Links between Growth, Inequality, and Poverty

A Survey

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Abstract

Is there a trade-off between raising growth and reducing inequality and poverty? This paper reviews the theoretical and empirical literature on the complex links between growth, inequality, and poverty, with causation going in both directions. The evidence suggests that growth can be effective in reducing poverty, but its impact on inequality is ambiguous and depends on the underlying sources of growth. The impact of poverty and inequality on growth is likewise ambiguous, as several channels mediate the relationship. But most plausible mechanisms suggest that poverty and inequality reduce growth, at least in the long run. Policies play a role in shaping these relationships and those designed to improve equality of opportunity can simultaneously improve inclusiveness and growth.

Links between Growth, Inequality, and Poverty: A Survey[*]

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1.   Introduction

The most commonly used measure of a country's economic activity and the overall well-being is gross domestic product (GDP). It gauges the magnitude of economic production, which in turn affects the payments to factors of production such as capital and labor. GDP *growth* is therefore an estimate of how the aggregate income of a country increases over time. A country's aggregate income, in turn, provides resources that can increase the incomes of families and individuals.[1] Given these relationships, economists have long been concerned about explaining the determinants of economic growth and formulating policies to elevate it.

But whether economic growth is sufficient to improve the welfare of every individual depends on *how* the benefits of growth are spread across the society. If all individuals benefit proportionately, then studying growth through the device of a "representative agent" would be sufficient to determine the economic forces at work and the policy options needed to improve the welfare of each individual. However, if growth does not raise everyone's incomes proportionately, then an analysis of the economic welfare of an individual requires studying aggregate economic growth in conjunction with the distribution of income within the economy.[2]

So, what is the relationship between growth and measures of the inclusion of individuals in the economy and society, such as inequality and poverty? Does growth help pull people out of poverty? And how does growth affect inequality, if at all? What about the reverse relationship: that is, how do poverty and inequality affect growth?

This paper studies the nexus of growth, poverty, and inequality, seeking answers to these questions. The relationship between inequality and economic activity has been a subject of interest throughout the history of economic thought. In the *Wealth of Nations*, Adam Smith (1776) noted that wealth inequality could lead to social unrest and that the government had a role in protecting property rights and preventing the poor from seizing the property of the rich. From

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[1] GDP omits some components of economic production, such as housework and home production, because it measures goods and services traded in market transactions. It also fails to deduct economic "bads" such as environmental degradation or to fully account for other aspects of well-being and happiness. For a full discussion, see the 2020 IMF report, Measuring Economic Welfare: What and How?

[2] While there are multiple ways of measuring inclusiveness, this paper focuses the analysis on two metrics: the poverty rate and the Gini coefficient of income distribution. The first measure captures the percentage of the population that is unable to meets its needs, based on an estimated threshold defining the cost of consumption basket for satisfying basic needs. To expand the coverage of data, this paper uses the World Bank's threshold of $3.20 per day in purchasing power parity (PPP) terms, rather than the $1.90 PPP indicator of extreme poverty. The second measure of inclusiveness, the Gini coefficient, captures the degree of dispersion or inequality in the distribution of income, where a value of 1 indicates maximum inequality (whereby one person accrues all income) and 0 indicates perfect equality (whereby everyone in the entire population receives the same income). Additional indicators that might capture different dimensions of inequality, living standards, and inclusiveness are discussed in more detail in Cerra et al. (2021, Chapter 1), along with their limitations.

a different perspective, in the mid-nineteenth century, Karl Marx saw capitalism as exacerbating inequality, making capital owners richer and workers poorer over time. He thought that this polarization of income could lead to a revolution, where a communist system eventually would replace capitalism (Marx 1867). The complex relationship between income distribution and growth has continued to receive attention from many other economists, including the seminal works of Simon Kuznets (1955) and Nicholas Kaldor (1957). Furthermore, the study of inequality and growth has been facilitated by developments in data collection on poverty, wealth, and labor market conditions. For instance, Charles Booth (1891), in *Life and Labour of the People in London*, published maps describing wealth and poverty levels street by street in the city of London. About the same time in the United States, Carroll Wright, the first US Commissioner of Labor, was a pioneer in the collection of labor market statistics. He initiated the collection of data on wages and labor conditions of women and also published studies describing how the adoption of new machinery affected wages and employment. These advances in data collection continued over the twentieth century and made it possible to conduct a systematic analysis on the links between growth and inclusiveness.

Multiple channels link growth to inclusion and inclusion to growth, making it difficult to determine causation. Moreover, many factors affect growth and inclusion simultaneously. Compounding these issues, data on poverty and inequality have been difficult to compile, are collected and measured infrequently, and are often unreliable. Estimates are sensitive to assumptions on factors such as capital gains and untaxed income (Cerra et al. 2021, Chapter 1) and alternative measures may show different trends (Blotevogel et al. 2020). Empirical studies, especially those exploring the link between growth and inequality, sometimes find inconsistent results, no doubt due to these multiple channels, endogenous relationships, and poor data quality. As a starting point, the next section presents key stylized facts and trends of inequality, poverty, and economic growth across different world regions and over time. Sections 3 and 4 then discuss the channels linking the variables on this nexus, drawing on the theoretical and empirical literature. Section 5 concludes with the key takeaways and policy implications.

2.   Trends in Inequality, Poverty, and Growth

Market-based income inequality has risen steadily in advanced economies and some large emerging market economies. Figure 1 shows the evolution across country groups of income inequality, measured by the Gini coefficients for market-based income (before taxes and

transfers) and disposable income (after taxes and transfers).[3] The key distinctive feature of the evolution of income inequality has been the large and sustained increase in the market-based Gini coefficient in advanced economies in each decade from the 1980s through the 2010s.[4] In contrast, income inequality for emerging market and developing economies (EMDEs) as a group has been broadly unchanged since the 1980s.[5] As a result of these contrasting trends, market inequality in advanced economies has surpassed that of EMDEs, on average, in recent decades, from a lower relative level in the 1980s (Table 1). Despite the relatively stable trend for EMDEs, some of the largest emerging market countries—notably China, the Russian Federation, India, South Africa, and Indonesia—have experienced increasing market inequality (Table 1). In addition, inequality varies considerably more across emerging markets and low-income countries—especially the former, where outliers range from a low Gini coefficient in the range 20 to 30 to nearly 70 (Figure 2, panel a). The variation in inequality across countries is especially pronounced when comparing the ratio of income of the top decile relative to the bottom decile of each country's income distribution (Figure 2, panel b). For emerging markets and low-income countries, the ratio exceeds 20 for several countries.

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[3] For inequality measures presented in the paper, we use the Standardized World Income Inequality Database (SWIID). Its main advantage is coverage in terms of time and country information, as well as pre- and post-tax/transfer estimations. This coverage, however, comes at the cost of extensive imputations to fill gaps over time in a country, to extend the data to countries with missing data, and to obtain post-tax/transfer estimates. We recognize this limitation and point out that the World Bank PovcalNet is the unique comprehensive global dataset of non-imputed inequality (and poverty) data. For our purposes in writing this survey paper, the advantages of the SWIID outweigh its limitations.

[4] This section analyzes trends in poverty and inequality starting in the 1980s. Longer time series on wealth and income inequality have been collected by Piketty (2014) and are restricted mostly to advanced economies. Piketty and Saez (2014) report sustained improvements in wealth and income distribution across Europe and the United States from the 1930s to the 1970s, followed by a worsening of inequality starting in the 1970s to the 1980s. This section captures the rise in inequality in advanced economies starting in the 1980s. Later sections examine several channels that might account for this more recent trend.

[5] Fabrizio et al. (2017) provide an overview of income inequality trends in low-income countries.

Figure 1. Inequality across Country Groups, 1980s–2010s
(Market and Disposable Income Gini Coefficients)

While market-based income inequality has increased greatly in advanced economies since the 1980s, it has been broadly unchanged for emerging market and developing economies.

a.   Advanced Economies
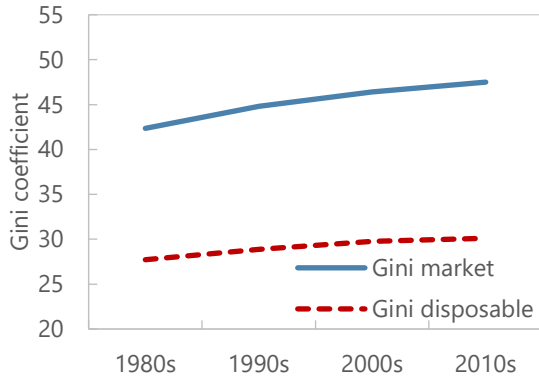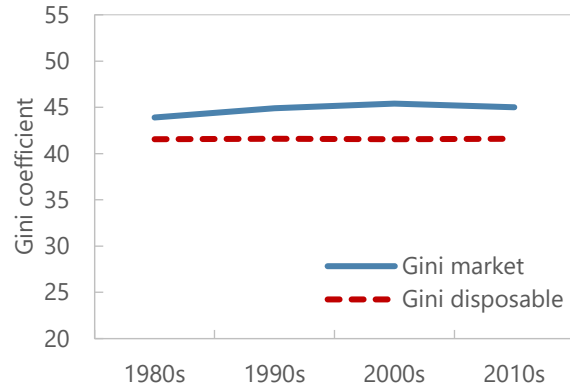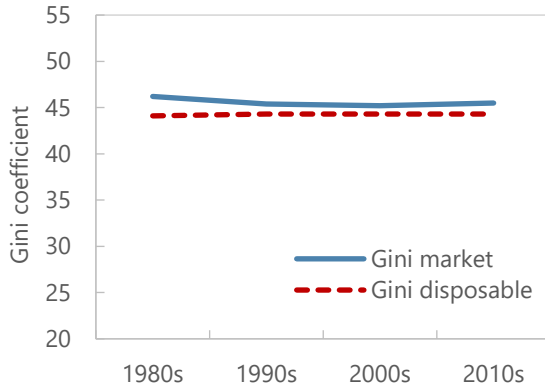
b.   Emerging Market Economies

c.   Low-Income Developing Countries

d.   World Average
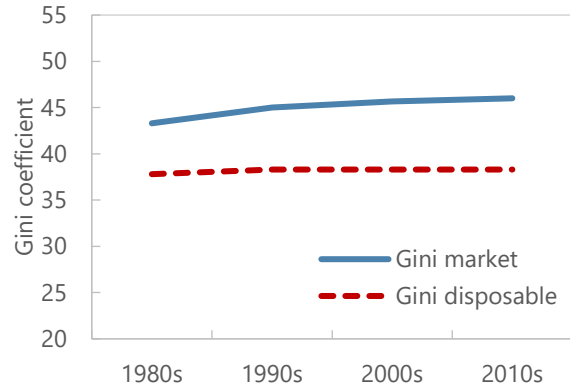
Source: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID).
Note: Gini market indicates the Gini coefficient before taxes and transfers. Gini disposable indicates the Gini coefficient after taxes and transfers. A higher/lower Gini coefficient indicates greater/less inequality. The average index for the 2010s is up to 2019. The Gini coefficients presented in the figure are regional and global averages of country Ginis (and not interpersonal inequality in these country groups). Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

Table 1. Inequality and Poverty in the 2010s Compared to the 1980s, Selected Countries and Country Groups

Country	Initial Gini (1980s)	Final Gini (2010s)	Change in Gini	Initial Poverty (1980s)	Final Poverty (2010s)	Change in Poverty
Brazil	60.9	55.2	-5.8	37.5	8.6	-28.9
Canada	40.7	45.5	4.7	0.4	0.4	0.0
China	30.2	41.4	11.2	…	15.2	…
France	48.2	49.0	0.8	1.6	0.1	-1.5
Germany	42.5	51.9	9.4	…	0.1	…
India	42.1	49.0	6.9	84.9	61.7	-23.2
Indonesia	39.6	42.6	3.1	91.1	33.9	-57.2
Italy	43.9	49.3	5.4	0.8	1.9	1.1
Japan	37.8	45.6	7.8	…	0.6	…
Mexico	46.8	47.2	0.4	19.0	10.2	-8.8
Russian Federation	35.3	45.6	10.4	…	0.5	…
South Africa	65.7	68.5	2.8	…	36.4	…
Turkey	44.4	43.1	-1.3	13.2	2.6	-10.6
United Kingdom	46.4	52.9	6.5	1.2	0.3	-0.9
United States	44.7	50.8	6.1	0.7	1.2	0.5
Country classification						
Advanced economies	42.6	46.9	4.3	0.8	0.5	-0.3
Emerging markets	44.9	45.1	0.2	34.7	9.0	-25.7
Low-income developing countries	46.2	44.9	-1.2	62.3	46.4	-16.0
World average	44.3	45.5	1.2	29.1	12.1	-16.9

Sources: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID) and World Bank.
Note: A negative/positive change in the Gini market coefficient indicates less/more inequality. Initial Gini market (1980s): average index for the 1980s. Final Gini market (2010s): average index for the 2010s up to 2019. Initial poverty ratio (1980s) at $3.20 a day: average index for the 1980s. Final poverty ratio (2010s) at $3.20 a day: average index for the 2010s up to 2019. The data points given for advanced economies, emerging market economies, and low-income developing countries use the IMF classifications and data for all countries in those categories.

