

# Growth with Adjectives: Global Poverty and Inequality After the Pandemic

**Christopher Hoy and Andy Sumner**

## Abstract

This paper is concerned with the following question: In a post-COVID-19 context, what type of economic growth will most likely end global poverty and reduce inequality? To answer this, we first survey the existing conceptual and empirical study of the poverty-inequality-growth relationship through the analysis of various forms of economic growth with adjectives, i.e. kinds of growth specified through attached adjectives including pro-poor growth, inclusive growth, and shared growth. We also revisit older discussions on redistribution with growth and growth with equity. We present a typology of growth episodes based on the associated changes in poverty and inequality. Second, we empirically re-examine all growth episodes in the developing world since 1980 and categorise them according to our typology. Third, we discuss the implications for when global poverty would be ended and what levels of inequality could exist in 2030 if each type of growth episode was replicated. The contribution of our paper is a typology of growth episodes based on poverty and inequality patterns; the application of said typology to the empirical relationship between poverty, inequality, and growth historically; and the provision of a new set of projections for the end of global poverty based on differing types of growth. We conclude that in the aftermath of the pandemic, countries will need to pursue historically unprecedented growth paths in order to achieve the poverty and inequality Sustainable Development Goals by 2030.

**Keywords:** Global Poverty, SDGs, Inequality, COVID-19.

**JEL:** I32

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We would like to thank Kunal Sen and two anonymous peer reviewers.

Christopher Hoy and Andy Sumner, 2020. "Growth with Adjectives: Global Poverty and Inequality After the Pandemic" CGD Working Paper 537. Washington, DC: Center for Global Development. <https://www.cgdev.org/publication/growth-adjectives-global-poverty-and-inequality-after-pandemic>

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# 1. Introduction

The UN Sustainable Development Goals (SDGs) aim to end global poverty in all its forms by 2030 and to reduce inequality within every country. Economic growth is typically seen as the key to achieving poverty reduction, accompanied by social policies. There is a long running debate on just how good growth alone is for the poor. Almost fifty years ago, Chenery et al. (1974) argued that a then new approach of ‘Redistribution with Growth’ was needed to reduce poverty in the developing world. The case for a redistributive approach fell into the background in subsequent decades as it was argued that on average growth is distribution-neutral (see Dollar and Kraay, 2002 and critiques such as Amman et al., 2006 and more recently, Dollar et al., 2013). As such focusing on growth alone was viewed to be good enough for poverty reduction. Nevertheless, redistribution can matter to some considerable extent (see estimates in Kraay, 2006).<sup>1</sup> In short, growth is crucial for poverty reduction but changes in distribution matter as well. Recent contributions such as the edited volume of country cases studies in Shaffer, Kanbur, and Sandbrook (2019, p. 40) have revisited the debate noting that in up to a third of growth episodes poverty rates may not fall (based on the dataset used by Adams, 2004) and even in Dollar and Kraay’s (2002) dataset, the incomes of the poorest quintile declined during positive mean survey income growth in 15 percent of growth episodes (Donaldson, 2008).

The COVID-19 pandemic is likely to make ending global poverty harder (Lea, 2020; Maher et al., 2020a, 2020b; Sumner et al., 2020a, 2020b; Valensisi, 2020) and even the most optimistic estimates suggested 70m new poor in 2020 living on less than \$1.90 per day (Mahler et al., 2020b). In light of this, our paper asks the following: In a post-COVID-19 context, what type of economic growth is likely to end global poverty while also reducing inequality? To answer this, we first survey the existing conceptual and empirical study of the poverty-inequality-growth relationship through the analysis of various forms of economic growth *with adjectives*, i.e. kinds of growth specified through attached adjectives including pro-poor growth, inclusive growth, and shared growth. We also revisit older discussions on redistribution with growth and growth with equity. We present a typology of growth episodes based on the changes they are associated with in poverty and inequality. Second, we empirically re-examine all growth episodes in the developing world since 1980 using household surveys. Third, we discuss the implications of each type of growth episode for ending poverty and the level of inequality.

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<sup>1</sup> Kraay (2006) provided a decomposition analysis of the change in poverty between household surveys using data for 41 countries with data for long-run growth spells. He found that when measuring poverty by headcounts, 80 percent of poverty reduction was due to changes in average income. However, when considering the poverty gap or the poverty headcount times the poverty gap, respectively, only 70 percent and 60 percent of the changes were due to changes in average income, suggesting that changes in distribution do matter. Further analyses based on growth spells across 185 countries, many of which shorter than ten years, indicated the contribution of growth to poverty reduction to be between 43 percent and 70 percent, again suggesting changes in inequality should not be dismissed.

Our paper thus makes three contributions to the existing literature. First, we review all growth episodes in developing countries based on household surveys and project future scenarios based on this complete set of historical experiences. Previous studies have tended to project future levels of poverty based on a set of assumptions about inequality that have little reference to past experience (e.g. Chandy et al., 2013; Lakner et al., 2020; Ncube et al., 2014). For example, in contrast to modelling the impact of a one percentage point fall in the Gini index, we consider what levels of poverty and inequality may exist in 2030 if countries replicated past growth episodes.

Second, our empirical analysis adds nuance to the discussion about whether a trade-off between growth, poverty, and inequality exists. We show rapid falls in poverty can occur as a consequence of high growth episodes but tend to be accompanied by small changes in inequality. Or alternatively similar falls in poverty can result from large reductions in inequality albeit being associated with slower growth. The prior literature has largely been polarised between the alternatives of either growth alone is sufficient to reduce poverty (Dollar and Kraay, 2002; Dollar et al., 2013) or poverty reduction requires greater attention to (re)distribution (e.g. Chenery et al., 1974; Shorrocks and van der Hoeven, 2004). Our results in turn suggest neither high growth rates nor falling inequality are essential for poverty reduction. Instead we highlight there is a trade-off between achieving all three of the following: high rates of growth, substantial falls in inequality, and considerable reductions in poverty.

Third, we introduce a new typology of growth and inequality to summarise existing conceptual thought on the poverty-inequality-growth relationship and use the typology to categorise the empirical patterns we observe. This paper concludes that in the aftermath of the COVID-19 pandemic, countries would need to pursue historically unprecedented growth paths if they wish to come close to achieving the inequality and poverty SDGs by 2030.

