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Is income inequality necessary for economic growth ?

(Litterature review of the channels through which income inequality affects economic growth)

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Abstract

This literature review examines the relationship between income inequality and economic growth, focusing on the effects of inequality on growth and the channels through which this relationship operates. The analysis incorporates various theoretical models and empirical evidence from a range of studies. The review explores the role of savings in shaping the relationship between income inequality and economic growth, highlighting the positive impact of inequality on savings rates and capital accumulation. Credit market imperfections are also identified as a channel through which inequality affects growth, with limited access to financing hindering capital formation. The review further investigates the influence of income inequality on human capital accumulation through fertility and education channels. Higher levels of inequality are found to hinder the accumulation of human capital, leading to lower output and wage differentials. Increased fertility rates among the poor, associated with higher inequality, result in reduced investment in education and human capital, impeding economic growth. Moreover, the review examines the impact of income inequality on growth through the political economy and socio-political instability channels, revealing how redistributive fiscal policies, corruption, and political instability can hinder growth. The empirical evidence on the relationship between income inequality and economic growth is mixed, with some studies finding a positive association, others observing a negative impact, and some reporting inconclusive findings. The net effect of inequality and redistribution on growth depends on various factors such as credit market imperfections, public provision of education, and the stage of development. The review emphasizes the importance of considering the dynamics of inequality and its associated factors when assessing its impact on economic growth.

Keywords : Income inequality, Economic growth, Transmission Channels.

1. Introduction

The relationship between income inequality and economic growth has been a subject of extensive research and debate. While the relationship can be studied in both directions, this literature review focuses specifically on the effects of inequality on growth, excluding the examination of the effects of growth on inequality. Understanding this relationship is crucial for policymakers aiming to promote inclusive and sustainable development. Over the years, numerous studies have examined the various channels through which income inequality can affect economic growth, yielding a wide range of findings and insights. In this work, we will focus mainly on two channels : savings and human capital accumulation.

One prominent perspective in the literature explores the role of savings in shaping the relationship between income inequality and economic growth. Kaldor (1955) argued that income inequality could have a positive impact on growth, as wealthier individuals, who benefit from inequality, tend to save more and invest in the economy. Barro (2000) found empirical evidence supporting a direct link between income levels and savings rates, with higher incomes leading to greater savings and capital accumulation. However, Barro (2000) also noted that redistributing resources from the rich to the poor could lower the overall savings rate. Galor and Moav (2004) presented a unified theory that combined the classical approach and credit market imperfections, demonstrating how inequality affects growth through capital formation and limited access to financing. Studies such as Odedokun and Round (2004), Galor and Zeira (1993), Barro (2008), Galor (2009), Berg et al. (2018), and Braun et al. (2019) have contributed to understanding these approaches and the channels through which inequality influences economic growth via savings. Moreover, the significance of precise measurement, as emphasized by Knowles (2005), reinforces the insights derived from earlier studies examining the relationship between income distribution, savings behavior, and economic development. These studies underscore the role of human capital formation and the need to address credit market imperfections to foster sustainable economic growth.

The accumulation of human capital, a vital factor for economic growth, has been explored in relation to inequality through two key channels: fertility and education. Galor and Zeira (1993) predict that high levels of inequality hinder the accumulation of human capital, resulting in low output and wage differentials. Numerous empirical studies by Perotti (1996), Barro (2000), and others consistently support the association between inequality and lower levels of human capital accumulation and growth. The fertility channel plays a significant role in this relationship. Studies by Perotti (1996), Odedokun and Round (2004), Kremer and Chen (2000), and others reveal that higher inequality is linked to increased fertility rates, particularly among the poor. This leads to reduced investment in education and human capital, ultimately hindering growth. While Barro (2000) initially finds no direct relationship between inequality and growth, he acknowledges the negative effect of high fertility rates on human capital accumulation. Subsequent studies by Barro (2008), Castells-Quintana and Royuela (2017), Gründler and Scheuermeyer (2018), Berg et al. (2018), and others reaffirm the negative impact of inequality on growth through the fertility channel. These studies highlight that as income inequality rises, families from lower socioeconomic backgrounds tend to have more children, impeding their ability to invest in education. Being another critical channel, education plays a crucial role in human capital accumulation and economic growth. Studies by Birdsall et al. (1995), Perotti (1996), Forbes (2000), Odedokun and Round (2004), Galor and Moav (2004), Berg et al. (2018), and Gründler and Scheuermeyer (2018) emphasize the significance of education in economic growth. They reveal that high income inequality hampers investment in education, leading to lower levels of human capital accumulation and impeding economic growth.

