



IMF STAFF DISCUSSION NOTE

April 8, 2011
SDN/11/08

Inequality and Unsustainable Growth: Two Sides of the Same Coin?

Andrew G. Berg and Jonathan D. Ostry

INTERNATIONAL MONETARY FUND

Research Department

Inequality and Unsustainable Growth: Two Sides of the Same Coin?

Prepared by Andrew G. Berg and Jonathan D. Ostry¹

April 8, 2011

DISCLAIMER: This Staff Discussion Note represents the views of the authors and does not necessarily represent IMF views or IMF policy. The views expressed herein should be attributed to the authors and not to the IMF, its Executive Board, or its management. Staff Discussion Notes are published to elicit comments and to further debate.

JEL Classification Numbers: O1, O4

Keywords: Income distribution; sustainable growth

Author's E-mail Address: Aberg@imf.org ; Jostry@imf.org

¹ We would like to thank Olivier Blanchard and other IMF colleagues for useful suggestions and Yorbol Yakhshilikov for excellent research assistance.

| Contents | Page |
|--|------|
| Executive Summary | 3 |
| I. Introduction | 4 |
| II. The Hills and Valleys of Growth | 5 |
| III. Income Distribution and Growth Sustainability | 8 |
| IV. Some Tentative Policy Implications | 16 |
| References | 19 |
| Tables | |
| 1. Growth Breaks by Region and Decade | 7 |
| 2. Characteristics of Growth Spells | 8 |
| 3. The Ends of Six Spells | 11 |
| Figures | |
| 1a. The Hills of Growth | 5 |
| 1b. The Hills, Valleys, and Plateaus of Growth..... | 6 |
| 2. Duration of Growth Spells and Inequality | 9 |
| 3. Effect of Increase of Different Factors on Growth Spell Duration..... | 12 |
| Box | |
| 1. Is It Really Income Distribution? A Closer Look at Country Cases..... | 14 |

EXECUTIVE SUMMARY

The relationship between income inequality and economic growth is complex. Some inequality is integral to the effective functioning of a market economy and the incentives needed for investment and growth. But inequality can also be destructive to growth, for example, by amplifying the risk of crisis or making it difficult for the poor to invest in education. The evidence has also been mixed: some find that average growth over long periods of time is higher with more initial equality; others find that an increase in equality today tends to lower growth in the near term.

The empirical literature on growth and inequality, however, has missed a key feature of the growth process in developing countries: namely, its lack of persistence. Per capita incomes do not typically grow steadily for decades. Rather, periods of rapid growth are punctuated by collapses and sometimes stagnation—the hills, valleys, and plateaus of growth. Relating income distribution to long-run average growth may thus miss the point. The more relevant issue for many countries is: how is income distribution related to these sharp growth breaks?

This note focuses on the duration of growth spells—defined as the interval starting with a growth upbreak and ending with a downbreak—and on the links between duration and various policies and country characteristics, including income distribution. It turns out that many of even the poorest countries have succeeded in initiating growth at high rates for a few years. What is rarer—and what separates growth miracles from laggards—is the ability to sustain growth. The question then becomes: what determines the length of growth spells, and what is the role of income inequality in duration?

We find that longer growth spells are robustly associated with more equality in the income distribution. For example, closing, say, half the inequality gap between Latin America and emerging Asia would, according to our central estimates, more than double the expected duration of a growth spell. Inequality typically changes only slowly, but a number of countries in our sample have experienced improvements in income distribution of this magnitude in the course of a growth spell. Inequality still matters, moreover, even when other determinants of growth duration—external shocks, initial income, institutional quality, openness to trade, and macroeconomic stability—are taken into account.

A key implication of these results is that it is difficult to separate analyses of growth and income distribution. The immediate role for policy, however, is less clear. Increased inequality may shorten growth duration, but poorly designed efforts to lower inequality could grossly distort incentives and thereby undermine growth, hurting even the poor. There nevertheless may be some “win-win” policies, such as better-targeted subsidies, improvements in economic opportunities for the poor, and active labor market policies that promote employment. When there are trade-offs between potential short-run effects of policies on growth and income distribution, the evidence presented in this note is not decisive. But the analysis below does perhaps tilt the balance towards the notion that attention to inequality can bring significant longer-run benefits for growth. Over longer horizons, reduced inequality and sustained growth may thus be two sides of the same coin.

I. INTRODUCTION

Over the long run, sustained growth is central to poverty reduction. The rapid growth seen in much of the world over the past few decades—notably, but not only, in China and India—has led to an unprecedented reduction in poverty. And, in general, increases in per capita income tend to translate into proportionate increases in income of the poor. As Dollar and Kraay (2002) memorably put it, “Growth Is Good for the Poor.” All the more reason, then, to place sustainability of growth at the center of any poverty reduction strategy.

The recent global crisis—and the impact this is having on economic activity, jobs, and the poor—is thus rightly spurring a renewed focus on the drivers of growth, including possible links between income inequality, crises, and growth sustainability. Piketty and Saez (2003) underscore the sharp rise in income inequality in the United States in the past two decades and its return to levels not seen since the late 1920s. A number of analysts have investigated how this may have contributed to the crisis. Rajan (2010) points to the political and economic pressures that led high-income individuals to save, low-income individuals to sustain consumption through borrowing, and financial institutions and regulators to encourage the process. Kumhof and Rancière (2010) detail the mechanisms that may have linked income distribution and financial excess, arguing that the same factors may have been at play in both the Great Depression and the Great Recession. Meanwhile, recent events in Tunisia, Egypt, and elsewhere in the Middle East underscore the importance of better understanding the complex relationship between growth, income distribution, and crises.

Some inequality is integral to the effective functioning of a market economy and the incentives needed for investment and growth (Chaudhuri and Ravallion, 2006). But too much inequality might be destructive to growth. Beyond the risk that inequality may amplify the potential for financial crisis, it may also bring political instability, which can discourage investment. Inequality may make it harder for governments to make difficult but necessary choices in the face of shocks. Or, inequality may reflect lack of access of the poor to finance and thus fewer opportunities to invest in education and entrepreneurial activity.

Earlier analyses have recognized the complex linkages among income distribution, growth, and policies to counter inequality. In this note, we ask whether growth can in fact be sustained in the face of a highly uneven income distribution. Does less inequality help to increase the duration of growth? Are inequality and unsustainable growth two sides of the same coin, or largely unrelated issues?

This note draws on earlier work (Berg, Ostry, and Zettelmeyer, 2008) that looked at growth in a way that emphasizes the turning points in countries’ growth trajectories, and especially what determines when a long period of growth—a “growth spell”—comes to an end. Here the focus is squarely on the relationship between income distribution and the length of growth spells, and the relation of the empirical findings to the political and economic narratives of specific cases. The next section reviews the earlier empirical literature on growth and distribution, relating it to the stylized facts of growth. Section III discusses the role of income distribution—and other determinants such as institutions, education and health, globalization, and macro policy—in growth duration. Section IV draws some tentative policy implications.