Our paper is structured as follows: Section 2 discusses the evolution of the conceptual discussion on growth with adjectives or the growth-poverty-inequality relationship. Subsequently, we present our typology of growth episodes based on changes in poverty and inequality. In Section 3 we empirically re-examine all growth episodes in the developing world since 1980 and apply the typology. In section 4 we estimate the implications of different types of growth for poverty and inequality. Section 5 concludes.

## **2. Growth with Adjectives**

A substantial amount of attention has been given to the relationship between poverty, inequality, and growth in developing countries over the last fifty years. Interest in the broad area—framed in the first instance as who benefits from growth and by how much—developed from debates in the early 1970s that were critical of the then distribution of the benefits of growth and the share that reached the poorest (see for example, Adelman and Morris, 1973). This more critical view of the benefits of growth has resurfaced recently (see below).

In the almost half century of discussion, there has been a long lasting fault line between two stylised camps. One camp has argued that whether intentionally pursued or rather as a side effect, a fall in income inequality during growth episodes is necessary to reduce poverty. This could be explicitly demanded as per Chenery et al.'s (1974) call for 'Redistribution with Growth'. Or it could occur rather as a by-product of the incomes of the poor rising faster than mean growth which implies falling inequality. A second camp has argued that rising incomes of the poorest (or a fall in the poverty headcount) through growth is sufficient. Consequently, changes in the income distribution are not considered essential. This argument was made strongly by Dollar and Kraay (2002) and Dollar et al. (2013).

In the 1970s, the former camp dominated to some extent. Chenery et al. (1974) promoted an agenda calling for asset redistribution, income transfers, the redirecting of public investments to focus on productive capacity, and to raise the incomes of the poor alongside—importantly—the conscious adoption of the twin objectives of both redistribution and growth. Furthermore, they advocated the development of new measures of economic growth to assess redistribution with growth including and beyond simply measuring the incomes of the poorest. In the 1980s, attention to the distribution of growth somewhat fell from view. However, in the 1990s, the approach of growth with equity emerged based on the East Asian experience of growth which implied steady inequality during growth (see for example, World Bank, 1993). The late 1990s and 2000s saw a somewhat similar debate under the new guise of pro-poor growth (see for example, Besley and Cord, 2006; Grimm et al., 2007; Shorrocks and van der Hoeven, 2004). Pro-poor growth implied redistribution as the incomes of the poor were to grow faster than the non-poor, at least in relative pro-poor growth iteration (see Ravallion, 2004). An absolute pro-poor episode however would imply simply that poverty falls or the incomes of the poor rise (Ravallion, 2004; see also Bourguignon, 2003; Kakwani and Pernia, 2000). Pro-poor growth was in turn superseded in the late 2000s by the term inclusive growth (see Ali and Zhang, 2007; Klasen, 2010; McKinley, 2010; Rauniar and Kanbur, 2010) which became the umbrella term and expanded the discussions beyond incomes of the poor to include capabilities and employment. Thus, a focus on decreasing inequality of opportunity was introduced and hence potentially also reducing future inequality of outcomes. The term 'shared prosperity' is another label that has emerged in the mid-2010s focusing on the incomes of the poorest in comparison to the change in mean incomes (see for example, World Bank, 2016, 2019).

Recent contributions have reopened this debate with a new take on 'immiserising growth'. First, Shaffer, Kanbur, and Sandbrook (2019) noted that in 15 to 35 percent of analysed growth episodes, absolute poverty did not fall with per capita growth. They developed new thinking on 'immiserising growth'. This term was originally used by Bhagwati (1958) to demonstrate that export-led growth could lead to a country being worse off due to changes in the terms of trade. However, Shaffer, Kanbur, and Sandbrook use the term to refer to growth accompanied by no change in, or even increasing poverty.

Sen (2014, 2019) concurs with this, finding that a surprising number of growth episodes were not inclusive in the sense of they did not result in falling poverty (with or without non-

rising inequality). Sen distinguishes between two types of growth episodes, namely ‘growth acceleration’ and ‘growth maintenance’ and finds that the latter is much more likely to benefit the poor than the former. Sen argues that this is because the institutional factors that lead to growth acceleration differ from those that lead to growth maintenance. In fact, Sen finds the average relationship between growth and poverty reduction during an episode characterised as growth acceleration to be negative for the poorest quintile (and, on average, accompanied by a rise in the Gini coefficient), resulting in the poorest 20 percent being worse off after the growth episode in a range of countries including Bangladesh, China, and Nigeria, each home to large numbers of the world’s poorest. In contrast, during a growth maintenance episode, the income of the poorest quintile on average rises and the Gini falls.

In sum, the discussion on growth with adjectives can be summarised by what happens to the incomes of the poor during an economic growth episode on the one hand and to income inequality on the other hand (see Figure 1).

**Figure 1. A typology of the poverty-inequality-growth episodes**

Measure	Strongly equitable growth episode	Weakly equitable or inequitable growth
<b>Income growth rate of poorest 40% of population relative to survey mean growth rate</b>	Type I: income growth of the bottom 40% (B40) above survey mean growth rate	Type II: income growth of B40 equal to or below survey mean growth rate
<b>Change in income inequality in percentage points (pp) or % during growth episode</b>	Type III: falling income inequality in pp or %	Type IV: rising income inequality in pp or %

*Source:* Authors’ elaboration.

Following this typology, four types of growth episodes become evident based on the poverty and inequality dynamics of growth. Two types of growth are strongly equitable while the other two are weakly equitable or inequitable. The strongly equitable growth episodes are Type I and Type III in Figure 1. A Type I growth episode occurs when the income growth of the poorest 40% is above the survey mean growth rate. A Type III growth episode is characterised by falling income inequality (in pp or %) during the growth episode. The weakly equitable or inequitable growth episodes are Type II and Type IV in Figure 1. A Type II growth episode occurs when the income growth of the poorest 40% is equal to or below the survey mean growth rate. A Type IV growth episode is characterised by rising income inequality (in pp or %) during the growth episode. This raises the question just how common each of these growth episodes are historically. We explore this in the next section.

### 3. An Empirical Re-Examination of Growth Episodes

We make use of the World Bank's global poverty monitoring database, PovcalNET, which includes comparable household survey data for 164 countries and contains data since 1980. The World Bank bases its estimates of global poverty on PovcalNET. It is furthermore the platform through which progress towards the poverty and inequality SDGs are tracked and also the primary source of data for other studies on this topic (e.g. Lakner et al., 2020).