The influence of income inequality on economic growth is further examined through the political economy channel and the socio-political instability channel. Alesina and Rodrik (1994) find that high income inequality can lead to redistributive fiscal policies that hinder growth. Persson and Tabellini (1994) discover a negative relationship between inequality and growth in democracies, while Perotti (1996) finds contradictory results. Li and Zou (1998) show that income distribution has an ambiguous effect on economic growth, while Forbes (2000) links higher corruption levels, often associated with inequality, to reduced growth. Additionally, high inequality can lead to political instability, as suggested by Perotti (1996) and supported by Odedokun and Round (2004). Nel (2003) finds that greater inequality is associated with increased political instability and reduced investment.

The remainder of this paper is organized as follows: Section 2 examines the effect of inequality on growth via the savings channel who is explain in deep by the accumulation of physical capital channel and credit market imperfection channel, while Section 3 discusses the human capital accumulation channel also explain in deep by the fertility channel and the education channel. Additionally, Section 4 evaluates other transmission channels of inequality to growth proposed in the literature and section 5 conclude.

2. Savings

Economists have been interested in studying the relationship between economic growth and income inequality for several decades. One of the earliest arguments supporting the positive effect of income inequality on growth was put forward by Kaldor (1955). He posited that the wealthy individuals, who are typically the beneficiaries of income inequality, tend to save more and invest in the economy due to their higher marginal propensity to save, leading to increased capital accumulation and economic growth.

Barro (2000) conducted research to further explore the connexion between income inequality and economic growth using panel data from 84 countries including both developed and developing countries from the 1960s to the 1990s. He found that savings rates are directly linked to income levels; as income increases, so does the savings rate. This means that individuals with higher incomes have a greater capacity to save, which results in an overall increase in aggregate savings. In turn, this leads to greater capital accumulation, and thus stimulates long-term economic growth. Barro's study also suggested that a redistribution of resources from rich to poor tends to lower the aggregate rate of saving in an economy.

In their paper, Galor and Moav (2004) presented a “unified” theory of growth and inequality that combines two important ideas in this field. The first idea is the “classical” approach, which suggests that income inequality contributes to economic growth by directing resources towards richer households with higher saving rates, leading to increased capital formation. The second idea is the “credit market imperfection” approach, which suggests that inequality hinders economic growth by limiting access to student loans and other forms of financing for human capital.

This section will examine the two approaches by reviewing the work of various authors such as Odedokun and Round (2004), Galor and Zeira (1993), Barro (2000, 2008), Galor (2009), Berg et al. (2018), and Braun et al. (2019). By analyzing these approaches in-depth, we can

gain a better understanding of how inequality influences growth via the accumulation of physical capital and credit market imperfection. This highlights the channels related to saving through which inequality affects economic growth.

2.1 Accumulation of physical capital channel

One way in which saving can affect economic growth is through its impact on physical capital accumulation. Investment in physical capital, such as machinery and equipment, allows workers to produce more output per unit of time, thereby increasing the economy's overall productivity. Kaldor's growth model suggests that as capital holders' share of national income grows, so does the savings rate. As a result, if there is a rise in income inequality where property holders and entrepreneurs receive a larger portion of income compared to workers' wages, then the savings rate, as well as the overall level of investment and capital formation, will increase. This, in turn, leads to more economic development and growth.

In Galor and Moav (2004), the "classical" approach is more important in the early stages of economic development, where inequality initially encourages growth. This is because, in the early stages of development, the economy is primarily driven by physical capital accumulation. As such, directing resources towards richer households with higher saving rates can lead to increased capital formation and faster economic growth. However, as the economy develops and human capital becomes more important for growth, the negative effects of inequality may become greater or more significant than its positive effects. This highlights the importance of considering the stage of economic development when examining the relationship between inequality and growth.

Contrary to the findings of Barro, the study by Odedokun and Round (2004) empirically examines the determinants of income inequality and its effect on economic growth within the African regional context. They used cross-country data for 35 countries over different periods from the 1960s to the 1990s. Their results showed that income inequality reduce growth through private saving and investment, suggesting that high inequality reduces saving. They also found that factors such as the level of economic development, the overall size of the government, and a high proportion of the labor force being engaged in the agricultural sector influenced inequality. Additionally, regional factors were found to have exerted some influence, with inequality generally being higher in Southern and Eastern African countries and lower in Northern African countries.