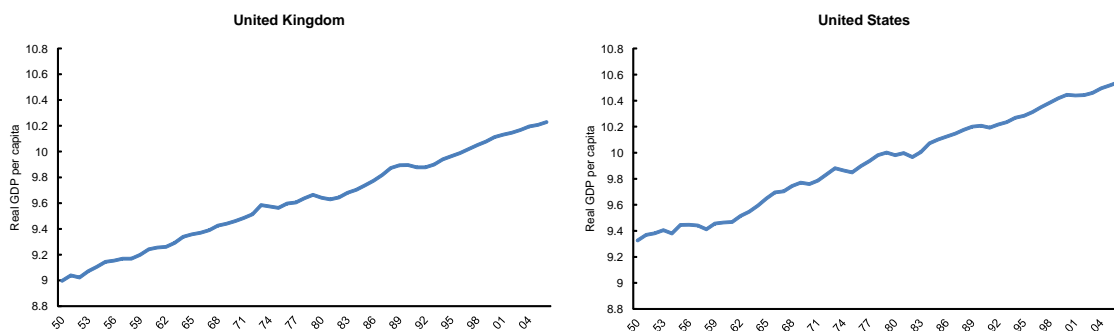
II. THE HILLS AND VALLEYS OF GROWTH

By the late 1990s, many authors had examined empirically the relationship between income distribution and growth. Following the broader growth literature, the typical approach was to relate a country's income distribution at the beginning of a long sample (say, 1965–85) to the growth rate during that period, controlling for a few key variables such as initial per capita income. An empirical consensus had emerged that countries with more equal income distributions tended to grow faster (e.g., Alesina and Rodrik, 1994), though the evidence was admittedly not robust (Deininger and Squire, 1998; Barro, 2000).

Subsequently, attention turned to analysis of panel data, in order to examine how changes in income distribution affected the growth rate in a subsequent medium-term (usually five-year) period. Forbes (2000) found that an increase in inequality tended to *raise* growth during the subsequent period. Banerjee and Duflo (2003) found an even more complex relationship between inequality and growth, in which changes in inequality in *either direction* lower growth in the subsequent five-year period. They interpreted this finding as supportive of the notion that redistribution hurts growth, at least over short- to medium-run horizons.

For significant poverty reduction, the key is to achieve rapid growth *over long periods of time*. For these purposes, the long-run growth regressions of Barro (2000) and similar studies would seem the most relevant. However, these analyses, and perhaps common perceptions, assume implicitly that development is like climbing a “hill”: more-or-less steady increases in real income, punctuated by fairly small bumps—business cycle fluctuations—perhaps with the occasional takeoff as poor countries become integrated in the global economy. Figure 1a shows the level of real per capita income in a couple of advanced countries, with a pattern consistent with this idea of growth. If this were indeed the common pattern, the most interesting question, indeed the only important question about growth, would be how to explain why some countries grow faster than others over long periods.

Figure 1a. The Hills of Growth
(Real GDP per capita)

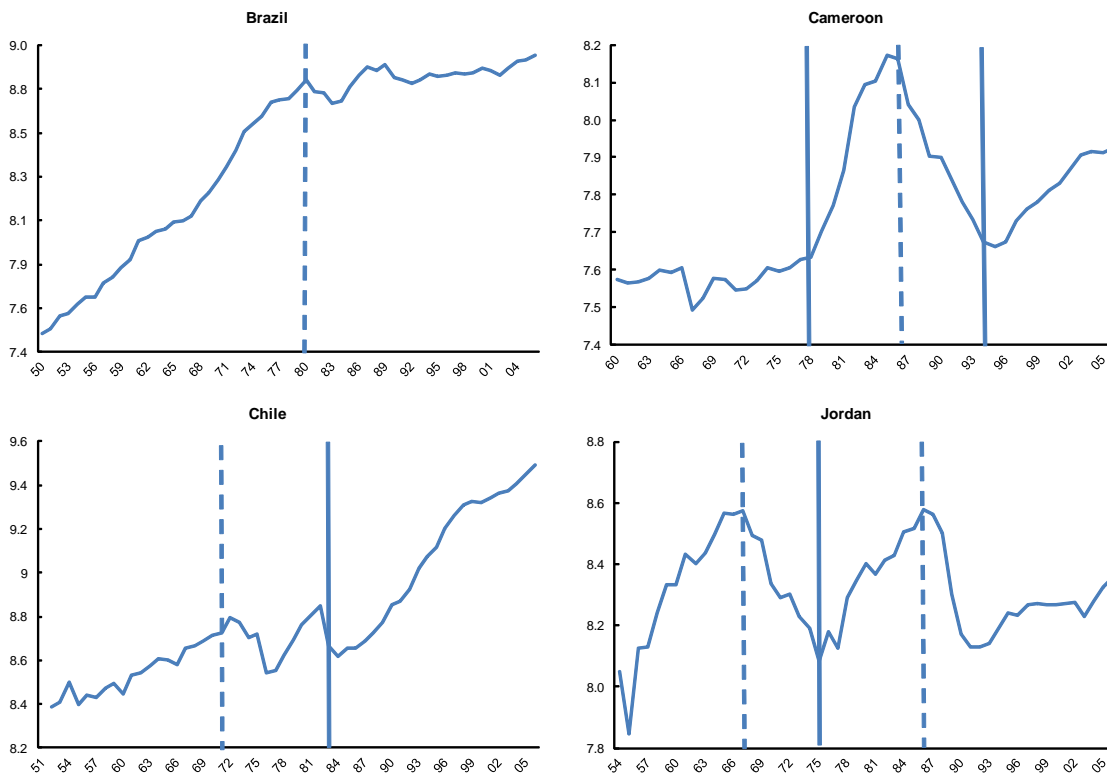


Source: Penn World Tables Version 6.2

Note: Real GDP per capita is measured in logs, so a straight line implies a constant growth rate.