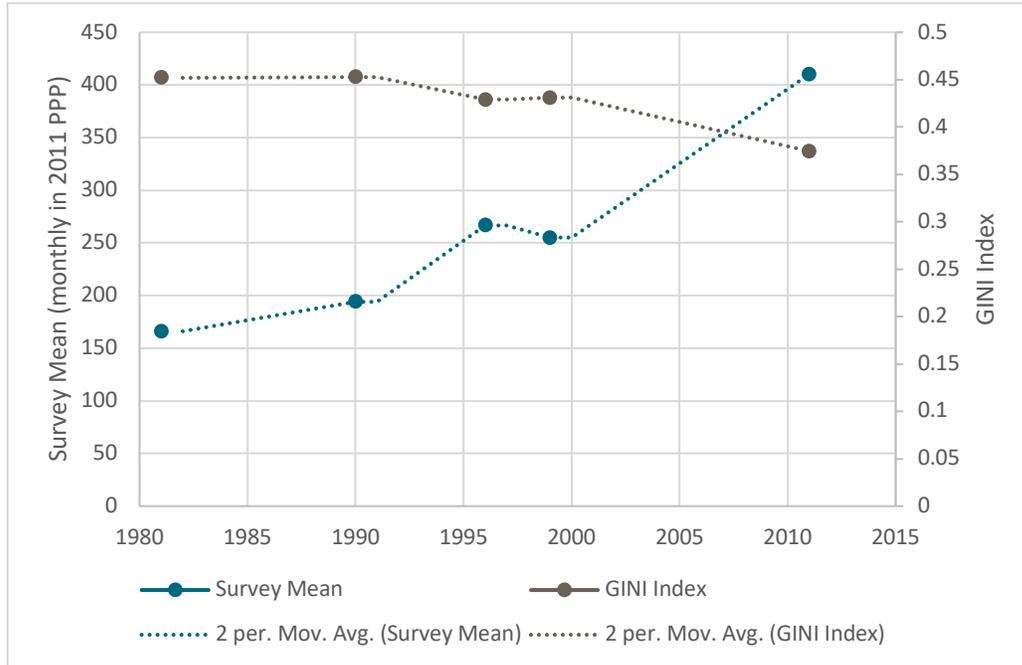
We use this dataset to assess the frequency and intensity of the four types of episodes we outlined above and their respective empirical parameters. We remove high-income countries and developing countries (low- and middle-income countries) that have inadequate data for our purposes (e.g. they do not have two surveys at least five years apart). This leaves 66 developing countries.

We define a *consistent* growth episode as a period of time during which according to PovcalNET data a country experienced positive (survey-based) consumption growth that lasted for more than five years *and* simultaneously the Gini Index either consistently increased or decreased. As such we exclude those episodes with brief changes in average consumption per capita and/or inequality (i.e. that last five years or less) or where no data exists.

Figure 2 below illustrates a set of growth episodes using Thailand from 1981 to 2011 as an example. Over the entire period, average monthly consumption per capita grew from \$US166 (2011 PPP) to \$US410 (2011 PPP) and the Gini Index fell from 0.452 to 0.375. There are three consistent growth periods (1981 to 1990, 1990 to 1996, and 1999 to 2011), the second and third of which are clearly Type III (strongly equitable growth episode). For the purposes of our analysis we exclude the period from 1996 to 1999 because the spell did not last for more than five years (and it was a period of economic crisis).

Overall, we identify 120 consistent growth episodes (i.e. lasting for more than five years during which inequality consistently increased or decreased) in the PovcalNET database. 38 of these consistent growth episodes involved negative growth while the other 82 were positive. We drop two of these episodes as they occurred in countries with less than one million inhabitants (Solomon Islands and Cape Verde). The remaining 80 positive growth episodes build our core set and are spread across the 66 countries. Only 45 of the 80 episodes are strongly equitable episodes (i.e. inequality decreased).

**Figure 2. Changes in average consumption and the Gini Index from 1981 to 2011 in Thailand**



*Source:* Authors' estimates based on PovCal.

We next categorise the 80 episodes with positive growth in the survey mean by the average performance into the top 25%, middle 50%, and bottom 25% of episodes in terms of consumption growth and changes in inequality. Table 1 shows the following: the average growth rate in survey means, the average growth rate of the bottom 40%, the change in the Gini Index (measured in percentage points) and the change in the Gini Index (measured as a percentage). The 'sort on growth' panel ranks these episodes by their growth performance (Type I and II episodes) and the 'sort on inequality' panel by reduction in inequality (Type III and IV growth episodes). (see appendix Tables A1–5 for country level data for each episode).

Categorising the 80 positive, consistent growth episodes illustrates that there has been—on average across the episodes in each type—some trade-off between achieving high rates of growth and rapid reductions in inequality. The fastest growing 25% of episodes experienced a growth rate almost twice as high as the average one across all episodes (8.66% compared to 4.40% in terms of survey means), but these episodes also resulted in below average rates of reduction in inequality (0.1pp fall in Gini compared to 0.18pp across all episodes). In contrast, the top 25% of episodes in terms of inequality reduction experienced a fall in the Gini Index around six times greater than the average (1.13pp compared to 0.18pp), but only a growth rate slightly above average (5.12% compared to 4.40%). The trade-off between growth and reduction in inequality can also be seen for the bottom 25% of episodes by

growth rates and by falls in inequality. For example, the bottom 25% of episodes in terms of inequality reduction had a growth rate similar to the average (4.45% compared to 4.40%) but in these cases inequality actually increased.