Akpolih and Farayibi (2012) conducted an empirical study on the impact of income inequality as a barrier to economic growth in Nigeria. Their study showed that income inequality leads to slower growth through the level of savings and total investment in Nigeria. This is explained by the fact that a significant number of people in Nigeria live in poor conditions, some below the poverty line. An increase in inequality would continue to reduce the ability of some to save and start a business, leading some into economic instability and insecurity. Therefore, inequality would not be favorable for this country, which has a part of the population unemployed.

More recently, in the same perspective of developing countries, Odusanya and Akinlo (2020) explored the channels through which income inequality affects economic growth in Sub-Saharan Africa (SSA). Their study focused on 31 SSA countries and spanned the period from 1995 to 2015. They used the two-step system generalized method of moments for their

estimation. Results from the estimation of the saving model showed that income inequality has a positive but insignificant relationship with saving, suggesting that higher income inequality tends to increase capital in the economy. When controlling for saving in the growth equation, the coefficient of the Gini index (proxy of inequality) became positive but insignificant after introducing saving into the growth model. However, when they introduced the interaction term for saving and income inequality into the growth model, the coefficient of income inequality was positive and statistically significant at 1%, indicating that income inequality promotes growth via the accumulation of capital.

Including more recent data, Topuz (2022) conducted a study examining the relationship between income inequality and economic growth for 143 countries between 1980 and 2017 through both positive and negative channels. The findings suggest that high inequality tends to increase the saving propensity in developed countries, providing evidence for the positive channel. This means that in developed countries, higher levels of income inequality can lead to increased savings and capital formation, which can stimulate economic growth. This is because individuals with higher incomes have a greater capacity to save, resulting in an overall increase in aggregate savings and greater capital accumulation.

2.2 The Credit Market Imperfection channel

Income inequality and its effect on economic growth through credit market imperfections have been extensively studied in the literature. The theory of credit market imperfection posits that limitations in accessing credit due to information asymmetry and imperfect legal institutions contribute to high income inequality. These credit market imperfections hinder the ability of the poor to access credit, resulting in restricted borrowing and diminished returns on investment (Blotevogel et al., 2020).

Galor and Zeira (1993) were among the first to empirically analyze how inequality affects growth in the presence of credit market imperfections. They emphasized the link between borrowing constraints, income distribution, and society's aggregate investment in human capital. In their study, they explored the relationship between income distribution and economic growth and found that, in the presence of credit market imperfections, the distribution of wealth has a notable impact on overall economic activity. Equality, therefore, enhances growth by facilitating access to credit for human capital financing (Galor & Zeira, 1993).

Further examining the impact of credit market imperfections, Barro (2000) argued that they hold greater significance in poorer economies compared to wealthier ones. Capital markets and legal institutions tend to improve with economic development, enabling greater access to credit. In models with imperfect credit markets, the limited ability to borrow implies that rates of return-on-investment opportunities are not necessarily equated at the margin. Credit market imperfections typically reflect asymmetric information and limitations of legal institutions. Creditors may have difficulty collecting defaulted loans due to imperfect law enforcement, and bankruptcy laws that protect debtors' assets can further hinder debt collection. The exploitation of investment opportunities, therefore, depends, to some extent, on individuals' levels of assets and incomes (Barro, 2000).

Odedokun and Round (2004) analyzed the effect of inequality on growth in a group of 35 African countries and found that high inequality reduces growth in the presence of credit market imperfections. In their study, they highlighted the negative consequences of income inequality

on access to education and human capital development. As wealth and income inequality increase, more people experience limitations in accessing education and developing human capital. Consequently, the overall stock of human capital in the economy is diminished. While economic growth is generally assumed to benefit from the accumulation of human capital, the influence of this mechanism could be weaker in the presence of state-funded education or compulsory education, such as primary schooling in some countries (Odedokun & Round, 2004).

Iradian (2005) conducted an empirical analysis on the impact of income inequality on growth using fixed effects and the Generalized Method-of-Moments (GMM) econometric estimation techniques for a panel dataset of 82 countries. His study covered various regions, including Latin America, sub-Saharan Africa, South and East Asia, the former Soviet Union, Central and Eastern Europe, the Middle East and North Africa, and OECD countries. Iradian utilized the Gini coefficient as a measure of inequality. The results revealed that inequality stimulates growth in the short- to medium-term in countries with low levels of financial market development and limited credit available to the private sector. However, over the long-term, inequality may have an adverse impact on growth.