Figure 2. Indicators of Inequality across Country Groups, 2000s and 2010s

Inequality varies considerably more across emerging markets and low-income countries than advanced economies.
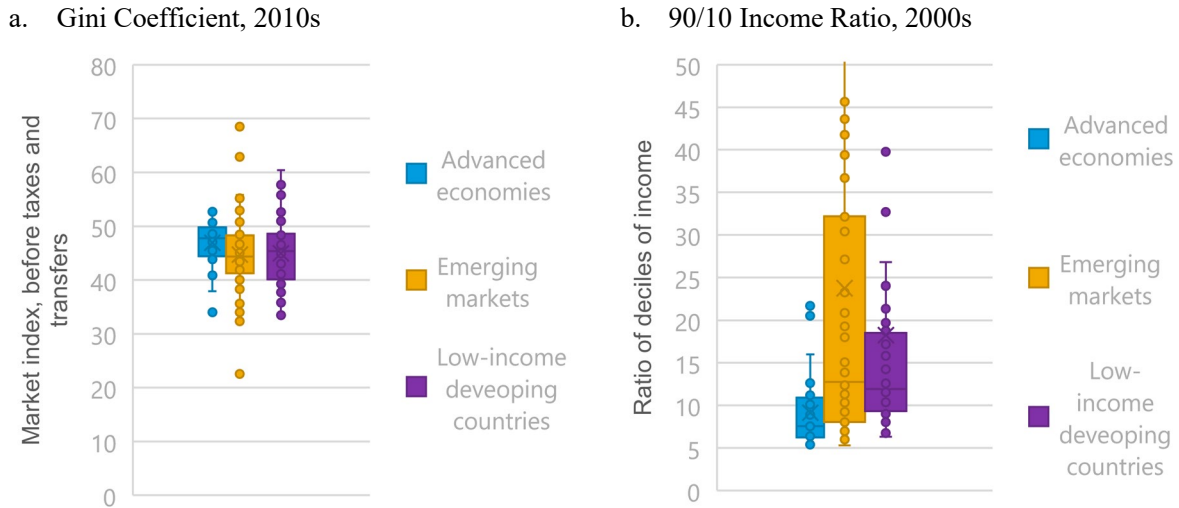
a. Gini Coefficient, 2010s   b. 90/10 Income Ratio, 2000s

Source: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID).
Note: For each decade, the box in the whisker plot depicts the spread between the 25th and 75th percentiles of the Gini market coefficient (Panel a) or the income ratio between the bottom 90 percent and top 10 percent of the population (Panel b) across countries in each country group. Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

Fiscal redistribution through taxes and transfers reduces income inequality, especially in advanced economies. The disposable income (or net) Gini coefficient (after taxes and transfers) drops to an average of 30 points from nearly 50 points for advanced economies, bringing net inequality much below that of other income groups. In contrast, redistribution is very limited in emerging markets and low-income countries, where the tax base and resources available for redistribution tend to be much smaller than in advanced economies.

Poverty rates are low in advanced economies and have been declining in developing countries from a high level. Figure 3 illustrates the dynamics of the poverty rate, measured as the fraction of the population that earns less than $3.20 a day in purchasing power parity (PPP) terms. Not surprisingly, the poverty rate in advanced economies has been low and stable during the sample period (Figure 3, panel a), given that most people in those countries have an income level substantially higher than the poverty threshold (Table 1). Most of the dynamics in poverty reduction since the 1970s has been concentrated in emerging markets and low-income countries (Figure 3, panel b and c), with emerging markets experiencing the largest reduction in poverty rates.

Figure 3. Poverty across Country Groups, 1980s–2010s
(percent of population)

The decline in poverty has been greatest in emerging markets.

a. Advanced Economies

b. Emerging Market Economies

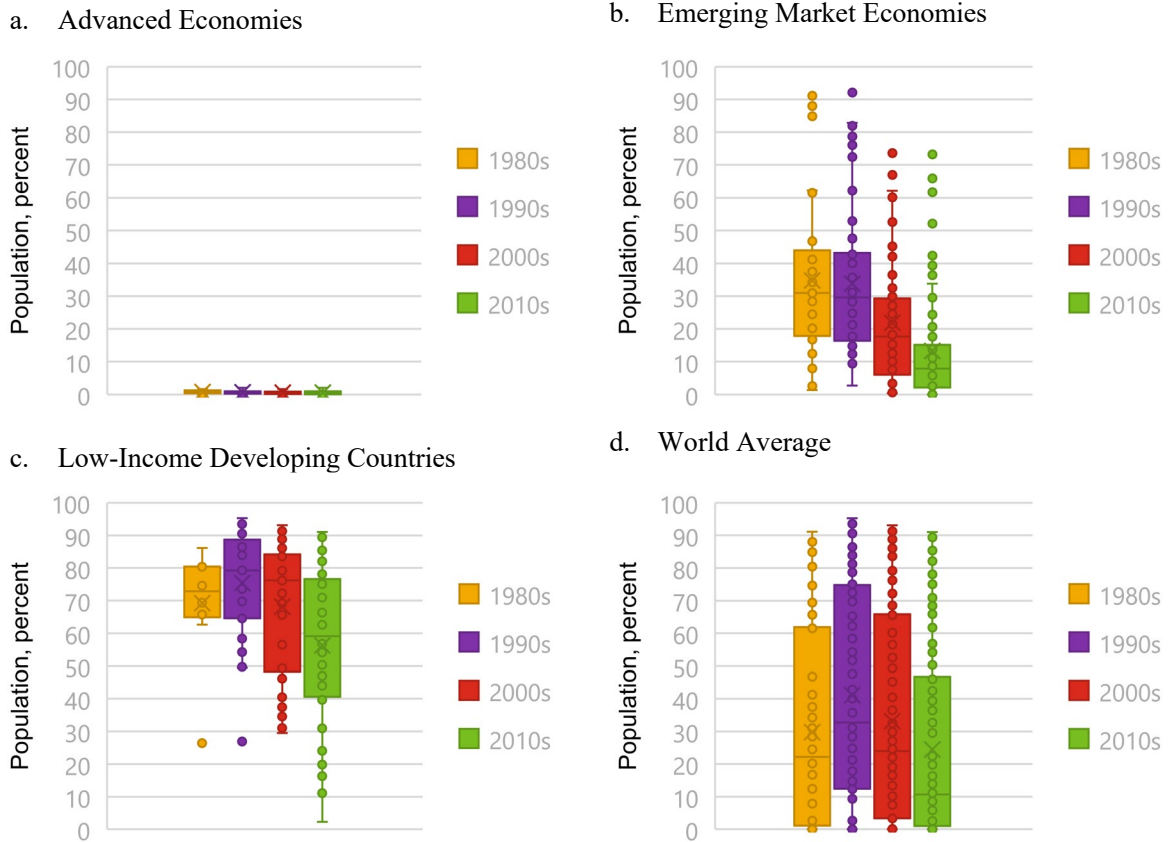c. Low-Income Developing Countries

d. World Average

Source: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID).
Note: For each decade, the box in the whisker plot depicts the spread in the poverty ratio between the 25th and 75th percentiles of the population across countries in each country group. The poverty ratio is in terms of 2011 purchasing power parity (PPP). The poverty ratio uses the poverty measure of $3.20 per day. Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

While GDP per capita growth in advanced economies has been slowing down every decade since the 1980s, growth has accelerated in emerging markets and low-income countries, particularly since the 2000s (Duttagupta and Narita 2017).[6] Figure 4 shows recent trends in GDP per capita growth across different groups of countries. Globalization allowed a large pool of the workforce in emerging markets and low-income countries to participate in the global markets through international trade, which arguably increased growth and reduced poverty rates (Figure 4, panel b and c) (Dollar and Kraay 2004). During the same period, advanced economies experienced a slowdown in GDP per capita growth rates, which worsened in the 2010s as a consequence of the

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[6] Johnson and Papageorgiou (2020) present a literature survey on growth convergence.

global financial crisis (Figure 4, panel a). Some of the long-term structural factors that might be behind the slowdown in per capita income growth are related to aging (Bloom, Canning, and Fink 2010) and a generalized slowdown in productivity growth (Gordon 2018).

Figure 4. Average Growth in GDP per capita across Country Groups, 1980s–2010s
(percent)

While GDP per capita growth has been slowing in advanced economies since the 1980s, it has accelerated in emerging markets and low-income countries.

a. Advanced Economies

b. Emerging Market Economies

c. Low-Income Developing Countries
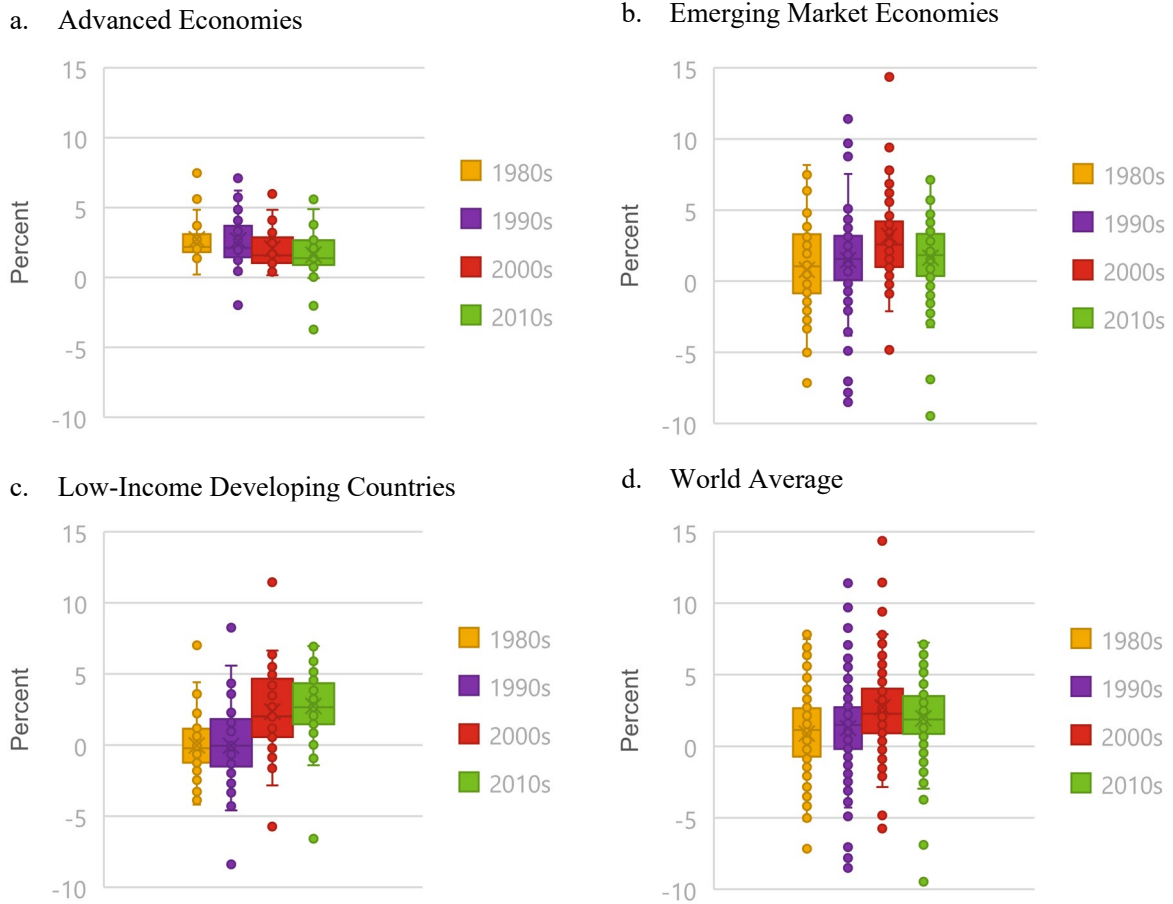
d. World Average

Source: Authors' calculations based on data from World Bank.
Note: For each decade, the box in the whisker plot depicts the spread of the average growth in real GDP per capita between the 25th and 75th percentiles of the population across countries in each country group. Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

With these facts and trends on inequality, poverty, and growth examined, the rest of the paper will comprehensively review the multiple dimensions through which inclusiveness and growth are related.

3.   How Does Growth Affect Poverty and Inequality?

3.1. Empirical Estimates of the Impact of Growth on Poverty and Inequality

The impact of growth on poverty and inequality depends on how income growth at each percentile of the distribution compares with average income (GDP) growth. Figure 5 shows that the income of the poor is strongly correlated with GDP per capita, both in levels (Figure 5, panel a) and in growth rates (Figure 5, panel c). This clearly illustrates the adage that a "rising tide lifts all boats," in the sense that when average GDP per capita rises, income in the lowest decile also increases and poverty falls.

The poverty-reducing effect of growth has been corroborated in several studies. Dollar and Kraay (2002) investigate the systematic relationship between economic growth and poverty reduction for a sample of 92 countries from 1950 to 1999. These authors find a robust pattern across countries where the share of income of the first quintile of the population varies proportionally to average incomes. They uncover a strong and positive relationship between these two variables, with a correlation coefficient that is not statistically different from one. Dollar and Kraay also evaluate the extent to which policies and institutions that have been identified in the literature as promoting growth can play a role in reducing poverty by increasing the share of income of the poorest quantile. The main conclusion of this analysis is that growth-enhancing policies and institutions do benefit the poor and the rest of the society in equal proportions.

Building on this work, using data from a panel of 80 countries, Kraay (2006) decomposes the changes in absolute poverty into three potential sources: the growth rate of average income; the sensitivity of poverty to growth; and a poverty-reducing pattern of growth (changes in relative income). In the short term, growth in average income accounts for 70 percent of the variation in poverty changes, while in the long term, it accounts for 97 percent. This study reemphasizes that growth-enhancing policies and institutions are central to alleviating poverty.