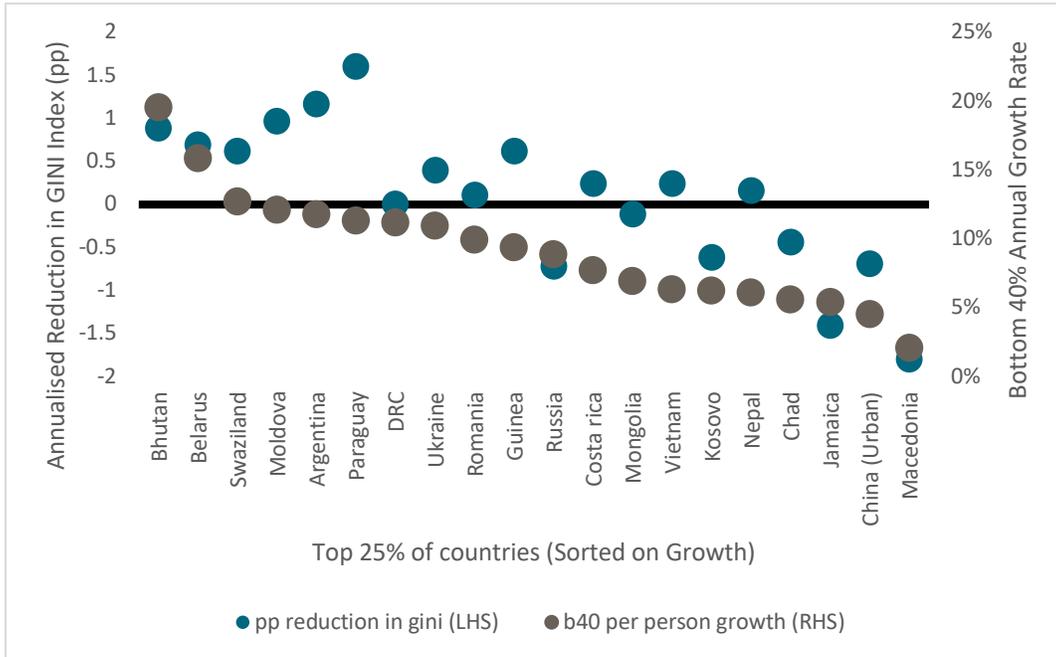
**Table 1. Growth episodes in developing countries since 1980 by growth rate of poorest 40% of population and changes in Gini (pp and %)**

	Type of growth	Survey mean growth rate	Bottom 40% growth rate	Reduction in Gini (pp)	Reduction in Gini (%)
<b>Sort on growth panel—by growth rate of poorest 40%</b>					
<b>Fastest growing episodes (top quartile)</b>	I	8.66%	9.24%	0.10	0.1%
<b>Mid 50% of episodes</b>	[I]	3.82%	4.85%	0.25	0.5%
<b>Slowest growing episodes (bottom quartile)</b>	II	1.30%	1.76%	0.10	0.20%
<b>Sort on inequality panel—reduction of Gini in pp</b>					
<b>Most equitable episodes (top quartile)</b>	III	5.12%	8.80%	1.13	2.60%
<b>Mid 50% of episodes</b>	[III]	4.01%	4.57%	0.13	0.30%
<b>Least equitable episodes (bottom quartile)</b>	IV	4.45%	2.75%	-0.69	-1.90%

*Source:* Authors' estimates based on PovCal.

Next we examine the top 25% and bottom 25% of each type of episode in detail (see Figures 3 to 6). In Figure 3, we show the growth rate of the bottom 40% (right hand axis) and the annualised change in the Gini Index (left hand axis) for the fastest 25% of growth episodes. For six of the 20 growth episodes, the Gini Index actually increased despite the positive and often high rates of growth for the bottom 40% of the distribution [this was the case in Russia (2002–2008), Jamaica (1993–2002), Kosovo (2003–2010), Macedonia (1998–2008), Chad (2003–2011), and Urban China (1984–2010)]. For the remaining 14 growth episodes, the growth rate of the bottom 40% was faster than the average in 13 cases while in one case (in the Democratic Republic of Congo) the difference between the growth rate of the bottom 40% and the average was negligible.

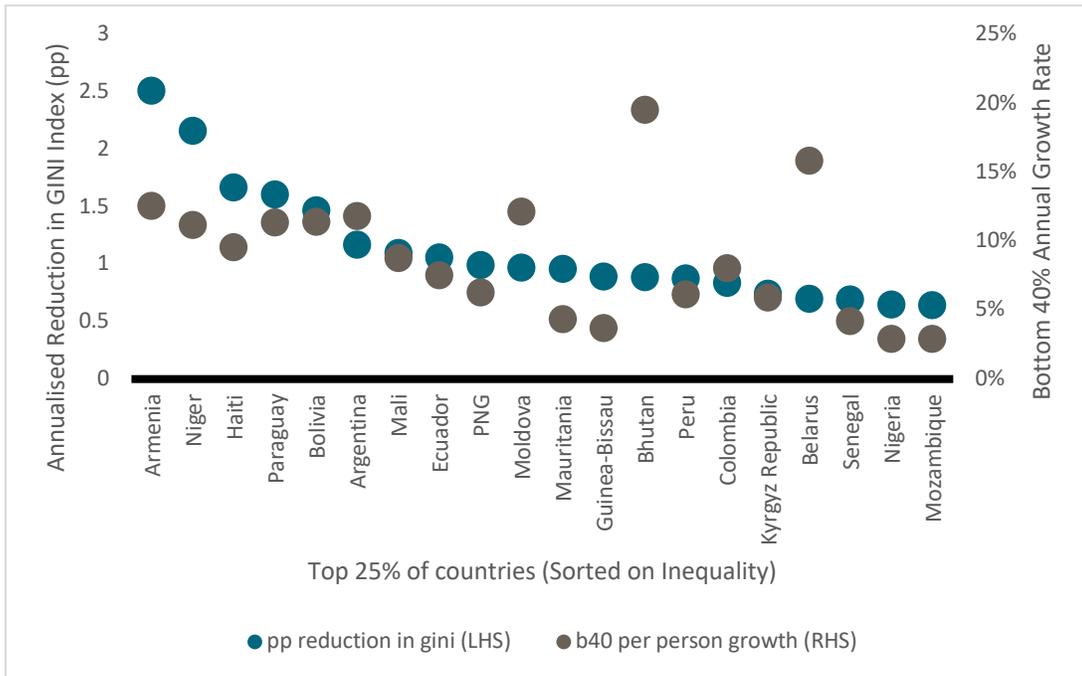
Figure 3. Type I episodes



Source: Authors' estimates based on PovCal.

Figure 4 below illustrates the growth rate of the bottom 40% (right hand axis) and the annualised change in the Gini Index (left hand axis), this time for the top 25% of episodes in terms of falls in inequality. In all of these growth episodes, the Gini Index fell by at least half a percentage point a year and the bottom 40% had a yearly growth rate of at least 3%. In eight of the 20 growth episodes the Gini Index fell by over one percentage point a year [Armenia (1996–2002), Niger (2005–2011), Haiti (2001–2012), Paraguay (2002–2008), Bolivia (2002–2011), Argentina (2002–2013), Mali (1994–2010), and Ecuador (1999–2011)]. In six of these growth episodes the growth rate of the bottom 40% was over 10% a year [Armenia (1996–2002), Niger (2005–2011), Haiti (2001–2012), Paraguay (2002–2008), Bolivia (2002–2011), and Argentina (2002–2013)]. There are four cases that appeared in the top 25% both by growth and by inequality reduction [Paraguay (2002–2008), Argentina (2002–2013), Bhutan (2003–2012), and Belarus (1999–2005)].