Figure 1b shows the level of real per capita income in a group of developing countries. In contrast to the visual impression from the advanced-country graphs, what strikes the eye here is the variety of experience. Looking at such pictures, Pritchett (2000) and other authors have been struck that an understanding of growth must involve looking more closely at the turning points, meaning not the ups and downs of growth over business cycle horizons, but rather why some countries are able to keep growing for long periods of time, whereas others see growth downbreaks after just a few years, followed by stagnation or decay. To get a handle on this question, this note focuses on “growth spells,” defined as the time interval starting with a growth upbreak—the takeoff—and ending with a downbreak (or the end of the sample). The goal is to examine trends, not temporary events such as recoveries from recessions or the impact of sharp increases in the price of a principal export commodity. It follows that the object of inquiry—the growth spell—cannot be too short: in practical terms we set its minimum length at eight years.²

Figure 1b. The Hills, Valleys, and Plateaus of Growth
(Real GDP per capita)



Sources: Penn World Tables Version 6.2, Berg, Ostry, and Zettelmeyer (2008), and authors' calculations.
Note: Vertical dashed lines represent statistically significant growth downbreaks; solid lines represent statistically significant upbreaks. Real GDP per capita is measured in logs, so a straight line implies a constant growth rate.

² Berg, Ostry, and Zettelmeyer (2008) also looks at five-year minimum lengths to gauge the sensitivity of the results. To take account also of economic significance, a growth spell (i) begins with a statistical upbreak followed by a period of at least two percent average real per capita growth and (ii) ends either with a statistical downbreak followed by a period of less than 2 percent average growth or with the end of the sample.

The question of how to sustain a growth spell is particularly interesting for two reasons:

- First, looking at the broad cross-country evidence, igniting growth is much less challenging than *sustaining* growth (Hausmann, Pritchett, and Rodrik, 2005). That is, even the poorest of countries have managed to get growth going for several years from time to time. Where growth laggards differ from their more successful peers is in the degree to which they have been able to sustain growth for long periods of time.
- Second, in recent years, a large number of countries have been enjoying the fruits of sustained growth spells—more indeed than at any time in the last 30 years or so. The higher incidence of growth spells is most dramatic in sub-Saharan Africa, where many countries had a takeoff in the mid-1990s. Thus the questions emerge: are these ongoing spells likely to persist, and how can they be kept going?

Growth: Easy to Start, Hard to Keep Going

A first observation about growth breaks and growth spells is that both upbreaks and downbreaks are quite common, reflecting the notion that growth is not “smooth.” As Table 1 shows, upbreaks tend to be fairly spread out across regions and decades. A key message from the data is thus that the initiation of growth is not necessarily the “hard part” of achieving a long-run rise in per capita incomes. Latin America and Africa, for example, do not seem to suffer from an unusual dearth of spells. Rather, the real problem seems to stem from the inability to sustain growth over long periods. For example, almost all growth spells in advanced countries and emerging Asia last at least 10 years or more, but only about two-thirds of Latin American and African spells do (Table 2). Sustained growth over many years/decades seems to be what separates growth miracles from growth laggards.

Table 1. Growth Breaks by Region and Decade

| Region | Total no. | Average break size ¹ | 50s–60s | 70s | 80s | 90–00s |
|---------------------------------|-----------|---------------------------------|---------|-----|-----|--------|
| Total <i>Upbreaks</i> | 78 | 6.9 | 17 | 13 | 21 | 27 |
| Advanced countries ² | 11 | 5.0 | 5 | 0 | 3 | 3 |
| Emerging Asia | 19 | 5.6 | 4 | 6 | 4 | 5 |
| Latin America | 11 | 4.0 | 3 | 2 | 4 | 2 |
| Sub-Saharan Africa | 22 | 10.3 | 4 | 1 | 5 | 12 |
| Other developing ³ | 15 | 7.4 | 1 | 4 | 5 | 5 |
| Total <i>Downbreaks</i> | 96 | -6.3 | 7 | 48 | 30 | 11 |
| Advanced countries ² | 21 | -5.3 | 0 | 15 | 1 | 5 |
| Emerging Asia | 15 | -6.0 | 0 | 7 | 5 | 3 |
| Latin America | 13 | -4.6 | 0 | 8 | 5 | 0 |
| Sub-Saharan Africa | 26 | -8.0 | 3 | 12 | 9 | 2 |
| Other developing ³ | 21 | -6.9 | 4 | 6 | 10 | 1 |

Sources: Berg, Ostry, and Zettelmeyer (2008) and authors' calculations.

Note: A growth break is a statistically significant change in the per capita real GDP growth rate that persists for at least eight years.

¹Percentage point change in real per capita GDP growth before and after the break.

²Includes Hong Kong SAR, Japan, Korea, Singapore, and Taiwan Province of China.

³Caribbean countries, Cyprus, Middle East, North Africa, and Turkey.

Beyond the duration issue, another salient feature of the data relates to the rate of growth both within and outside of growth spells. As Table 2 shows, all regions' spells involve fairly fast growth, with those in Africa actually the most rapid. In contrast, there are big differences following the end of spells. Soft landings have tended to follow the end of growth spells in advanced countries and Asia, whereas African spells have tended to end in deep collapses.

Table 2. Characteristics of Growth Spells

| Region | Frequency and duration | | | | | Average growth before, during, and After ¹ | | | | |
|--|------------------------|---------------|-----------------------|---------------------------|----------|---|--------|-------|---------|-------|
| | No. of countries | No. of spells | Mean duration (years) | % spells lasting at least | | Average growth | | | 3 years | |
| | | | | 10 years | 16 years | Before | During | After | Before | After |
| Complete spells | | | | | | | | | | |
| Advanced countries ² | 37 | 2 | 13.0 | 100.0 | 0.0 | 3.3 | 6.0 | 1.2 | 2.6 | 3.4 |
| Emerging Asia | 22 | 3 | 18.0 | 33.3 | 33.3 | -0.7 | 9.1 | 1.4 | 1.4 | 1.9 |
| Latin America | 18 | 5 | 14.4 | 60.0 | 40.0 | 1.1 | 4.8 | 0.2 | 1.3 | -1.3 |
| Sub-Saharan Africa | 43 | 3 | 8.3 | 0.0 | 0.0 | -2.7 | 9.9 | -4.0 | -10.6 | -6.5 |
| Other developing ³ | 20 | 7 | 10.7 | 42.9 | 14.3 | -1.6 | 5.0 | -0.9 | -1.4 | -2.0 |
| Total (including incomplete spells) | | | | | | | | | | |
| Advanced countries ² | 37 | 11 | 24.4 | 100.0 | 63.6 | 0.7 | 5.7 | n.a. | -0.1 | n.a. |
| Emerging Asia | 22 | 16 | 24.2 | 87.5 | 56.2 | -0.3 | 5.8 | n.a. | 0.4 | n.a. |
| Latin America | 18 | 7 | 15.7 | 71.4 | 42.9 | 0.4 | 4.4 | n.a. | 0.1 | n.a. |
| Sub-Saharan Africa | 43 | 18 | 13.6 | 66.7 | 22.2 | -4.0 | 6.3 | n.a. | -7.7 | n.a. |
| Other developing ³ | 20 | 12 | 13.5 | 66.7 | 33.3 | -2.1 | 5.0 | n.a. | -2.8 | n.a. |

Source: Berg, Ostry, and Zettelmeyer (2008) and authors' calculations.