Figure 5. Relationships among GDP per capita, Growth, Inequality, and Poverty

Growth in average GDP per capita is strongly correlated with growth in the incomes of the poorest decile but has an ambiguous relationship with inequality.

a. Income in Poorest Decile vs. GDP per capita, 2000–10
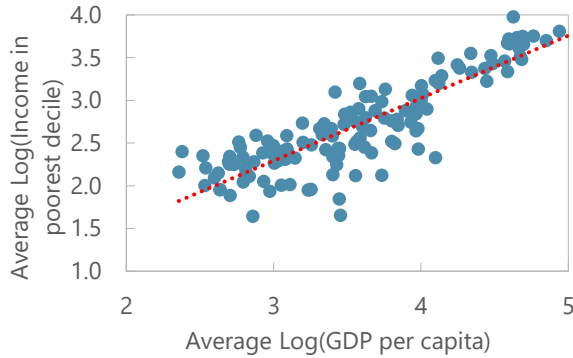
b. Market Gini and GDP per capita, 2000–10
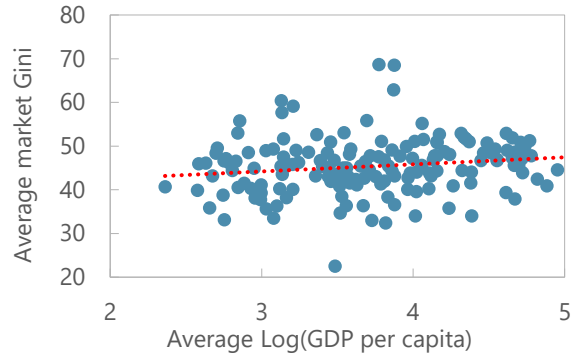
c. Change in Income of Poorest Decile and GDP per capita Growth, 1988–2008
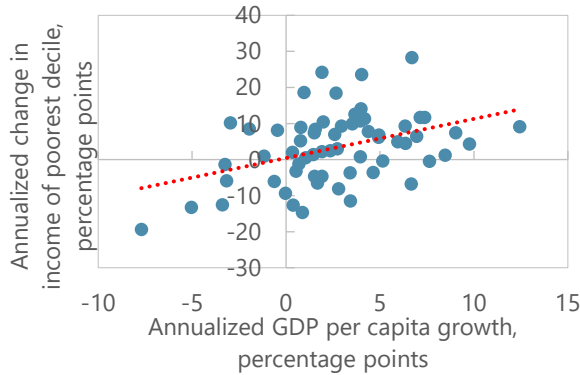
d. Change in Market Gini and GDP per capita Growth, 2000–19
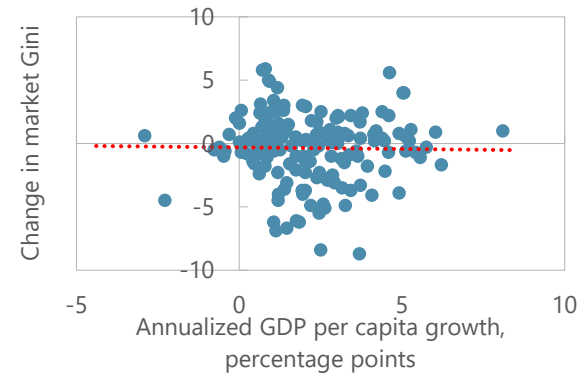
e. Sample of Growth Spells Lasting at Least Five Years, 1967-2011
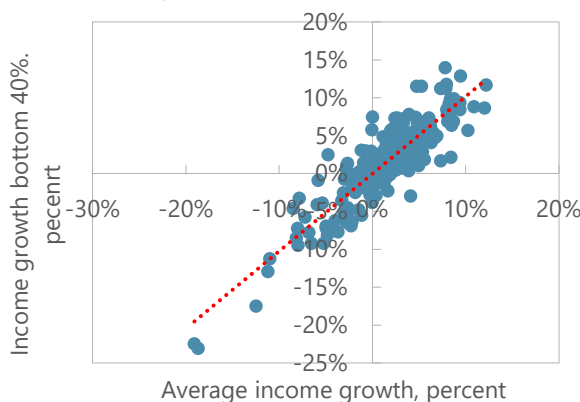
f. Income Decile Growth and Correlation with GDP per capita Growth, 1993–2008
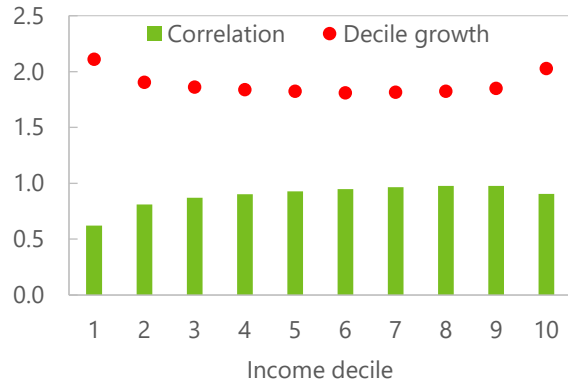
Sources: IMF staff and authors' calculations using data from Dollar, Kleineberg, and Kraay 2016; World Bank Open Knowledge repository CC By-NC-ND 3.0; Standardized World Income Inequality Database (SWIID).
Note: In Panel b, market Gini is before taxes and transfers. All data on GDP per capita, income of the poorest decile, and their growth rates are in real terms.

Dollar, Kleineberg, and Kraay (2016) update their analysis on the systematic relationship between average growth and growth of the poorest groups, examining 151 countries from 1967 to 2011. Similar to the result in Dollar and Kraay (2002), they find that the income in the poorest deciles varies in equal proportions with average incomes (Figure 5, panel e). They also find that on average, the shares of income accruing to the poorest 20th percentile and 40th percentile are fairly stable over time. These results emphasize the idea that policies aimed directly at increasing economic growth rates are indeed "pro-poor," in the sense that they lift the average income in the lowest deciles of the income distribution.

More recent literature has corroborated the importance of economic growth in reducing poverty. Analyzing the dynamics of the extreme poverty rate (PPP $1.90 per day poverty line) in 135 countries from 1974 to 2018, Bergstrom (2020) finds that 90 percent of the variation of poverty rates can be explained by changes in GDP per capita, while much of the rest is accounted for by changes in inequality.[7] At the same time, a 1 percent decline in inequality (measured as the standard deviation of log income) reduces poverty more than a 1 percent increase in GDP per capita for most countries in the sample. These results are reconciled by the fact that changes in mean growth have been substantially larger than observed changes in inequality. The study confirms that although growth has been the dominant force in poverty reduction, reductions in inequality have great potential in reducing poverty rates.

While both economic growth and inequality have an impact on social welfare, growth has been the dominant force. Dollar, Kleineberg, and Kraay (2015) construct social welfare functions that are sensitive to the bottom deciles, where welfare depends positively on income growth and negatively on inequality. Focusing on five decades of data for 151 countries, they find that most of the variation in welfare across countries is driven by the average growth of income. The role played by inequality is relatively minor—again because changes in inequality have been small and generally uncorrelated with growth. These results imply that policies aimed at reducing inequality will improve welfare as long as they are not detrimental to growth but may reduce social welfare if they reduce growth. Complementary results from Jones and Klenow (2016) show that GDP per capita is a good indicator of welfare for most countries, as these two variables have a correlation of 0.98. Moreover, they find that welfare inequality is greater than income inequality across countries. The mortality rate is the most important factor driving the dispersion in welfare.

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[7] Additional studies such as Bluhm, de Crombrugghe, and Szirmai (2018) and Fosu (2017) also find that poverty reduction has been driven primarily by economic growth, with changes in income distribution playing a secondary, albeit important, role.

In contrast to poverty, there is no significant systematic relationship between a country's income level and its market inequality (Figure 5, panel b). The simple cross-country evidence is not consistent with the Kuznets curve model that postulates an inverse U-shaped relationship between development and inequality.[8] Likewise, per capita GDP growth is uncorrelated with contemporaneous changes in inequality, measured in panel d of Figure 5 by the market Gini coefficient. The same lack of correlation is observed if inequality is measured by the change in the income ratio of the top to bottom deciles (not shown). Part of the explanation for the weak correlation between growth and inequality lies in the strong correlation between per capita GDP growth and *each* of the income deciles. As shown in the panel f of Figure 5, the correlation coefficient ranges between 0.6 to nearly 1.0. In addition, the change in inequality depends on the relative growth in incomes in each decile across the distribution, called the "growth incidence curve" (as discussed in Cerra et al. 2021, Chapter 1). For the sample of all countries, the income of the bottom and top deciles grew slightly faster than middle deciles over 1993–2008. Fast growth of the bottom would decrease inequality, while fast growth at the top would increase it, for an ambiguous overall impact.

In short, the impact of growth on poverty and inequality depends on how growth is distributed across the rich and poor. The discussion that follows describes the various channels by which growth can result in differential income growth rates for different socioeconomic groups.

3.2. Channels from Growth to Poverty and Inequality

3.2.1. The Neoclassical Growth Model

What does growth theory predict for the impact of growth on inclusion? The standard workhorse theory is the neoclassical growth model (Solow 1956), in which output is a function $Y=F(A,K,L)$ of factors of production, including capital (K), labor (L), and total factor productivity or TFP (A). Investment leads to capital accumulation, which increases the marginal product of labor and the wage paid to workers. In addition, growth arising from increases in TFP raises the marginal products of both capital and labor and therefore the income payments that they receive. Higher investment and/or higher technological progress imply higher production and higher incomes for everyone in the economy. In addition, because of diminishing returns to capital, capital-poor countries are expected to grow faster and eventually converge to capital-rich countries.

This simple model has been the cornerstone of much of growth theory. Given its one-sector structure in which both capital owners and workers benefit from growth, the policy implication is to focus on improving incentives for investment for economies to grow and converge more

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[8] Note, however, that the original Kuznets formulation is for structural transformation for a country over time, as discussed in section 3.2.4, and does not necessarily apply to the cross-section of countries.

quickly to the (higher-than-initial) steady state capital stock. The model does not account for any heterogeneity in capital ownership and labor supply within a country but predicts a decline in global poverty and inequality as poor countries catch up. Implicitly, this analytical framework is centered on aggregate growth, rather than on distributional issues.

Drawing on the neoclassical framework, Hausmann, Rodrik, and Velasco (2005) develop a general framework, "growth diagnostics," designed to inform policymakers on how to prioritize growth policies in a context of multiple distortions by targeting the most binding constraints. As in the neoclassical framework, with its emphasis on investment, economic growth depends on three elements: the returns to capital accumulation, their private appropriability, and the cost of financing capital investment. Distortions that can lower the return on capital include high taxes or expropriation risk, large negative externalities, low productivity, or insufficient investment in infrastructure or human capital. Distortions that increase the cost of financing investment include underdeveloped domestic financial markets due to lack of banking competition or a poor regulatory framework, and impediments to international financing due to high country-risk premium, excessive regulation of the capital account, or external debt vulnerabilities. However, the growth diagnostics analysis relies on a representative agent approach, which, like the Solow model, does not illuminate the distributional impacts of growth policies.

The basic neoclassical paradigm features a number of assumptions including: no government sector activities and redistribution; fully employed factors; a fixed and undifferentiated supply of labor; a competitive market structure; and balanced growth (no differential growth across sectors/industries/regions/firms, and so on). Relaxing each of these assumptions creates channels through which growth can have distributional effects, including for inequality and poverty. Each channel is considered in turn next.

3.2.2. The Government: Public Goods and Redistribution

Public goods and services

Growth increases aggregate resources, including the tax base and the public sector's capacity to collect taxes. A higher tax ratio facilitates the provision of public goods such as health and education that can be pro-poor. The extent to which growth leads to an expansion of pro-poor public services depends on the society's preferences for private versus public goods and the composition of public goods. As shown in Figure 6, it is an empirical regularity that as countries become richer, the government is capable of raising more fiscal revenue and increase the capacity of providing public goods. This stylized fact is better known as the Wagner's Law (Wagner 1893) and captures a channel through which growth leads to an increase in the size of

the government, which can reduce poverty and improve the income distribution provided spending is efficient and its composition benefits the poor.

Figure 6. Tax Revenues and Spending on Health and Education, by Country Group
(percent of GDP, 2010-19 average)

As countries become richer, the government can raise more fiscal revenue and increase spending on public goods and services.
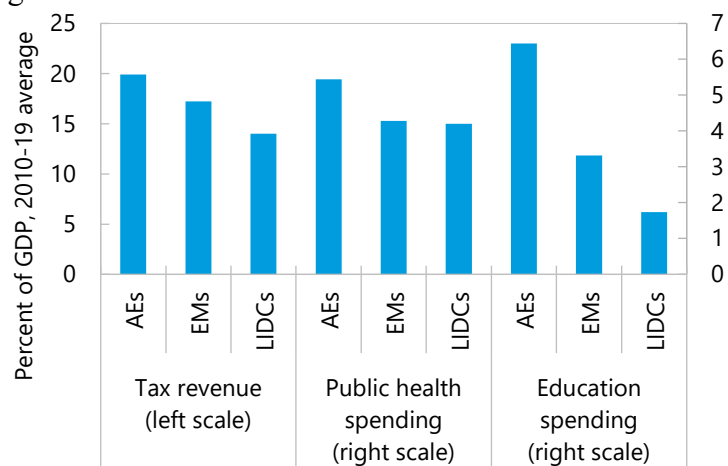
Source: Authors' calculations based on data from World Bank.
Note: AEs = advanced economies; EMs = emerging market economies; LIDCs = low-income developing countries. Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

Redistribution

As with public goods, the impact of growth on poverty and inequality through redistribution depends on social preferences. If poverty and inequality are considered social ills, people may be willing to "purchase" reductions in poverty and inequality through redistribution policies as overall incomes rise (that is, poverty and inequality reduction function as "normal goods," in which demand increases with income). Indeed, cross-country evidence shows that higher-income countries engage in more redistribution than developing countries (Figure 7), where redistribution is measured as the difference between the Gini before and after taxes and transfers. But the composition and incidence of taxes and transfers is important. For example, developing countries have high energy subsidies. This policy may be intended to support the poor, but instead largely benefits the rich who spend more on energy products (see Cerra et al. 2021, Chapter 12 and 13 for elaboration on taxation and spending policies).