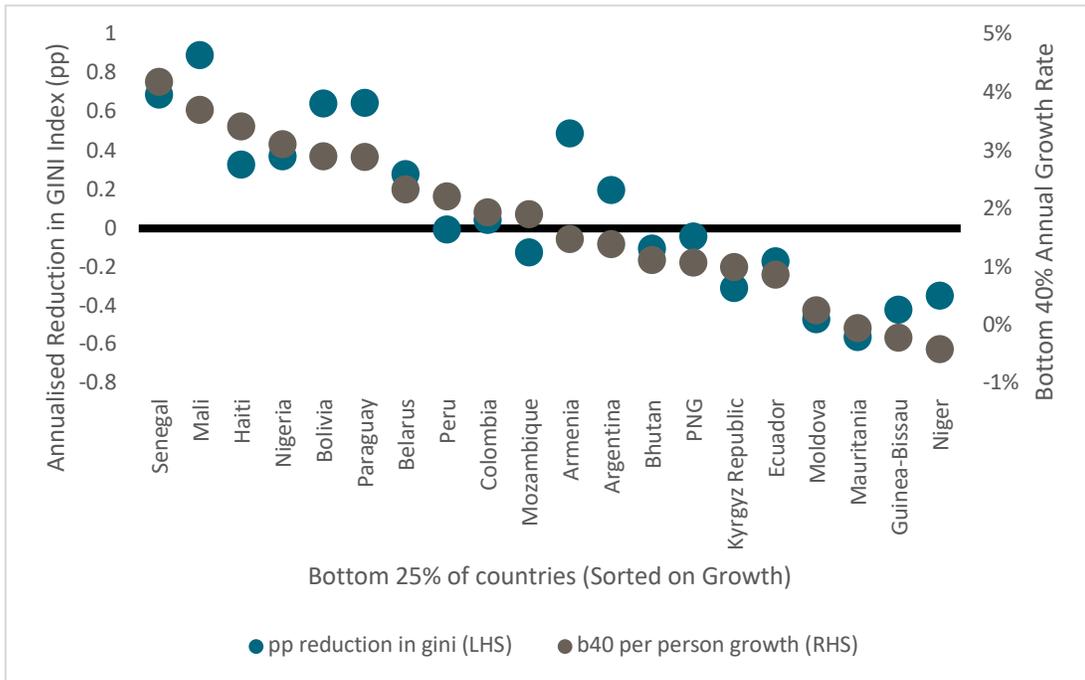
Figure 4. Type III episodes by inequality reduction



Source: Authors' estimates based on PovCal.

Figure 5 below shows the growth rate of the bottom 40% (right hand axis) and the annualised change in the Gini Index (left hand axis) for the slowest 25% of growth episodes. In half of these episodes the Gini Index increased and in five episodes the growth rate of the bottom 40% was less than one percentage point a year [Georgia (2002–2010), Rural India (1994–2005), Nepal (1985–1996), Ethiopia (2005–2011), and Dominican Republic (1996–2002)]. There is a strong negative correlation between the change in the Gini Index and the growth rate of the bottom 40% (correlation coefficient = -0.886). This suggests that growth and inequality tend to have a closer relationship for these slower growth episodes than is the case for the fastest growth episodes (whereby the correlation coefficient equals -0.744).

Figure 5. Type II episodes

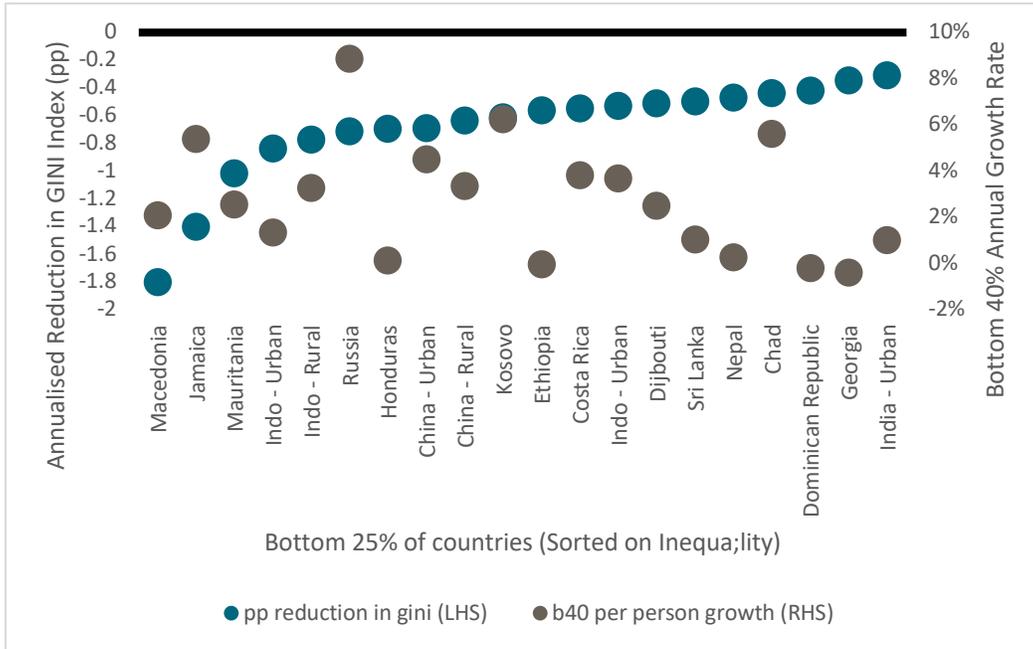


Source: Authors' estimates based on PovCal.

In Figure 6 below, we show the growth rate of the bottom 40% (right hand axis) and the annualised change in the Gini Index (left hand axis) for the bottom 25% of growth episodes in terms of falls in inequality. In all of these episodes inequality increased. In three cases the Gini Index rose by more than one percentage point a year [Macedonia (1998–2008), Jamaica (1993–2002), and Mauritania (1987–1993)]. Half of these episodes had a growth rate of the bottom 40% below 2.5% and in one case the growth rate was negative [Ethiopia (2005–2011)]. There are five growth spells that feature in the bottom 25% in terms of both growth and inequality (Dominican Republic (1996–2002), Urban India (1994–2010), Georgia (2002–2010), Ethiopia (2005–2011), and Nepal (1985–1996)).

