1028651 .103739 .0258266 .0350481 -0102077 .01027941 .102568	xxxxxxxx 9	9 N = 5 T-bar = 2 N = 5 T -bar = 1 T = 3 N = 5 n = 6 T-bar = 3 N = 8 n =	401 18 22.2778 468 18 26 419 18 23.2778 468 18
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe withi Inequa-K overa	00.00 i \$ylist \$x: 1 2288 1 2288 1 2288 1 2288 1 1 2288 1 1 2288 1 1 2288 1 1 2288 1 1 1 2288 1 1 1 2288 1 1 1 1 2288 1 1 1 1 2288 1 1 1 1 2288 1 1 1 1 1 2288 1 1 1 1 1 1 2288 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11ist Mean 4065 1256 3459 6319	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .05548904 .0267419 .0922131 .1019473 .0373289 .0880923	Min .201 .2556141 .024522102 .0548222 .1026651 .1026651 .0236261 .0650481 -0102072 -0127943	xxxxxxxx 9	9 N = 5 T-bar = 2 N = 5 T -bar = 1 T = 3 N = 5 n = 6 T-bar = 3 N = 8 n =	401 18 22.2778 468 18 26 419 18 23.2778 468 18
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-K overa betwe withi	00.00 i \$ylist \$xi 1 1 11 .298 .11 .298 .11 .215 .11 .215 .2	list Mean 4065 1256 3459 6319	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .05548904 .0267419 .0922131 .019473 .0373289 .0880923 .0795978 .0419955	Min 200 235210 2586141 .054822 .1028651 .103739 .023626 .050488 010207 .050698 .056888	xxxxxxxxx n Max 9 .384 5 .3568233 8 .3418065 5 .3568762 8 .3068195 4 .2961595 1 .4972985 1 .3054034 3 .6496873 7 .4444755 5 .4208435	9 N = 5 n = 5 T-bar = 2 N = 1 T = 3 N = 5 n = 6 T-bar = 3 N = 8 n = 5 T =	401 18 22.2778 468 18 26 419 18 23.2778 468 18 26
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe withi Inequa-K overa betwe withi unemplRT overa	00.00 i Sylist Sx. 1 11 11 12 12 12 12 12 12 12	list Mean 4065 1256 3459 6319	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0548904 .0267419 .0922131 .1019473 .0373289 .0480923 .0795978 .0419955 .0446446	Min 200 235210 2586141 054822 102865 102865 102865 102865 065048 -010207 -012794 102568 056898	xxxxxxxx n Mai 9 .381 5 .3568233 8 .3418065 5 .3568763 8 .3068193 4 .2961593 1 .4972983 6 .386775 1 .3054034 3 .6496877 1 .3054034 3 .444755 .4208435 0 .2536703	9 N = 9 T-bar = 5 N = 5 N = 5 N = 1 T = 3 N = 6 T-bar = 3 N = 8 N = 8 N = 3 N = 9 N = 9 N = 1 T = 1	401 18 22.2778 468 18 26 419 18 23.2778 468 18 26 468
18 1 . xtsum \$t \$id Variable GiniEU-t overa betwe withi Inequa-F overa betwe withi Inequa-L overa betwe withi Inequa-K overa betwe	.00.00 i \$ylist \$x: 1 1 11 .298- ten 	1115t Mean 4065 1256 3459 6319 2579	XXXXXXXXXX Std. Dev. .0393419 .0387538 .0149403 .0597226 .05548904 .0267419 .0922131 .019473 .0373289 .0880923 .0795978 .0419955	Min 200 235210 2586141 .054822 .1028651 .103739 .023626 .050488 010207 .050698 .056888	xxxxxxxxx 9 .381 5 .3568233 8 .3418065 5 .3568762 8 .3068192 1 .497298 6 .386775 1 .3054031 3 .6496875 7 .4424755 5 .4208433 0 .2536705 1 .160201 ⁺	9 N = 9 T-bar = 2 N = 5 T-bar = 1 T = 3 N = 7 T = 3 N =	401 18 22.2778 468 26 419 18 23.2778 468 18 26 468 18

. test	parm i.year
(1)	1996.year = 0
(2)	1997.year = 0
(3)	1998.year = 0
(4)	1999.year = 0
(5)	2000.year = 0
(6)	2001.year = 0
(7)	2002.year = 0
(8)	2003.year = 0
(9)	2004.year = 0
(10)	2005.year = 0
(11)	2006.year = 0
(12)	2007.year = 0
(13)	2008.year = 0
(14)	2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18) (19)	2013.year = 0 2014.year = 0
(20)	2014.year = 0 2015.year = 0
(20)	2015.year = 0
(22)	2017.year = 0
(23)	2018.year = 0
(24)	2019.year = 0
(25)	2020.year = 0
	Constraint 10 dropped
	Constraint 12 dropped
	Constraint 14 dropped
	Constraint 15 dropped
	Constraint 17 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	Constraint 22 dropped
	F(17, 17) = 119.73
	Prob > F = 0.0000
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	15.cou = 0
(12)	17.cou = 0
(13)	18.cou = 0
(14)	20.cou = 0
(15)	21.cou = 0
(16) (17)	22.cou = 0 23.cou = 0
(±/)	25.000 - 0
	F(17, 17) = 7.5e+07

F(17, 17) = 7.5e+07 Prob > F = 0.0000

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

GiniEUstat[cou,t]	= Xb + u[cou]	+ e[cou,t]
Estimated results:	:	
	Var	sd = sqrt(Var)
GiniEUs~t	.0015298	.0391126
e	.0002029	.0142455
ц	.0010425	.0322873
Test: Var(u) = (2	
	chibar2(01)	= 1892.15
	Prob > chibar2	= 0.0000

Pooled OLS over random

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.0366151	.0511046	0144895	.0087728
InequalityL	.0137453	.024428	0106827	.0066095
InequalityK	.0106077	.0184907	007883	.0041733
unemplRT	.0567374	.0655224	008785	.0017755

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = -5.71 chi2<0 ==> model fitted on these data fails to meet the asymptotic assumptions of the Hausman test; see <u>suest</u> for a generalized test

. hausman fixed random,sigmamore

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.0366151	.0511046	0144895	.0096546
InequalityL	.0137453	.024428	0106827	.0070586
InequalityK	.0106077	.0184907	007883	.0047717
unemplRT	.0567374	.0655224	008785	.0033422

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

	Coeffic			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.0366151	.0511046	0144895	.0095999
InequalityL	.0137453	.024428	0106827	.0070186
InequalityK	.0106077	.0184907	007883	.0047447
unemplRT	.0567374	.0655224	008785	.0033233

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 8.17 Prob>chi2 = 0.0855

Random over fixed

Depended variable: Inequality Eurostat before transfers

Gini Eurostat Before Taxes_{it}

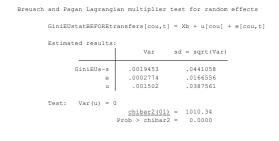
 $= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$ $+ u_{it} + b_i + u_{it}$

. describe \$id \$t \$ylist \$xlist

variable name		display format	value label		able label		
InequalityL InequalityK	double double double double double	%10.0g %10.0g %10.0g		Ineq Ineq Ineq	EUstatBEFOR qualityF qualityL qualityK uplRT	Etransfers	
. summarize \$id	\$t \$yli	st \$xlis	t				
Variable	Obs		Mean	Std. Dev.	Min	Max	
GiniEUstat~s InequalityF InequalityL InequalityK unemplRT	304 468 419 468 468	.2 .139 .215	7993 1256 3459 6319 2579	.0450628 .0597226 .0922131 .0880923 .0446446	.372 .0548225 .0236261 0127943 0	.617 .3568762 .4972983 .6496873 .2536703	
. xtdescribe							
Span (1996, . (year) = year) =	, 2020 1 year 26 peri	ods	s each obse		n = T =	18 26
Distribution of					0% 75		max
		26	26	26	26 2	6 26	26
Freq. Perc	ent C	um. P	attern				
18 100	.00 100			.1111111111	1111111		
18 100		.00 1	11111111	.1111111111			
	.00	.00 1	11111111				
18 100	.00 ylist \$x	.00 1 x	11111111			Obse	rvations
18 100 . xtsum \$t \$id \$ Variable GiniEU~s overall	.00 ylist \$x	.00 1 x list Mean S 7993 .	111111111 XXXXXXXX td. Dev. 0450628	. Min 	Max 	N =	304
18 100 . xtsum \$t \$id \$ Variable	.00 ylist \$x	.00 1 x list Mean S 7993 .	111111111 XXXXXXXX td. Dev.	Min	Max 	N = n =	
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between	.00 ylist \$x	.00 1 x list Mean S 7993 .	111111111 xxxxxxxxx ttd. Dev. 0450628 0382885	. Min . 372 . 413875	Max 	N = n = T-bar =	304 18
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall between	.00 ylist \$x	.00 1 x list 7993 . 1256 .	111111111 XXXXXXXX (td. Dev. 0450628 0382885 0260273 0597226 0548904	Min . 372 .413875 .4181118 .0548225 .1028658	Max 	N = n = T-bar = N = n =	304 18 16.8889 468 18
18 100 . xtsum \$t \$id \$ Variable GiniEU~s overall between within Inequa~F overall between within	.00 ylist \$x .483 .2	.00 1 x list 7993 . 1256 .	11111111 xxxxxxxxx 0450628 0382885 0260273 0597226 0548904 0267419	Min .372 .413875 .418118 .0548225 .1028658 .1037394	Max Max 	N = n = T-bar = N = n = T =	304 18 16.8889 468 18 26
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall between	.00 ylist \$x .483 .2	.00 1 11st Mean S 1256 . 3459 .	111111111 XXXXXXXX (td. Dev. 0450628 0382885 0260273 0597226 0548904	Min . 372 .413875 .4181118 .0548225 .1028658	XXXXXXX Max 617 .5551875 .5925771 .3568762 .3068195 .2961591 .4972983	N = n = T-bar = N = T = N =	304 18 16.8889 468 18
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall Inequa-L overall	.00 ylist \$x .483 .2	.00 1 x list 7993 .	11111111 xxxxxxxxx 0450628 0322885 0260273 0597226 0548904 0267419 0922131 1019473	Min .372 .413875 .4181118 .0548225 .1028658 .1037394 .0236261 .0650486	Max Max 	N = n = T-bar = n = T = N = n =	304 18 16.8889 468 18 26 419
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall between within Inequa-L overall between within Inequa-K overall	.00 ylist \$x .483 .2 .139	.00 1 1ist Mean S 1256 . 3459 . 6319 .	11111111 xxxxxxxx 0450628 0260273 0597226 0548904 0267419 0922131 1019473 0373289 0880923	Min 	XXXXXXXX 	N = n = T-bar = N = T = N = n = T-bar = N =	304 18 16.8889 468 18 26 419 18 23.2778 468
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall between within Inequa-L overall between within	.00 ylist \$x .483 .2 .139	.00 1 x list 7993 . 1256 . 3459 . 6319 .	111111111 xxxxxxxxx 0450628 0382885 0260273 0597226 0548904 0267419 0922131 1019473 0373289	Min .372 .413875 .4181118 .0548225 .1028658 .1037394 .0236261 .0650486 0102071	Max 	N = n = T-bar = N = n = T = N = n = T-bar = N = n = n = n =	304 18 16.8889 468 18 26 419 18 23.2778 468 18
18 100 . xtsum \$t \$id \$ Variable GiniEU-s overall between within Inequa-F overall between within Inequa-L overall between within	.00 ylist \$x .483 .2 .139 .215	.00 1 11ist Mean S 7993 . 1256 . 3459 . 6319 .	td. Dev. 0450628 032285 0260273 0597226 0548904 0267419 0922131 1019473 0732289 0880923 0795978	. Min . 372 .413875 .418118 .0548225 .1026658 .1037394 .0236261 .0650486 .0102071 .0127943 .1025687	XXXXXXXX	N = n = T-bar = N = T = N = n = T-bar = N = n = T =	304 18 16.8889 468 18 26 419 18 23.2778 468 18 26

. test	parm i.year
(1)	2004.year = 0
(2)	2005.year = 0
(3)	2006.year = 0
(4)	2007.year = 0
(5)	2008.year = 0
(6)	2009.year = 0
(7)	2010.year = 0
(8)	2011.year = 0
(9)	2012.year = 0
(10)	2013.year = 0
(11)	2014.year = 0
(12)	2015.year = 0
(13)	2016.year = 0
(14)	2017.year = 0
(15)	2018.year = 0
(16)	2019.year = 0
(17)	2020.year = 0
	F(17, 17) = 102.34 Prob > F = 0.0000
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	15.cou = 0
(12)	17.cou = 0
(13)	18.cou = 0
(14)	20.cou = 0
(15)	21.cou = 0
(16)	22.cou = 0
(17)	23.cou = 0
	Constraint 3 dropped
	Constraint 4 dropped
	Constraint 12 dropped
	Constraint 13 dropped
	Constraint 14 dropped
	Constraint 17 dropped
	R/ 11 12\ 0.7.105
	F(11, 17) = 3.7e+05 Prob > F = 0.0000
	1100 × r = 0.0000

Fixed over pooled OLS



Pooled over random

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.3035299	.2786419	.0248881	.0135197
InequalityL	.2940783	.2462594	.0478189	.0119564
InequalityK	.1176989	.1012287	.0164702	.0054813
unemplRT	.5708604	.5513588	.0195015	

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 10.60 Prob>chi2 = 0.0314 (V_b-V_B is not positive definite)

. . hausman fixed random,sigmamore

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.3035299	.2786419	.0248881	.0175563
InequalityL	.2940783	.2462594	.0478189	.014
InequalityK	.1176989	.1012287	.0164702	.0081164
unemplRT	.5708604	.5513588	.0195015	.0060116

 \mbox{b} = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 14.46 Prob>chi2 = 0.0060

. hausman fixed random, sigmaless

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.3035299	.2786419	.0248881	.0172139
InequalityL	.2940783	.2462594	.0478189	.0137269
InequalityK	.1176989	.1012287	.0164702	.0079581
unemplRT	.5708604	.5513588	.0195015	.0058943

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 15.05 Prob>chi2 = 0.0046

Fixed over pooled

Depended variable: Gini oecd

 $Gini \ OECD_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i + u_{it}$ $+ b_{i} + u_{it}$