Figure 7. Income Redistribution by Country Group, 1980s–2010s
(difference in Gini points before and after taxes and transfers)

As national incomes rise, countries engage in more redistribution.
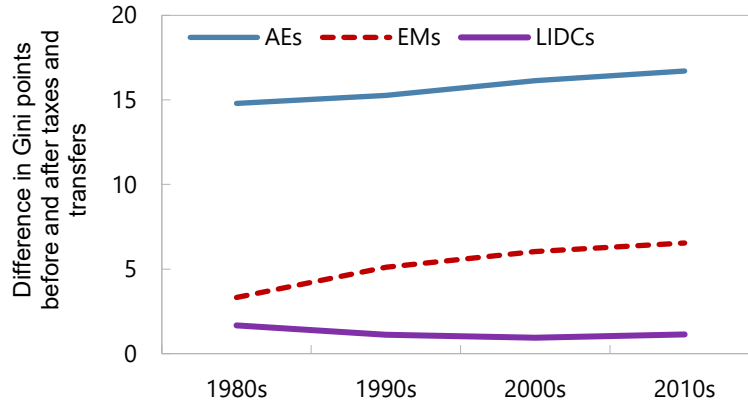
Sources: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID).
Note: AEs = advanced economies; EMs = emerging market economies; LIDCs = low-income developing countries. Country groups are defined according to WEO Methodology. For details see https://www.imf.org/external/pubs/ft/weo/faq.htm#q4b2.

3.2.3. Factors and Markets

Employment of factors

In the short and medium term, factors of production such as labor and capital are not necessarily fully employed. Recessions resulting from a variety of shocks, including financial distress and pandemics, can reduce long-term output (Cerra, Fatás, and Saxena 2020) and generate large spikes in unemployment and inequality and declines in capacity utilization (Heathcote, Perri, and Violante 2020). Unemployment creates income losses in the short term, especially for those in lower-income groups such as people with lower educational attainment, ethnic minorities, and women (Hoynes, Miller, and Schaller 2012). Unemployment often results in scarring effects on incomes over the longer term. As shown by von Wachter, Song, and Manchester (2009), 15 to 20 years after a layoff, earnings can be depressed by as much as 20 percent, as workers' skill set becomes outdated and they lose skills that are specific to the jobs lost in a specific industry. As described in Okun's law (discussed in Cerra et al. 2021, Chapter 3), unemployment varies inversely with cyclical growth (Ball, Leigh, and Loungani 2017). Higher growth generates employment, which improves inclusion. In general, economic volatility is associated with both lower growth and higher inequality (Cerra et al. 2021, Chapter 11).

Another reason for unemployed or underemployed factors could be poverty traps that entail the inability of low-income individuals to pay any fixed costs of education, move to a booming region, or obtain collateral to obtain credit. Such individuals can be excluded from more remunerative productive activities or remain unable to meet a threshold of productivity. Those

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stuck in a poverty trap may not be able to benefit from growth in the absence of government intervention such as the provision of microcredit (see Banerjee et al. 2019).

Labor supply response

Growth that generates higher returns to labor would induce more work effort. If leisure is a normal good, then higher-income people would increase their work less than low-income people. Bick, Fuchs-Schündein, and Lagakos (2018) show empirically that this is the case across countries, where the average adult worker in a low-income country works 50 percent more hours than the adult workers in high-income countries. Moreover, within countries, on average, the number of hours worked decreases with the level of wages. The exception to these stylized facts occurs in very high-income countries, including the United States, where the number of hours increases with the wage rate.

Growth also leads to demographic changes, notably a decline in the number of children and investment in the upbringing of children (through parental efforts to educate them). Growth may induce women to enter the labor force, raising family incomes (and reducing poverty if women of poor families did not previously work outside the home). Becker (1992) analyzes the interaction between fertility and growth. His economic framework shows how economic growth can result in a lower fertility rate, which reduces the labor supply and thus increases the return to labor.

Differentiated labor

Labor is not homogeneous in practice. Educational attainment and skills vary across individuals. Technological progress has generally been more complementary to skilled and educated workers than to the unskilled and uneducated, leading to a higher demand for the former and a reduction in the demand for the latter. As a result of economic growth associated with skilled-biased technological change, the rising wage skill premium has increased inequality of labor income (Krusell et al. 2000).

In the United States, the observed increase in wage inequality since the 1980s can be attributed, at least partially, to the increase of the wage premium of college education. Autor (2014) and Autor, Katz, and Kearney (2008) show that the college wage premium roughly doubled between 1980 and 2012 for both male and female workers, in part due to skill-biased technological change that increased the demand for college-educated workers.[9] The relationship between growth and inequality through skill-biased technical change is not necessarily linear. Since the

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[9] In addition, a slowdown in educational attainment starting in the early 1980s reduced the supply of skilled workers.

late 1980s, skill-biased technological change has led to job market polarization due to an increased demand for skilled and unskilled workers at expense of middle-class jobs, as new technologies are capable of performing routine tasks traditionally done by middle-wage workers (Goldin and Katz 2007).

Analyzing cross-country evidence, Brueckner, Dabla Norris, and Gradstein (2015) find that national income and inequality are positively related, with education as a possible channel. For a sample of 80 countries, the authors use two instruments for within-country variation of real GDP per capita, including international oil price fluctuations and countries' trade-weighted world income. The instrumental variables regressions show that, on average, a 1 percent increase in real GDP per capita reduces the Gini coefficient by around 0.08 percentage points. However, the importance of national income in explaining inequality is significantly reduced when education proxies are introduced, making education a probable channel.

Market structure

Contrary to the assumptions in the Solow neoclassical growth model, many industries do not have perfectly competitive market structures. Natural monopolies, policy-induced monopolies, or industries supported by rents (particularly in the natural resource sectors) lead to high returns to owners without a commensurate rise in payments to labor. Returns to certain factors— entrepreneurship, capital, land, and resource ownership—rise faster than returns to labor (especially unskilled labor). Scale of market can be important—bigger markets provide higher returns to owners if competition can be avoided. There can also be network effects (such as in high-tech and communications sectors) and tournament effects (for instance, the best sport star earns much more than the second best; singers/actors benefit more from brand in large markets).

Diez, Leigh, and Tambunlertchai (2018) document that a generalized increase in market concentration (associated with higher markups) occurred across advanced economies and across industries. At high levels of markups and profitability, an increase in market concentration leads to lower investment and lower wages, which directly influences the income distribution and growth. De Loecker and Eeckhout (2018) also analyze the global evolution of market power from 1980 to 2016, based on data from Worldscope covering more than 60,000 firms located in 134 countries. They corroborate that the recent trend of rising markups and market power has been predominantly concentrated in advanced economies, while markups in most emerging economies have been either stable or declining.

For the United States, De Loecker, Eeckhout, and Unger (2020) show that markups nearly tripled between 1980 and 2016, increasing from 21 percent above marginal cost to 61 percent. The rise in markups was greatest for firms in the upper tail of the distribution: that is, with markups that

were already high compared to the average. Those firms expanded at the expense of firms with low markups. This rise in markups can account for recent macroeconomic trends such as the secular decline in labor shares and the wage reduction of low-skilled workers. For a cost-minimizing firm, the labor share is inversely related to the markup. Greater market power also implies fewer firms, lower output, and reduced aggregate demand for labor, negatively affecting real wages and income inequality. Autor et al. (2020) also analyze the consequences of firm size on the labor market share by developing a framework for superstar firms characterized by a "winner takes most" feature. They provide evidence for the United States that industries that exhibited the largest increase in market concentration have also experienced larger declines in the labor market share. Cerra et al. (2021, Chapter 6) discuss the role market structure plays in shaping inclusive growth in more detail.

3.2.4. Unbalanced Growth

For a variety of reasons, different sectors, industries, regions, and firms may grow at different rates. Many of the sources of growth, including technology and trade, could improve growth in some economic sectors more than in others. Uneven growth produces uneven returns. When some sectors boom but others lag, growth is not likely to raise incomes proportionately. Payments to factors may fall in some cases. As some industries emerge and others disappear in a process of "creative destruction" (Schumpeter 1942), some workers could be displaced or face stagnant wages. In addition, pecuniary externalities can cause an increase in market prices, such as housing rents, that may reduce real incomes of poor.[10]

Economic development may entail unbalanced growth that affects inequality. For example, Kuznets (1955) postulated that inequality evolves as an inverted "U" shape function where inequality initially increases and eventually declines. In the initial stages of development, some workers migrate from rural agriculture to the fast-growing urban manufacturing sector. Workers in the manufacturing sector experience an increase in income, while the ones staying in the traditional sector remain with low wages, resulting in higher income inequality. As a larger share of workers shift to the manufacturing sector, inequality eventually declines at later stages of development.

Sectoral composition

Empirical studies confirm that the sectoral composition of growth is important in determining poverty reduction. Loayza and Raddatz (2010) study a cross-section of 55 developing countries

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[10] Matlack and Vigdor (2008), using Census data for US cities, show that an increase in income at the top of the income distribution leads to an overall increase in housing rents that disproportionally affect the poor, exacerbating inequality.

and find that growth in sectors that rely more intensively on unskilled labor have the greatest contribution to reducing poverty rates. The empirical results show that agriculture is the most effective poverty-reducing sector, followed by construction and manufacturing. Mining, utilities, and services do not have a statistically significant impact on poverty alleviation. These results highlight that in some countries, growth might be insufficient to reduce poverty if it is concentrated in sectors that are not intensive in unskilled labor, such as oil and mining.

Studies conducted for individual countries support the results of Loayza and Raddatz (2010). Ravallion and Datt (1996) find that for India in the second half of the 20th century, growth in agriculture and services was correlated with declines in poverty in both rural and urban areas, while industrial growth did not have a systematic impact on poverty. Ravallion and Chen (2007) find that agriculture growth was the most important driver for poverty alleviation in China. For Indonesia, Suryahadi, Suryadarma, and Sumarto (2009) find that growth in the service sector was strongly correlated with poverty reduction in rural and urban areas, while agriculture growth was correlated with poverty declines in rural areas. Ivanic and Martin (2018) find that in poor countries, productivity gains in agriculture are generally—although not always—more effective in reducing global poverty than the productivity gains in industry or services of equivalent size. However, the effectiveness of the former fades as average income rises.

Capital intensity

If growth is generated in sectors that are intensive in capital or innovative skill, such growth could provide higher returns to capital and entrepreneurs than to labor. Indeed, in recent years, the labor share of output across advanced and emerging market economies has fallen as a result of capital deepening and technological progress (Dao, Das, and Koczan 2019). Moreover, Piketty (2015) finds that the return on capital is higher than the growth rate of GDP in many country episodes, leading to higher inequality, as capital owners tend to be at the top of the income distribution. Using historical data from the United States and Europe, Piketty provides evidence that the difference between the return to capital (r) and the growth rate of GDP (g) has the effect of amplifying wealth inequality over time. Since wealth is highly concentrated at the top of the income distribution, the high return to capital relative to GDP growth increases the ratio of wealth to GDP, increasing the extent of inequality.

However, even if the driving sector is capital-intensive, it could have positive spillovers to the poor, provided it simulates enough growth in more labor-intensive sectors. Conversely, under some circumstances, strong productivity growth in labor-intensive agriculture could reduce demand for rural labor, thereby increasing poverty and the number of urban unemployed.

Technology and innovation

The prospect of obtaining rents from new products drives innovation, and innovation contributes to growth. The rents created by successful innovations lead to a rising share of the top 1 percent of the distribution. However, innovations appear to have limited impact on inequality in the bottom 99 percent of the population, and there is some evidence that innovation is positively correlated with social mobility (Aghion et. al. 2019). This may be consistent with the findings of Galor and Tsiddon (1997). They distinguish between "invention," which they assume draws on ability and leads to higher inequality and higher intergenerational mobility, versus a more accessible category of "innovation," which they model as depending on human capital correlated with parental human capital, and which thus leads to lower inequality but also lower intergenerational mobility.

The empirical evidence shows that investment in new technologies—such as information and communication technologies (ICT)—has important effects on the income distribution. Relying on a sample of 11 member-countries of the Organisation for Economic Co-operation and Development (OECD) from 1980 to 2004, Michaels, Natraj, and Van Reenen (2014) find that industries that experienced the highest growth in the use of ICT technologies increased the demand for highly educated workers (such as physicians or engineers) at the expense of middle-educated workers (such as administrative or clerical occupations). The demand for low-skilled workers was not affected, since many of the tasks performed by these workers (such as janitors or farmworkers) are difficult to replace with new technologies. As a result, investment in ICT results in polarization of labor markets across OECD economies, as tasks of middle-educated workers are replaced by new technologies. ICT could also increase the bargaining power of large, financially strong and politically influential entities that are capable of collecting, storing and analyzing large amounts of individual data, to the detriment of individuals and smaller enterprises, raising inequality.

More recently, Graetz and Michaels (2018) study the impact of the adoption of robots across industries in 17 OECD countries from 1993 to 2007. As opposed to new ICT technologies, robots can perform a wide array of repetitive tasks typically done by low-skilled workers, such as wielding, painting, or packaging, with very little human intervention. The increased use of robots contributed to an increase in labor productivity and average wages and a decline in output prices that benefited consumers but reduced the employment shares of low-skilled workers. For the US labor markets, Acemoglu and Restrepo (2020) find that adopting robots has led to higher productivity gains, but lower aggregate employment and wages. The authors estimate that, on average, one robot displaces three workers, even after accounting for the positive effects via higher productivity and lower output prices. For the French manufacturing sector, Aghion et al.

(2020) find net positive effects from automation technologies (including the adoption of robots) on employment, including of unskilled workers, and no discernible impact on wages. Cerra et al. (2021, Chapters 3 and 5) look into the links between technology, labor markets, and inequality in more detail.