Note: A growth spell is a period between a growth upbreak and a growth downbreak, as long as per capita real growth is above 2 percent during the spell and falls to below 2 percent after the downbreak. Breaks are at least eight years apart.

¹Real per capita GDP growth, in percentage points.

²Includes Hong Kong SAR, Japan, Korea, Singapore, and Taiwan Province of China.

³Caribbean countries, Cyprus, Middle East, North Africa, and Turkey.

III. INCOME DISTRIBUTION AND GROWTH SUSTAINABILITY

To what extent is the duration of growth episodes related to differences in country characteristics and policies, including income distribution? It has long been recognized that the quality of economic and political institutions, an outward orientation, macroeconomic stability, and human capital accumulation are all important determinants of economic growth, and much work has gone into understanding the mechanisms and policy implications of these relationships. This note argues that income distribution may also—and independently—belong in this “pantheon” of critical growth determinants.

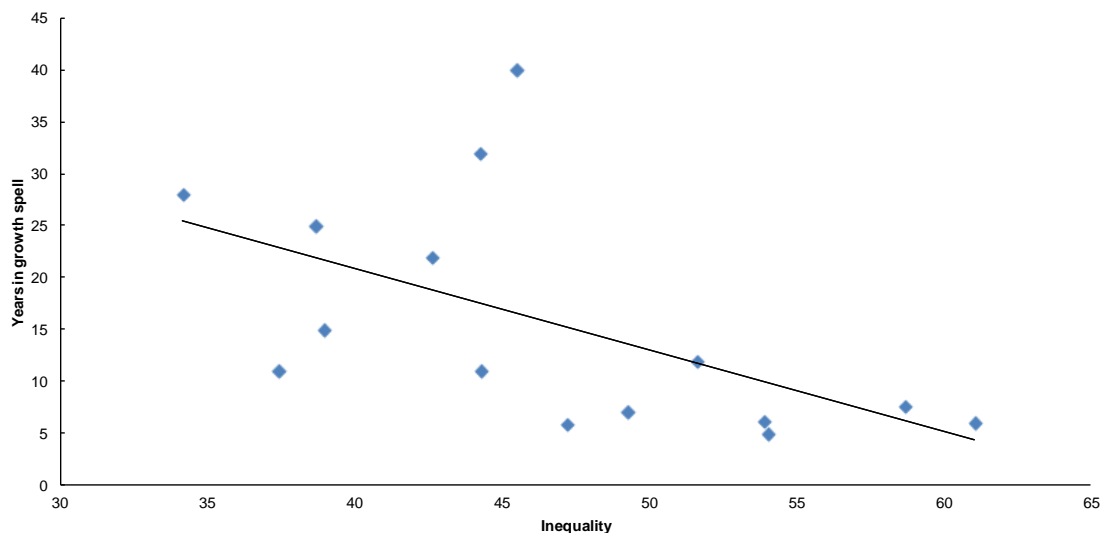
Why Income Distribution?

To set the stage, Figure 2 presents a simple correlation between length of growth spells and the average income distribution during the spell for a sample of countries. The measure of inequality is the Gini coefficient, which varies from 0 (all households have the same income) to 100 (all income received by one household).

There is a pattern here: more inequality seems associated with less sustained growth. What are the possible channels through which income inequality affects growth sustainability?

- **Credit market imperfections.** Poor people may not have the means to finance their education. A more equal distribution of income could thus increase investment in human capital and hence growth. In the data used here, there is a negative correlation between some indicators of human capital (notably, secondary education achievement) and income distribution, even controlling for per capita income. This echoes the arguments in Wilkinson and Pickett (2009) that more unequal countries suffer from relatively poor social indicators.

Figure 2. Duration of Growth Spells and Inequality



Source: Penn World Tables and Wider World Income Inequality Database.

Note: This figure includes spells that end in-sample (completed spells) only, because the length of incomplete spells is unknown. For this figure, minimum spell length is five years.

- **Political economy.** In economically unequal countries, political power may be distributed in a more egalitarian fashion than economic power. Efforts to use this political power to effect redistribution, say, through the tax system, may create disincentives to investment and result in lower or less durable growth (Alesina and Rodrik, 1994). Meanwhile, efforts by economic elites to resist this redistribution, for example, through vote buying and other corrupt behavior, itself could be distortionary and wasteful and thus also detrimental to growth (Barro, 2000).
- **Political instability.** Income inequality may increase the risk of political instability, and the resulting uncertainty could reduce incentives to invest and hence impair growth. Rodrik (1999) argues that inequality and political instability may hamper countries' effectiveness in responding to external shocks. Similarly, Berg and Sachs (1988) find that unequal societies tended to experience relatively severe debt crises in the 1980s. IILS (2010) highlights links between unemployment and social unrest.

Against the background of these mechanisms, the question is whether the data lend support to the notion that societies with more equal income distributions have more durable growth.

Many Hazards to Growth

Many factors are likely to play a role in the duration of growth spells. In this section, the relationship between duration and inequality—and other key potential determinants—is examined more systematically. It goes almost without saying, given the nature of statistical relationships, that what follows should be interpreted as highlighting associations rather than causation, suggesting tentative stylized facts that seem to emerge from the data.

The approach here borrows from the medical literature that aims to gauge, for example, how long someone might be expected to live conditional on certain factors, for example, whether the person is a smoker, his or her weight, gender, and age (time “in the spell”). In our context, the probability that a growth spell will end depends on its current length and various “hazards” to growth. The analysis distinguishes between conditions at the onset of a growth spell and changes during the course of it. The latter are most interesting for the question of what policies might be able to extend the life of an ongoing spell.³

Unfortunately, there are not nearly enough data to test all the main growth theories—and hence candidate variables—at once. There are simply too few spells and too many candidates to disentangle everything. So the strategy is to look at possible determinants of duration one at a time and then try to synthesize the findings. The variable-by-variable analysis suggests the following are correlated with longer growth spells:⁴

- *Better political institutions.* Many have argued that political institutions that constrain the executive and secure political accountability help to sustain growth. We also find that several measures of better political institutions are correlated with longer spells.
- *Increases in education, health, and physical infrastructure.* One strong effect is of within-spell improvements in primary education. In addition, both the initial level and increases in child mortality reduce the expected duration of a spell, though with mixed significance and magnitude.
- *Financial development.* In line with conventional wisdom, increases in the ratio of bank deposits to GDP during the spell seem to have a protective effect.

³Many of the spells have not ended and their eventual length is unknown. However, the statistical techniques used in this section take these incomplete spells into account. If some factor is common to long incomplete spells but absent in short complete spells, a protective effect on duration can be identified.