In his comprehensive analysis on the relationship between inequality and economic growth, Knowles (2005) emphasized the significance of using consistently measured data to obtain reliable results, unlike previous studies that measured inequality inconsistently. The findings revealed that when gross income was considered, there was no significant correlation between inequality and economic growth. However, when expenditure data were consistently measured, a significant negative correlation between inequality and growth emerged. This suggests that in the presence of imperfect capital markets, inequality will reduce investment in human capital, which will in turn reduce growth in the long-run, rather than short-run. Knowles' approach differs from earlier research by addressing the measurement inconsistencies prevalent in the field and demonstrating the sensitivity of empirical results to the consistency of measurement. Based on his finding, Knowles provided two main reasons why the use of inconsistently measured data may mask the true relationship between inequality and economic growth. For instance, he showed that countries in Latin America which typically have high Gini coefficients tend to have gross income distribution data for individuals, the very data that he would expect to give the highest Gini coefficient. This may exaggerate the degree of income inequality in these countries, relative to countries where inequality is measured differently. The second possibility is that inequality is not really correlated with growth, but that the significant negative correlation typically found in the cross-country literature is due to the measurement error in inequality being systematic.

Nearly a decade after Barro's (2000) work, Galor (2009) revisited the relationship between inequality and growth, reaffirming the findings and confirming that inequality, combined with credit market imperfections, can hinder human capital formation and economic development. The accumulation of human and physical capital also influences the correlation between income inequality and subsequent economic growth (Chambers & Krause, 2010). Furthermore, education plays a vital role in reducing income inequality when credit market imperfections are present, as highlighted by Castello (2010). Unequal access to education reflects unequal opportunities, especially in the face of credit market constraints. Similarly, Le and Nguyen (2019) found that income inequality negatively affects economic growth due to imperfections in the capital market. High inequality limits investment in human capital, underscoring the need to address credit market imperfections to foster sustainable economic growth.

The argument of domestic financial development was introduced with recent data by Braun et al. (2019) who conducted a theoretical and empirical study to examine whether the effect of inequality on growth depends on the country's level of domestic financial development. They used a panel dataset that covers a large number of countries over the past four decades to test the main predictions of their model. Their findings show that the negative effect of inequality on growth is mitigated in economies with more developed domestic financial systems. As an economy develops, capital markets tend to improve. This means that the effects related to capital-market imperfections are more significant in poor economies than in rich ones. As a result, the predicted effects of inequality on growth is likely to be more pronounced in less developed economies, where capital-market imperfections are more prevalent.

Recently, Odusanya and Akinlo (2020) In their study on the Sub-Saharan Africa (SSA) region, analyzed the effect of income inequality on economic growth via the credit market imperfection channel. They used a growth model and introduced an interaction term for the measure of credit market imperfection and income inequality. The results suggest that the coefficient of the Gini index is negative and statistically significant at 10%, with income inequality causing about a 0.12% decline in money supply. This implies that income inequality exacerbates imperfection in the credit market, hindering economic growth in the SSA.

The literature consistently demonstrates the significant role of credit market imperfections in the relationship between income inequality and economic growth. Studies by Galor and Zeira (1993), Barro (2000), Odedokun and Round (2004), Iradian (2005), and Knowles (2005) emphasize that credit market imperfections, such as limited access to credit and information asymmetry, hinder the poor from borrowing and investing, ultimately reducing economic growth. The accumulation of both physical and human capital further influences this correlation, as highlighted by Chambers and Krause (2010). The findings of Braun et al. (2019) indicate that the negative impact of inequality on growth is alleviated in economies with more developed domestic financial systems. This emphasizes the need to address imperfections in capital markets, particularly in less developed economies where they are more prevalent. The next section will examine the impact of inequality on growth through the accumulation of human capital.

3. Accumulation of human capital

This section aims to review the research of various authors who have contributed to the study of the relationship between inequality and growth, with a particular focus on two channels: fertility and education. These two channels are linked and play an important role in explaining the main transmission channel, which is the accumulation of human capital.

Galor and Zeira (1993) predict that an economy with high levels of inequality and poverty will be unable to accumulate human capital over time, resulting in low output and a high wage differential. Empirical studies have consistently shown that inequality is associated with lower levels of human capital accumulation and growth (Perotti 1996, Barro 2000). According to Birdsall et al. (1995), the accumulation of human capital, as measured by educational attainment, is a crucial factor for economic growth and development. In an optimizing model, the decision to invest in education or fertility is closely related, as both rely on the parents' human capital. While the literature on income inequality and growth has largely ignored fertility, studies have found that higher fertility rates lead to fewer resources for education and lower enrolment ratios.