Trade

The simplest framework for understanding the impact of trade liberalization on inequality is the Stolper-Samuleson theorem (Stolper and Samuelson 1941) derived in the context of the Hecksher-Ohlin model of trade. In this framework of two countries, two goods, and two factors, a reduction of tariffs in a developing country abundant in unskilled labor will lead to an increase in exports of the good that uses labor intensively and higher labor compensation of unskilled workers in that country. Conversely, opening up to trade leads to higher imports of products from developed countries that use skills or capital intensively and a reduction in wages for high-skilled workers in the importing country. For developed countries that are abundant in skilled labor, the reverse will be true: trade liberalization will reduce the wages of unskilled workers relative to skilled ones. Consequently, trade liberalization will lead to lower inequality in developing countries and higher inequality in advanced economies. In practice, however, the skill premium, or the gap between the wages of skilled and unskilled workers, has increased in both advanced and developing countries, mainly due to skill-biased technological change (see Cerra et al. 2021, Chapter 7). This suggests that additional factors besides trade might be playing a role in driving inequality.

Financial liberalization

Financial globalization can also influence income distribution through different channels (Cerra et al. 2021, Chapter 8). For instance, foreign direct investment (FDI) typically flows to high-skilled sectors of the host economy (Cragg and Epelbaum 1996), which might raise the skill premium and increase inequality in that country. The impact of other capital flows (portfolio debt and equity flows) in principle can have an ambiguous impact on inequality. Some authors argue that higher global financial integration can improve financial intermediation and help the poor by providing funds that can be used to accumulate human and physical capital. On the other hand, capital account liberalization might increase the frequency of financial crises (Kaminsky and Reinhart 1999). Governments may also increase debt following financial market integration (Azzimonti, de Francisco, and Quadrini 2014), raising the likelihood of a debt crisis. Financial and debt crises often lead to severe recessions that disproportionately affect the poor and raise inequality (Cerra et al. 2021, Chapter 11). The quality of institutions might also shape the direction in which financial flows influence income distribution. With strong institutions, financial flows might be channeled to the most productive uses and also would allow the poor to

smooth consumption to better insure themselves against macroeconomic volatility. On the other hand, with weak institutions, those well connected to financial institutions might have disproportionate access to the financial flows to the detriment of the poor, which can exacerbate inequality.[11]

3.2.5. Empirical Estimates of Multiple Drivers of Growth and Inequality

Various empirical studies have estimated the impact of several factors mentioned above that concurrently affect growth and inequality. For instance, Jaumotte, Lall, and Papageorgiou (2013) focus on two important drivers of economic growth in recent decades—technological change and globalization— and evaluate their joint impact on inequality. Relying on a panel data set of 51 countries covering 1981 to 2003, they find that technological change has a greater impact on income inequality than globalization does. The overall impact of globalization on inequality is limited, reflecting two offsetting effects. Trade globalization reduces inequality by raising the income of the bottom four quintiles, while financial globalization—manifested through an expansion in FDI flows—increases inequality. Technological innovation is the key channel increasing inequality: it increases the demand for skilled workers and the returns to capital, and disproportionally boosts the income in the top quintile of the income distribution. The authors also find that an increase in access to education could offset the negative effects of technological change and financial globalization, thus reducing inequality.

More recently, Furceri and Ostry (2019) have corroborated the different roles of technological change and globalization in driving inequality. Using model-averaging techniques in a sample of 108 countries covering the more recent period of 1980 to 2013, they find econometric results consistent with Jaumotte, Lall, and Papageorgiou (2013): namely, that financial globalization and technological improvements contribute to a rise in inequality while trade globalization is associated with lower inequality, especially in developing countries.[12]

4. How Does Poverty and Inequality Affect Growth?

4.1. Empirical Estimates of the Impact of Poverty and Inequality on Growth

4.1.1. From Poverty to Growth

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[11] Globalization and technological change influence growth and inequality through different components of GDP. Trade globalization and technological change impact the income distribution through labor income and the skill premium, whereas financial flows affect capital income.

[12] More specifically, Furceri and Ostry (2019) estimate the drivers of inequality using weighted-average least square (WALS) techniques, whereby the reported coefficients are a weighted average of the estimated coefficients across all possible models. This technique addresses model uncertainty and endogeneity issues related to omitted variables typically present in empirical studies focused on income inequality.

The empirical evidence shows that poverty is detrimental to long-term economic growth. Using panel data of 85 countries covering 1960 to 2000, López and Servén (2015) find that a 10 percentage-point increase in the poverty rate reduces the GDP per capita growth rate by 1 percentage point. In particular, an increase in the poverty rate reduces the investment rate for countries with low levels of financial development. There is also evidence that the negative impact of poverty on growth depends on the initial level of poverty. In a sample of 156 countries covering 1960 to 2010, Marrero and Servén (2018) find that for low levels of poverty (below the median), poverty has an insignificant impact on growth (Figure 8). In contrast, when the poverty rate is high, a 10 percentage-point decrease in headcount poverty is associated with an increase in economic growth ranging from 1 to 2 percent per year.

Related evidence comes from the observation that despite the global reduction in poverty rates, cross-country evidence indicates a lack of convergence in poverty rates. Studying 90 developing countries during the 1991–2004 period, Ravallion (2012) finds that two distinctive effects prevented the convergence of poverty rates. First, poverty reduces growth, consistent with the results from López and Servén (2015). Second, high initial poverty dulls the impact of growth in reducing poverty. The combination of these two channels makes it more difficult for the poorest countries to reduce their poverty rates.

Figure 8. Growth in GDP per capita vs Initial Poverty, 1960–2010

A higher poverty rate is associated with lower growth in subsequent decades.
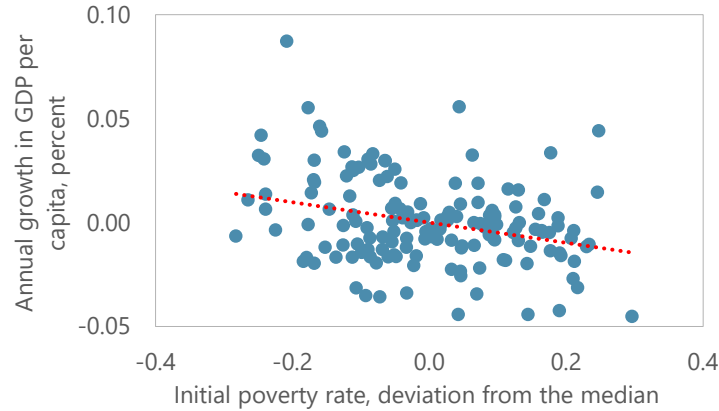
Source: Marrero and Servén 2018.
Note: Data cover 156 countries and are controlled for initial income. The year of the initial poverty is 1960 and the average growth in GDP per capital is over the period 1960-2010. Initial poverty is expressed as deviation from the median.

4.1.2. From Inequality to Growth

As an illustration of the relationship from inequality to growth, Bénabou (1996) compares the growth outcomes of East Asian and Latin American economies conditional on the initial levels of income inequality. According to Bénabou (1996), the conventional wisdom among development economists is that the relatively equal distribution of income and land in East Asian economies contributed to their observed high economic growth rates. By the same token, the lack of a similar economic dynamism in Latin America has been attributed to the consequences of high concentration of wealth and income in that region.[13]

The panel a of Figure 9 reports the correlation between income inequality in 1980 and the average GDP per capita growth in the subsequent 30 years for selected Latin American and Asian economies. Consistent with Bénabou (1996), on average countries that exhibited lower levels of initial inequality also experienced higher rates of economic growth. While there are many other factors that might explain the economic dynamism of these Asian economies, such as the quality of institutions and high rates of saving and investment (Collins and Bosworth 1996), this figure illustrates that income distribution might be one key element for understanding differences in economic performance. An extended sample of advanced and developing countries

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[13] "Poverty trap" is a common narrative of economic development whereby some countries are stuck in poverty and would need external support (or a "big push") for them to escape it. Easterly (2006) rejects, however, the claim that "well-governed poor nations" are stuck in a trap just because they are poor. The author cannot statistically discern any effect of initial poverty on subsequent growth once bad governance is controlled for.

(Figure 9, panel b) confirms the relationship between initial income inequality and subsequent growth.[14]

Figure 9. Growth in GDP per capita vs Initial Inequality

Countries that started with lower levels of inequality experienced higher rates of economic growth.

a. Inequality in 1980 vs GDP per capita Growth in the Next 30 Years
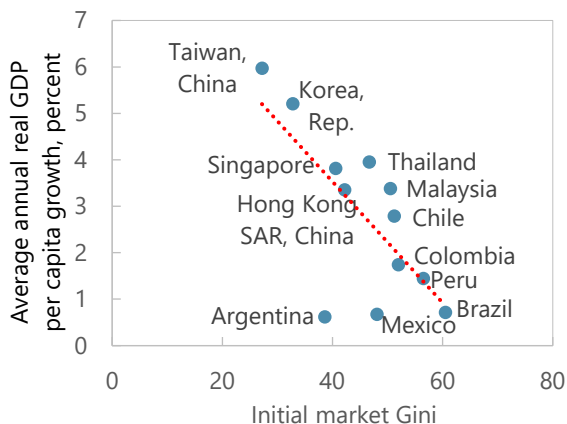
b. Inequality in 1970 vs GDP per capita Growth in the Next 50 years
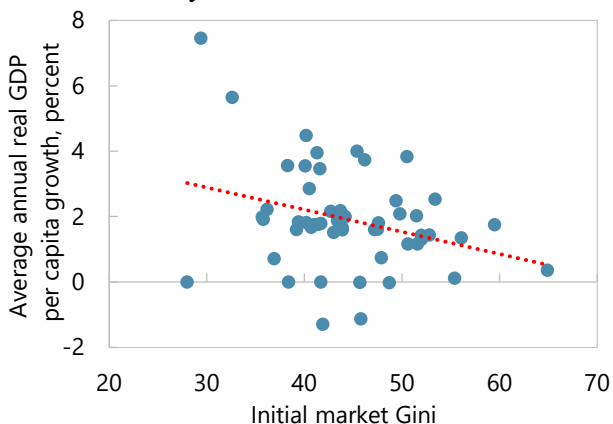
Sources: Authors' calculations based on data from Standardized World Income Inequality Database (SWIID) and World Bank.
Note: Panel a shows a sample of selected Asian and Latin American economies. Panel b shows an extended sample of advanced economies and developing countries. Market Gini is before taxes and transfers.

The empirical relationship between inequality and growth has been investigated formally in a number of cross-country growth studies, following Barro and Sala-i-Martin (1995). Many of these studies find that inequality, typically measured by a Gini coefficient, enters with a negative and statistically significant sign in cross-country growth regressions, indicating that an increase in inequality leads to lower economic growth. In a survey of 23 different empirical studies on inequality and growth, for instance, Bénabou (1996) finds that despite differences in data sets, sample periods, and measures of income distribution, the studies consistently find that initial inequality is negatively associated with growth. In particular, the quantitative effects of inequality are quite robust across studies: a one-standard-deviation decrease inequality raises the annual growth of GDP in the range of 0.5 percentage points to 0.8 percentage points.

Various studies examine different dimensions of the relationship. An early work by Alesina and Rodrik (1994) finds that income and land inequality are statistically significant variables that decrease long-term growth in a sample of 70 advanced and developing countries. Perotti (1996)

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[14] The negative relationship between inequality and growth remains robust even when the analysis controls for the initial level of income, as is standard in growth regressions (see Barro 2000).

finds a negative and robust association between inequality, inversely related to the share of the middle class (third and fourth quantiles of the income distribution), and growth. He finds that social political instability and fertility rates could be driving the relationship between inequality and growth.

The impact of inequality on growth can also depend on the initial level of development. Barro (2000) estimates the impact of inequality on growth by splitting a sample of 100 countries into high- and low-income samples. In that specification, there is a negative relationship between inequality and growth for poor countries, similar to previous studies, while the relationship is positive for richer countries. The empirical results suggest that in the presence of credit constraints, inequality prevents low-income households from accumulating human and physical capital, resulting in lower growth in poor countries. On the other hand, the positive relationship observed in richer economies is consistent with the traditional growth-enhancing effects of inequality emphasized by Kaldor (1957).

The effects of inequality on output might also differ across economic sectors. For instance, Erman and te Kaat (2019) identify the effect of inequality on industry-level value added growth. The authors use a data set that includes 22 industries in 86 countries for the period between 1980 and 2012. They find that that higher income inequality increases the growth rates of industries that use physical capital intensively, while it decreases the growth rates of industries that use skilled labor intensively. Thus, the lower human capital stock associated with inequality drives its negative effect on growth. At the country level, these results are consistent with the theoretical predictions by Galor and Moav (2004).

Studies based on panel data techniques find conflicting results regarding the impact of inequality on economic growth. Forbes (2000) estimates the impact of inequality on growth in a panel of 45 advanced economies and emerging markets for the period between 1966 and1995. Contrary to the cross-country results, she finds that higher inequality leads to higher economic growth in the short and medium term. These results are robust to alternative samples and model specifications. Forbes mentions several theoretical models that are consistent with a positive relationship between inequality and growth. For example, Galor and Tsiddon (1997) find that a concentration of high-skilled workers in technologically advanced sectors allows a higher rate of technological innovation, promoting higher growth rates but also increasing inequality. More recently, using fixed effects panel data techniques, Cingano (2014) finds a negative effect of inequality on growth for a sample of 30 OECD countries for the period between 1970 and 2010. Berg et al. (2018) find that net inequality has a negative effect on growth in a sample of advanced and developing countries, and moderate redistribution through taxes and transfers does not have statistically significant effects on growth.

Evidence from panel data studies also indicates that the effect of inequality on growth might depend crucially on the level of the development and the time horizon of the growth spells (short term vs long term). Brueckner and Lederman (2018) find that income inequality may be beneficial for transitional growth in poor countries but becomes harmful for growth in economies with high average income, contradicting the results by Barro (2000). Regarding the time horizon, Halter, Oechslin, and Zweimüller (2014) find that higher inequality is beneficial for economic performance in the short term, but in the long term the net effect of the relationship tends to be negative. Inequality reduces the duration of growth spells (Berg, Ostry, and Zettelmeyer 2012; Berg and Ostry 2017), with most of the results coming from cross-country differences rather than changes over time.