. describe \$id \$t \$ylist \$xlist

variable name	storage type	display format	value label	variable label
giniOECD	double	%10.0g		giniOECD
InequalityF	double	%10.0g		InequalityF
InequalityL	double	%10.0g		InequalityL
InequalityK	double	%10.0g		InequalityK
unemplRT	double	%10.0g		unemplRT
. summarize \$i	d \$t \$y]	ist \$xlist		

Variable	Obs	Mean	Std. Dev.	Min	Max
giniOECD	305	.3171016	.0351379	.235	.39
InequalityF	468	.21256	.0597226	.0548225	.3568762
InequalityL	419	.1393459	.0922131	.0236261	.4972983
InequalityK	468	.2156319	.0880923	0127943	.6496873
unemplRT	468	.0892579	.0446446	0	.2536703

. xtdescribe

cou:	3, 5,, 23	n	=	18
year:	1995, 1996,, 2020	Т	-	26
	Delta(year) = 1 year			
	Span(year) = 26 periods			
	(cou*year uniquely identifies each observation)			

Distribution of	T_i:	min	5%	25%	50%	75%	95%	max
		26	26	26	26	26	26	26

Freq.	Percent	Cum.	Pattern
18	100.00	100.00	111111111111111111111111111111111111111

. xtsum \$t \$id \$ylist \$xlist

Variable	Mean	Std. Dev.	Min	Max	Obse	rvations
giniOECD overall	.3171016	.0351379	.235	.39	N =	305
between		.0345992	.2486667	.3628125	n =	18
within		.0127215	.279435	.3637858	т =	16.9444
Inequa~F overall	.21256	.0597226	.0548225	.3568762	N =	468
between		.0548904	.1028658	.3068195	n =	18
within		.0267419	.1037394	.2961591	т =	26
Inequa~L overall	.1393459	.0922131	.0236261	.4972983	N =	419
between		.1019473	.0650486	.386775	n =	18
within		.0373289	0102071	.3054036	T-bar =	23.2778
Inequa~K overall	.2156319	.0880923	0127943	.6496873	N =	468
between		.0795978	.1025687	.4444758	n =	18
within		.0419955	.0568985	.4208435	т =	26
unemplRT overall	.0892579	.0446446	0	.2536703	N =	468
between		.033309	.0286401	.1602017	n =	18
within		.0307091	.0092509	.1973715	Τ =	26

```
. testparm i.year
( 1) 1996.year = 0
( 2) 1997.year = 0
( 3) 1998.year = 0
( 5) 2000.year = 0
( 5) 2000.year = 0
( 6) 2001.year = 0
( 7) 2002.year = 0
( 8) 2003.year = 0
( 10) 2005.year = 0
( 11) 2006.year = 0
( 12) 2007.year = 0
( 13) 2008.year = 0
( 14) 2009.year = 0
( 15) 2010.year = 0
( 16) 2011.year = 0
( 16) 2011.year = 0
( 17) 2012.year = 0
( 18) 2013.year = 0
( 19) 2014.year = 0
( 21) 2016.year = 0
( 21) 2016.year = 0
( 22) 2017.year = 0
( 23) 2018.year = 0
( 23) 2018.year = 0
( 23) 2018.year = 0
( 24) constraint 1 dropped
Constraint 1 dropped
Constraint 2 dropped
Constraint 20 dropped
Constraint 3 dropped
Constraint 20 dropped
Constraint 20 dropped
Constraint 20 dropped
Constraint 3 dropped
Constraint 4 dropped
Constraint 1 dropped
Constraint 4 dropped
Constraint 1 dropped
Constraint 2 dropped
Constraint 1 dropped
Constraint 2 dropped
Constraint 1 dropped
Constraint 2 dropped
Con
```

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

giniOE	CD[cou,t] =	Xb + u[cou] +	e[cou,t]
Estima	ted results		
		Var	sd = sqrt(Var)
	giniOECD	.0012194	.0349196
	e	.0001476	.0121505
	ц	.0008289	.0287906
Test:	Var(u) = ()	
		chibar2(01)	<u>)</u> = 1208.77
		Prob > chibar2	2 = 0.0000

Pooled OLS over random

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.054728	.0768052	0220772	.0104214
InequalityL	.0082722	.0229223	0146501	.0083659
InequalityK	.0395003	.0465828	0070825	.0045359
unemplRT	.1252332	.1327543	0075211	.002516

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random,sigmamore

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.054728	.0768052	0220772	.0110394
InequalityL	.0082722	.0229223	0146501	.0086902
InequalityK	.0395003	.0465828	0070825	.0049307
unemplRT	.1252332	.1327543	0075211	.0034703

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

----- Coefficients -----

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.054728	.0768052	0220772	.0109896
InequalityL	.0082722	.0229223	0146501	.008651
InequalityK	.0395003	.0465828	0070825	.0049085
unemplRT	.1252332	.1327543	0075211	.0034546

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 6.58 Prob>chi2 = 0.1598

end of do-file

random over fixed OLS

Depended variable: Gini pre tax oecd

Gini OECD pre tax _{it}

 $= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$ $+ u_{it} + b_i + u_{it}$

. describe \$id \$t \$ylist \$xlist

type form	nat label	varia	able label		
double %10. double %10. double %10.	.0g .0g	Inequ Inequ Inequ	ualityF ualityL ualityK		
		unemp	plRT		
\$t \$ylist \$					
Obs	Mean	Std. Dev.	Min	Max	
263 468 419 468 468	.21256 .1393459 .2156319	.0597226 .0922131 .0880923 -	.0236261	.4972983 .6496873	
, 23			n	=	18
<pre>year: 1995, 1996,, 2020 T = Delta(year) = 1 year Span(year) = 26 periods</pre>					26
Ti: min	5% 2	5% 50	0% 75%	95%	max
26	26	26 2	26 26	26	26
ent Cum.	Pattern				
.00 100.00	111111111	111111111111	1111111		
.00	*****	*****	xxxxxx		
ylist \$xlist	1				
Mear	n Std. Dev.	Min	Max	Observ	vations
		. 378	.58	N =	263
	.0326083	.41375 .4352647	.5432 .5324909		17 15.4706
.21256	6 .0597226	.0548225	.3568762	N =	468
	.0548904	.1028658	.3068195	n = T =	18 26
4005					
	.1019473	.0650486	.386775	n =	419 18
	.0373289	0102071	.3054036	T-bar = 2	23.2778
			.6496873	N =	468
	.0795978 .0419955	.1025687 .0568985	.4444758 .4208435	n = T =	18 26
				1	
.0892579	9 .0446446	0	.2536703	N =	468
	double %10 double %10 double %10 double %10 st \$ylist % 0bs 263 468 419 468 468 468 (year) = 26 year unique: T_i: min 26 ent Cum. 0.00 100.00 0.00 iylist \$xlist 486726; 1 , 23 1996,, 26 year unique: T_i: min 26 , 28 year unique: 10,00 100.00 , 20 , 20 year unique: 10,00 100.00 , 20 year unique: 10,00 100.00 , 20 , 2	double %10.0g double %10.0g double %10.0g %t \$ylist \$xlist	double \$10.0g Ineq double \$10.0g	double %10.0g TrequalityF double %10.0g TrequalityF double %10.0g TrequalityF double %10.0g TrequalityF double %10.0g UnemplRT %t \$ylist \$xlist bbs Mean Std. Dev. Min 263 .4867262 .0364532 .378 468 .21256 .0597226 .0548225 419 .1393459 .0222131 .0236261 468 .0892579 .044646 0 , 23 n 1996,, 2020 T 1996,, 2020 T (Year) = 1 year 266 26 26 26 26 26 26 ent Cum. Pattern 0.00 100.00 1111111111111111111111 0.00 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	double \$10.0g inequalityr double \$10.0g inequalityr double \$10.0g inequalityr double \$10.0g unemplRT \$t \$ylist \$xlist Obs Mean Std. Dev. Min Max 263 .4867262 .0364532 .378 .58 468 .21256 .059726 .0548225 .3568762 419 .1393459 .0822131 .0236261 .4972983 468 .21551 .0880923 .0127943 .6467262 , 23 n = 1996,, 2020 T = , 24 n = 1996,, 2020 T = , (year) = 1 year

tost	parm i.year
. cest	paim i.yeai
(1)	1996.year = 0
(2) (3)	1997.year = 0 1998.year = 0
(4)	1999.year = 0
(5)	2000.year = 0
(6)	2001.year = 0
(7)	2002.year = 0
(8)	2003.year = 0
(9)	2004.year = 0
(10) (11)	2005.year = 0 2006.year = 0
(12)	2000.year = 0
(12)	2008.year = 0
(14)	2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17)	2012.year = 0
(18)	2013.year = 0
(19) (20)	2014.year = 0 2015.year = 0
(21)	2015.year = 0
(22)	2017.year = 0
(23)	2018.year = 0
(24)	2019.year = 0
(25)	2020.year = 0
	Constraint 3 dropped
	Constraint 4 dropped Constraint 7 dropped
	Constraint 8 dropped
	Constraint 12 dropped
	Constraint 14 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	Constraint 24 dropped
	F(16, 16) = 83.14
	Prob > F = 0.0000
toot	parm i.cou
. test	parm 1.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5) (6)	9.cou = 0 10.cou = 0
(7)	11.cou = 0
(8)	13.cou = 0
(9)	14.cou = 0
(10)	15.cou = 0
(11)	17.cou = 0
(12)	18.cou = 0
(13)	20.cou = 0
(14) (15)	21.cou = 0 22.cou = 0
(16)	23.cou = 0
(/	Constraint 13 dropped
	F(15, 16) = 8.9e+07 Prob > F = 0.0000
	FTOD > F = 0.0000

Fixed over pooled OLS

Pooled OLS over random

	(b) fixed	cients —— (B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF InequalityL	.0058165	.0050753	.0007413	.0137274
InequalityK unemplRT	.0571855 .4558778	.0553712 .4513135	.0018143	.0065179 .0063152

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 1.03 Prob>chi2 = 0.9060

. hausman fixed random, sigmamore

	Coeffic	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.0058165	.0050753	.0007413	.012965
InequalityL	.1429361	.1351776	.0077585	.0111206
InequalityK	.0571855	.0553712	.0018143	.006055
unemplRT	.4558778	.4513135	.0045643	.0055134

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 1.57 Prob>chi2 = 0.8138

. hausman fixed random, sigmaless

	Coeffic	cients		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	.0058165	.0050753	.0007413	.0130298
InequalityL	.1429361	.1351776	.0077585	.0111761
InequalityK	.0571855	.0553712	.0018143	.0060853
unemplRT	.4558778	.4513135	.0045643	.0055409

 \mbox{b} = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 1.56 Prob>chi2 = 0.8166

Random over fixed

Depended variable: Gini UN

 $Gini \ UN_{it} = a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i + u_{it} + b_i \\ + u_{it}$

. describe \$id \$t \$ylist \$xlist

variable name	storage type	display format	value label		variable	label
GiniWHO	double	%10.0g			GiniWHO	
InequalityF	double	%10.0g			Inequali	tyF
InequalityL	double	%10.0g			Inequali	tyL
InequalityK	double	%10.0g			Inequali	tyK
unemplRT	double	%10.0g			unemplRT	
. summarize \$i	d \$t \$yl	ist \$xli:	st			
Variable	Ob	s	Mean	Std.	Dev.	Min

Variable	Obs	Mean	Std. Dev.	Min	Max
GiniWHO	418	.31011	.0386805	.209	.39
InequalityF	468	.21256	.0597226	.0548225	.3568762
InequalityL	419	.1393459	.0922131	.0236261	.4972983
InequalityK	468	.2156319	.0880923	0127943	.6496873
unemplRT	468	.0892579	.0446446	0	.2536703
. xtdescribe					

cou:	3, 5,, 23	n =	18
year:	1995, 1996,, 2020	т =	26
	Delta(year) = 1 year		
	Span(year) = 26 periods		
	(cou*year uniquely identifies each observation)		

Distribution	of T_i:	min	5%	25%	50%	75%	95%	max
		26	26	26	26	26	26	26

Freq.	Percent	Cum.	Pattern
18	100.00	100.00	111111111111111111111111111111111111111
18	100.00		*****

. xtsum \$t \$id \$ylist \$xlist

Variable	Mean	Std. Dev.	Min	Max	Obsei	vations
GiniWHO overall	.31011	.0386805	.209	.39	N =	418
between		.0360673	.2434762	.36052	n =	18
within		.0177574	.25375	.3595646	т =	23.2222
Inequa~F overall	.21256	.0597226	.0548225	.3568762	N =	468
between		.0548904	.1028658	.3068195	n =	18
within		.0267419	.1037394	.2961591	т =	26
Inequa~L overall	.1393459	.0922131	.0236261	.4972983	N =	419
between		.1019473	.0650486	.386775	n =	18
within		.0373289	0102071	.3054036	T-bar =	23.2778
Inequa~K overall	.2156319	.0880923	0127943	.6496873	N =	468
between		.0795978	.1025687	.4444758	n =	18
within		.0419955	.0568985	.4208435	т =	26
unemplRT overall	.0892579	.0446446	0	.2536703	N =	468
between		.033309	.0286401	.1602017	n =	18
within		.0307091	.0092509	.1973715	т =	26

```
. testparm i.year
( 1) 1996.year = 0
( 2) 1997.year = 0
( 3) 1998.year = 0
( 4) 1999.year = 0
( 6) 2001.year = 0
( 6) 2001.year = 0
( 7) 2002.year = 0
( 8) 2003.year = 0
( 10) 2004.year = 0
( 11) 2006.year = 0
( 12) 2007.year = 0
( 13) 2008.year = 0
( 14) 2009.year = 0
( 15) 2010.year = 0
( 16) 2011.year = 0
( 16) 2011.year = 0
( 17) 2012.year = 0
( 19) 2014.year = 0
( 21) 2017.year = 0
( 21) 2015.year = 0
( 22) 2017.year = 0
( 24) 2019.year = 0
( 26) Constraint 12 dropped
Constraint 20 dropped
Constraint 10 dropped
Constraint 20 dropped
Constraint 10 dropped
Constraint 20 dropped
Constraint 10 dropped
Constraint 13 dropped
Constraint 14 dropped
Constraint 13 dropped
Constraint 14 dropped
Constraint 14 dropped
Constraint 15 dropped
Constraint 17 dropped
```