In their 2000 paper, Banerjee and Duflo describe the cross-country evidence on inequality and growth. They explore the effect of inequality on growth through human capital accumulation by using two measures of human capital: average years of schooling and infant mortality rate. Using panel data for both five- and ten-year periods, they find that both measures are negatively correlated with initial inequality and positively correlated with subsequent growth. Additionally, they find that changes in inequality (in either direction) are correlated with a reduction in growth in the next period. The effect of inequality on growth through human capital accumulation is stronger for low-income countries than for high-income countries. These results suggest that inequality reduces the incentives and opportunities for human capital investment, especially among the poor, and that this has a negative impact on growth.

Fertility and schooling decisions are influenced by the direct cost of raising children and the opportunity cost of the parents' human capital implying that more unequal societies tend to have higher fertility rates and lower rates of investment in education. Since education has a cost equal to the income foregone while at school, while poor households do not invest in human capital but in the quantity of children, rich households can afford their children and reduce their fertility rate. However, because growth is basically promoted by investment in human capital, a relatively large number of poor households will invest in quantity rather than education in a society with high inequality. Consequently, the high fertility rate of this society leads to low growth [Perotti (1996), Kremer and Chen (2000), Barro (2000), Forbes (2000), De la CROIX and Doepke (2003), Galor and Moav (2004), Castello (2010), Berg et al. (2018)].

3.1 The Fertility channel

The relationship between income inequality and economic growth has long been a topic of discussion among economists. In recent years, many studies have been conducted to understand the complex relationship between the two variables. One such variable that has been found to be closely linked to economic growth is fertility rate.

Perotti (1996) was one of the first researchers to examine the links between income distribution, fertility, and development. He found that a greater income share of the middle class has a strong negative effect on fertility, and this in turn has a significant positive impact on growth. According to Perotti, inequality has a negative impact on economic growth through the fertility channel, as it leads to higher fertility rates and lower investment in children's education. Perotti implicitly assumes that the relationship between individual and household measures of the distribution of income is relatively stable across countries and time. Morand (1999) also provided a formal theoretical exposition of this argument, suggesting that there exists a poverty threshold below which a high fertility rate is preferred over investment in children's education.

Odedokun and Round (2004) used the same method as Perotti (1996) with African countries by adding income distribution variables in their model, and their results also supported the idea that high inequality is found to have increased fertility rates in these countries. Kremer and Chen (2000) examined the link between inequality and differential fertility, using cross-country data, they find that higher levels of inequality are typically associated with greater fertility differentials within a country. This suggests that societies with high poverty levels tend to have high fertility rates and low education levels. Furthermore, empirical evidence, as highlighted by Kremer and Chen, indicates that greater inequality is linked to larger differences in fertility rates between educated and uneducated women.

In contrast, Barro (2000) focused her attention on the reduced-form relationship between inequality and growth in a panel of countries in the short run. She found that once controls for education, fertility, and investment are introduced, there is no relationship between inequality and economic growth in the entire sample. However, De la Croix and Doepke (2003) introduced a novel theoretical framework that connects inequality and growth, using information on fertility differentials across 68 countries. They suggested a distinct mechanism that links inequality and growth through differential fertility and the accumulation of human capital. Their analysis revealed that inequality increases the fertility of the poor and hence reduces human capital accumulation and growth. They build on the finding that fertility differentials have an impact on growth. When there is a spread in income distribution that does not change the mean, the number of children from disadvantaged families with low levels of education increases relative to the number of children from richer families with high levels of education. This leads to a dilution of average human capital as the proportion of less educated individuals increases. Additionally, an increase in inequality also raises the total fertility rate, which has a further negative effect on per capita income growth.

Barro (2008) revisited the link between inequality and growth almost a decade later and found that as fertility rate rises, human capital investment declines, which undermines the growth process. Although Barro found no direct relationship between income inequality and economic growth, he acknowledged the negative effect of high fertility rates on human capital accumulation, leading to lower economic growth. As fertility rate rises, human capital investment tends to decline, which eventually undermines the growth process. Furthermore, Castells-Quintana and Royuela (2017) introduced the control function approach, traditionally used to address endogeneity concerns, in their study analyzing the relationship between inequality and economic growth. Their focus was on the long-term effects of income inequality on economic growth, utilizing OLS "Barro regressions" with cross-sectional data on growth rates from 1970 to 2007 in a sample of 51 countries, including both developed and developing nations. The findings indicate a negative effect of high inequality on long-run growth, which appears to be associated with higher fertility rates. The authors argue that these results emphasise the complexity of the relationship between income distribution and economic growth, with the complexity being particularly pronounced in developing countries.