In sum, we can empirically identify the four conceptual types of growth episodes we presented earlier our typology of growth episodes. Looking ahead to the SDGs a question arises as to which type of growth episode is likely to end global poverty by 2030 in a post-COVID-19 world. We discuss this next.

Figure 6. Type IV episodes



Source: Authors' estimates based on PovCal.

#### 4. Growth with Adjectives After COVID-19

The full set of 80 growth episodes builds the basis for our projections of poverty and inequality presented in this section. Specifically, we assess how countries would fair if they replicated the experience of the top and bottom quartiles of consistent growth episodes ranked by growth and by inequality reduction.<sup>2</sup> Our estimates are deliberately overly optimistic as we are unable to factor in the precise extent that poverty will increase due to COVID-19 (see Lea, 2020; Maher et al., 2020a, 2020b; Sumner et al., 2020a, 2020b; Valensisi, 2020). We can be confident that when our projections below show poverty cannot be eliminated by 2030 and that inequality will not reduce, this will be even more likely to be true in the post-COVID-19 world where rates of poverty and levels of inequality are likely to be above our starting points.

<sup>2</sup> Lakner et al.'s (2020) study is relevant to mention at this point, as it simulates a set of scenarios for global poverty in 2030 with differing assumptions on growth and distribution for each scenario. The paper innovatively uses a machine-learning algorithm assessing how GDP growth passes through to household consumption. They find that if within-country inequality is static and IMF projections are utilised, poverty (at the \$1.90 a day line) remains above 500 million or 6.5% of the global population in 2030. However, a one percent per year decrease in the Gini would reduce poverty by a further 100 million people, hence more than a one percentage point increase in annual GDP growth would.

To recap, Type I and Type II growth episodes are most and least equitable episodes respectively, defined by whether the growth rate of the poorest 40% of population is higher (most equitable) or less (least equitable) than the mean survey growth. Type III and IV growth episodes are most and least equitable episodes respectively and defined by falls (most equitable) or rises (least equitable) in the Gini in percentage points.

First, we make regional estimates of the mean year that poverty - at the \$1.90, \$3.20, and \$5.50 a day poverty lines - will end in each region if developing countries could replicate the Type I episode. (Table 2). We find that extreme poverty (at \$1.90 a day) could be eliminated in more than half of the countries in each region by the mid-2020s. By 2030 even poverty at \$3.20 a day could be eradicated. However, there would be effectively no change in inequality by 2030, with the average Gini Index remaining in the mid-30s in East Asia and the Pacific, Middle East and North Africa, and South Asia while Sub-Saharan Africa and Latin America would still face average Ginis in the mid-40s.

**Table 2. What if all countries replicate the Type I episode?**

Region	Gini		Mean year that poverty will end for all countries in each region		
	2013	2030	\$1.90 line	\$3.20 line	\$5.50 line
<b>EAP</b>	0.39	0.37	2018	2024	2030
<b>ECA</b>	0.31	0.30	2019	2025	2031
<b>LAC</b>	0.47	0.45	2023	2029	2035
<b>MENA</b>	0.35	0.34	2018	2024	2030
<b>SAS</b>	0.36	0.35	2017	2023	2029
<b>SSA</b>	0.44	0.42	2021	2026	2033

*Source:* Authors' estimates based on PovCal.

*Notes:* EAP - East Asia and the Pacific, MENA - Middle East and North Africa, SAS - South Asia, SSA - Sub-Saharan Africa, LAC - Latin America and the Caribbean, and ECA—Eastern Europe and Central Asia.

In Table 3 below we again illustrate projections of poverty and inequality. In this case we use the Type II episode. In contrast to the scenario in Table 2, extreme poverty would not end in most countries across all the regions in the developing world by 2030 and inequality would again remain unchanged. In addition, poverty measured at the slightly higher line of \$5.50 a day would likely persist in each region until at least the end of the century.

**Table 3. What if all countries replicate the Type II episode?**

Region	Gini		Mean year that poverty will end for all countries in each region		
	2013	2030	\$1.90 line	\$3.20 line	\$5.50 line
<b>EAP</b>	0.39	0.36	2035	2062	2090
<b>ECA</b>	0.31	0.30	2041	2068	2096
<b>LAC</b>	0.47	0.44	2058	2085	2114
<b>MENA</b>	0.35	0.33	2034	2061	2089
<b>SAS</b>	0.36	0.34	2030	2058	2086
<b>SSA</b>	0.44	0.42	2048	2075	2103

*Source:* Authors' estimates based on PovCal.

*Notes:* EAP - East Asia and the Pacific, MENA - Middle East and North Africa, SAS - South Asia, SSA - Sub-Saharan Africa, LAC - Latin America and the Caribbean, and ECA—Eastern Europe and Central Asia.

Next, we consider the Type III and IV episodes. We again estimate the average year poverty would end for each of the major regions in the developing world if all countries could replicate the experience of the top and bottom quartile of growth episodes. Table 4 shows that extreme poverty could still be eliminated by 2030 in most countries if the top growth episodes by inequality reduction were replicated. However progress in eliminating poverty at higher lines (\$3.20 and \$5.50 a day) would be slightly slower than in the first scenario above replicating Type I growth episodes. The average Gini Index would fall below 30 in each of the regions in the developing world by 2030, which is a reduction by around one-third of current levels.

**Table 4. What if all countries replicate the Type III episode?**

Region	Gini		Mean year that poverty will end for all countries in each region		
	2013	2030	\$1.90 line	\$3.20 line	\$5.50 line
<b>EAP</b>	0.39	0.24	2018	2025	2032
<b>ECA</b>	0.31	0.20	2020	2026	2033
<b>LAC</b>	0.47	0.30	2024	2031	2037
<b>MNA</b>	0.35	0.22	2018	2025	2031
<b>SAS</b>	0.36	0.23	2017	2024	2031
<b>SSA</b>	0.44	0.28	2021	2028	2035

*Source:* Authors' estimates based on PovCal.

*Notes:* EAP - East Asia and the Pacific, MENA - Middle East and North Africa, SAS - South Asia, SSA - Sub-Saharan Africa, LAC - Latin America and the Caribbean, and ECA—Eastern Europe and Central Asia.

Finally, we estimate the average year poverty would be eliminated if all countries could replicate the Type IV episodes (Table 5). In this scenario the average Gini Index in each region would increase dramatically until 2030 and extreme poverty would not be eliminated in most regions by 2030. However, greater progress would be made in poverty reduction than in Scenario 2 which refers to the replication of the experience of the slowest 25% of growth episodes (results shown in Table 3).