F(12, 17) = 4.9e+06 Prob > F = 0.0000

Fixed over pooled OLS

Breusch and Pagan Lagrangian multiplier test for random effects

GiniWHO[cou,t] = >	(b + u[cou] + e	[cou,t]
Estimate	d results:		
		Var	sd = sqrt(Var)
	GiniWHO	.0014948	.0386621
	e	.0002854	.0168951
	u	.0010181	.0319069
Test:	Var(u) = ()	
		chibar2(01)	= 2197.75
		Prob > chibar2	= 0.0000

Pooled OLS over random

. hausman fixed random

	Coeffic			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	0284813	010045	0184364	.0112491
InequalityL	.1277216	.1316018	0038803	.0082318
InequalityK	.0942716	.0964407	0021691	.0057737
unemplRT	.1623246	.1663646	00404	.0043054

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random,sigmamore

	Coeffi			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	0284813	010045	0184364	.0112432
InequalityL	.1277216	.1316018	0038803	.0082287
InequalityK	.0942716	.0964407	0021691	.0057697
unemplRT	.1623246	.1663646	00404	.0042969

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

	Coeffic	cients		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	0284813	010045	0184364	.0112436
InequalityL	.1277216	.1316018	0038803	.008229
InequalityK	.0942716	.0964407	0021691	.0057699
unemplRT	.1623246	.1663646	00404	.0042971

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 3.95 Prob>chi2 = 0.4125

Random over fixed

Depended variable: Gini Texas University

Gini Texas Univercity_{it}

 $= a_{1it} + a_2 Inequality F_{it} + a_3 Inequality L_{it} + a_4 Inequality K_{it} + b_i$ $+ u_{it} + b_i + u_{it}$

 $u_{it} + D_i + u_i$

```
. testparm i.year
( 1) 1996.year = 0
( 2) 1997.year = 0
( 3) 1998.year = 0
( 4) 1999.year = 0
( 5) 2000.year = 0
( 6) 2001.year = 0
( 7) 2002.year = 0
( 8) 2003.year = 0
( 9) 2004.year = 0
( 10) 2005.year = 0
( 11) 2006.year = 0
( 12) 2007.year = 0
( 13) 2008.year = 0
( 14) 2009.year = 0
( 15) 2010.year = 0
( 16) 2011.year = 0
( 16) 2011.year = 0
( 17) 2012.year = 0
( 18) 2013.year = 0
( 19) 2014.year = 0
( 19) 2014.year = 0
( 20) 2015.year = 0
Constraint 10 dropped
Constraint 11 dropped
Te( 17, 17) = 3.5
 . testparm i.year
                                         F(17, 17) = 3.51
Prob > F = 0.0067
. testparm i.cou
```

(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4)	8.cou = 0
(5)	9.cou = 0
(6)	10.cou = 0
(7)	11.cou = 0
(8)	12.cou = 0
(9)	13.cou = 0
(10)	14.cou = 0
(11)	15.cou = 0
(12)	17.cou = 0
(13)	18.cou = 0
(14)	20.cou = 0
(15)	21.cou = 0
(16)	22.cou = 0
(17)	23.cou = 0
	Constraint 4 dropped
	Constraint 6 dropped
	Constraint 15 dropped
	F(14 = 17) = 1.2e+(

F(14, 17) = 1.2e+06 Prob > F = 0.0000

Fixed over pooled

Breusch and Pagan Lagrangian multiplier test for random effects

Texasineq[cou,t] = Xb + u[cou] + e[cou,t]						
Estimated results	:					
	Var	sd	= sqrt(Var)			
Texasineq	.0009102		.0301692			
e	.0001309		.0114393			
u	.0006089		.0246762			
Test: Var(u) = (D					
	chibar2(01)	=	1679.38			
	Prob > chibar2	=	0.0000			

Pooled OLS over random

. hausman fixed random

	Coeffi	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	1159564	0994551	0165013	.0078389
InequalityL	.1437518	.139726	.0040259	.0069642
InequalityK	.0372873	.0329352	.0043522	.0036915
unemplRT	.1693825	.1715822	0021997	.002409

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmamore

	Coeffi	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	1159564	0994551	0165013	.0085562
InequalityL	.1437518	.139726	.0040259	.0073357
InequalityK	.0372873	.0329352	.0043522	.0041461
unemplRT	.1693825	.1715822	0021997	.0034197

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

	Coeffi	cients ———		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
InequalityF	1159564	0994551	0165013	.0085087
InequalityL InequalityK	.1437518 .0372873	.139726 .0329352	.0040259	.007295 .0041231
unemplRT	.1693825	.1715822	0021997	.0034007

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(v_b-v_B)^(-1)](b-B) = 7.50 Prob>chi2 = 0.1115

Random over fixed

Kuznets

Factor inequality

 $Inequality F_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita_{it}^2 + b_i + u_{it} \ (7.3.14)$

	rage disp ype forma			able label		
growthInequal~F do lnGDPpcapita do lnGDPpcapita2 do	ouble %10.0	Dg	lnGD	thInequality Ppcapita Ppcapita2	Ē	
. summarize \$id \$	t \$ylist \$;	xlist				
Variable	Obs	Mean	Std. Dev.	Min	Max	
growthIneq~F lnGDPpcapita lnGDPpcapi~2	468	.0069697 3.577002 13.27904			.451739 4.980603 24.80641	
. xtdescribe						
Span (ye		ear periods	s each obse	Т	=	18 26
Distribution of T	_i: min 26	5% 26		0% 75% 26 26		max 26
Freq. Percer	nt Cum.	Pattern				
18 100.0	00 100.00	11111111	111111111111	1111111		
18 100.	00	*****	****	XXXXXXX		
. xtsum \$t \$id \$y	list \$xlist					
Variable	Mean	Std. Dev	. Min	Max	Obser	rvations
growth~F overall between within	0069697		415333 0282483 3940543	.0252856	N = n = T-bar =	
lnGDPp~a overall between within	3.577002	.696516 .6151704 .3563127	2.519646	4.493712	N = n = T =	468 18 26
lnGDPp~2 overall between within	13.27904	4.515063 4.12096 2.076681	6.773964	20.23075	N = n = T =	468 18 26

. test	parm i.year
(2)	1996.year = 0 1997.year = 0
(3)	1998.year = 0
(4) (5)	1999.year = 0 2000.year = 0
(б)	2001.year = 0
(7) (8)	2002.year = 0 2003.year = 0
(9)	2003.year = 0
(10)	2005.year = 0
(11) (12)	2006.year = 0 2007.year = 0
(12)	2008.year = 0
(14)	2009.year = 0
(15) (16)	2010.year = 0 2011.year = 0
(17)	2012.year = 0
(18)	2013.year = 0
(19) (20)	2014.year = 0 2015.year = 0
(21)	2016.year = 0
(22)	2017.year = 0
(23) (24)	2018.year = 0 2019.year = 0
(24)	2020.vear = 0
	Constraint 3 dropped Constraint 6 dropped
	Constraint 6 dropped Constraint 8 dropped
	Constraint 11 dropped
	Constraint 14 dropped
	Constraint 16 dropped Constraint 21 dropped
	Constraint 23 dropped
	F(17, 17) = 13.60
	F(17, 17) = 13.60 Prob > F = 0.0000
. test	Prob > F = 0.0000
	Prob > F = 0.0000 parm i.cou
(1)	Prob > F = 0.0000 parm i.cou 5.cou = 0
(1) (2) (3)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3) (4)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0
(1) (2) (3) (4) (5)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6) (7)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (5) (6) (7) (8)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 17.cou = 0 18.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14) (15)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 21.cou = 0 21.cou = 0 22.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14) (15)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 17.cou = 0 17.cou = 0 12.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 2 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 3 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 15.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 22.cou = 0 constraint 2 dropped Constraint 2 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 6 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 6 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 5 dropped Constraint 5 dropped Constraint 7 dropped Constraint 8 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 5 dropped Constraint 7 dropped Constraint 7 dropped Constraint 12 dropped Constraint 12 dropped Constraint 12 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 6 dropped Constraint 6 dropped Constraint 10 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 17.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 5 dropped Constraint 7 dropped Constraint 7 dropped Constraint 12 dropped Constraint 12 dropped Constraint 12 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 14.cou = 0 14.cou = 0 14.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 3 dropped Constraint 6 dropped Constraint 10 dropped Constraint 10 dropped Constraint 10 dropped Constraint 12 dropped Constraint 10 dropped Constraint 10 dropped Constraint 12 dropped Constraint 13 dropped Constraint 10 dropped Constraint 12 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	<pre>Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 11.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 5 dropped Constraint 18 dropped Constraint 18 dropped Constraint 13 dropped Constraint 14 dropped Constraint 15 dropped Constraint 15 dropped Constraint 16 dropped Constraint 16 dropped Constraint 16 dropped Constraint 16 dropped Constraint 17 dropped F(3, 17) = 15.49</pre>
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	Prob > F = 0.0000 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 1 dropped Constraint 15 dropped Constraint 15 dropped Constraint 15 dropped Constraint 15 dropped Constraint 16 dropped Constraint 16 dropped Constraint 16 dropped Constraint 17 dropped Constraint 1

Facor over pooled OLS

. testparm i.year (1) 1996.year = 0 (1) 1990.year = 0 (2) 1997.year = 0 (3) 1998.year = 0 (4) 1999.year = 0 (5) 2000.year = 0 (6) 2001.year = 0 (7) 2002.year = 0 (8) 2003.year = 0 (8) 2003.year = 0 (9) 2004.year = 0 (10) 2005.year = 0 (11) 2006.year = 0 (12) 2007.year = 0 (13) 2008.year = 0 (14) 2009.year = 0 2010.year = 0 2011.year = 0 2012.year = 0 2013.year = 0 (15) (16) (10) (17) (18) 2014.year = 0 2015.year = 0 2015.year = 0 2017.year = 0 2019.year = 0 2020.year = 0 2020.year = 0 Constraint 3 dropped Constraint 6 dropped Constraint 14 dropped Constraint 14 dropped Constraint 14 dropped Constraint 16 dropped Constraint 21 dropped (19) 2014.year = 0 (20) (21) (23) (24) (25)F(17, 17) = 13.60 Prob > F = 0.0000 . testparm i.cou
(1) 5.cou = 0
(2) 6.cou = 0
(2) 6.cou = 0
(3) 7.cou = 0
(4) 8.cou = 0
(5) 9.cou = 0
(6) 10.cou = 0
(7) 11.cou = 0
(7) 11.cou = 0
(7) 11.cou = 0
(10) 14.cou = 0
(10) 14.cou = 0
(11) 15.cou = 0
(12) 17.cou = 0
(13) 18.cou = 0
(14) 20.cou = 0
(15) 21.cou = 0
(15) 21.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
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(17) 23.cou = 0
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(16) 22.cou = 0
(17) 23.cou = 0
(17) 23.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0
(17) 23.cou = 0
(17) 23.cou = 0
(16) 22.cou = 0
(17) 23.cou = 0 . testparm i.cou F(3, 17) = 15.49 Prob > F = 0.0000

end of do-file

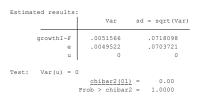
. do "C:\Users\addez\AppData\Local\Temp\STD0000000.tmp"

. quietly xtreg \$ylist \$xlist, re

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

growthInequalityF[cou,t] = Xb + u[cou] + e[cou,t]



Random over OLS

	Coeffi	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lnGDPpcapita	0426496	0381849	0044647	.0252725
lnGDPpcapi~2	0005316	.0052057	0057374	.0049132

 $$\mathsf{b}$$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 27.52 Prob>chi2 = 0.0000

fixed over random

Labor inequality

$Inequality L_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita^2_{it} + b_i + u_{it} \ (7.3.15)$

. describe \$id \$t \$ylist \$xlist

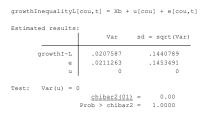
variable name t	rage displ ype forma			able label		
	ouble %10.0 ouble %10.0 ouble %10.0	g	lnGD	thInequality Ppcapita Ppcapita2	L	
. summarize \$id \$	t Şylist Şx	list				
Variable	Obs	Mean	Std. Dev.	Min	Max	
growthIneq~L lnGDPpcapita lnGDPpcapi~2	468 3	0270131 .577002 3.27904	.696516	1.053507	1.159001 4.980603 24.80641	
. xtdescribe						
Span (ye		ar eriods	s each obse	Т	=	18 26
Distribution of T	26	5% : 26 Pattern		0% 75% 26 26		max 26
		raccern				
18 100.0	00 100.00	111111111	111111111111	1111111		
18 100.0			111111111111 xxxxxxxxxxxx			
	00					
18 100.0	00		*****	****	Obse	rvations
18 100.0	00 list \$xlist	XXXXXXXXX Std. Dev .1440789 .0169949	XXXXXXXXXXXX	Max 1.159001 .0475136	Obse: N = n = T-bar =	405 18
18 100.0 . xtsum \$t \$id \$y: Variable growt-yL overall between	00 list \$xlist Mean	XXXXXXXXX Std. Dev .1440789 .0169949	. Min 716658 0013351 6978831 1.053507 2.519646	Max 1.159001 .0475136 1.178458 4.980603	N = n =	405 18 22.5 468 18