⁴ Even these “bivariate” estimations include initial income, in addition to the variable of interest, to avoid misattributing to another variable the effects of underdevelopment itself, with which that variable might be correlated. It turns out that low initial income is independently a significant predictor of longer spells. The estimations can also shed some light on whether the length of the spell itself is a risk factor, which it appears to be (the hazard is increasing in the time spent in the spell), even after including the other potential determinants.

- *Trade liberalization.* There is a significant and large effect of trade liberalization, consistent with the notion that mechanisms such as increased market size, promotion of competition, and transmission of know-how may link trade openness and growth and make growth more durable.
- *International financial integration,* depending on the nature of the capital flow. Foreign direct investment (FDI) seems to help duration, whereas growth of external debt seems to hurt (consistent with the findings in Dell’Ariccia et al., 2008).
- *Competitiveness and export structure.* Avoidance of exchange rate overvaluation, high shares of manufacturing exports in total exports, and various measures of the “sophistication” of export structures (Hausmann, Rodriguez, and Wagner, 2006; Hausmann, Hwang, and Rodrik, 2007) are all correlated with longer growth spells.
- *Macroeconomic volatility.* Increasing rates of currency depreciation and inflation both reduce the expected length of spells.
- *External shocks.* Reductions in the terms of trade and increases in U.S. interest rates, in particular, are associated with shorter spells.
- *Inequality.* There is indeed a large and statistically significant association between low income inequality and growth duration. Inequality is among the variables with the economically strongest effect on predicted spell duration. It is also among the most robust variables, in that it remains statistically significant across samples.

Overall, the results of the analysis have the flavor of some interpretations of the East Asian “miracle”: growth is most enduring in countries that maintain outward orientation, have inward FDI but perhaps not much external debt or deficits, maintain macro stability, and have relatively equal income distribution. Given this, it is worth noting that overall results hold up even when Asia is excluded from the sample.

Putting the Hazards Together

So far, we have looked one by one at the possible factors influencing the duration of growth spells. It is possible that many of the identified determinants of spell duration are themselves correlated with one another. For example, perhaps inequality is only indirectly capturing the effects of poor institutions, poor health or education, or other factors that might be the true drivers of growth duration.

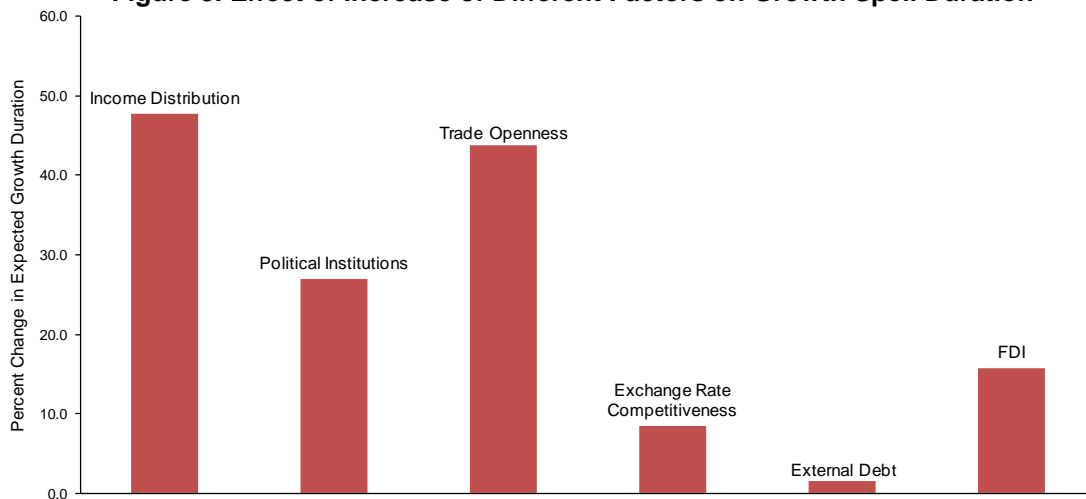
To address this possibility, we now examine the joint effect of the above factors. Many potential determinants of duration remain important in this multivariate analysis, though their statistical and economic significance varies substantially depending on the exact sample, whether or not other potentially important variables are also included, and so on. Several variables are significant in at least some samples and specifications.

Figure 3 presents the results from the preferred multivariate specification in Berg, Ostry, and Zettelmeyer (2008). To give a feeling for the importance of each variable, the figure reports the increase in expected spell duration for a given increase in the variable in question,

keeping other factors constant. Doing so requires first calculating expected duration when all variables are at the median for the sample (the 50th percentile). The expected duration is then recalculated when the variable in question improves by 10 percentiles.⁵ The main results are as follows:

- *Better political institutions*—measured by “autocracy” according to the Polity IV database—are correlated with longer spells: a reduction in autocracy from a rating of 1 (which corresponds to the sample median) to 0 on the 10-point scale is associated with a 25 percent longer spell.
- *Liberalized trade*—measured with the Wacziarg and Welch (2008) dichotomous variable that takes a value of 1 when trade has been liberalized and 0 otherwise—is associated with a 45 percent longer spell.
- *A smaller real exchange rate overvaluation* is associated with more durable growth. A decrease in overvaluation by 10 percentage points of the real exchange rate—measured as a deviation from purchasing power parity, after adjusting for per capita income—is associated with an 8 percent increase in expected spell length.

Figure 3. Effect of Increase of Different Factors on Growth Spell Duration



Sources: Berg, Ostry, and Zettelmeyer (2008) and authors' calculations.

Note: For each variable, the height of the figure shows the percentage increase in spell duration resulting from an increase in that variable from the 50th to the 60th percentile, with other variables at the 50th percentile. For trade, the figure shows the benefits of having an open instead of a closed regime, using the Wacziarg and Welch (2008) dichotomous variable. For autocracy, the figure shows the effects of a move from a rating of 1 (the 50th percentile) to 0 (the 73rd percentile.)

- *The effects of financial globalization* again depend on the nature of the capital flow. Higher FDI inflows are associated with longer spells, with an increase from 8 to 12 percent of GDP in FDI liabilities associated with an expected spell duration that is 15 percent longer. Lower external debt is associated with longer spells; a decrease

⁵ To take the Gini as an example, the median in the sample is 40. A 10-percentile improvement takes the Gini to 37, which represents more equality than 60 percent of the Gini observations in the sample.

from 44 to 39 percent in the ratio of external debt to GDP suggests an increase in the duration of the growth spell of about 2 percent.