**Table 5. What if all countries replicate the Type IV episode?**

Region	Gini		Mean year that poverty will end for all countries in each region		
	2013	2030	\$1.90 line	\$3.20 line	\$5.50 line
EAP	0.39	0.53	2028	2048	2068
ECA	0.31	0.43	2033	2052	2072
LAC	0.47	0.65	2045	2064	2084
MNA	0.35	0.48	2028	2047	2067
SAS	0.36	0.49	2025	2045	2064
SSA	0.44	0.61	2037	2057	2077

*Source:* Authors' estimates based on PovCal.

*Notes:* EAP - East Asia and the Pacific, MENA - Middle East and North Africa, SAS - South Asia, SSA - Sub-Saharan Africa, LAC - Latin America and the Caribbean and ECA—Eastern Europe and Central Asia.

The trade-off between high growth versus growth with falling inequality is illustrated in Table 6. We estimate the share of global poverty today which would be eliminated under each scenario and for each of the poverty lines (\$1.90, \$3.20 and \$5.50 a day). We find that over 95% of global poverty at \$1.90 a day would be eliminated if all countries replicated the top 25% of episodes in terms of falls in inequality or rates of growth.

**Table 6. Share of today's global poverty eliminated under each scenario in 2030**

	\$1.90	\$3.20	\$5.50
Top 25% by inequality reduction	95.32%	72.00%	9.80%
Top 25% by growth	95.32%	78.29%	44.34%
Middle 50% by inequality reduction	76.49%	0.00%	0.00%
Middle 50% by growth	77.83%	15.68%	0.00%
Bottom 25% by inequality reduction	40.42%	0.00%	0.00%
Bottom 25% by growth	36.13%	0.00%	0.00%

*Source:* Authors' estimates based on PovCal.

In addition, replicating the average high growth or equitable growth path of the middle 50% of episodes would eliminate a similar share of extreme poverty by 2030 (76.49% and 77.83% when replicating the middle 50% by inequality and by growth respectively). The real difference emerges at the higher poverty lines, as replicating the experience of the top 25% of episodes in terms of inequality reduction would only eliminate less than 10% of poverty at \$5.50 a day whereas replicating the fastest growing 25% of episodes would almost halve the rate of poverty at this line. Similarly, replicating the middle 50% of episodes by inequality reduction would not eliminate poverty at \$3.20 a day in any country in the world, but replicating the middle 50% in terms of growth would eradicate over 15% of global poverty at that line.

In short, an equitable growth path appears to reduce poverty at lower levels to a similar extent as a high growth path would, but this is not the case at more generous poverty lines. In other words, on average there appear to be limits to the potential of growth with equity. However, there are cases of 'equitable growth miracles'. Standout cases where consistent growth episodes lasted for more than 10 years with annual growth above 4% and Gini Index reductions of more than 1pp a year have occurred in Ecuador (1999–2011), Argentina (2002–2013) and also in Mali (1994–2010). Nevertheless, in the case of Ecuador and Argentina, these countries experienced significantly rising inequality in the decade prior to the positive equitable growth episodes and the net change in inequality since the mid-1980s is close to zero.

## 5. Conclusions

In this paper we have considered the different types of growth episodes based on the changes in the incomes of the poorest and in inequality. Furthermore, we have estimated the end of poverty based on different types of growth episodes. What do we conclude? First, episodes of positive, consistent growth are surprisingly rare. We found only 80 such episodes (across 66 countries) lasting longer than five years over almost 25 years of the sample.

Second, we find inequality fell in over half of those growth episodes (45 of 80) counter to the notion that inequality tends to rise with growth. However, the average positive, consistent growth episode has low to moderate rates of growth and only slightly reduced inequality: growth is below 5% a year and inequality (according to the Gini Index) falls less than 0.2 pp a year.

Third, we find that replicating even the fastest growing 25% of positive, consistent growth episodes will dramatically reduce poverty albeit with little reduction in inequality. On the other hand, replicating the top 25% of positive, consistent growth episodes by inequality reduction would dramatically lower inequality and poverty, but income per person would be considerably lower in 2030 than if countries replicated the fastest growing 25% of positive, consistent growth episodes.

Our findings imply that policy makers face a trade-off when they consider what post-COVID-19 development pathway to pursue to 2030. Historical experience would suggest that focusing on achieving high rates of growth is likely to result in considerable poverty reduction but do little to address inequality and consequently countries would fail to achieve the inequality SDG. Alternatively, sizable falls in inequality and poverty can occur (i.e. countries can achieve both the poverty and inequality SDGs), but past growth episodes imply this comes at the cost of slower growth. As such governments would need to follow an unprecedented trajectory if they wish to recover from the economic downturn caused by COVID-19 along with achieving the inequality and poverty SDGs by 2030. This points towards the need for a renaissance of the redistributive growth agendas such as those of Chenery et al. (1974). The latter agenda implies asset redistribution, income transfers, and public investments at an extraordinary scale, the likes of which have not occurred in recent decades.

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## Appendix

If we only consider the 45 cases of positive, consistent growth episodes where inequality decreased, the trade-off between rapid growth in income and falls in inequality still appears to be present (see Table A1). The fastest growing 25% of positive, consistent growth episodes where inequality fell experienced a growth rate almost twice as high as the average across all countries (9.65% compared to 4.78% in terms of survey means), but these countries experienced below average rates of reduction in inequality (0.54pp fall in Gini compared to 0.67pp). In contrast, the top 25% of positive, consistent growth episodes by inequality reduction experienced a fall in the Gini Index more than twice as fast as the average (1.42pp compared to 0.67pp), but only had a growth rate slightly above average (5.13% compared to 4.78%). The lack of correlation between growth and reduction in inequality is also apparent when considering the bottom 25% of cases.

**Table A1. A typology of equitable, consistent growth patterns by growth and by inequality**

	Survey mean growth rate	Bottom 40% growth rate	Reduction in Gini (pp)	Reduction in Gini (%)
<b>Average</b>	4.78%	7.02%	0.67	1.6%
<i>Sort on growth</i>				
<b>Top 25% of episodes</b>	9.65%	11.60%	0.54	1.4%
<b>Mid 50% of episodes</b>	4.10%	6.72%	0.80	1.8%
<b>Bottom 25% of episodes</b>	1.31%	3.06%	0.51	1.2%
<i>Sort on inequality</i>				
<b>Top 25% of episodes</b>	5.13%	9.72%	1.42	3.2%
<b>Mid 50% of episodes</b>	4.55%	6.53%	0.56	1.4%
<b>Bottom 25% of episodes</b>	4.89%	5.35%	0.13	0.3%

*Source:* Authors' estimates based on PovCal.