. end of do-file

.

```
. testparm i.year
      ( 1) 1996.year = 0
( 2) 1997.year = 0
( 3) 1998.year = 0
( 3) 1998.year = 0
( 5) 2000.year = 0
( 6) 2001.year = 0
( 7) 2002.year = 0
( 9) 2004.year = 0
( 9) 2004.year = 0
( 10) 2005.year = 0
( 11) 2005.year = 0
( 11) 2005.year = 0
( 12) 2007.year = 0
( 13) 2008.year = 0
( 14) 2009.year = 0
( 14) 2009.year = 0
( 15) 2010.year = 0
( 16) 2011.year = 0
( 17) 2012.year = 0
( 18) 2013.year = 0
( 20) 2015.year = 0
( 20) 2019.year = 0
( 20) 2019.year = 0
( 20) 2019.year = 0
( 20) Constraint 1 dropped
Constraint 1 dropped
Constraint 1 2 dropped
Constraint 2 dropped
Constraint2 dropped
Constraint 2 dropp
                        ( 1) 1996.year = 0
                                                                                                                                                              F(17, 17) = 18.40
Prob > F = 0.0000
      . testparm i.cou
                  (1) 5.cou = 0
(2) 6.cou = 0
( 1) 5.cou = 0
( 2) 6.cou = 0
( 3) 7.cou = 0
( 4) 8.cou = 0
( 5) 9.cou = 0
( 6) 10.cou = 0
( 7) 11.cou = 0
( 7) 11.cou = 0
( 7) 11.cou = 0
( 9) 13.cou = 0
( 10) 14.cou = 0
( 11) 15.cou = 0
( 12) 17.cou = 0
( 12) 17.cou = 0
( 13) 18.cou = 0
( 14) 20.cou = 0
( 15) 21.cou = 0
( 15) 21.cou = 0
( 16) 22.cou = 0
( 17) 23.cou = 0
Constraint 4 dropped
Constraint 5 dropped
Constraint 12 dropped
Constraint 17 dropped
Constraint17 dropped
Constraint 17 dropped
Con
                                                                                                                                                              F(11, 17) = 473.80
Prob > F = 0.0000
```

Breusch and Pagan Lagrangian multiplier test for random effects



Random over pooled OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnGDPpcapita	.3609069	.1868619	.174045	.0865008
lnGDPpcapi~2	0550254	0258317	0291937	.0141838

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha; efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 4.24 Prob>chi2 = 0.1198

. . hausman fixed random, sigmamore

	Coeffi	cients ——		
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lnGDPpcapita	.3609069	.1868619	.174045	.0842735
lnGDPpcapi~2	0550254	0258317	0291937	.0138684

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

. hausman fixed random, sigmaless

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnGDPpcapita	.3609069	.1868619	.174045	.0851811
lnGDPpcapi~2	0550254	0258317	0291937	.0140177

 $\label{eq:b} b \mbox{ = consistent under Ho and Ha; obtained from xtreg} \\ B \mbox{ = inconsistent under Ha, efficient under Ho; obtained from xtreg} \end{cases}$

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(v_b-v_B)^(-1)](b-B) = 4.35 Prob>chi2 = 0.1135

Random over fixed

Profit inequality

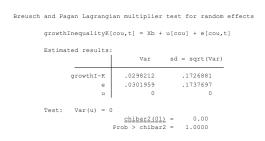
 $Inequality K_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita_{it}^2 + b_i + u_{it} (7.3.16)$

s variable name	torage disp type forma			able label		
growthInequal~K lnGDPpcapita lnGDPpcapita2	double %10.0)ġ	lnGE	thInequality Ppcapita Ppcapita2	K	
. summarize \$id	\$t \$ylist \$;	dist				
Variable	Obs	Mean	Std. Dev.	Min	Max	
growthIneq~K lnGDPpcapita lnGDPpcapi~2	468	.0177396 3.577002 L3.27904		1.053507	1.470415 4.980603 24.80641	
. xtdescribe						
Delt Span	,, 23 , 1996,, 2 a(year) = 1 ye (year) = 26 p *year uniquely	ear periods	s each obse	Т	=	18 26
Distribution of Freq. Per	_ 26	5% 26 Pattern		0% 75% 26 26		max 26
	0.00 100.00		111111111111	1111111		
	0.00		****			
. xtsum \$t \$id	Şylist Şxlist	I				
Variable	Mean	Std. Dev	. Min	Max	Obser	vations
growt~yK overal betwee within	n	.0219224	5998913 0085433 5736084	.0754785	N = n = T-bar =	456 18 25.3333
lnGDPp~a overal betwee within	n	.696516 .6151704 .3563127	2.519646	4.493712	N = n = T =	468 18 26
lnGDPp~2 overal betwee within	n	4.515063 4.12096 2.076681	6.773964	20.23075	N = n = T =	468 18 26

<pre>(1) 1996.year = 0 (2) 1997.year = 0 (3) 1998.year = 0 (4) 1999.year = 0 (5) 2000.year = 0 (7) 2002.year = 0 (10) 2005.year = 0 (11) 2006.year = 0 (12) 2007.year = 0 (13) 2008.year = 0 (14) 2009.year = 0 (15) 2010.year = 0 (15) 2010.year = 0 (16) 2011.year = 0 (17) 2012.year = 0 (18) 2013.year = 0 (20) 2015.year = 0 (21) 2016.year = 0 (22) 2015.year = 0 (23) 2018.year = 0 (24) 2019.year = 0 (25) 2020.year = 0 (25) 2020.year = 0 (26) 2019.year = 0 (27) 2018.year = 0 (28) 2018.year = 0 (29) 2014.year = 0 (20) 2015.year = 0 (20) 2015.year = 0 (20) 2015.year = 0 (21) 2016.year = 0 (22) 2017.year = 0 (23) 2018.year = 0 (24) 2019.year = 0 (25) 2020.year = 0 (25) 2020.year = 0 (20) Constraint 1 dropped Constraint 5 dropped Constraint 24 dropped Constraint 25 dropped Constraint 25 dropped Constraint 25 dropped Constraint 26 dropped Constraint 26 dropped Constraint 26 dropped Constraint 27 dropped (10) 14.cou = 0 (13) 15.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 12.cou = 0 (17) 11.cou = 0 (16) 12.cou = 0 (17) 12.cou = 0 (16) 22.cou = 0 (17) 13.cou = 0 (16) 22.cou = 0 (17) 13.cou = 0 (17) 12.cou = 0 (16) 22.cou = 0 (17) 12.cou = 0 (17) 12.cou = 0 (17) 12.cou = 0 (20) Constraint 1 dropped Constraint 1 dro</pre>	. test	parm i.year
$\begin{array}{c} \text{Constraint 25 droppd} \\ \hline \\ \text{F(17, 17) = 6.08} \\ \text{Prob > F = 0.0003} \\ \hline \\ \text{(1) 5.cou = 0} \\ (2) 6.cou = 0 \\ (3) 7.cou = 0 \\ (4) 8.cou = 0 \\ (5) 9.cou = 0 \\ (4) 8.cou = 0 \\ (5) 9.cou = 0 \\ (6) 10.cou = 0 \\ (7) 11.cou = 0 \\ (8) 12.cou = 0 \\ (10) 14.cou = 0 \\ (11) 15.cou = 0 \\ (11) 15.cou = 0 \\ (12) 17.cou = 0 \\ (13) 18.cou = 0 \\ (14) 20.cou = 0 \\ (14) 20.cou = 0 \\ (15) 21.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 23.cou = 0 \\ (17) 23.cou$	<pre>(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24)</pre>	1996.year = 0 1997.year = 0 1998.year = 0 2000.year = 0 2001.year = 0 2001.year = 0 2003.year = 0 2005.year = 0 2006.year = 0 2006.year = 0 2008.year = 0 2010.year = 0 2011.year = 0 2011.year = 0 2012.year = 0 2013.year = 0 2013.year = 0 2013.year = 0 2013.year = 0 2014.year = 0 2015.year = 0 2015.year = 0 2016.year = 0 2017.year = 0 2018.year = 0 2019.year = 0 2019.y
$\begin{array}{c} \text{Constraint 25 droppd} \\ \hline \\ \text{F(17, 17) = 6.08} \\ \text{Prob > F = 0.0003} \\ \hline \\ \text{(1) 5.cou = 0} \\ (2) 6.cou = 0 \\ (3) 7.cou = 0 \\ (4) 8.cou = 0 \\ (5) 9.cou = 0 \\ (4) 8.cou = 0 \\ (5) 9.cou = 0 \\ (6) 10.cou = 0 \\ (7) 11.cou = 0 \\ (8) 12.cou = 0 \\ (10) 14.cou = 0 \\ (11) 15.cou = 0 \\ (11) 15.cou = 0 \\ (12) 17.cou = 0 \\ (13) 18.cou = 0 \\ (14) 20.cou = 0 \\ (14) 20.cou = 0 \\ (15) 21.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 12.cou = 0 \\ (17) 12.cou = 0 \\ (16) 22.cou = 0 \\ (17) 23.cou = 0 \\ (17) 23.cou$		Constraint 7 dropped Constraint 9 dropped
$F(17, 17) = 6.08 \\ Frob > F = 0.0003$. testparm i.cou $(1) 5.cou = 0$ $(2) 6.cou = 0$ $(3) 7.cou = 0$ $(3) 7.cou = 0$ $(6) 10.cou = 0$ $(6) 10.cou = 0$ $(7) 11.cou = 0$ $(1) 14.cou = 0$ $(1) 14.cou = 0$ $(11) 15.cou = 0$ $(11) 15.cou = 0$ $(12) 17.cou = 0$ $(14) 20.cou = 0$ $(14) 20.cou = 0$ $(15) 21.cou = 0$ $(15) 21.cou = 0$ $(16) 22.cou = 0$ $(17) 23.cou = 0$ $(17) 23.cou = 0$ $Constraint 1 droppedConstraint 5 droppedConstraint 7 droppedConstraint 1 droppedConstraint 12 droppedConstraint 12 droppedConstraint 13 droppedConstraint 15 dropped$		
<pre>Prob > F = 0.0003 . testparm i.cou (1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (8) 12.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (17) 7.3.cou = 0 Constraint 1 dropped Constraint 2 dropped Constraint 4 dropped Constraint 5 dropped Constraint 5 dropped Constraint 1 dropped Constraint 12 dropped Constraint 13 dropped Constraint 13 dropped Constraint 15 dropped Constra</pre>		constraint 25 dropped
<pre>(1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (7) 11.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (14) 20.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (17) 23.cou = 0 (17) 23.cou = 0 (constraint 1 dropped Constraint 5 dropped Constraint 1 dropped</pre>		7 17 17 (00
<pre>(2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (7) 11.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 Constraint 1 dropped Constraint 5 dropped Constraint 4 dropped Constraint 5 dropped Constraint 1 dropped Constraint 6 dropped Constraint 1 dropped</pre>		F(17, 17) = 6.08 Prob > F = 0.0003
	. test	Prob > F = 0.0003

F(4, 17) = 503.97 Prob > F = 0.0000

Fixed over pooled OLS



Random over OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnGDPpcapita	1816748	1634425	0182323	.0641915
lnGDPpcapi~2	.0223932		.0015067	.0123082

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 0.41 Prob>chi2 = 0.8150

Random over fixed

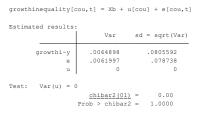
Total inequality

$Inequality_{it} = a_{1it} + a_2 GDP \ per \ capita_{it} + a_3 GDP \ per \ capita_{it}^2 + b_i + u_{it} (7.3.17)$

	rage displ ype forma			ble label		
growthinequal~y do				hinequality		
	ouble %10.0			pcapita		
lnGDPpcapita2 do	Suble %10.0	g	InGDP	pcapita2		
. summarize \$id \$t	t Şylist Şx	list				
Variable	Obs	Mean	Std. Dev.	Min	Max	
growthineq~y	435	0015933	.0805592 -	.8765261	.8245583	
lnGDPpcapita			.696516		4.980603	
lnGDPpcapi~2	468 1	3.27904	4.515063	1.109877	24.80641	
1						
. xtdescribe						
cou: 3, 5,	, 23			n	-	18
year: 1995, 1		020			=	26
Delta(year) = 1 ye	ar				
	ear) = 26 p					
(cou*ye	ear uniquely	identifies	each obser	vation)		
-					05.0	
(cou*ye Distribution of T_	_i: min	5% 2	5% 50	\$ 75%		max 26
-		5% 2		\$ 75%		max 26
-	_i: min 26	5% 2	5% 50	\$ 75%		
Distribution of T	_i: min 26	5% 2 26 Pattern	5% 50	\$ 75% 6 26		
Distribution of T Freq. Percer	_i: min 26 nt Cum.	5% 2 26 Pattern 11111111	5% 50 26 2 11111111111	\$ 75% 6 26 111111		
Distribution of T	_i: min 26 nt Cum.	5% 2 26 Pattern 11111111	5% 50 26 2	\$ 75% 6 26 111111		
Distribution of T Freq. Percer	_i: min 26 nt Cum.	5% 2 26 Pattern 11111111	5% 50 26 2 11111111111	\$ 75% 6 26 111111		
Distribution of T Freq. Percer 18 100.0	_i: min 26 nt Cum.	5% 2 26 Pattern 11111111	5% 50 26 2 111111111111	\$ 75% 6 26 111111	26	
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable	_i: min	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev.	5% 50 26 2 111111111111 XXXXXXXXXXX Min	8 75% 6 26 1111111 XXXXXXX Max	26	26
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable	_i: min 26 nt Cum. 00 100.00 00	5% 2 26 Pattern 111111111 XXXXXXXX Std. Dev. .0805592	5% 50 26 2 111111111111	\$ 75% 6 26	Obser	26 evations
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable gro-lity overall	_i: min	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0805592 .0139599	5% 50 26 2 11111111111 XXXXXXXXXXX Min 8765261	75% 26 111111 XXXXXX Max .8245583	Obser N =	26
Distribution of T Freq. Percer 18 100.0 18 100.0 . xtsum \$t \$id \$y: Variable gro-lity overall between within	_i: min 26 nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0805592 .0139599 .0793743	5% 50 26 2 11111111111 XXXXXXXXXXX Min 8765261 0232379 8548815	* 75% 6 26 111111 XXXXXX Max .8245583 .0405596 .7824054	Obser N = n = T-bar =	26 vations 435 18 24.1667
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable gro-lity overall between within lnGDPp-a overall	_i: min	5% 2 Pattern 111111111 XXXXXXXXX Std. Dev. .0805592 .0139599 .0793743 .696516	5% 50 26 2 111111111111 XXXXXXXXXXXX Min 8765261 0232379 8548815 1.053507	8 75% 6 26 1111111 xxxxxxx Max .8245583 .0405596 .7824054 4.980603	26 Obser N = T-bar = N =	26 tvations 435 18 24.1667 468
Distribution of T Freq. Percer 18 100.0 18 100.0 . xtsum \$t \$id \$y: Variable gro-lity overall between within lnGDFP-a overall between	_i: min 26 nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0005592 .0139599 .0793743 .696516 .6151704	5% 50 26 2 11111111111 XXXXXXXXXXXXXXXXXXXXXXXXX	% 75% 6 26 1111111 xxxxxxx Max 8245583 .0405596 .7824054 4.980603 4.493712	26 Obser n = T-bar = n = n =	26 evations 435 18 24.1667 468 18
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable gro-lity overall between within lnGDPp-a overall	_i: min 26 nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0005592 .0139599 .0793743 .696516 .6151704	5% 50 26 2 111111111111 XXXXXXXXXXXX Min 8765261 0232379 8548815 1.053507	8 75% 6 26 1111111 xxxxxxx Max .8245583 .0405596 .7824054 4.980603	26 Obser N = T-bar = N =	26 tvations 435 18 24.1667 468
Distribution of T Freq. Percer 18 100.(18 100.(. xtsum \$t \$id \$y) Variable gro-lity overall between within lnGDPp-a overall between within	_i: min 26 nt Cum. 00 100.00 00 00 00 00 00 00 00 00 00 00 00 0	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0005592 .0139599 .0793743 .696516 .6151704	5% 50 26 2 11111111111 XXXXXXXXXXXXXXXXXXXXXXXXX	% 75% 6 26 1111111 xxxxxxx Max 8245583 .0405596 .7824054 4.980603 4.493712	26 Obser n = T-bar = n = n =	26 evations 435 18 24.1667 468 18
Distribution of T Freq. Percer 18 100.0 18 100.0 . xtsum \$t \$id \$y: Variable gro-lity overall between within lnGDPp-a overall between	i: min 26 nt Cum. 00 100.00 00 11ist \$xlist Mean 0015933 3.577002	5% 2 26 Pattern 111111111 XXXXXXXXX Std. Dev. .0805592 .0139599 .0139599 .0139599 .0139599 .0139599 .0139543 .696516 .6151704 .3563127	5% 50 26 2 111111111111 XXXXXXXXXXXXXXXXXXXXXXXX	8 75% 6 26 111111 XXXXXXX Max .8245583 .0405596 .7824054 4.980603 4.43712 4.441503	26 Obser n = T-bar = N = n = T =	26 evations 435 18 24.1667 468 18 26 468