Banerjee and Duflo (2003) find a nonlinear relationship between changes in inequality and growth. In particular, growth is an inverted U-shaped function of changes in inequality such that a change in the Gini coefficient in either direction is correlated with lower future growth. This empirical result strongly rejects the standard linear specification of cross-country growth regressions and suggests an explanation for the seemingly contradictory results obtained in the literature. However, the non-linear relationship could also reflect omitted variables in the empirical model. For instance, Aiyar and Ebeke (2020) show that the negative effect of inequality on growth largely depends on the degree of intergenerational mobility. In countries with higher intergenerational mobility, the negative impact of income inequality can be more easily reversed because the poor have more opportunities to improve their living standards. In particular, they show that in their specification, the nonlinear term proposed by Banerjee and Duflo (2003) is not statistically significant, suggesting that intergenerational mobility could be capturing the nonlinear relationship between inequality and growth.[15] The lack of robust results on the effect of inequality of growth using panel data may reflect not only issues of correct specification but also an insufficient way of dealing with endogeneity, particularly the use of weak instruments (Kraay 2015).

In sum, the mixed evidence of the impact of inequality on growth arises primarily based on whether the study used a cross-country approach (which includes between-country inequality) or a panel data approach (which includes only within-country variation over time). Given that some of the key mechanisms linking inequality to growth—such as institutional quality, credit constraints, and redistribution policies—do not change much over time, the influences of those channels are greater in the cross-country than the time series dimension. Given that channels such as political economy and credit constraints generate a negative impact of inequality on

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[15] The relationship between intergenerational mobility and growth is complex and may depend on inheritance laws and uncertainty of property rights. Cerra et al. (2021, Chapter 18) examines these issues in more detail.

growth, this may explain the stronger negative results in cross-country regressions relative to the mixed results of panel data studies. In general, with many potential channels affecting the relationship, inconsistent findings may be expected with differences in country coverage, sample period, time horizon, model specification, and econometric method.

4.2. Channels from Poverty and Inequality to Growth

4.2.1. Channels by which Inequality Can Boost Growth

Incentives

Inequality provides incentives to work, save, and invest—those who do will receive higher returns than those who do not. Differential returns incentivize good behaviors that promote growth. Milton Friedman (Friedman 1962; Friedman and Friedman 1980) based his opposition to redistributive policies aimed at reducing inequality of outcomes on the grounds of efficiency, arguing that they could distort incentives and induce an inefficient allocation of resources. In a capitalist system, the distribution of income is consistent with the ethical principle, "To each according to what he and the instruments he owns produce." This implies that in a free market economy, people should be rewarded according to their marginal productivity, resulting in some inequality of outcomes. Friedman emphasized that this inequality of outcomes could be necessary to provide incentives to perform certain types of tasks that could be risky or tedious (Friedman and Friedman 1980). Moreover, compensation schemes that reward relative performance and thus generate inequality can provide incentives for workers to invest in skills and exert strong efforts (Lazear and Rosen 1981).

Savings

Different savings rates between rich and poor can affect growth. Kaldor (1957) hypothesized that since the richer save more of their income, higher income inequality can lead to a higher national savings rate, a higher investment rate, and greater accumulation of capital, and consequently higher economic growth. Evidence for the United States (Dynan, Skinner, and Zeldes 2004), for instance, supports the notion that both saving rates and the marginal propensity to save are positively correlated with the level of income, suggesting that higher income inequality can lead to a higher savings rate, consistent with Kaldor's hypothesis.

4.2.2. Channels by Which Inequality and Poverty Can Depress Growth

Poverty Traps and Human Capital

Poverty can undermine growth by hindering the accumulation of human capital through both health and education. Poverty is associated with high rates of malnutrition, especially in developing countries (Cerra et al. 2021, Chapter 14). Stunting (a low height-to-age ratio)—an

indicator of chronic malnutrition—and child survival rates are correlated with income across and within countries. Poor nutrition impairs children's capacity to learn. Poor children may also be kept out of school in order to support low family incomes through home production or informal work or because families cannot afford school fees. Students from poor households have higher learning gaps even when attending school (World Bank 2018). Empirical evidence shows that inequality of wealth, not just inequality of income, reduces the effectiveness of educational interventions (Deininger and Olinto 2000).

As described in Section 2, lower-income countries experience higher poverty rates, partly reflecting the correlation between average country income and the income of the bottom of the distribution. Poor countries have weak capacity to supply public goods such as health and education. Indeed, public spending on health and education is lower for countries with high poverty rates (Figure 10, panel a and b). Higher poverty is associated with lower access to doctors and higher illiteracy rates (Figure 10, panel c and d).

Inequality in education attainment can undermine growth as economies develop (Galor and Moav 2004). In the initial stage of development when physical capital is the prime source of growth, inequality raises growth because it channels resources to individuals with a higher propensity to save. This is reversed later in the development process: as human capital replaces physical capital as the main engine of growth, more equality leads to growth as it alleviates adverse effects of credit constraints on human capital accumulation.

Figure 10. Access to Health and Education

Public spending per capita on health and education is lower for countries with high poverty rate.

a. Poverty Rate vs Expenditure on Public Health
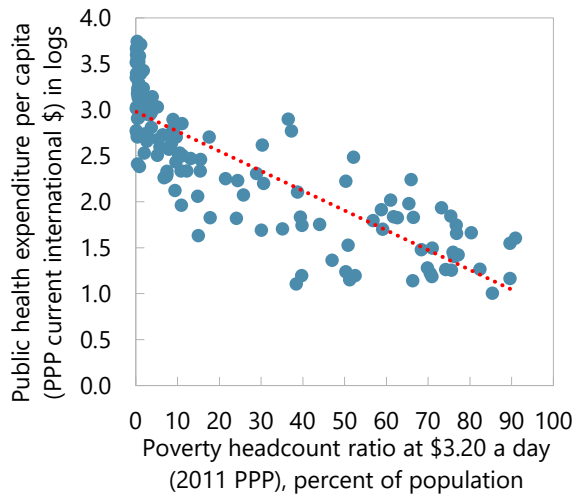
b. Poverty Rate vs Expenditure on Public Education
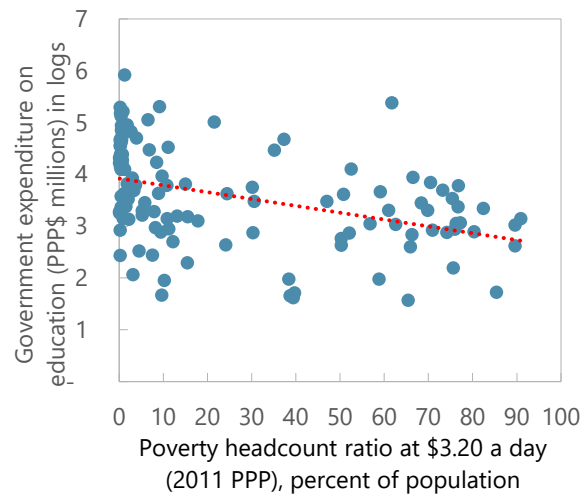
c. Poverty Rate vs Coverage of Doctors
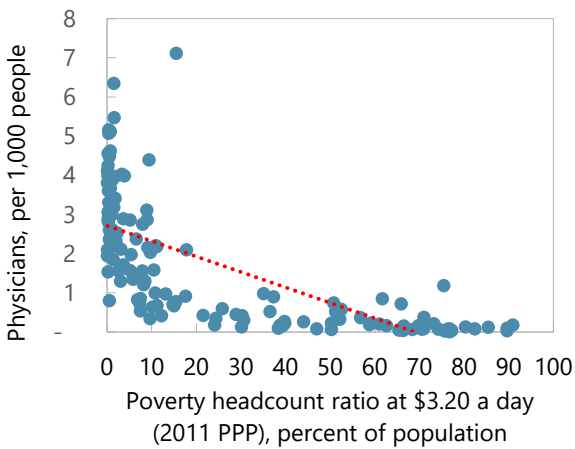
d. Poverty Rate vs Illiteracy Rate
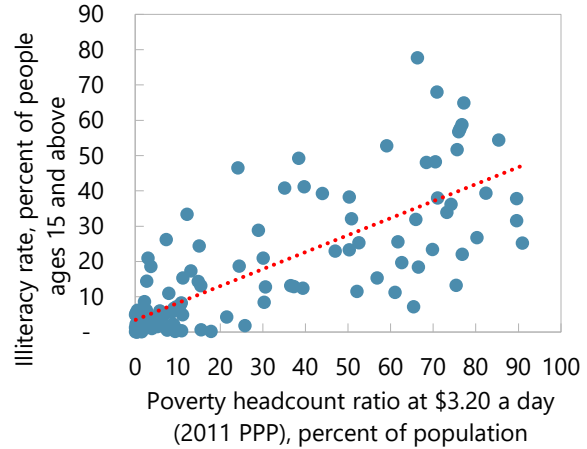
Source: Authors' calculation based on data from World Bank.
Note: Data are for latest observation available including 142 countries from the World Bank's POVCALNET database. Poverty headcount ratio uses the poverty measure of $3.20 per day in 2011 purchasing power parity (PPP) terms.

Credit Market Imperfections

Weak credit markets can impede the poor from borrowing to invest in physical or human capital, thereby reducing growth. In the model proposed by Galor and Zeira (1993), wealthy individuals can invest in human capital using their own resources, while individuals with low levels of wealth can only invest in human capital if they have access to credit markets. However, financial frictions increase the interest cost for borrowers. Below a threshold of initial wealth, poor individuals find the cost of borrowing higher than the return to human capital and choose not to invest. In this economy, higher inequality reduces growth. However, redistribution provides the opportunity for the poor to invest in human capital, stimulating economic growth.

In their analysis of the impact of poverty on growth, López and Servén (2015) develop an endogenous growth model with learning-by-doing externalities and subsistence consumption. Poor consumers have a low endowment of wealth and no access to capital markets. The model predicts that in economies where the share of poor people is high enough, economic growth rates are lower because the poor are unable to invest and accumulate capital, resulting in a reduction of the potential growth rate of the economy. López and Servén (2015) report robust results consistent with this prediction.

Banerjee and Newman (1993) argue that, given credit constraints, wealth inequality can influence the occupational choice of individuals, thereby affecting growth. In their model, poor people decide to become (low-skilled) workers, rich people decide to become entrepreneurs, and the rest become self-employed. The model predicts that highly unequal societies stagnate since wages remain too low. Highly equal societies display a large share of self-employed workers. At an intermediate level of inequality, the society can "take off" and converge to a developed economy with a combination of entrepreneurs and workers receiving high wages.

Aghion and Bolton (1997) examine credit constraints where the accumulation of capital by the rich benefits the poor because more funds become available to the poor for investment purposes. Unlike Milton Friedman, they find that the laissez-faire outcome is not efficient because it does not allow the poor to invest amounts consistent with an optimal allocation of resources. Instead, a permanent redistribution of wealth can achieve the optimal allocation.

Demand and structural transformation

Inequality can shape the composition of demand and thereby impact growth and structural transformation. For goods produced with technologies subject to economies of scale, sales need to be large enough to cover fixed costs. If only high-income individuals can afford the price of the goods, a moderate level of inequality may be required so that there are enough rich people to make adoption of the technology feasible. Income generated by the sectors can spill over into

demand for other goods and spur industrialization, but only if income is distributed broadly enough (Murphy, Shleifer, and Vishny 1989). In addition, productivity improvements through learning by doing can reduce the production costs and prices, making the goods affordable to more people. This can trigger mass production and industrialization provided that inequality is not too severe (Matsuyama 2002).

Risk Aversion and Decision-Making Capabilities

Inequality and poverty might also have a long-term impact on growth through the effects on individuals' decision-making processes. In order for people to overcome poverty, they must save and reinvest continually in order to earn higher wages, which also contributes to higher economic growth rates. However, living in impoverished conditions can prevent individuals from making the best decisions to escape poverty.

This faulty decision making can occur as a result of the particularly burdensome risks and uncertainty imposed by poverty. As noted by Banerjee (2000), the poor might be more risk averse than the rest of the population because they have more to lose if a bad shock materializes, even risking malnourishment or starvation. In the absence of developed financial and insurance markets, the poor will avoid investing in profitable investment opportunities that are intrinsically risky. That behavior self-perpetuates poverty, as the poor do not engage in risky activities that might boost their income. Dercon (2005) surveys several studies conducted in developing countries that support this hypothesis. He finds that if the poor could insure against risks in the same way as the rich, their income could be higher by at least 25 percent.

An alternative behavioral channel through which poverty is perpetuated and economic growth prospects is curtailed is through the lack of self-control in consumption and saving decisions. Banerjee and Mullainathan (2010) develop a model with "temptation" goods (such as cigarettes or alcohol) that provide utility in the present, but not in the future. Under the assumption that the share of expenditures on temptation goods declines with the level of income, the model can lead to poverty traps, whereby the poor overvalue the present and undervalue the future, and thus decide not to make investments that could yield a higher income later. Their model is consistent with the evidence that the poor spend a large fraction of their income on goods that are not survival necessities such alcohol, tobacco, and festivities (Banerjee and Duflo, 2007).

Shah, Mullainathan, and Shafir (2012) study an alternative mechanism through which poverty affects the decision-making process. Through several experiments, they illustrate how the poor devote a significant fraction of their attention span to satisfying basic needs, such as obtaining food, leaving them with less attention to handle other problems, such as investment decisions that would enable their businesses to expand and grow.