More recent studies have continued to examine the relationship between income inequality, fertility, and economic growth. Gründler and Scheuermeyer (2018) used data from 192 countries between the early 1960s and 2014 and found that inequality had a positive effect on the fertility rate. This suggests that as income inequality increases, families from lower socioeconomic backgrounds tend to have a higher number of children. The effect of inequality on fertility was considerably stronger in countries with limited credit availability. This implies that credit market imperfections may lead to families choosing to have more children if they are unable to finance their children's education due to restricted access to credit. To continue in this direction, Berg et al. (2018) used a comprehensive data set that covered many advanced and developing countries to look at the relationships among inequality, redistribution, and growth. They found that inequality through fertility is associated with lower growth. Similarly, Le and Nguyen (2019) analyzed the impact of income inequality on economic growth at the provincial level in Vietnam and found that high inequality had a negative impact on economic growth through the fertility channel. possible explanation for this result was that the degree of income inequality is smaller within provinces than in the nation as a whole because of the independent role of the central government.

Most recently, Odunsanya and Akinlo (2020) explore the channels through which income inequality affects economic growth in Sub-Saharan Africa (SSA). The study spans the period 1995–2015, focusing on 31 SSA countries. Using the two-step system generalized method of moments (GMM) as their estimation technique, they find that income inequality has a statistically significant negative effect on economic growth in the region through the fertility channel. Estimation of the fertility model reveals that higher adolescent fertility rate significantly increases the total fertility rate. The results suggest that income inequality is harmful to economic growth in the SSA region.
These studies suggest that high income inequality can have negative effects on economic growth through increased fertility rates and lower investment in education and human capital accumulation.

3.2 The Education/human capital channel

When considering the impact of inequality on economic growth, Human capital accumulation is one of the main channels through which inequality can affect growth: Inequality can affect the ability of individuals to access education and training, which can limit their ability to acquire the skills and knowledge needed to participate in the modern economy. This can limit economic growth in the long run, Birdsall and al.(1995).

Several studies have explored the link between human capital accumulation, income inequality, and economic growth. According to Birdsall and al. (1995), the accumulation of human capital, as measured by the educational attainment of the population, is a crucial feature of economic growth and development. They found that in East Asia, the expansion of basic education after the war stimulated growth by increasing labor productivity, changing household behavior, and facilitating the acquisition of technological capability. Additionally, macroeconomic and trade policies that generated demand for skilled labor also reinforced the positive effect of education on growth.

Perotti (1996) examined the channels through which inequality affects economic growth and found that higher levels of human capital formation lead to economic growth. He argued that inequality reduces investment in human capital, which in turn slows down economic growth. Forbes (2000) found a positive correlation between government spending on primary education or better-quality public education, which are negatively correlated with inequality, and economic growth. Forbes notes that her estimates ‘do not directly contradict the previously reported negative relationship between inequality and growth’ and goes on to point out that her paper ‘focuses on the short- and medium-term relationship within individual countries. The main argument for using panel techniques is that they allow for the control of omitted time-invariant factors and for addressing how a change in a country’s level of inequality will affect growth within that country (Forbes 2000).

Several studies have also tested the hypothesis that high inequality reduces investment in education due to borrowing constraints in credit markets. Odedokun and Round (2004) analyzed 35 African countries over the period 1960-1990 and found that high inequality reduced both secondary and tertiary school enrolment ratios. De Gregorio and Lee (2004) used cross-country panel regressions of 85 countries and found that income inequality negatively impacted secondary school enrolment, leading to a smaller secondary educational stock and adverse effects on economic growth. They also found that more equal distribution enables more households to send their children to school.

According to Galor and Moav (2004), human capital becomes the primary driver of economic growth in the later stages of development, and a more equal distribution of income encourages investment in human capital, resulting in economic growth. Zhang (2005) found that higher inequality has not only a direct negative effect on output growth but also an indirect negative effect through raising the ratio of physical to human capital. Castello (2010) showed that inequality in human capital affects the accumulation of human capital through its impact on fertility and life expectancy, which largely captures the overall effect of human capital inequality on economic growth.