. test	parm i.year
(1)	1996.year = 0
(2)	1997.year = 0
(3)	1998.year = 0
(4) (5)	1999.year = 0 2000.year = 0
(6)	2000.year = 0 2001.year = 0
(7)	2002.year = 0
(8)	2003.year = 0
(9)	2004.year = 0
(10)	2005.year = 0
(11) (12)	2006.year = 0 2007.year = 0
(13)	2008.year = 0
(14)	2009.year = 0
(15)	2010.year = 0
(16)	2011.year = 0
(17) (18)	2012.year = 0 2013.year = 0
(19)	2013.year = 0 2014.year = 0
(20)	2015.year = 0
(21)	2016.year = 0
(22)	2017.year = 0
(23)	2018.year = 0
(24)	2019.year = 0
(25)	2020.year = 0 Constraint 2 dropped
	Constraint 5 dropped
	Constraint 8 dropped
	Constraint 9 dropped
	Constraint 11 dropped
	Constraint 12 dropped Constraint 18 dropped
	Constraint 18 dropped Constraint 21 dropped
	F(17, 17) = 4.94
. test;	F(17, 17) = 4.94
	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou
(1)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0
(1) (2)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0
(1) (2) (3)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0
(1) (2) (3)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0
(1) (2) (3) (4) (5) (6)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0
(1) (2) (3) (4) (5) (6) (7)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 17.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 12.cou = 0 13.cou = 0 2.cou = 0 2.cou = 0 13.cou = 0 12.cou = 0 2.cou = 0 13.cou = 0 12.cou = 0 13.cou = 0 12.cou = 0 13.cou = 0
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0 20.cou =
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0 20.cou =
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 2 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 20.cou =
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 4 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 12.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 20.cou =
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 13.cou = 0 13.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 3 dropped Constraint 4 dropped Constraint 4 dropped Constraint 6 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 13.cou = 0 22.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 3 dropped Constraint 4 dropped Constraint 5 dropped Constraint 7 dropped Constraint 12 dropped Constraint 12 dropped Constraint 12 dropped Constraint 12 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 3 dropped Constraint 6 dropped Constraint 6 dropped Constraint 10 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 8.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 12.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 15.cou = 0 21.cou = 0 21.cou = 0 21.cou = 0 23.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 4 dropped Constraint 5 dropped Constraint 6 dropped Constraint 7 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm 1.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 13.cou = 0 20.cou = 0 Constraint 2 dropped Constraint 5 dropped Constraint 12 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped Constraint 17 dropped
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16)	F(17, 17) = 4.94 Prob > F = 0.0010 parm i.cou 5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 13.cou = 0 14.cou = 0 15.cou = 0 20.cou = 0 20.cou = 0 21.cou = 0 22.cou = 0 22.cou = 0 23.cou = 0 Constraint 2 dropped Constraint 3 dropped Constraint 6 dropped Constraint 6 dropped Constraint 10 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped

Breusch and Pagan Lagrangian multiplier test for random effects



Random over pooled OLS

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
lnGDPpcapita	1473866	1428764	0045101	.0344454
lnGDPpcapi~2	.0145889	.0184113	0038224	

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 7.53 Prob>chi2 = 0.0232

Fixed over random effects

Depended variable: ∆GDPper capita

Total inequality

 $\Delta GDP percapita_{it}$

 $= a_{1it} + a_2L. profit rate_{it} + a_3L. interest rate_{it} + a_4L. private dept_{it}$ $+ a_5 inequality_{it} + a_6 euro entrance_{it} + a_7 2008 financial crisis_{it} + b_i$ $+ u_{it}$ (7.3.17)

variable nam							
growthGDPpca					thGDPpcapit	a	
growthr growthir		e %10. e %10.			vthr vthir		
lnDebtH1		e %10.			ebtH1		
inequality	doubl	e %10.	0g	ine	quality		
eurodumm	byte				odumm		
crisisdumm	byte	%10.	Ug	cris	sisdumm		
. summarize	\$id \$t \$	ylist \$	xlist				
Variable	e	Obs	Mean	Std. Dev.	Min	Max	
growthGDPp~a			.0406442		217647	.409613	
growthr			.0235549		4369912 4369218	.5567241	
growthir lnDebtH1			4.006271			.6638064 7.639548	
inequality					.1889477	.5817417	
eurodumm			.6923077	.4620323	0	1	
crisisdumm	n	468	.5	.500535	0	1	
. xtdescribe	e						
cou: 3	3, 5,,	23				n =	18
year: 1	1995, 1996	,,				т =	26
	Delta(year						
	Span(year)		periods y identifies	and at -			
((couryear	uniquel	y rdentifies	each obse	ervation)		
Distribution	n of T_i:			15%	50% 75	5% 95%	max
		26	26	26	26 2	26 26	26
Freq.	Percent	26 Cum.	26 Pattern	26	26 2	26 26	26
Freq.	Percent	Cum.	Pattern	26		26 26	26
		Cum.	Pattern 11111111		1111111	26 26	26
18	100.00	Cum.	Pattern 111111111 XXXXXXXXX	.1111111111	1111111	26 26	26
18	100.00	Cum.	Pattern 111111111 XXXXXXXXX		11111111 (XXXXXXXX		26 tvations
	100.00 100.00 \$id \$ylist	Cum. 100.00 \$xlist Mear	Pattern 111111111 XXXXXXXXX Std. Dev	.1111111111 	11111111 (XXXXXXX) Max	< Obser	vations
18 18 . xtsum \$t \$ Variable growth~a ove bet	100.00 100.00 \$id \$ylist erall . tween	Cum. 100.00 \$xlist	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097	.111111111 XXXXXXXXXXXX Min 21764' .01198;	11111111 (XXXXXXX) Max 7 .409613 2 .1029395	< Obser 3 N = 5 n =	-vations 465 18
18 18 . xtsum \$t \$ Variable growth~a ove bet	100.00 100.00 \$id \$ylist erall .	Cum. 100.00 \$xlist Mear	Pattern 111111111 XXXXXXXX Std. Dev. .0605026	.111111111 XXXXXXXXXXXX Min 21764' .01198;	11111111 (XXXXXXX) Max 7 .409613 2 .1029395	< Obser 3 N = 5 n =	-vations 465 18
18 18 . xtsum \$t \$ Variable growth~a ove bet wit	100.00 100.00 \$id \$ylist erall . tween thin	Cum. 100.00 \$xlist Mear 0406442	Pattern 11111111 XXXXXXXX Std. Dev. .0605026 .030097 .0529168		11111111 XXXXXXX Max 7 .409612 2 .1029395 5 .348506	 Obser 8 N = 5 n = 5 T-bar = 	-vations 465 18
18 18 . xtsum \$t \$ Variable growth~a ove bet wit growthr ove	100.00 100.00 \$id \$ylist erall . tween thin	Cum. 100.00 \$xlist Mear	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998	.111111111 XXXXXXXXXXX Min 21764 .01198; 26481 436991;	11111111 (XXXXXXXX 7 .409611 2 .1029395 5 .348506 2 .5567241	< Obser 3 N = 5 N = 5 T-bar = 1 N =	vations 465 18 25.8333
IR IR IR Variable growth~a ove bet wit growthr ove bet	100.00 100.00 \$id \$ylist erall . tween thin erall .	Cum. 100.00 \$xlist Mear 0406442	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985		11111111 (XXXXXXXX 7 .409611 2 .1029395 5 .348506 2 .5567241 3 .098276	< Obser 3 N = 5 n = 5 T-bar = 1 N = 5 n =	vations 465 18 25.8333 463 18
IR IR IR Variable growth~a ove bet wit growthr ove bet	100.00 100.00 \$id \$ylist erall . thin erall . tween thin	Cum. 100.00 \$xlist Mear 0406442 0235549	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985	Min 21764 .01198 26481(436991) 003297 457312	IIIIIIIII XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXXX XXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	 C Obser N = T-bar = N = N = N = T-bar = 	vations 465 18 25.8333 463 18
18 18 . xtsum %t % Variable growth~a ove bet wit growthr ove bet wit	100.00 100.00 \$id \$ylist erall . thin erall . tween thin	Cum. 100.00 \$xlist Mear 0406442 0235549	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985 .0909177 .0939562	Min 21764 .01198 26481(436991) 003297 457312	1111111 XXXXXXXX 1	 Cobservation N = n = T-bar = N = T-bar = N = 	465 18 25.8333 463 18 25.7222
18 18 . xtsum \$t \$ Variable growth-a ove bet wit growthr ove bet growthr ove bet bet	100.00 100.00 \$id \$ylist tween thin erall . tween thin erall .	Cum. 100.00 \$xlist Mear 0406442 0235549	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .03097 .0529168 .0944998 .0266885 .0909177 .0939562 .0217885		11111111 A Max 7 .409613 7 .409613 5 .348500 2 .5567241 8 .6638064 8 .6638064 8 .6638064	 C Obser N = 5 n = 5 n = 6 n = 7 - bar = 1 N = 5 n = 	465 18 25.8333 463 18 25.7222 450
18 18 . xtsum \$t \$ growth-a ove bet wit growthr ove bet wit	100.00 100.00 \$id \$ylist erall erall thin erall theen thin erall tween thin	Cum. 100.00 \$xlist 0406442 0235549	Pattern 11111111 XXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985 .0909177 .0939562 .0217585 .0915404	21764 .01198; 264810 436991; 436991; 4369211 437312; 4369211 014782; 502878;	11111111 XXXXXXXXX A Max 7 .409613 2 .5567241 3 .638066 8 .09277606 6 396246	 Cobser N = n = T-bar = N = T-bar = N = N = N = T = 	465 18 25.8333 18 25.7222 450 18
18 18 18 . xtsum \$t \$ variable growth-a ove bet wit growthr ove bet wit lnDebtH1 ove	100.00 100.00 \$id \$ylist erall erall thin erall theen thin erall tween thin	Cum. 100.00 \$xlist 0406442 0235549	Pattern 11111111 XXXXXXXX Std. Dev. .0605026 .03097 .0529168 .0944998 .0266985 .0909177 .0939562 .0217585 .0915404 2.315389	21764 .01198; 264810 436991; 436991; 4369211 437312; 4369211 014782; 502878;	IIIIIIII CXXXXXXX A Max 7 .409612 2 .1029195 3 .482003 8 .6638064 8 .0557604 5 .6396248 8 .07.639548	 C Obser N = T-bar = N = T-bar = N = N = N = N = 	465 18 25.8333 463 18 25.7222 450 18 25
18 18 18 . xtsum \$t \$ Variable growth~a ove bet wit growthr ove bet wit lnDebtH1 ove	100.00 100.00 \$id \$ylist tween thin erall erall tween thin erall	Cum. 100.00 \$xlist 0406442 0235549	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0266985 .0909177 .0939562 .0217585 .0915404 2.315389 2.171727		IIIIIIII CXXXXXXX A Max 7 .409612 2 .1029195 3 .482003 8 .6638064 8 .0557604 5 .6396248 8 .07.639548	 Cobser N = T - bar = T - bar = T - bar = N = 	465 18 25.8333 463 18 25.7222 450 18 25 25 462 18
18 18 18 variable growth-a ove bet wit growthr ove bet wit growthir ove bet wit lnDebtHl ove bet wit	100.00 100.00 \$id \$ylist erall tween thin erall tween thin erall erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall the the the the the the the the	Cum. 100.00 \$xlist Mear 0406442 0235549 0098039 .006271	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .0905026 .0929168 .0944998 .0266885 .0909177 .0939562 .0217585 .0915404 2.315389 2.171727 .9220272	Min 21764 .01988 264814 436991 436921 457312 457312 5028784 014782 5028784 2592874 2592874 2592874 2592874 2592874 2592874 259274 2592874 259274 25	IIIIIIII XXXXXXXX 3 Max 7 .409613 2 .1029195 3 .348506 2 .5567241 8 .698276 3 .482003 8 .6638066 8 .639546 9 .639542 9 6.030101	 C Obser N = n = T-bar = N = T-bar = N = N = N = N = N = N = T-bar = 	465 25.8333 463 25.7222 450 18 25 462 25.6667
IS IS IS Variable growth~a ove bet wit growthr ove bet wit InDebtHl ove bet wit inequa-y ove	100.00 100.00 Sid \$ylist erall . tween thin erall . tween thin erall . tween thin erall . erall . tween thin erall . thin erall . the tween thin thin erall . the tween thin erall . thin erall . thin erall . thin erall . thin erall . the tween thin erall . thin erall . thin erall . thin erall . thin erall .	Cum. 100.00 \$xlist Mear 0406442 0235549 0098039 .006271	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0266985 .0909177 .0939562 .0217585 .0915404 2.315389 2.171727 .9220272 .0804257		IIIIIIII XXXXXXXXX A Max T .409411 T .409412 2 .102393 5 .348500 2 .5567241 3 .6638064 8 .6638064 8 .6638064 8 .7.345051 9 .6.030103 7 .5817417	 C Obser N = n = T-bar = T-bar = N = T-bar = N = N = N = N = T = N = T = N = T = N = 	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 450
18 18 18 Variable growth-a ove bet wit growthr ove bet wit lnDebtHl ove bet inequa-y ove bet	100.00 100.00 \$id \$ylist erall tween thin erall tween thin erall erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall the the the the the the the the	Cum. 100.00 \$xlist Mear 0406442 0235549 0098039 .006271	Pattern 11111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985 .0909177 .0939562 .0217585 .0915404 2.315389 2.171227 .0804257 .0694712		IIIIIIII a Max 7 .409613 2 .1023932 3 .4682003 3 .6638064 6 .0757604 6 .0757604 6 .0754504 7 .435159 7 .5817417	 C Obser N = n = T-bar = I - bar = T-bar = N = 	465 25.8333 463 25.7222 450 18 25 462 25.6667
18 18 18 variable growth-a over bet wit growthr over bet wit growthir over bet wit inequa~y over bet wit	100.00 100.00 \$id \$ylist erall . tween thin erall . tween	Cum. 100.00 \$x11st Mear 0406442 0235545 0098035 .006271 3574031	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0944998 .0266985 .0909177 .0939562 .0217585 .0915404 2.315389 2.171727 .9220272 .0804257 .0694712 .0437959		IIIIIIIII XXXXXXXXX A Max 7 .409613 2 .1029395 5 .3482003 3 .6638064 8 .0757606 5 .639542 3 .6638064 3 .7.639542 7 .345019 6 .030103 7 .5817417 9 .6.030103 7 .5817417 9 .4975451	 CObservert N = n = T-bar = T-bar = T-bar = N = N = T = N = N = T = N = T = N = N = T = N = T = N = T =	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 450 18 25.6667
18 18 18 18 variable growth-a ove bet wit growthr ove bet wit growthr ove bet wit inDebtH1 ove bet wit inequa-y ove bet wit	100.00 100.00 \$id \$ylist tween thin erall era	Cum. 100.00 \$x11st Mear 0406442 0235545 0098035 .006271 3574031	Pattern 11111111 XXXXXXXX Std. Dev. .0605026 .03097 .0529168 .0944998 .0266985 .0909177 .0939562 .217585 .0915404 2.315389 2.171727 .08042577 .0694712 .0437959 .4620323	Min 21764' .01198' 26481' 436991' 436921' 457312' 457312' 502878' .738922' .090842' .130911'	11111111 CXXXXXXX a Max 7 .409613 2 .1029395 2 .5567241 8 .098276 3 .482003 8 .6639646 6 .0757600 6 .0757600 7 .5439548 9 6.039104 7 .5451953 4.4519535 .4975451 9 .4519545 5 .4975451	 C Obser N = T-bar = T-bar = T-bar = T-bar = N = N = N = N = N = N = T-bar = T-bar = T-bar = T-bar = T-bar = N = 	465 465 25.8333 463 25.7222 450 18 25.6667 462 25.6667 450 18 25.6667 450 450 450
18 18 18 variable growth~a over bet wit growthr over bet wit growthr over bet wit lnDebtHl over bet wit inequa~y over bet wit	100.00 100.00 \$id \$ylist erall . tween thin erall . tween	Cum. 100.00 \$x11st Mear 0406442 0235545 0098035 .006271 3574031	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0246985 .0909177 .039562 .0217585 .0915404 2.315389 2.171727 .9220272 .0804257 .0694712 .0694712 .0437959 .4620323 .2258141	Min 21764' .01982' 26481' 436991' 436921' 436921' 03297' 436921' 03297' 436921' 03297' .0329' .0399' .0399' .0399' .0399' .0399' .0399' .0399' .0399' .039'	IIIIIIII XXXXXXXXX A Max A Max CXXXXXXXX Second Se	 Cobsert N = n = T-bar = T-bar = T-bar = N = 	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 450 18 25.6667
18 18 18 18 variable growth-a ove bet wit growthr ove bet wit growthir ove bet wit inequa-y ove bet wit eurodumm ove bet wit	100.00 100.00 \$id \$ylist tween thin erall tween thin erall erall tween thin erall erall tween thin erall erall tween thin erall erall tween thin erall e	Cum. 100.00 \$x1isti 00406442 0035549 0098035 .006271 3574031 6923077	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .0905026 .0929168 .0944998 .0266885 .0909177 .0939562 .021785 .0915404 2.315389 2.171727 .0915404 2.315389 2.171727 .09202225 .0804257 .0694712 .0437959 .4620323 .2258141 .4064624	Min 21764' .01198' 26481' 436991' 436921' 457312' 457312' 457312' 457312' 014782' .010842' .18947' .2093804' .130911' .20759' 153846'	IIIIIIII XXXXXXXX A Max CXXXXXXXX A Max CXXXXXXXX A Max CXXXXXXXX A Max CXXXXXXXX A A A A A A B A B A B A B A B B B A B	C Obser 3 N = 5 n = 5 n = 5 n = 6 n = 7 n = 8 T = 9 n = 1 T > 3 N = 1 T > 3 N = 1 T > 8 T = 1 T > 1 T > 1 T > 1 T > 1 T > 3 T = 3 T =	465 25.8333 463 25.7222 450 18 25.6667 450 18 25.6667 450 18 25 468 25 468 25 468 25
18 18 18 variable growth~a ove bet wit growthr ove bet wit lnDebtHl ove bet wit inequa~y ove bet wit crisis-m ove	100.00 100.00 \$id \$ylist erall . tween thin erall . the erall . the eral . the erall . the	Cum. 100.00 \$x11st Mear 0406442 0235545 0098035 .006271 3574031	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .030097 .0529168 .0246985 .0909177 .039562 .0217580 .031580 2.315389 2.171727 .9220272 .0804257 .0694712 .0437959 .4620323 .2258141 .4064624 .500535		IIIIIIIII XXXXXXXXXX A Max A Max CXXXXXXXXX Constraints A Max CXXXXXXXXXX Constraints A Max CXXXXXXXXXXXXX Constraints A Max CXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	 CObservert N = n = T-bar = T-bar = T-bar = N = 	vations 465 18 25.8333 463 18 25.7222 450 18 25 462 18 25 462 18 25 462 18 25 468 18 25 468 18 25 468
18 18 18 variable growth-a over bet wit growthr over bet wit growthr over bet wit inequa-y over bet wit inequa-y over bet wit crisis-m over bet	100.00 100.00 \$id \$ylist tween thin erall tween thin erall erall tween thin erall erall tween thin erall erall tween thin erall erall tween thin erall e	Cum. 100.00 \$x1isti 00406442 0035549 0098035 .006271 3574031 6923077	Pattern 111111111 XXXXXXXXX Std. Dev. .0605026 .0905026 .0929168 .0944998 .0266885 .0909177 .0939562 .021785 .0915404 2.315389 2.171727 .0915404 2.315389 2.171727 .09202225 .0804257 .0694712 .0437959 .4620323 .2258141 .4064624	Min 21764' .01198' 26481' 436991' 436921' 457312' 457312' 457312' 457312' 014782' .010842' .738922' .0908042' .130911' .20769' 153846'	IIIIIIII Max 1 CXXXXXXX 1 CXXXXXXX 1 CXXXXXXX 2	 Cobserved N = T-bar = N = T-bar = T-bar = N = N = N = N = N = T-bar = N = 	465 25.8333 463 25.7222 450 18 25.6667 450 18 25.6667 450 18 25 468 25 468 25 468 25