Lower aspirations induced by poverty is another channel through which poverty may affect the decision-making process of the poor, resulting in lower economic growth. La Ferrara (2019) reviews the theoretical literature on aspirations and provides empirical evidence on how they are correlated with poverty rates and income inequality. Data on aspirations are obtained from the tests on academic performance administered through the OECD's Programme for International Student Assessment (PISA), and are measured as the expectations of students as to what academic degree and job they will achieve in the future. The intuition of this channel is as follows. The poor have lower aspirations than the rich because they anticipate that the lack of resources (including financial buffers to withstand adverse shocks) will impede their success in the future. As result, the poor may lack the incentives to invest in their future income opportunities for their families, such as the education of their children or the adoption of new technologies. This in turn perpetuates their poverty, leading to a vicious cycle in which low growth breeds poverty and poverty promotes stagnation.

All these mechanisms share the common feature that poverty influences the behavior of poor individuals, with negative consequences on the accumulation of capital and long-term growth, hence self-perpetuating poverty. For instance, this behavioral channel is consistent with the empirical evidence that the poor borrow repeatedly at very high rates instead of self-financing through savings (Banerjee and Duflo 2005) or do not invest in profitable small-scale investment such as purchasing fertilizer (Duflo, Kremer, and Robinson 2011), preventing them from escaping poverty.

Political Economy

There are two key channels through which inequality has political economy effects that depress long-term growth. The first, the "redistribution" channel, is when inequality generates political pressures from voters for redistribution, which results in an increase in distortionary taxation, and consequently lower investment and growth. The second, "the institutional" channel, is when inequality leads the rich and powerful to influence institutions in such way that laws benefit them but are not conducive to sustained growth for the population at large.

The redistribution channel is illustrated by Alesina and Rodrik (1994) based on the endogenous growth model of Barro (1990), where government spending is productive but is financed through distortionary capital taxation. Taxation and the growth rate of the economy exhibit an inverted "U" relationship. For low levels of tax rates, increasing the tax rate raises growth by funding the expansion of productive public infrastructure. After some point, however, further increasing the tax rate reduces growth because it reduces the incentives to accumulate private capital and may also provide declining marginal return to public expenditure. In the electoral process, the median voter prefers to impose a tax higher than the growth-maximizing tax rate, as they benefit from

the public good while the tax falls disproportionately on capital owners. The model implies that the more unequal is the distribution of wealth or capital, the higher the tax rate chosen by the median voter, resulting in a lower rate of economic growth. Persson and Tabellini (1994) obtain similar theoretical results in an overlapping generations framework. Milanovic (2000, 2010) finds empirical support that more unequal countries redistribute more to the poor.

The view that redistribution harms growth was challenged by Gilles Saint-Paul and Thierry Verdier (1993). When tax revenues are invested in education, the growth rate is higher. The implication is that the growth effects of fiscal policy depend jointly on the tax distortions and expenditure benefits. Moreover, inequality does not necessarily imply demand for more redistribution; it depends on the position of the decisive voter's income relative to the mean (Meltzer and Richard 1981). In a democracy, redistribution depends on the skewness of the income distribution, which places the median voter below the mean (Saint-Paul and Verdier 1996).

The institutional channel is illustrated by Glaeser, Scheinkman, and Shleifer (2003). They propose that the wealthy and politically connected can subvert legal, political, and regulatory institutions, damaging growth through two distinctive mechanisms. First, the elite can weaken the protection of property rights of people at large, discouraging the accumulation of capital by the non-elite, with a negative impact on growth. Second, the elite can influence regulations in order to protect incumbents against entrant firms, with detrimental effects on technological innovation, capital accumulation, and growth. This implies that in countries with weak institutions geared toward the interests of the elite, only elite invest and accumulate wealth. The middle class can expand only when institutions are strong enough to protect them from the rich.

The causality between inequality and institutions goes in both directions. High initial inequality facilitates the elite's ability to subvert institutions toward their interests, but weak institutions can lead to higher inequality to the extent that only the rich and powerful can protect themselves. The authors find empirical support that inequality reduces growth only for countries with poor rule of law. Their results are also consistent with what Acemoglu and Robinson (2019) call "extractive political institutions." These institutions, where power is concentrated, benefit the elite at the expense of the rest of the society, leading to high inequality and low growth.[16]

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[16] Cerra et al. (2021, Chapter 10) cover the impact of governance on inclusiveness in a society. Cerra et al. (2021, Chapter 15) discuss the political economy factors that influence the supply and demand for reform and redistribution in more detail. Ostry, Loungani, and Berg (2019) highlight the impact of political choices in the relationship between inequality and growth.

Sociopolitical Unrest

Under this channel, inequality leads to a polarization of the society, social unrest, and violence, if the demands of the voters cannot be met through the traditional political system. Alesina and Perotti (1996) analyze this channel and find that an increase in inequality (inversely related to the income of the middle class, in their estimation) has a statistically negative effect on political stability. In the empirical analysis, the authors construct an index of political stability based on a dummy variable for democratic regimes, the number of assassinations and deaths, and the number of coups. In addition, they find that political instability negatively affects investment, a key determinant of long-term growth across countries. Their results are broadly consistent with three different mechanisms through which political stability affects investment. First, higher instability tends to shorten the horizon of the government in power; this, in turn, tends to be associated with higher taxation and lower investment, as the reputational costs of taxation are lower for regimes of short duration. Second, social unrest might lead to a disruption of productive activities and therefore a reduction in productivity. Third, political instability increases uncertainty, which can induce investor to postpone projects or to invest abroad.

Rodrik (1999) studies the interaction between social conflict (measured by inequality or ethnic and linguistic fragmentation) and the quality of government institutions in developing countries in response to external shocks (specifically, terms of trade shocks). Rodrik's analysis is intended to capture the experience in Latin America, the Middle East, and Sub-Saharan Africa, which had a sharp slowdown in growth after the negative shocks in the 1970s. The main channel through which social conflict exacerbates negative shocks is through macroeconomic mismanagement, in particular in the context of weak institutions. As societies become more polarized, the impact of the initial negative shock is exacerbated by the implementation of populist policies that have palliative short-term effects but result in uncertainty, low investment, and, consequently, poor long-term economic growth.

Gender Inequality

Galor and Weil (1996) develop a theory whereby gender inequality, measured as the wage gap between male and female workers, has a long-term impact on growth. In their model, an increase in the stock of capital per capita makes workers more productive, but more so for female than male workers (because as economies develop, the rewards to "brain relative to brawn" increase). The decline in the wage gap, in turn, increases the opportunity cost of raising children, and hence reduces the fertility rate and increases female labor force participation. Consequently, the reduction in the fertility rate leads to lower population growth and an increase in the stock of capital per capita, which in turns generates a positive feedback loop boosting growth and the relative wage of female workers.

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This model accounts for the fact that some countries might experience development traps in which a low stock of capital per capita results in low wages for women, a high fertility rate, and high population growth, which further depresses the stock of capital per capita, generating an equilibrium of self-perpetuating stagnation. Kremer and Chen (2002) and de la Croix and Doepke (2003) corroborate that inequality is associated with higher fertility differentials within countries, with the poor having more children and achieving less education, which in turn leads to lower growth.

Several recent studies find that gender inequality reduces growth. Based on a difference-in-difference approach for advanced economies and emerging markets, Bertay, Dordevic, and Sever (2020) find that that gender inequality reduces real economic growth at the industry level for the manufacturing sector. Cuberes, Newiak, and Teignier (2017) find that gender inequality in labor markets leads to income losses of 15.5 percent in OECD countries and 17.5 percent in non-OECD countries. Stotsky (2006) discusses the macroeconomic impacts of gender inequality. Cerra et al. (2021, Chapter 16) examines gender and inclusive growth more extensively.

5. Conclusion and Policy Implications

This paper traces the factors and policies that affect the nexus of growth, inequality, and poverty. Figure 11 presents an illustration of the main channels of this nexus. The relationships are complex, and a multitude of papers have been written to elucidate them. Bourguignon (2004) argues that creating development strategies for reducing poverty is challenging not because of its relationship with growth on the one hand and with inequality on the other. Rather, the difficulty lies in the two-way interaction between growth, inequality, and poverty. Following this idea, Figure 12 summarizes the evidence from a large number of empirical papers on the multidirectional links in the nexus between growth, inequality, and poverty.

Two main conclusions emerge from analyzing the impact of growth on inclusion.

- A nearly universal consensus in the empirical literature suggests that growth reduces poverty. Economic growth experienced in emerging and low-income economies has had a first-order effect on poverty reduction. Through various mechanisms, growth increases education, health, and job opportunities for the poor and improves their access to public goods and services, lifting their incomes and prospects for the future.

- On the other hand, the impact of growth on inequality (a relative measure of the well-being of the poor) is ambiguous and depends on the sources of growth. For example, growth propelled by skill-biased technological change can disproportionately benefit capital owners and skilled workers to the detriment of unskilled workers, whose earnings are generally low and who tend to be in the lowest quantiles of the income distribution. This type of technological innovation,

while usually positive for economic growth, can induce an increase in inequality. Thus, identifying the underlying sectors driving economic growth is crucial for understanding the impact on inclusiveness. Most sources of growth generate unbalanced growth rates across sectors, industries, regions, and factors, so it is not possible to generalize about the distributional effects of growth.

Two conclusions also emerge from analyzing the impact of inclusion on growth: the reverse direction of causation.

- Most plausible mechanisms suggest that poverty impedes growth by reducing the ability and incentives of the poor to accumulate physical and human capital and assets. Poverty curtails access to markets and public services and distorts the incentives for entrepreneurship and forward-looking behavior, leading to individual and social stagnation. The empirical evidence amply supports the negative effect of poverty on economic growth.

- However, the impact of inequality on growth is less straightforward. A case can be made that inequality can serve as an incentive for effort and investment. However, other theoretical arguments and empirical evidence point to a negative effect of inequality on growth through a variety of channels, such as higher distributional pressures, lower institutional quality, greater social conflict, and higher fertility rates.

What are the implications of this analysis for the policy framework that should be adopted to promote inclusive growth?

- First, policies to promote growth are most relevant—crucially, because growth helps reduce poverty. An increase in growth is a necessary condition for lifting incomes; improving nutrition; and expanding access to health, education, and opportunities for high-quality jobs. While there is no single set of policies that will work in all countries, some general recommendations can be made. For instance, *The Growth Report* (Commission on Growth and Development 2008) describes a set of policies that has been adopted successfully in countries that have experienced large and sustained growth: an average rate of 7 percent per year or more for 25 years or longer. While the list of policies is not intended to be prescriptive, it provides a good benchmark of what has worked for supporting a successful growth strategy. The report explores policies falling into five broad categories: accumulation of human and physical capital; innovation and technology adoption; efficient allocation of resources; macroeconomic stabilization; and social inclusion.

- Second, economic growth is not an objective in itself, but a way to achieve human development. This requires that the benefits of growth are widely shared across society. Therefore, policy analysis must determine the distributional consequences as well as the

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growth consequences of policy interventions. Inevitably, market forces will not guarantee that growth is balanced. Thus, public measures will also be needed to ensure that the (absolute and relative) losers of any economic transformation have opportunities to move to better jobs, and support policies will be needed to provide social protection in the meantime.

Finally, is there a trade-off between inequality and growth? Or more precisely, must society tolerate inequality in order to spur growth? Considering the various channels from inequality to growth, the answer may reside in differentiating between *inequality of outcomes* and *inequality of opportunities*.

- The possibility of achieving high returns and higher incomes provides incentives to save, invest, acquire skills, innovate, and take risks, all of which can lead to higher growth. So, indeed some inequality of outcomes is necessary to motivate behavior that enhances growth.

- However, if the opportunities to save, invest, acquire skills, innovate, and take risks are thwarted by barriers (such as fixed costs) that depend on an individual's initial income/wealth/place of birth/race/ethnicity/sexual orientation/disabilities, inequality can prevent many poor and marginalized people from contributing to growth. Moreover, if segments of the population do not perceive that growth is benefiting them, it can fuel discontent in the society and if not addressed can lead to political instability and social unrest.

The policy message is straightforward: policies to remove barriers to markets and public goods and services can improve growth and equity at the same time. In other words, equality of opportunity does *not* pose a trade-off with economic growth. Expanding access to health care, education, safety, justice, social protection, and finance, for example, can simultaneously boost growth and inclusion.