A number of other variables that work one by one do not remain significant in the joint analysis. This may reflect the difficulty in identifying many different effects in a limited sample of spells, but possibly also that they are—at least in part—not independent drivers of duration but rather manifestations of the underlying forces captured by some of the above variables.⁶

Inequality: A Significant Hazard to Growth Sustainability

The key result from the joint analysis is that income distribution survives as one of the most robust and important factors associated with growth duration. As Figure 3 demonstrates, a 10-percentile decrease in inequality—the sort of improvement that a number of countries have experienced during their spells—increases the expected length of a growth spell by 50 percent. Remarkably, inequality retains a similar statistical and economic significance in the joint analysis despite the inclusion of many more possible determinants. This suggests that inequality seems to matter in itself and is not just proxying for other factors. Inequality also preserves its significance more systematically across different samples and definitions of growth spells than the other variables. Inequality is thus a more robust predictor of growth duration than many variables widely understood to be central to growth.

The estimates of the effects of inequality mainly rely on cross-country variation, because generally inequality is fairly stable through time for a given country. But sometimes income distribution does change dramatically, as in the United States, China, and a number of developing countries over the past few decades. And the estimates suggest that such changes may have significant effects on expected growth duration. To take one example, Brazil has complemented market-oriented reforms with progressive social policies aimed directly at poverty reduction (Ravallion, 2009). The multivariate estimates would suggest that the resulting decline in Brazil's Gini would, other things equal, increase the expected length of a growth spell by some 40 percent.

Income distribution is only one measure of social heterogeneity. Several authors have argued that ethnic or religious fractionalization plays a similar role to inequality in making a country more vulnerable to shocks or more unstable.⁷ Anecdotally, there are clearly times when ethnic fractionalization seems to be associated with political and economic instability. And it seems plausible that ethnic and other sorts of fractionalization are correlated with and indeed interact with income distribution in complex ways. We find some evidence to support the

⁶ Lack of significance of manufactured exports may reflect the notion that these operate mainly by creating stronger institutions and reform constituencies, as suggested by Johnson, Ostry, and Subramanian (2007). Macro stability variables are also not terribly robust, possibly reflecting the idea that inflation reflects deep distributional conflicts (Taylor, 1991).

⁷ Easterly and Levine (1997), for example, attribute differences in a number of important public policy and economic indicators such as low schooling, political instability, and macroeconomic mismanagement to high ethnic fractionalization. However, they do not also control for income distribution.

idea that higher ethnic fractionalization is associated with shorter growth spells, but the effect varies substantially across samples and is often not statistically significant. For growth spells, at least, the evidence seems firmer on the importance of income inequality.

Do these statistical results find a voice in the political and economic narratives of the growth spell events in question? Box 1 takes a look at this issue for a number of countries and concludes with a tentative “yes”: the tenor of the results—and the particular role of inequality as a key factor associated with the end of growth spells—seems also to be consistent with the analyses of commentators who have looked at these cases in detail.

Box 1. Is It Really Income Distribution? A Closer Look at Country Cases

How do the statistical findings in the text relate to the actual political and economic events surrounding the ends of growth spells? Specifically, where the model predicts a high likelihood that the spell will end, *does the narrative highlight the income distribution channels suggested by the empirics?* The answer is indeed a tentative “yes.”

Consider the 11 complete spells in the main sample. For all, the predicted risk that the spell will end during the last five years of the spell is several multiples higher than for an average country in the sample. What was going on in these cases? Although space limitations prevent us from going into all the details, the table below gives some data for the period corresponding to the end of spells in six cases with the highest predicted hazard.

Table 3. The Ends of Six Spells

| Country | Spell dates | Growth in real per capita GDP | | Hazard ratio | Main contributing factors (Share of total hazard) | | | | |
|-----------|-------------|-------------------------------|-------------|--------------|--|----------------|-------------------------|----------------|----------------|
| | | During spell | Next decade | | Inequality | Low FDI Inflow | Increased external debt | More autocracy | Over-valuation |
| Cameroon | 1978–85 | 6.6 | -5.6 | 109 | 0.49 | 0.33 | -0.05 | 0.33 | 0.09 |
| Colombia | 1967–78 | 3.4 | 1.2 | 66 | 0.73 | 0.46 | -0.06 | -0.23 | -0.03 |
| Guatemala | 1958–79 | 2.4 | -1.3 | 56 | 0.39 | 0.38 | -0.07 | 0.13 | -0.02 |
| Ecuador | 1971–78 | 7.2 | -1.0 | 47 | 1.05 | 0.34 | -0.05 | 0.17 | -0.13 |
| Panama | 1959–80 | 4.7 | 0.0 | 42 | 0.44 | -0.61 | 0.62 | 0.28 | 0.06 |
| Nigeria | 1968–76 | 5.9 | -4.0 | 29 | 0.27 | 0.41 | -0.08 | 0.39 | 0.47 |

Note: The hazard ratio is the ratio of the predicted probability that the spell would end during the five years prior to its actual end to the predicted probability of a spell ending for the average observation in the entire sample. Thus, a hazard ratio of one implies no unusual risk that the spell will end. The factors contributing to the hazard ratio are based on Model 1 of Table 12 of Berg, Ostry, and Zettelmeyer (2008), with the contributions rescaled so that they sum to one. Shown here are only the main factors for these particular observations.

- Colombia** experienced a spell end in 1978. The spark was a crackdown on drug cartels, beginning a long civil conflict. According to Cárdenas (2007, p. 225), the massive change in Colombia’s growth trajectory over two decades was related to “a fortuitous event that interacted with . . . high levels of inequality and poverty and the weak presence of the state.” The baseline multifactor model predicts that Colombia’s growth spell was indeed fragile—with a risk of ending 66 times higher than the average over all the spells in our sample. This higher risk can be decomposed into the various determinants included in the duration regression presented in Figure 3. Colombia’s high Gini (53 vs. the sample average of 38) accounts for most of the higher risk.

Box 1. Is It Really Income Distribution? A Closer Look at Country Cases (cont.)