	testester	i
٠	testparm	r.year

Constraint 22 dropped Constraint 23 dropped F(17, 17) = 89.50 Prob > F = 0.0000 testparm i.cou (1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (8) 12.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (15) 22.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 Constraint 4 dropped Constraint 12 dropped Constraint 12 dropped Constraint 14 dropped Constraint 17 dropped Constraint 19 dropped Constraint 19 dropped Constraint 10 droppe	(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (20) (22) (22) (23)	1997.year = 0 1998.year = 0 1999.year = 0 2001.year = 0 2001.year = 0 2003.year = 0 2003.year = 0 2004.year = 0 2005.year = 0 2006.year = 0 2008.year = 0 2008.year = 0 2009.year = 0 2010.year = 0 2011.year = 0 2011.year = 0 2013.year = 0 2013.year = 0 2014.year = 0 2015.year = 0 2015.year = 0 2015.year = 0 2015.year = 0 2016.year = 0 2018.year = 0 2018.year = 0 2019.year = 0 2019.y
F(17, 17) = 89.50 $Prob > F = 0.0000$ testparm i.cou (1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (8) 12.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (17) 23.cou = 0 (20, straint 5 dropped Constraint 14 dropped Constraint 13 dropped Constraint 13 dropped Constraint 14 dropped Constraint 17 dropped Constraint 17 dropped F(10, 17) = 7441.47		Constraint 22 dropped
Prob > F = 0.0000 testparm i.cou (1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (7) 11.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (13) 18.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (16) 23.cou = 0 (17) 23.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (17) 23.cou = 0 (18) Constraint 4 dropped Constraint 5 dropped Constraint 13 dropped Constraint 13 dropped Constraint 13 dropped Constraint 14 dropped Constraint 17 dropped Constraint 17 dropped Constraint 17 dropped		Constraint 23 dropped
<pre>(1) 5.cou = 0 (2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (11) 15.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 Constraint 4 dropped Constraint 5 dropped Constraint 13 dropped Constraint 13 dropped Constraint 14 dropped Constraint 14 dropped Constraint 14 dropped Constraint 13 dropped Constraint 14 dropped Constraint 17 dropped Constraint 17 dropped F(10, 17) = 7441.47</pre>		
<pre>(2) 6.cou = 0 (3) 7.cou = 0 (4) 8.cou = 0 (5) 9.cou = 0 (6) 10.cou = 0 (7) 11.cou = 0 (7) 11.cou = 0 (9) 13.cou = 0 (10) 14.cou = 0 (11) 14.cou = 0 (12) 17.cou = 0 (12) 17.cou = 0 (13) 18.cou = 0 (14) 20.cou = 0 (15) 21.cou = 0 (16) 22.cou = 0 (16) 22.cou = 0 (17) 23.cou = 0 (16) 23.cou = 0 (17) 23.cou</pre>	test	parm i.cou
ProD > F = 0.0000	(1) (2) (3) (4) (5) (6) (7) (8) (10) (11) (12) (13) (14) (15) (16)	5.cou = 0 6.cou = 0 7.cou = 0 9.cou = 0 9.cou = 0 10.cou = 0 11.cou = 0 12.cou = 0 13.cou = 0 13.cou = 0 15.cou = 0 15.cou = 0 18.cou = 0 20.cou = 0 21.cou = 0 23.cou = 0 Constraint 4 dropped Constraint 6 dropped Constraint 12 dropped Constraint 13 dropped Constraint 14 dropped

Pooled OLS over random effects

	Coeffi	cients ——		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.growthr	.1933998	.1856418	.0077579	.0095786
L.growthir	0546518	0371158	017536	.0057649
L.lnDebtH1	00814	0079495	0001905	.0036761
inequality	.0101537	0155905	.0257442	.038388
eurodumm	.0081811	0001602	.0083412	.0020302
crisisdumm	0267498	0230145	0037353	.0035497
Crisisdumm	0267498	0230145	003/353	.0035497

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) =	(b-B)'[(V_b-V_B)^(-1)](b-B)
=	35.08
Prob>chi2 =	0.0000
(V_b-V_B is	not positive definite)

. hausman fixed random,sigmamore

	Coeffi	cienca —		
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.growthr	.1933998	.1856418	.0077579	.0126712
L.growthir	0546518	0371158	017536	.0093509
L.lnDebtH1	00814	0079495	0001905	.0037895
inequality	.0101537	0155905	.0257442	.0400366
eurodumm	.0081811	0001602	.0083412	.0026185
crisisdumm	0267498	0230145	0037353	.0038243

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

Prob>chi2 = 0.0001

. hausman fixed random, sigmaless

	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.growthr	.1933998	.1856418	.0077579	.0123349
L.growthir	0546518	0371158	017536	.0091027
L.lnDebtH1	00814	0079495	0001905	.0036889
inequality	.0101537	0155905	.0257442	.038974
eurodumm	.0081811	0001602	.0083412	.002549
crisisdumm	0267498	0230145	0037353	.0037228