Figure 11. Key Channels in the Growth–Poverty–Inequality Nexus

Many factors and policies can affect the nexus of growth, inequality, and poverty.
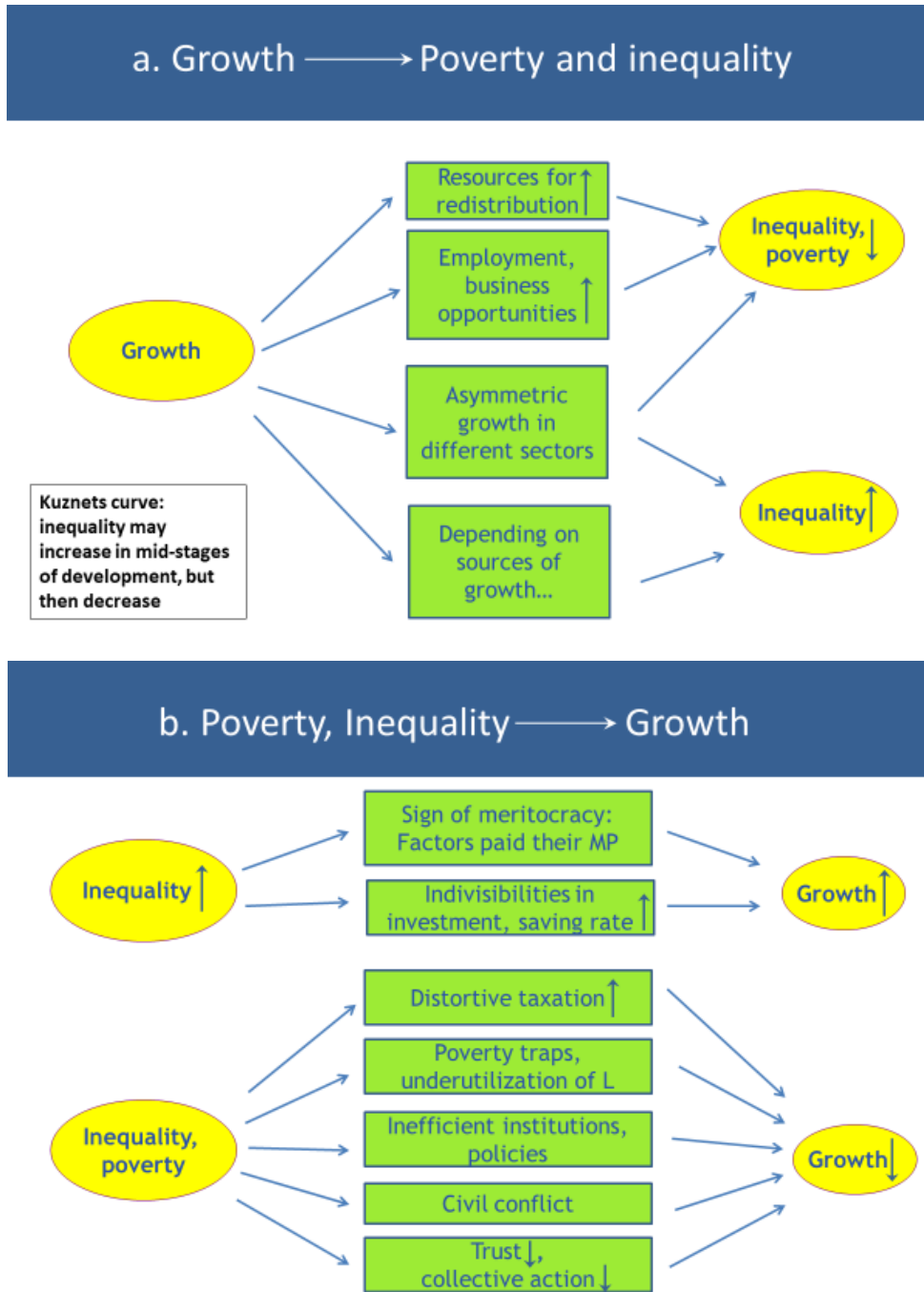
Figure 12. Empirical Literature on the Growth–Poverty–Inequality Nexus

Evidence on the multidirectional links among growth, inequality, and poverty from a large set of empirical papers.

Growth

28
1, 2, 3, 4, 6, 7, 8, 8, 10, 12, 14, 17, 17, 21, 26, 30, 31, 34, 35, 39, 39, 40, 42, 42, 43, 45, 47, 47, 50, 50, 52, 54, 55, 57

4
18, 32, 37, 45

20
5, 9, 13, 15, 16, 19, 20, 23, 25, 27, 28, 29, 38, 41, 44, 46, 49, 53, 56, 58

8
11, 15, 24, 33, 33, 36, 41, 48, 51, 51

Growth-Inequality-Poverty Nexus: Empirical Literature

Inequality

Poverty

1
46

5
20, 22, 46, 56, 58

Beneficial	Conditionally beneficial	No significant result	Conditionally not beneficial	Not beneficial

Source: Authors' compilations.
Note: Fifty-eight empirical papers were numerically ordered from oldest to most recent. The specific paper attached to the numbering can be found in Appendix A.

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Appendix A. List of Empirical Literature on Growth–Poverty–Inequality Nexus

No.	Year	Author(s)	Title	Publication
1	1994	Alberto Alesina and Dani Rodrik	"Distributive Politics and Economic Growth"	Quarterly Journal of Economics 109 (2): 465–90
2	1994	Torsten Persson and Guido Tabellini	"Is Inequality Harmful for Growth?"	American Economic Review 84 (3, June): 600–21
3	1996	Alberto Alesina and Roberto Perotti	"Income Distribution, Political Instability, and Investment"	European Economic Review 40 (6): 1203–28
4	1996	Roberto Perotti	"Growth, Income Distribution, and Democracy: What the Data Say"	Journal of Economic Growth 1 (2, June): 149–87
5	1996	Martin Ravallion and Gaurav Datt	"How Important to India's Poor Is the Sectoral Composition of Economic Growth?"	World Bank Economic Review 10 (1, January): 1–25
6	1998	Klaus Deininger and Lyn Squire	"New Ways of Looking at Old Issues: Inequality and Growth"	Journal of Development Economics 57 (2): 259–87
7	1999	Dani Rodrik	"Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses"	Journal of Economic Growth 4 (4): 385–412
8	2000	Robert Barro	"Inequality and Growth in a Panel of Countries"	Journal of Economic Growth 5: 5–32
9	2000	Shenggen Fan, Peter Hazell, and Sukhadeo Thorat	"Government Spending, Growth, and Poverty in Rural India"	American Journal of Agricultural Economics 82 (4): 1038–51
10	2000	Kristin Forbes	"A Reassessment of the Relationship between Inequality and Growth"	American Economic Review 90 (4): 869–87
11	2000	Per Krusell, Lee E. Ohanian, Josè-Victor RÌos-Rull, and Giovanni L. Violante	"Capital-Skill Complementarity and Inequality: A Macroeconomic Analysis"	Econometrica 68 (5, September): 1029–54
12	2000	Kevin Sylwester	"Income Inequality, Education Expenditures, and Growth"	Journal of Development Economics 63 (2): 379–98
13	2002	David Dollar and Aart Kraay	"Growth Is Good for the Poor"	Journal of Economic Growth 7 (3, September): 195–225
14	2003	Abhijit V. Banerjee and Esther Duflo	"Inequality and Growth: What Can the Data Say?"	Journal of Economic Growth 8: 267–99
15	2004	Richard H. Adams, Jr.	"Economic Growth, Inequality and Poverty: Estimating the Growth Elasticity of Poverty"	World Development 32 (12, December): 1989–2014
16	2004	David Dollar and Aart Kraay	"Trade, Growth, and Poverty"	The Economic Journal 114 (493, February): F22–F49
17	2005	Sarah Voitchovsky	"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 10 (3): 273–96
18	2006	William Easterly	"Reliving the 1950s: The Big Push, Poverty Traps, and Takeoffs in Economic Development"	Journal of Economic Growth 11: 289–318
19	2006	Aart Kraay	"When Is Growth Pro-Poor? Evidence from a Panel of Countries"	Journal of Development Economics 80 (1, June): 198–227
	2007	Thorsten Beck, Asli Demirgüç-Kunt, and Ross Levine	"Finance, Inequality, and the Poor"	Journal of Economic Growth 12 (1): 27–49
21	2007	William Easterly	"Inequality Does Cause Underdevelopment: Insights from a New Instrument"	Journal of Development Economics 84 (2): 755–76
22	2007	Adriaan Kalwij and Arjan Verschoor	"Not by Growth Alone: The Role of the Distribution of Income in Regional Diversity in Poverty Reduction"	European Economic Review 51 (4, May): 805–29

No.	Year	Author(s)	Title	Publication
23	2007	Martin Ravallion and Shaohua Chen	"China's (Uneven) Progress against Poverty"	Journal of Development Economics 82 (1, January): 1–42
24	2008	James E. Foster and Miguel Székely	"Is Economic Growth Good for the Poor? Tracking Low Incomes Using General Means"	International Economic Review 49 (4, November): 1143–72
25	2009	Asep Suryahadi, Daniel Suryadarma, and Sudarno Sumarto	"The Effects of Location and Sectoral Components of Economic Growth on Poverty: Evidence from Indonesia"	Journal of Development Economics 89 (1, May): 109–17
26	2010	Amparo Castelló-Climent	"Inequality and Growth in Advanced Economies: An Empirical Investigation"	Journal of Economic Inequality 8: 293–321
27	2010	Alain de Janvry and Elisabeth Sadoulet	"Agricultural Growth and Poverty Reduction: Additional Evidence"	The World Bank Research Observer 25 (1, February) 2010: 1–20 (advanced copy, 2009)
28	2010	Francisco H. G. Ferreira, Phillippe G. Leite, and Martin Ravallion	"Poverty Reduction without Economic Growth? Explaining Brazil's Poverty Dynamics, 1985–2004"	Journal of Development Economics 93 (1): 20–36
29	2010	Norman V. Loayza and Claudio Raddatz	"The Composition of Growth Matters for Poverty Alleviation"	Journal of Development Economics 93 (1, September): 137–51
30	2011	Dwayne Benjamin, Loren Brandt, and John Giles	"Did Higher Inequality Impede Growth in Rural China?"	The Economic Journal 121 (557, December 1): 1281–1309
31	2011	Jaejoon Woo	"Growth, Income Distribution, and Fiscal Policy Volatility"	Journal of Development Economics 96 (2): 289–313
32	2012	Martin Ravallion	"Why Don't We See Poverty Convergence?"	American Economic Review 102 (1, February): 504–23
33	2013	Florence Jaumotte, Subir Lall, and Chris Papageorgiou	"Rising Income Inequality: Technology, or Trade and Financial Globalization?"	IMF Economic Review 61 (2): 271–309
34	2013	Gustavo A. Marrero and Juan G. Rodríguez	"Inequality of Opportunity and Growth"	Journal of Development Economics 104 (September): 107–22
35	2014	Daniel Halter, Manuel Oechslin, and Josef Zweimüller	"Inequality and Growth: The Neglected Time Dimension"	Journal of Economic Growth 19: 81–104
36	2015	Markus Brueckner, Era Dabla Norris, and Mark Gradstein	"National Income and Its Distribution"	Journal of Economic Growth 20: 149–75
37	2015	Humberto López and Luis Servén	"Too Poor to Grow"	Economic Policies in Emerging-Market Economies Festschrift in Honor of Vittorio Corbo, 1st ed., vol. 21, chapter 13, 309–50
38	2016	David Dollar, Tatjana Kleineberg, and Aart Kraay	"Growth Still Is Good for the Poor"	European Economic Review 81 (January): 68–85
39	2017	Siddhartha Biswas, Indraneel Chakraborty, and Rong Hai	"Income Inequality, Tax Policy, and Economic Growth"	The Economic Journal 127 (601, May): 688–727
40	2018	Andrew Berg, Jonathan D. Ostry, Charalambos G. Tsangarides, and Yorbol Yakhshilikov	"Redistribution, Inequality, and Growth: New Evidence"	Journal of Economic Growth 23 (September): 259–305
41	2018	Benjamin M. Blau	"Income Inequality, Poverty, and the Liquidity of Stock Markets"	Journal of Development Economics 130 (January): 113–26

No.	Year	Author(s)	Title	Publication
42	2018	Markus Brueckner and Daniel Lederman	"Inequality and Economic Growth: The Role of Initial Income"	Journal of Economic Growth 23 (3): 341–66
43	2018	Francisco H. G. Ferreira, Christoph Lakner, Maria Ana Lugo, and Berk Özler	"Inequality of Opportunity and Economic Growth: How Much Can Cross-Country Regressions Really Tell Us?"	Review of Income and Wealth 64 (4): 800–27
44	2018	Maros Ivanic and Will Martin	"Sectoral Productivity Growth and Poverty Reduction: National and Global Impacts"	World Development 109 (C, September): 429–39
45	2018	Gustavo Alberto Marrero and Luis Servén	"Growth, Inequality, and Poverty: A Robust Relationship?"	World Bank Policy Research Working Paper 8578
46	2018	Madhu Sehrawat and A. K. Giri	"The Impact of Financial Development, Economic Growth, and Income Inequality on Poverty: Evidence from India"	Empirical Economics 55 (3): 1585–1602
47	2018	Roy van der Weide and Branko Milanovic	"Inequality Is Bad for Growth of the Poor (but Not for That of the Rich)"	World Bank Economic Review 32 (3, October): 507–30
48	2019	Philippe Aghion, Ufuk Akcigit, Antonin Bergeaud, Richard Blundell, and David Hemous	"Innovation and Top Income Inequality"	Review of Economic Studies 86 (1): 1–45.
49	2019	Gaurav Datt, Martin Ravallion, and Rinku Murgai	"Poverty and Growth in India over Six Decades"	American Journal of Agricultural Economics 102 (1, January): 4–27
50	2019	Lisardo Erman and Daniel Marcel te Kaat	"Inequality and Growth: Industry-Level Evidence"	Journal of Economic Growth 24: 283–308
51	2019	Davide Furceri and Jonathan D. Ostry	"Robust Determinants of Income Inequality"	Oxford Review of Economic Policy 35 (3): 490–517
52	2019	Stephan Litschig and María Lombardi	"Which Tail Matters? Inequality and Growth in Brazil"	Journal of Economic Growth 24: 155–87
53	2019	Maria Emma Santos, Carlos Dabús, and Fernando Delbianco	"Growth and Poverty Revisited from a Multidimensional Perspective"	Journal of Development Studies 55 (2): 1–18
54	2019	Nathalie Scholl and Stephan Klasen	"Re-Estimating the Relationship between Inequality and Growth"	Oxford Economic Papers 71 (4): 824–47
55	2020	Shekhar Aiyar and Christian Ebeke	"Inequality of Opportunity, Inequality of Income, and Economic Growth"	World Development 136 (December), 105115
56	2020	Katy Bergstrom	"The Role of Inequality for Poverty Reduction"	World Bank Policy Research Working Paper 9409
57	2020	Abebe Hailemariam and Ratbek Dzhumashev	"Income Inequality and Economic Growth: Heterogeneity and Nonlinearity"	Studies in Nonlinear Dynamics and Econometrics 24 (3).
58	2020	Christoph Lakner, Daniel Gerszon Mahler, Mario Negre, and Espen Beer Prydz	"How Much Does Reducing Inequality Matter for Global Poverty?"	World Bank Global Poverty Monitoring Technical Note 13