Berg et al. (2018) conducted a study to examine the relationships between inequality, redistribution, and growth. Their analysis utilized a comprehensive dataset and focused on the medium and long term, specifically investigating growth patterns over 5-year periods and the duration of growth spells. The findings revealed that the impact of inequality on economic growth can be attributed to lower levels of education. The study incorporated a diverse range of countries, including both developed and developing nations, and employed various alternative samples and estimation methods. Two main approaches were employed: panel growth regressions and spell analysis using duration models. Additionally, the results were tested to account for measurement error and were supported by robust confidence intervals to address weak instruments.

Gründler and Scheuermeyer (2018) used data from 192 countries between the early 1960s and 2014 to study the relationship between inequality and investment. They found that inequality was negatively related to investment, which could be attributed to sociopolitical unrest or credit market imperfections. Inequality had a negative effect on school attainment, indicating that less equal societies tended to have a less educated population. The negative effect of inequality on schooling as well as the positive effect of inequality on fertility are considerably stronger the lower the availability of credit. Poor families seem to choose a higher quantity of children if they are unable to finance their children's education due to credit market restrictions. The study also found that the growth effect of inequality might depend on the volume of public spending on education. When public education spending was low, the negative marginal effect of inequality on growth was stronger. In poorer countries with less developed public schooling systems and capital markets, inequality had a significantly negative effect on growth, and redistribution could be a policy measure to address this negative effect.

These studies suggest that investment in human capital through education is crucial for economic growth and development. Higher levels of education lead to better labor productivity, which in turn stimulates growth. However, high levels of income inequality reduce investment in education, limit opportunities for the poorest people, and slow economic growth. This phenomenon is particularly evident in developing countries, where income inequality is very strong, and there are constraints on access to credit and high levels of corruption. In developing countries, poverty is often concentrated in certain regions, leading to a lack of access to basic services such as education, which further exacerbates inequality. On the other hand, developed countries have more advanced and well-established education systems and less income inequality, which allows for greater investment in human capital and ultimately contributes to economic growth.

4. Other Channels through which inequality affect growth

In the following section, we will examine the two additional channels through which income inequality influences economic growth: the political economy channel and the socio-political instability channel.

The link between income inequality and economic growth has been a topic of debate in the field of political economy. Alesina and Rodrick (1994) studied this relationship and found that high levels of income inequality can lead to redistributive fiscal policies, such as higher government expenditure and distortionary taxation, which are believed to retard growth. Their results imply that countries that experienced a land reform in the aftermath of World War II and reduced inequality in land ownership should have had higher growth than countries with no land reform. This argument is often cited as an explanation for the successful economic experiences of several Asian countries compared to the less stellar performance of most Latin American countries.

Persson and Tabellini (1994) conducted a historical panel data and cross-sectional analysis of countries after World War II and found a significant and large negative relationship between inequality and growth in democracies. However, Perotti (1996) conducted a study on the political economy channel, but his results did not support the theories proposed by Alesina and Rodrik (1994) and Persson and Tabelini (1994). These earlier hypotheses suggested that inequality was linked to higher levels of taxation, which in turn affected economic growth. However, Perotti's findings contradict this view, showing that inequality is associated with lower taxation levels and lower levels of economic growth.

Li and Zou (1998) re-examined the relationship between income distribution and economic growth between developed and developing countries. They considered a more general theoretical framework than Alesina and Rodrik (1994) by dividing government spending into production services and consumption services. Their results show that more equal income distribution can lead to higher income taxation and lower economic growth, and income inequality has an ambiguous effect on economic growth. Furthermore, Forbes (2000) found that higher levels of corruption (which tend to be positively correlated with inequality) have a negative correlation with growth. In unequal societies, there are more incentives for redistributive politics, as De Gregorio and Lee (2004) pointed out. According to Barro (2000), if the mean income in an economy exceeds the median income, then a system of majority voting tends to favor redistribution of resources from rich to poor, leading to transfer payments and associated tax finance that distort economic decisions.

Earlier research has suggested that high levels of income inequality can lead to political instability. This is because different groups may compete for power and resources, which can result in various forms of unrest such as protests, strikes, and violence. Furthermore, marginalized groups may resort to criminal activities to obtain resources, which can exacerbate the economic situation by creating an unsafe environment for citizens and discouraging investment. Additionally, inequality can contribute to a breakdown of public services, which can have a negative impact on economic growth.