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 29.66 Prob>chi2 = 0.0000

Fixed over random effects

All types of inequalities

$\Delta GDP percapita_{it}$

- $= a_{1it} + a_2L$. profit rate_{it} + a_3L . interest rate_{it} + a_4L . private dept_{it}
- $+ a_5 Inequality F_{it} + a_6 Inequality L_{it} + a_7 Inequality K_{it}$
- $+ a_8$ unemployment rate_{it} $+ a_9$ euro entrance_{it}
- $+ a_{10}2008 financial crisis_{it} + b_i + u_{it}$ (7.3.18)

	stor						
variable nam	me ty	pe for	mat labe	l vari	able label.		
growthGDPpc growthr	do	uble %10	.0g	grow			
growthir		uble %10		grow			
lnDebtH1 InequalityF		uble %10 uble %10		lnDe			
InequalityL		uble %10			qualityF qualityL		
InequalityK		uble %10			qualityK		
unemplRT		uble %10		unem			
eurodumm		te %10		euro			
crisisdumm		rte %10			isdumm		
. summarize				0110	10000		
. Summarize		Obs		Std. Dev.	Min	Max	
growthGDPp~	a	465	.0406442	.0605026	217647	.409613	
growth	r	463	.0235549	.0944998	4369912	.5567241	
growthi	r	450	.0098039	.0939562	4369218	.6638064	
lnDebtH	1	462	4.006271	2.315389	-2.951883	7.639548	
Inequality	F	468	.21256	.0597226	.0548225	.3568762	
Inequality		419	.1393459	.0922131		.4972983	
Inequality		468	.2156319	.0880923		.6496873	
unemplR'		468	.0892579	.0446446		.2536703	
eurodum		468	.6923077	.4620323	0	1	
crisisdum	m	468	.5	.500535	0	1	
. xtdescrib	e						
cou:	3, 5, .	, 23			n	=	18
		996,,			Т	=	26
		rear) = 1					
		ar) = 26 ar unique	periods ly identifie	s each obse	ervation)		
Distributio	n of T_	i: min 26			0% 75% 26 26		max 26
Freq.	Percen	it Cum.	Pattern				
1.							
18	100.0	0 100.00		111111111111	.1111111		
	100.0		11111111	*****			
18	100.0	0	11111111				
18	100.0	0	11111111 xxxxxxxxx t	*****		Obse	rvations
18 18 . xtsum \$t : Variable	100.0 \$id \$yl	0 .ist \$xlis	11111111 XXXXXXXX t n Std. Dev	XXXXXXXXXXXXX	xxxxxxxx	Obse N =	
18 18 . xtsum \$t : Variable growth~a ovo	100.0 \$id \$yl	0 ist \$xlis Mea	11111111 XXXXXXXX t n Std. Dev	. Min 217647	xxxxxxxx Max 2 .409613		465
18 18 . xtsum \$t : Variable growth~a ov. be:	100.0 \$id \$yl erall	0 ist \$xlis Mea	11111111 XXXXXXXX t 2 .0605026	. Min 217647 .011982	Max Max .409613 .1029395	N =	465
18 18 . xtsum \$t : Variable growth~a ov. be wit	100.0 \$id \$yl erall tween thin	0 ist \$xlis Mea .040644	11111111 11111111 xxxxxxxxx t n Std. Dev 2 .0605026 .030097 .0529168	. Min 217647 .011982 264816	Max 4 Max 7 .409613 2 .1029395 5 .348506	N = n = T-bar =	465 18 25.8333
18 18 . xtsum \$t : Variable growth~a ov. be wi growthr ov.	100.0 \$id \$yl erall tween thin erall	0 ist \$xlis Mea	11111111 11111111 xxxxxxxxx t 2 .0605026 .030097 .0529168 9 .0944998	. Min 217647 .011982 264816 4369912	XXXXXXXX Max 2 .409613 2 .1029395 3 .348506 2 .5567241	N = n = T-bar = N =	465 18 25.8333 463
18 18 18 variable growth-a ov be wi growthr ov be	100.0 \$id \$yl erall tween thin erall tween	0 ist \$xlis Mea .040644	1111111 1111111 XXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .0944998 .0266985	. Min 217647 .011982 264816 4369912 0032978	XXXXXXXX A Max 7 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276	N = n = T-bar = N = n =	465 18 25.8333 463 18
18 18 18 variable growth-a ov be wi growthr ov be	100.0 \$id \$yl erall tween thin erall	0 ist \$xlis Mea .040644	11111111 11111111 xxxxxxxxx t 2 .0605026 .030097 .0529168 9 .0944998	. Min 217647 .011982 264816 4369912 0032978	XXXXXXXX A Max 2 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276	N = n = T-bar = N =	465 18 25.8333 463 18
18 18 18 variable growth-a ov be wi growthr ov be	100.0 \$id \$yl erall tween thin erall tween thin	0 ist \$xlis Mea .040644	11111111 11111111 xxxxxxxx t a Std. Dev 2 .0605026 .030097 .0529168 9 .0944998 .0266985 .0909177	. Min 217647 .011982 264816 4369912 0032978 4573123	XXXXXXXX A Max 7 .409613 1029395 5 .348506 2 .5567241 3 .098276 3 .482003	N = n = T-bar = N = n =	465 18 25.8333 463 18 25.7222
18 18 . xtsum \$t : Variable growth~a ov. be wi growthr ov. be wi	100.0 \$id \$yl erall tween thin erall tween thin	0 ist \$xlis Mea .040644 .023554	11111111 11111111 xxxxxxxx t a Std. Dev 2 .0605026 .030097 .0529168 9 .0944998 .0266985 .0909177	 Min 217647 .011982 264816 4369912 0032978 4573123 4369218 	XXXXXXXX A Max 7 .409613 1.1029395 5 .348506 2 .5567241 3 .098276 3 .482003 4 .6638064	N = n = T-bar = N = n = T-bar =	465 18 25.8333 463 18 25.7222 450
I8 18 18 variable growth-a ov be wi growthr ov be growthir ov be	100.0 \$id \$y1 erall tween thin erall tween thin erall	0 ist \$xlis Mea .040644 .023554	11111111 11111111 XXXXXXXX t 2 .0605026 .030097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562	. Min 217647 011982 013982 4369912 032978 4573123 4369218 0147823	XXXXXXXXX A Max 7 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 1 .6638064 3 .0757606	N = n = T-bar = N = T-bar = N =	465 18 25.8333 463 18 25.7222 450
IR IR Xtsum %t : growth-a ov be wi growthr ov be wi growthir ov be wi	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin	0 ist \$xlis Mea .040644 .023554 .009803	11111111 11111111 XXXXXXXXX t a Std. Dev 2 .0605026 .030097 0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404	 Min 217647 .011982 264816 4369912 0032978 4573123 4369218 .0147823 5028786 	Max 1 Max 2 .409613 2 .1029395 5 .348506 2 .5567241 2 .6638064 3 .6638064 3 .65396248	N = n = T-bar = N = T-bar = N = n = T =	465 18 25.8333 463 18 25.7222 450 18 25
IR IR IR IR IR IR IR IR IR IR	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall	0 ist \$xlis Mea .040644 .023554	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .090917 9 .0939562 .0217585 .0915404 1 2.315389	. Min 217647 .011982 264816 4369912 0032978 4573123 4573123 5028786 0147823 5028786	xxxxxxxx 4 Max 7 .409613 1.1029355 5 .348506 2 .5567241 3 .098276 3 .482003 3 .6638064 .0757606 5 .6396248 3 7.639548	N = n = T-bar = N = n = T-bar = N = T = N =	465 18 25.8333 463 18 25.7222 450 18 25 462
IR IR IR IR Variable growth~a ov. be wi growthr ov. be wi lnDebtH1 ov. be	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall tween	0 ist \$xlis Mea .040644 .023554 .009803	11111111 11111111 xxxxxxxx t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727	 Min 217647 .011982 264816 264816 032978 4573123 4569218 0147823 5028786 .7389222 .7389222 	Max 1 Max 2 .409613 1.029395 .348506 2 .5567241 1 .098276 3 .6638064 0.0757606 .6396248 7 .3639624 7 .7639548	N = n = T-bar = N = T-bar = N = n = T = N = n =	465 18 25.8333 463 18 25.7222 450 18 25 462 18
IR IR IR IR Variable growth~a ov. be wi growthr ov. be wi lnDebtH1 ov. be	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall	0 ist \$xlis Mea .040644 .023554 .009803	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .090917 9 .0939562 .0217585 .0915404 1 2.315389	 Min 217647 .011982 264816 264816 032978 4573123 4569218 0147823 5028786 .7389222 .7389222 	Max 1 Max 2 .409613 1.029395 .348506 2 .5567241 3 .6638064 4 .0757606 5 .3696248 7 7.639548 7 7.639548	N = n = T-bar = N = n = T-bar = N = T = N =	465 18 25.8333 463 18 25.7222 450 18 25 462 18
18 18 18 variable growth-a ov. be wi growthr ov. be wi growthr ov. be wi lnDebtHl ov. be wi	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall tween thin	0 ist \$xlis .040644 .023554 .009803 4.00627	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727 .9220272	. Min 217647 .011982 264816 4369912 0032978 4573123 4573123 5028786 0147823 5028786 2.951883 .7389222 .0900429	xxxxxxxx A Max 7 .409613 1.1029395 5 .348506 2 .5567241 3 .098276 3 .482003 4 .6638064 .0757606 5 .6396248 3 .7.39548 2 7.345015 6 .030101	N = n = T-bar = N = T-bar = N = n = T = N = n = T-bar =	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667
18 18 . xtsum %t = Yariable growth~a ov. be wi growthr ov. be wi lnDebtHl ov. be wi lnDebtHl ov. be wi	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall tween thin erall	0 ist \$xlis Mea .040644 .023554 .009803	11111111 11111111 XXXXXXXX 2 0605026 2 0605026 9 0944998 0266985 0909177 9 0.034562 0017585 0915404 1 2.315389 2.171727 .9220272 6 0.0597226	 Min 217647 .011982 264816 0032978 4573123 4369218 .0147823 5028786 -2.951883 .7389222 .0900429 .0548225 	Max 1 Max 2 .409613 1.1029395 .348506 2 .5567241 2 .5567241 3 .6638064 3 .6638064 3 .6396248 3 7.345015 4 7.345015 5 .3360872	N = N = T-bar = T-bar = T-bar = N = T = N = T-bar = N = N = N = N = N = N = N = N	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667
IR IR IR IR IR IR IR IR IR IR	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall tween thin erall tween	0 ist \$xlis .040644 .023554 .009803 4.00627	1111111 1111111 XXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727 9202726 .0597226 .0597226	. Min 217647 .011982 264816 4369912 0032978 4369218 .0147823 5028786 -2.951883 .7389222 .0900429 .0548225 .1026658	xxxxxxxx A Max 2 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 3 .6638064 3 .0757606 5 .6396248 3 7.639548 2 7.345015 9 6.030101 5 .3568762 3 .3668762 3 .3668195	N = $n = $ $T-bar = $ $N = $ $T-bar = $ $N = $ $n = $ $T = $ $N = $ $n = $ $T-bar = $ $N = $ $n = $ $n =$	465 18 25.8333 463 18 25.7222 450 18 25 450 18 25 8 450 18 25 8 450 18 25 8 450 18 25 8 451 18 25 8 451 18 25 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8
IR IR IR IR IR IR IR IR IR IR	100.0 \$id \$yl erall tween thin erall tween thin erall tween thin erall tween thin erall	0 ist \$xlis .040644 .023554 .009803 4.00627	11111111 11111111 XXXXXXXX 2 0605026 2 0605026 9 0944998 0266985 0909177 9 0.034562 0017585 0915404 1 2.315389 2.171727 .9220272 6 0.0597226	. Min 217647 .011982 264816 4369912 0032978 4369218 .0147823 5028786 -2.951883 .7389222 .0900429 .0548225 .1026658	Max 1 Max 2 .409613 1.1029395 .348506 2 .5567241 2 .5567241 3 .6638064 3 .6638064 3 .6396248 3 7.345015 4 7.345015 5 .3360872	N = N = T-bar = T-bar = T-bar = N = T = N = T-bar = N = N = N = N = N = N = N = N	465 18 25.8333 463 18 25.7222 450 18 25 450 18 25 8 450 18 25 8 450 18 25 8 450 18 25 8 451 18 25 8 451 18 25 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8
IR IR IR IR IR IR IR IR IR IR	100.0 \$id \$y1 erall tween thin erall tween thin erall tween thin erall tween thin	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727 .9220272 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .0597226 .059726 .059727 .059726 .059726 .059726 .059727 .059727 .059727 <td>. Min 217647 .011982 264816 4369912 0032978 4369218 0147823 5028786 -2.951883 .7389222 .0900429 .0548225 .102658 .1037394 .0236261</td> <td>XXXXXXXXX A Max 7 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 4 .6638064 3 .0757606 5 .6396248 3 7.639548 7 .345015 9 6.030101 5 .3568762 2 .3068195 4 .2961591 . 4972983</td> <td>N = N = T-bar = T-bar = N = N = T = N = T-bar = N = T = N = N = N = N = N = N = N = N</td> <td>465 18 25.8333 463 18 25.7222 450 25 462 18 25.6667 468 18 26 419</td>	. Min 217647 .011982 264816 4369912 0032978 4369218 0147823 5028786 -2.951883 .7389222 .0900429 .0548225 .102658 .1037394 .0236261	XXXXXXXXX A Max 7 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 4 .6638064 3 .0757606 5 .6396248 3 7.639548 7 .345015 9 6.030101 5 .3568762 2 .3068195 4 .2961591 . 4972983	N = N = T-bar = T-bar = N = N = T = N = T-bar = N = T = N = N = N = N = N = N = N = N	465 18 25.8333 463 18 25.7222 450 25 462 18 25.6667 468 18 26 419
Inequa-L ov be	100.0 \$id \$yl erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin erall thin erall tween thin erall tween thin erall tween thin erall thin erall tween thin erall thin erall thin erall tween thin thin thin thin erall thin thin thin thin thin t	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0217585 .0217585 .0515404 1 2.315389 2.171727 .9220272 6 .0597226 .0548904 .0267419 9 .0922131 .1019473	 Min 217647 .011982 264816 3636912 032978 4573123 4369218 0147823 5028786 2.951883 7382222 .0900429 .0548225 .1028658 .1037394 .0236261 .0550486 	Max 1 Max 2 .409613 1029395 .348506 2 .5567241 3 .6638064 3 .6638064 3 .6638064 3 .639548 2 .348515 6 .030101 5 .3568762 3 .3668195 2961591 .2961591 3 .386775	N = n $n = T-bar = T$ $T-bar = T$ $T = T$ $T = T$ $T = T$ $N = T$ $T = T$ $N = T$ $T = T$	465 18 25.8333 463 18 25.7222 450 8 25 462 18 25.6667 468 18 25.6667 468 18 26 419 18
Inequa-L ov be	100.0 \$id \$yl erall tween thin erall tween tween tween thin erall tween twoen twoen twoen twoen tween twoen twoen tween twoen	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0217585 .0217585 .0515404 1 2.315389 2.171727 .9220272 6 .0597226 .0548904 .0267419 9 .0922131 .1019473	. Min 217647 .011982 264816 4369912 0032978 4369218 0147823 5028786 -2.951883 .7389222 .0900429 .0548225 .102658 .1037394 .0236261	Max 1 Max 2 .409613 1029395 .348506 2 .5567241 3 .6638064 3 .6638064 3 .6638064 3 .639548 2 .348515 6 .030101 5 .3568762 3 .3668195 2961591 .2961591 3 .386775	N = n $n = T-bar = 0$ $T-bar = 0$ $N = n$ $T = 0$ $N = 0$ $T = 0$ $N = 0$	465 18 25.8333 463 18 25.7222 450 8 25 462 18 25.6667 468 18 25.6667 468 18 26 419 18
Inequa-L ov be	100.0 \$id \$yl erall tween thin erall thin erall thin erall thin erall thin erall thin erall thin erall era	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727 .9220272 6 .05972266 .05972266 .05972266 .05972261 .05972261 .05972262 .0267419 9 .0922131 .1019473 .0373289	 Min 217647 .011982 264816 3636912 032978 4573123 4369218 0147823 5028786 2.951883 7382222 .0900429 .0548225 .1028658 .1037394 .0236261 .0550486 	XXXXXXXXX A Max 7 .409613 1.029395 5 .348506 2 .5567241 3 .098276 3 .482003 4.82003 3 .638064 6 .0757606 5 .6396248 3 7.639548 2 7.345015 6 .030101 5 .3568762 3 .34651951 5 .2961591 5 .3054036	N = n $n = T-bar = T$ $T-bar = T$ $T = T$ $T = T$ $T = T$ $N = T$ $T = T$ $N = T$ $T = T$	465 18 25.8333 463 18 25.7222 450 18 25.6667 462 18 25.6667 468 18 26 419 18 23.2778
Inequa~L ovy	100.0 \$id \$yl erall tween thin erall thin erall thin erall thin erall thin erall thin erall thin erall era	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345	1111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0217585 .0915404 1 2.315389 2.171727 .9220272 6 .05972266 .05972266 .05972266 .05972261 .05972261 .05972262 .0267419 9 .0922131 .1019473 .0373289	Min - 217647 - 011982 - 264816 - 4369912 - 0032978 - 4573123 - 4369218 - 0147823 - 5028786 - 2.951883 - 7389222 . 9000429 . 0548625 . 102658 . 1037394 . 0236261 . 0540865 . 0102071 0127943 	Max 1 Max 2 .409613 2 .1029395 3 .48506 2 .5567241 2 .6638064 3 .6638064 3 .6757606 5 .6396248 3 7.345015 6 .3068195 3 .368762 3 .368775 3 .386775 3 .3540736 3 .386775 3 .3540736 4 .6496873	N = n $n = T-bar = 0$ $N = T-bar = 0$ $N = T = 0$ $N = 0$ $T = 0$ $N = 0$ $T = 0$	445 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 468 18 25 462 18 25.6667 468 18 26 419 18 23.2778 468
Inequa-L ovy be wi Inequa-L ovy be wi growthr ovy be wi InDebtHl ovy be wi Inequa-F ovy be wi Inequa-L ovy be	100.0 \$id \$yll erall tween thin erall the erall tween thin erall the erall th	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .044998 .0266985 .02090177 9 .0339562 .0217585 .0515404 1 2.315389 9.217127 .9220272 6 .0597226 .0597226 .05264804 .0267419 9 .922131 .1019473 .0373289 9 .0880923	. Min 217647 .011982 264816 4369912 4369218 0147823 5028786 951883 .7389222 .0900429 .0548225 .1028658 .1037344 .0236261 .0504862 .0127943 .022647 .0127943 .022647	XXXXXXXXX A Max 7 .409613 1.029395 5 .348506 2 .5567241 3 .098276 3 .482003 4 .6638064 3 .0757606 5 .6396248 3 .7.639548 7 .639548 7 .639548 1 .3568762 3 .386775 3 .386775 3 .386775 3 .3444758 4 .4972983 3 .386775 3 .346496873 4 .444758 3 .444758	N = n $n = - T - bar = - T T = - T T T T T T T$	465 18 25.8333 463 18 25.7222 450 462 18 25.6667 468 18 26 419 18 23.2778 468 18
Inequa-L ovy be wi Inequa-L ovy be wi growthr ovy be wi InDebtHl ovy be wi Inequa-F ovy be wi Inequa-L ovy be	100.0 \$id \$yl erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin thin thin erall tween thin thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin thin erall tween thin erall tween thin erall tween thin erall tween thin erall thin erall thin erall thin erall thin erall thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall tween thin erall thin erall thin erall tween tween thin erall tween thin erall tween thin erall tween thin erall tween tween thin tween	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345 .215631	11111111 XXXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .0944998 .0266985 .0915404 1 2.315389 2.171727 .920272 6 .0597226 .0548904 .0267419 9 .0922131 .1019473 .0373289 .0880923 .0795978 .0419955	 Min 217647 .011982 264816 4369912 032978 4573123 4369218 .0147823 5028786 0147823 .9090429 .0548225 .102658 .0102071 .0127943 .0256878 .05688695 	XXXXXXXXX A Max 2 .409613 1029395 3 .48506 2 .5567241 2 .5567241 2 .6638064 0 .0757606 5 .6396248 4 .0757606 5 .6396248 4 .7.345015 6 .03011 5 .3568762 1 .3068195 1 .295151 3 .3054036 8 .6496873 4 .444758 5 .4208435	N = n $n = T-bar = 0$ $N = n$ $T-bar = 0$ $N = n$ $T = 0$ $N = 0$ $T = 0$ $N = 0$ $T = 0$	465 18 25.8333 463 18 25.7222 450 18 25.6667 468 18 26 419 8 23.2778 468 18 23.2778
Inequa-L ov. be wi growthr ov. be wi growthr ov. be wi growthr ov. be wi lnDebtHl ov. be wi lnDebtHl ov. be wi lnequa-F ov. be wi lnequa-F ov. be wi	100.0 \$id \$yl erall tween thin erall thin	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .03097 .0529168 9 .0944998 .0266985 .0909177 9 .0939562 .0915404 1 2.315389 2.171727 .9220272 6 .0597226 .0597226 .0597226 .0597226 .0597226 .0373289 .0480923 .075978 .0419955 9 .0446446	. Min 217647 .011982 264816 4369917 4369218 4373123 4369218 0147823 5028786 - 2.951883 .7389222 .05048255 .1026658 .1037394 .0236261 .0650486 0127743 .102568985 0568985 0	XXXXXXXXX A Max 2 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 4 .6638064 3 .0757606 5 .6396248 3 7.639548 2 7.345015 6 .3568762 3 .3668195 4 .2961591 2 .4972983 3 .386775 3 .3054036 3 .6496873 4 .44758 5 .4208435 0 .2536703	N = n = n = T - bar = T - bar = T = T = T = T = T = T = T = T = T =	465 18 25.8333 463 18 25.7222 450 18 25.6667 462 18 25.6667 468 18 26 419 18 23.2778 468 18 26 419
Inequa~L ov. be wi linequa~L ov. be wi growth-a ov. be wi growth-a ov. be wi growthr ov. be wi linbebtHl ov. be wi linequa~F ov. be wi linequa~L ov. be wi	100.0 \$id \$yll erall tween thin erall thin era	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345 .215631	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .044998 .026985 .0909177 9 .0939562 .0217585 .0915404 1 .1315389 .0267419 9.217127 .9220272 6 .0597226 .0527419 9 .022711 1.019473 .0373289 9 .0880923 .0795978 .0419955 .0449546 .033309	 Min 217647 .011982 264816 264816 0032978 4573123 4369218 0147823 5028786 20351883 090429 .0548225 .102658 .1037394 .026261 .05028661 .0127943 .1025687 .0528480 .0284010 	XXXXXXXXX 1 Max 2 .409613 1.1029395 .348506 2 .5567241 2 .5567241 3 .6638064 0.757606 .6396248 2 .348515 3 .6638064 3 .7.345015 4 .3068195 3 .366762 3 .368762 3 .368775 3.054036 .6496873 2 .44208435 3 .6496873 2 .4208435 3 .6296703 3 .6296703	N = n = n = T - bar = T - bar = T - bar = T = T = T - bar = T = T - bar = T = T - bar = T = T = T = T = T = T = T = T = T =	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 468 18 26 469 18 23.2778 468 18 23.2778
Inequa~L ov. be wi linequa~L ov. be wi growth-a ov. be wi growth-a ov. be wi growthr ov. be wi linbebtHl ov. be wi linequa~F ov. be wi linequa~L ov. be wi	100.0 \$id \$yl erall tween thin erall thin	0 ist \$xlis .040644 .023554 .009803 4.00627 .2125 .139345 .215631	11111111 11111111 XXXXXXXX t n Std. Dev 2 .0605026 .030097 .0529168 9 .044998 .026985 .0909177 9 .0939562 .0217585 .0915404 1 .1315389 .0267419 9.217127 .9220272 6 .0597226 .0527419 9 .022711 1.019473 .0373289 9 .0880923 .0795978 .0419955 .0449546 .033309	 Min 217647 .011982 264816 264816 0032978 4573123 4369218 0147823 5028786 20351883 090429 .0548225 .102658 .1037394 .026261 .05028661 .0127943 .1025687 .0528480 .0284010 	XXXXXXXXX A Max 2 .409613 2 .1029395 5 .348506 2 .5567241 3 .098276 4 .482003 4 .6638064 3 .0757606 5 .6396248 3 7.639548 2 7.345015 6 .3568762 3 .3668195 4 .2961591 2 .4972983 3 .386775 3 .3054036 3 .6496873 4 .44758 5 .4208435 0 .2536703	N = n = n = T - bar = T - bar = T = T = T = T = T = T = T = T = T =	465 18 25.8333 463 18 25.7222 450 18 25 462 18 25.6667 468 18 26 469 18 23.2778 468 18 23.2778