**Table A2. Fastest growing 25% of growth episodes**

	Start year	End year	pp reduction of Gini (LHS)	Bottom 40% per person growth (RHS)
<b>Bhutan</b>	2003	2012	-0.89	19.6%
<b>Belarus</b>	1999	2005	-0.70	15.8%
<b>Congo, Democratic Republic of</b>	2005	2012	-0.01	11.2%
<b>Russian Federation</b>	2002	2008	0.71	8.9%
<b>Swaziland</b>	1995	2009	-0.62	12.7%
<b>Ukraine</b>	2002	2008	-0.40	10.9%
<b>Moldova</b>	2005	2013	-0.97	12.1%
<b>Jamaica</b>	1993	2002	1.40	5.4%
<b>Romania</b>	2002	2008	-0.11	10.0%
<b>Kosovo</b>	2003	2010	0.61	6.2%
<b>Argentina</b>	2002	2013	-1.17	11.8%
<b>Chad</b>	2003	2011	0.44	5.6%
<b>Macedonia</b>	1998	2008	1.80	2.1%
<b>Mongolia</b>	2002	2011	0.11	6.9%
<b>Guinea</b>	1991	2012	-0.62	9.4%
<b>Costa Rica</b>	1981	1990	-0.24	7.7%
<b>China (Urban)</b>	1984	2010	0.69	4.5%
<b>Vietnam</b>	2002	2008	-0.24	6.3%
<b>Nepal</b>	1996	2010	-0.16	6.1%
<b>Paraguay</b>	2002	2008	-1.61	11.3%

*Source:* Authors' estimates based on PovCal.

**Table A3. Top 25% of growth episodes by inequality reduction**

	Start year	End year	pp reduction in Gini (LHS)	Bottom 40% per person growth (RHS)
<b>Armenia</b>	1996	2002	-2.51	12.6%
<b>Niger</b>	2005	2011	-2.16	11.2%
<b>Haiti</b>	2001	2012	-1.67	9.6%
<b>Paraguay</b>	2002	2008	-1.61	11.3%
<b>Bolivia</b>	2002	2011	-1.47	11.4%
<b>Argentina</b>	2002	2013	-1.17	11.8%
<b>Mali</b>	1994	2010	-1.10	8.8%
<b>Ecuador</b>	1999	2011	-1.06	7.5%
<b>Papua New Guinea</b>	1996	2010	-0.99	6.3%
<b>Moldova</b>	2005	2013	-0.97	12.1%
<b>Mauritania</b>	1993	2008	-0.96	4.3%
<b>Guinea-Bissau</b>	1993	2002	-0.89	3.7%
<b>Bhutan</b>	2003	2012	-0.89	19.6%
<b>Peru</b>	2002	2013	-0.88	6.1%
<b>Colombia</b>	1999	2005	-0.84	8.0%
<b>Kyrgyz Republic</b>	2005	2012	-0.74	5.9%
<b>Belarus</b>	1999	2005	-0.70	15.8%
<b>Senegal</b>	1991	2011	-0.69	4.2%
<b>Nigeria</b>	1996	2010	-0.65	2.9%
<b>Mozambique</b>	1996	2009	-0.64	2.9%

*Source:* Authors' estimates based on PovCal.

**Table A4. Slowest growing 25% of growth episodes**

	Start year	End year	pp reduction in Gini (LHS)	Bottom 40% per person growth (RHS)
<b>Pakistan</b>	1987	1997	-0.49	1.5%
<b>Georgia</b>	2002	2010	0.35	-0.4%
<b>CAR</b>	1992	2008	-0.33	3.4%
<b>Nigeria</b>	1996	2010	-0.65	2.9%
<b>Mozambique</b>	1996	2009	-0.64	2.9%
<b>India (Urban)</b>	1988	1994	-0.20	1.4%
<b>Guinea-Bissau</b>	1993	2002	-0.89	3.7%
<b>India (Rural)</b>	1994	2005	0.17	0.9%
<b>Philippines</b>	1985	2012	0.04	1.1%
<b>Nepal</b>	1985	1996	0.47	0.3%
<b>Ethiopia</b>	2005	2011	0.56	-0.1%
<b>Dominican Republic</b>	1996	2002	0.42	-0.2%
<b>Lao</b>	1992	2012	0.10	1.1%
<b>Thailand</b>	1981	1990	0.01	2.2%
<b>Mongolia</b>	1995	2002	-0.04	1.9%
<b>India (Urban)</b>	1994	2010	0.31	1.0%
<b>Albania</b>	2002	2012	-0.28	2.3%
<b>Senegal</b>	1991	2011	-0.69	4.2%
<b>Iran</b>	1986	2013	-0.37	3.1%
<b>Tanzania</b>	1992	2012	0.13	1.9%

**Table A5. Bottom 25% of growth episodes by inequality reduction**

	Start year	End year	pp reduction in Gini (LHS)	Bottom 40% per person growth (RHS)
<b>Macedonia</b>	1998	2008	1.80	2.1%
<b>Jamaica</b>	1993	2002	1.40	5.4%
<b>Mauritania</b>	1987	1993	1.02	2.6%
<b>Indonesia (Urban)</b>	2002	2013	0.84	1.3%
<b>Indonesia (Rural)</b>	1999	2011	0.78	3.3%
<b>Russia</b>	2002	2008	0.71	8.9%
<b>Honduras</b>	1999	2005	0.69	0.1%
<b>China (Urban)</b>	1984	2010	0.69	4.5%
<b>China (Rural)</b>	1981	2002	0.63	3.4%
<b>Kosovo</b>	2003	2010	0.61	6.2%
<b>Ethiopia</b>	2005	2011	0.56	-0.1%
<b>Costa Rica</b>	1990	2002	0.55	3.8%
<b>India (Urban)</b>	1987	1996	0.53	3.7%
<b>Djibouti</b>	2002	2012	0.51	2.5%
<b>Sri Lanka</b>	1985	2002	0.50	1.0%
<b>Nepal</b>	1985	1996	0.47	0.3%
<b>Chad</b>	2003	2011	0.44	5.6%
<b>Dominican Republic</b>	1996	2002	0.42	-0.2%
<b>Georgia</b>	2002	2010	0.35	-0.4%
<b>India (Urban)</b>	1994	2010	0.31	1.0%