- Guatemala** was in a state of civil war from 1960 until 1996. During these 36 years, thousands were executed, several coups took place, and civil liberties were denied. The war peaked in 1979, coincident with the end of the growth spell. In the words of Thorp, Caumartin, and Gray-Molina (2006, p. 462): “By the late 1970s, Guatemala had entered a stage of polarisation and radicalization of social organisations (trade unions, peasant organisations). In the face of increasing state repression, many CUC [Comité de Unidad Campesina, or Peasant Unity Committee] or trade unions members opted to join the guerrilla.” Carbonnier (2002, p. 1336) further notes that “peace or political conditionality induces the government to adopt lax economic policy in order to muster . . . political support to stay in power. . . . [But] economic conditionality often means political turmoil and civil unrest. . . . For instance, attempts to cut subsidy and raise transportation prices repeatedly spurred violent clashes in the streets of Guatemala City. . . . The [result] has often been an increase in repression coupled with the reintroduction of a subsidy.” The prediction of the multivariate model is that the risk of Guatemala’s spell ending was indeed about 55 times higher than that of the average country during 1974–79, with higher-than-average income inequality being one of the two factors (the other being FDI) driving the result.
- The end of spells in **Cameroon, Nigeria, and Ecuador** demonstrate how income distribution can interact with external shocks. Lewis (2007, p. 11) notes that for Nigeria, highly volatile politics, social incohesion, and external shocks drove bursts of economic volatility: “In Nigeria, ethnic and regional competition has hampered the formation of a stable growth coalition between the state and private producers. Political elites have turned instead to populist strategies and diffuse rent distribution among a fragmented and polarized business class. The populist option proved short-lived when oil revenues dwindled, while the residual rentier alliances were unstable, resulting in economic stagnation and disarray.” In Cameroon and Ecuador, oil wealth in the 1970s initially financed large increases in the public sector, particularly in the wage bill, which proved very difficult to cut when oil prices fell. “Although these measures [to cut government spending] were necessary to rescue the country from further economic crisis, they were very unpopular because they least affected the political elite and those in the upper echelon of government, whose privileges remained intact” (Mbaku and Takougang, 2003; see also Jácome, Larrea, and Vos, 1998, and Aerts et al., 2000). In all three countries, the model’s hazard ratio was very high (ranging from more than 100 times higher than normal for Cameroon to 29 times higher for Nigeria). In all three countries high inequality and autocracy levels, and low levels of FDI, played important roles according to the regression.
- The model attributes the (high) risk of **Panama**’s spell ending mainly to rising external debt, along with inequality. Indeed, Panama’s military dictatorship preserved power through the 1970s increasingly by borrowing externally to support transfers to government workers (Ropp, 1992). The global crisis of the early 1980s thus hit Panama hard. This pattern is consistent with the argument in Berg and Sachs (1988) that countries that suffered most from the debt crisis of the 1980s may have been those that used (unsustainable) foreign borrowing to bridge societal conflict.

The variety and complexity of the channels are evident in these examples. Crime, for example, seems key in Colombia but not in other cases. The timing of crises seems to reflect an interaction of underlying vulnerabilities, including income distribution, and shocks (such as a rise in the attractiveness of illegal drug production in Colombia and oil elsewhere). The narratives show the complexity of the debt/inequality/downbreak nexus, particularly with respect to timing. In Panama, debt grew prior to the crisis and thus shows up as a factor in the hazard regressions. In some of the oil exporters, debt grew mainly after the end of the spell, as an initial—and ultimately unsustainable—response to negative commodity shocks, thus helping to convert a shock into a sustained downturn. Clearly, ethnic fractionalization plays a role in some cases too. The regressions suggest that inequality is an underlying feature that makes it more likely that a number of these factors come together to bring a growth spell to an end.

IV. SOME TENTATIVE POLICY IMPLICATIONS

The main results in this note are that (i) increasing the length of growth spells, rather than just getting growth going, is critical to achieving income gains over the long term; and (ii) countries with more equal income distributions tend to have significantly longer growth spells. Attention to inequality may be warranted for social reasons, independently of its effects on growth (Wilkinson and Pickett, 2009). The evidence presented here suggests, however, that it is difficult to separate the issues of growth and distribution over long horizons. Rather, growth and inequality-reducing policies are likely to reinforce one another and help to establish the foundations for a sustainable expansion.

It is nonetheless necessary to be cautious about what specific sorts of policies can be recommended based on the evidence presented here. This note has uncovered some patterns in the growth spell data. But income distribution is only a part of the story—there are clearly many other variables involved and much about growth spells that remains unexplained. Also, it is hard to separate cause from effect. And of course policies affect growth directly as well as through income distribution. It is important to think through some of these complications before drawing specific policy conclusions.

Inequality is partly the outcome of market forces (Welch, 1999), but this does not suffice to justify policy inaction. In general, if increasing inequality were somehow a natural counterpart to the development of a market economy, then one would expect richer countries to be more unequal, but they are not—if anything the reverse is true. Rather, much of the vast cross-country and time-series variation in income inequality cannot be rationalized as an efficient market outcome. Some, for example, seems to be related to historical landholding patterns. These patterns—notably the prevalence of plantation versus smallholding agriculture—have little to do with current economic realities, but they seem to have set in motion human capital accumulation paths and societal organizations that continue to drive income distribution in the present day. Consistent with the evidence presented in this note, countries with more of this sort of “structural” inequality tend to grow more slowly (Easterly, 2007).

It would clearly be taking these results too far to conclude that an all-out effort to reduce inequality is the key to sustaining growth. Sometimes the positive direct effect of certain policies on growth may outweigh their negative effects on income distribution. For example, the initial reforms that ignited growth in China involved giving stronger incentives to farmers. Overall, this increased the income of the poor and reduced overall inequality as it gave a tremendous spur to growth. However, it probably led to some increased interfarmer inequality, and efforts to somehow resist this component of inequality would likely have been counterproductive (Chaudhuri and Ravallion, 2006).

There is nonetheless surely policy scope to improve income distribution without undermining incentives—perhaps even improving them—and thereby contribute to lengthening the duration of growth spells.

- Better targeting of subsidies can be a win-win proposition, as with the reallocation of fiscal resources towards subsidies of goods that are consumed mainly by the poor,

which can free up capacity to finance public infrastructure investment while better protecting the poor (Coady et al., 2010).

- Active labor market policies to foster job-rich recoveries (ILO, 2011) may help to make recoveries more sustainable, especially as rising unemployment appears to be associated with deteriorations in the income distribution (Heathcote, Perri, and Violante, 2010).
- Equality of opportunity can make for both more equal and more efficient outcomes (World Bank, 2005). For example, effective investments in health and education—human capital—may be able to square the circle of promoting durable growth and equity while avoiding shorter-run disincentive effects (Gupta et al., 1999). Such investments could strengthen the labor force’s capacity to cope with new technologies (which may have contributed to more inequality in a number of cases), and thereby not only reduce inequality but also help sustain growth. They could also help countries address possible adverse distributional consequences of globalization and reinforce its growth benefits.
- Some countries have managed through pro-poor policies to markedly reduce income inequality. Brazil, for example, after its market-oriented reforms of 1994 implemented active pro-poor distributional policies, notably, social assistance spending, that were critical to substantial reductions in poverty (Ravallion, 2009).
- Well-designed progressive taxation and adequate bargaining power for labor can also be important in promoting equity, though with due attention to the need to avoid dual labor markets that perpetuate divisions between insiders and outsiders.

Beyond policy implications at the country level, there are also some lessons here for international institutions such as the IMF.