.4620323 0 .2258141 .2307692 .4064624 -.1538462

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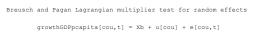
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468 18 26

N = n = T =

N = n = T =

. test	parm i.year
(1)	1997.year = 0
(2)	1998.year = 0
(3)	1999.year = 0
(4)	2000.year = 0
(5)	2001.year = 0
(6) (7)	2002.year = 0 2003.year = 0
(8)	2003.year = 0 2004.year = 0
(9)	2004.year = 0
(10)	2005.year = 0
(11)	2007.year = 0
(11)	2008.year = 0
(12)	2009.year = 0
(13)	2010.year = 0
(14)	2011.year = 0
(16)	2012.year = 0
(17)	2013.year = 0
(18)	2013.year = 0
(19)	2015.year = 0
(20)	2016.year = 0
(21)	2017.year = 0
(22)	2018.year = 0
(23)	2019.year = 0
(20)	Constraint 8 dropped
	Constraint 17 dropped
	Constraint 18 dropped
	Constraint 20 dropped
	Constraint 21 dropped
	Constraint 22 dropped
	* *
	F(17, 17) = 38.50
	Prob > F = 0.0000
. test	parm i.cou
(1)	5.cou = 0
(2)	6.cou = 0
(3)	7.cou = 0
(4) (5)	8.cou = 0
(5)	9.cou = 0 10.cou = 0
	10.cou = 0 11.cou = 0
(7)	11.cou = 0 12.cou = 0
(8)	
(9)	13.cou = 0 14.cou = 0
(10)	
(11)	15.cou = 0
(12)	17.cou = 0 18.cou = 0
(13)	18.cou = 0 20.cou = 0
(14) (15)	20.cou = 0 21.cou = 0
(15)	21.cou = 0 22.cou = 0
(16) (17)	
. ,	23.cou = 0
. ,	
. ,	



Estimated results:				
	Var	sd = sqrt(Var)		
growthG~a	.0028795	.0536613		
e	.0016372	.0404624		
ц	.0000357	.0059747		
Test: Var(u) =	0			
	chibar2(01)	= 10.21		
	Prob > chibar2	= 0.0007		

Pooled OLS over random

1	(b) (B) (b-B)			sgrt(diag(V b-V B))
	fixed	random	Difference	sqrt(drag(v_b v_b)) s.e.
L.growthr	.1628668	.2040162	0411495	.0060268
L.growthir	031274	0423665	.0110924	
L.lnDebtH1	0128018	0071374	0056644	.0043941
InequalityF	.2143648	.1266868	.0876779	.0929443
InequalityL	.2590017	0240338	.2830355	.075109
InequalityK	.2044004	.0970323	.1073681	.0540435
unemplRT	2728967	171492	1014047	.0558585
eurodumm	0029036	0034746	.000571	.0017499
crisisdumm	0217553	0172097	0045456	.0037881

 ${\rm b}$ = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = -256.22 chi2<0 ==> model fitted on these data fails to meet the asymptotic assumptions of the Hausman test; see <u>suest</u> for a generalized test

. hausman fixed random, sigmamore

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
L.growthr	.1628668	.2040162	0411495	.013275
L.growthir	031274	0423665	.0110924	.0100666
L.lnDebtH1	0128018	0071374	0056644	.0046602
InequalityF	.2143648	.1266868	.0876779	.0995286
InequalityL	.2590017	0240338	.2830355	.0798338
InequalityK	.2044004	.0970323	.1073681	.0579827
unemplRT	2728967	171492	1014047	.06256
eurodumm	0029036	0034746	.000571	.00298
crisisdumm	0217553	0172097	0045456	.0044068

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 47.13 Prob>chi2 = 0.0000

. hausman fixed random, sigmaless

Coefficients				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
L.growthr	.1628668	.2040162	0411495	.0126052
L.growthir	031274	0423665	.0110924	.0095587
L.lnDebtH1	0128018	0071374	0056644	.004425
InequalityF	.2143648	.1266868	.0876779	.0945065
InequalityL	.2590017	0240338	.2830355	.0758054
InequalityK	.2044004	.0970323	.1073681	.0550569
unemplRT	2728967	171492	1014047	.0594032
eurodumm	0029036	0034746	.000571	.0028297
crisisdumm	0217553	0172097	0045456	.0041844

b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 52.27 Prob>chi2 = 0.0000

Fixed over random effects