Perotti (1996) conducted cross-country analyses on a group of developed and developing countries and found a negative relationship between inequality and growth through the political instability channel. According to Perotti's socio-political instability approach, in more unequal societies, individuals are more likely to engage in rent-seeking activities or other manifestations

of socio-political instability, such as violent protests, assassinations, and coups. In a study by Odedokun and Round (2004), the relationship between income distribution variables and the index of political stability was estimated for African countries, along with per capita income levels. The study found compelling and consistent evidence that high income inequality is linked to decreased political stability in African countries.

Barro (2000) argues that the rise of socio-political unrest, resulting from high income inequality, may hinder economic growth. Inequitable distribution of wealth and income can cause the poor to engage in criminal activities, riots, and other disruptive actions. This can lead to political instability and even revolutions, which can result in shorter duration and greater uncertainty of laws and rules. These different forms of socio-political unrest caused by inequality can lead to a decrease in productivity and economic growth, especially during the transition to a steady state. According to Barro, one way to mitigate the negative effects of income inequality is to implement income equalizing transfers that promote political stability. However, this only works if the incentive of the poor to steal and disrupt rather than work is the dominant factor. Even in a situation where a dictatorship is in power, leaders with self-interest would support a certain level of income distribution transfers if it resulted in a decrease in social unrest and political instability. Therefore, based on these factors, it can be expected that a social safety net would be necessary regardless of the type of government in place. Additionally, the expectation that redistribution of wealth would lead to a decrease in crime and civil unrest can serve as a means to increase economic growth through greater income equality.

Nel (2003) conducted a similar study, using OLS methods to evaluate the impact of income inequality on both economic growth and political instability. The study discovered that greater levels of inequality are associated with an increase in political instability. Furthermore, the findings suggest that greater political instability has a negative effect on investment and dampens the prospects for economic growth.

To address issues such as strikes, criminal activity, political unrest, and uncertainty, politicians and leaders often support the redistribution of wealth by transferring funds from the wealthy to the less fortunate. This approach can create a safety net for citizens and help to restore trust in government, while also reducing uncertainty and increasing investment, leading to promoting economic growth in the long term. Overall, addressing income inequality and political instability is crucial to promoting economic growth and ensuring social stability. Additionally, with and update research, Grundler and Scheuermeyer (2015) found that an increase in crime rates leads to political instability, which prevents both domestic and foreign investors from investing in the country.

5. Conclusion

This literature review provides a comprehensive analysis of the relationship between income inequality and economic growth. Theoretical models have identified various transmission mechanisms through which income inequality can affect growth, including credit market imperfection, human capital accumulation, fertility rates, and the level of economic and technological development. Galor and Zeira (1993), Alesina and Rodrik (1994), Perotti (1996), Forbes (2000), Barro (2000) and others, has provided a comprehensive analysis of the relationship between income inequality and economic growth. However, the empirical evidence has yielded mixed results, with some studies finding a positive relationship, others observing a negative impact, and some reporting inconclusive findings. One important finding from the literature is that the growth effect of inequality depends on several factors. The degree of credit market imperfection, the level of public provision of education, and the stage of development are all key determinants of the relationship between inequality and growth. Inequality can exert a negative influence on growth through diminished human capital accumulation and an increase in the fertility rate. The effect on physical capital accumulation, however, remains ambiguous.

The net effect of inequality and redistribution on growth remains an empirical question, as the proposed transmission channels often offset each other. It is crucial to consider the dynamics of inequality when assessing its impact on economic growth. When inequality is associated with political instability, social unrest, distortive policies, and lower investments in human capital, it is expected to harm long-run economic performance. Therefore, improving income distribution is essential, particularly in low-income countries where inequality levels are typically high. However, some degree of inequality can be beneficial for economic growth. When inequality is driven by market forces and linked to factors such as innovation and capital investment.

Based on the findings of this literature review, several policy recommendations can be made. Firstly, addressing credit market imperfections is crucial. Policies should be implemented to remove rigidities in the financial market, providing equal and better access to loanable funds. This can be achieved through monetary policy initiatives that reduce borrowing costs and enhance accessibility to funds for low-income earners, thereby increasing productivity and reducing income inequality. Secondly, efforts should be directed towards improving human capital accumulation for the disproportionately poor. Governments should invest heavily in education at all levels and allocate increased funding for research and development. Enhancing human capital is vital due to its long-term socioeconomic implications. Thirdly, addressing high fertility rates is essential as it has been found to increase income inequality and hinder economic growth. Policies should focus on promoting family planning practices and improving knowledge about contraception, particularly in regions such as Sub-Saharan Africa .

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