- Attention to distribution is important simply to understand risks to growth at the country level. Substantial attention has been placed on countries’ vulnerability to crisis over near-term horizons. But crises and growth downbreaks are not tightly correlated. This may reflect partly the fact that the link between downbreaks and the timing of crises is not immediate, with growth spells in many cases tending to end several years before a full-blown macro crisis. Some of the developing-country debt crises of the 1980s and 1990s may have resulted from borrowing that was premised—falsely as it turned out—on the continuation of high growth. Based on current IMF *World Economic Outlook* forecasts, there were in fact no downbreaks in 2008-2009, suggesting that the global financial crisis will not end ongoing growth spells. But given that the end of a spell can only be identified confidently several years after it has occurred, clearly this must be taken with a grain of salt.
- Second, the efficacy of some standard policy recommendations may depend on forces related to distributional issues. It may be simultaneously true that inadequate regulation lay behind the financial crisis in the United States and that increasing inequality underlay the pressures on lenders and borrowers to overleverage. Better

analysis of macroeconomic and financial sector linkages, and thus more appropriate regulation, can surely help. But such analysis cannot ignore the larger context of rising inequality if it is to yield useful policy advice.

The policy conclusions of this note hark back to an earlier emphasis on poverty and inequality. The 1980s debt crises and the resulting difficult period of structural adjustment programs brought home the fact that sustainability of adjustment was possible only when the benefits were widely shared. As a result, substantial attention was focused on how to achieve adjustment and growth with equity. Many analyzed the relationship between fiscal and other macroeconomic policies and equity. IMF lending facilities were redesigned, culminating in the conversion of the Fund's flagship facility for low-income countries from the Enhanced Structural Adjustment Facility into the Poverty Reduction and Growth Facility.

After many years of strong global growth, some of these lessons may have been forgotten. In the face of the current global economic turmoil and the need for difficult adjustment in many countries, it would be useful if these lessons could be remembered rather than relearned. It will remain the case that the policy considerations on the ground are complex. The main contribution of this note may be to push slightly the balance of considerations towards the view that attention to inequality may serve both equity and growth at the same time.

References

- Aerts, J.-J., D. Cogneau, J. Herrera, G. de Monchy, and F. Roubaud, 2000, *L'économie camerounaise: Un espoir évanoui* (Paris: Karthala).
- Alesina, A., and D. Rodrik, 1994, "Distributive Politics and Economic Growth," *Quarterly Journal of Economics*, Vol. 109, No. 2, pp. 465–90.
- Banerjee, A. V., and E. Duflo, 2003, "Inequality and Growth: What Can the Data Say?" *Journal of Economic Growth*, Vol. 8, No. 3, pp.267–99.
- Barro, R. J., 2000, "Inequality and Growth in a Panel of Countries," *Journal of Economic Growth*, Vol. 5, No. 1, pp. 5–32.
- Berg, A., J. D. Ostry, and J. Zettelmeyer, 2008, "What Makes Growth Sustained?" IMF Working Paper 08/59 (Washington: International Monetary Fund).
- Berg, A., and J. Sachs, 1988, "The Debt Crisis: Structural Explanations of Country Performance," *Journal of Development Economics*, Vol. 29, No. 3, pp. 271–306.
- Carbonnier, G., 2002, "The Agendas of Economic Reform and Peace Process: A Politico-Economic Model Applied to Guatemala," *World Development*, Vol. 30, pp. 1323–39.
- Cárdenas, M., 2007, "Economic Growth in Colombia: A Reversal of 'Fortune'?" *Ensayos Sobre Política Económica*, Vol. 25, No. 53, pp. 220–59.
- Chaudhuri, S., and M. Ravallion, 2006, "Partially Awakened Giants: Uneven Growth in China and India" in *Dancing with Giants: China, India and the Global Economy*, ed. by L. A. Winters and S. Yusuf (Washington: World Bank).
- Coady, D., R. Gillingham, R. Ossowski, J. Piotrowski, S. Tareq, and J. Tyson, 2010, "Petroleum Product Subsidies," IMF Staff Position Note 10/05 (Washington: International Monetary Fund).
- Deininger, K., and L. Squire, 1998, "New Ways of Looking at Old Issues: Inequality and Growth," *Journal of Development Economics*, Vol. 57, No. 2, pp. 259–87.
- Dell'Araccia, G., J. di Giovanni, A. Faria, M. A. Kose, P. Mauro, M. Schindler, M. Terrones, and J. D. Ostry, 2008, *Reaping the Benefits of Financial Globalization*, IMF Occasional Paper No. 264 (Washington: International Monetary Fund).
- Dollar, D., and A. Kraay, 2002, "Growth Is Good for the Poor," *Journal of Economic Growth*, Vol. 7, No. 3, pp. 195–225.
- Easterly, W., 2007, "Inequality Does Cause Underdevelopment: Insights from a New Instrument," *Journal of Development Economics*, Vol. 84, No. 2, pp. 755–76.
- Easterly, W., and R. Levine, 1997, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics*, Vol. 112, No. 4, pp. 1203–50.
- Forbes, K. J., 2000, "A Reassessment of the Relationship between Inequality and Growth," *American Economic Review*, Vol. 90, No. 4, pp. 869–87.
- Gupta, S., B. Clements, R. Gillingham, C. Schiller, M. Verhoeven, R. Alonso-Terme, and A. Mourmouras, 1999, "Should Equity Be A Goal of Economic Policy?" *Economic Issues* No. 16 (Washington: International Monetary Fund).
- Hausmann, R., J. Hwang, and D. Rodrik, 2007, "What You Export Matters," *Journal of Economic Growth*, Vol. 12, No. 1, pp. 1–25.
- Hausmann, R., L. Pritchett, and D. Rodrik, 2005, "Growth Accelerations," *Journal of Economic Growth*, Vol. 10, No. 4, pp. 303–29.

- Hausmann, R., F. Rodriguez, and R. Wagner, 2006, "Growth Collapses," Working Paper No. 136, Center for International Development, Kennedy School of Government (Cambridge, Massachusetts: Harvard University).
- Heathcote, J., F. Perri, and G. Violante, 2010, "Unequal We stand: An Empirical Analysis of Economic Inequality in the United States, 1967–2006," *Review of Economic Dynamics*, Vol. 13, pp. 15–51.
- International Institute for Labour Studies (IILS) 2010, *World of Work Report* (Geneva: International Labour Organization).
- International Labour Organization (ILO), 2011, *Global Employment Trends 2011* (Geneva).
- Jácome, L., C. Larrea, and R. Vos, 1998, "Políticas macroeconómicas, distribución y pobreza en el Ecuador," in *Política macroeconómica y pobreza en América Latina y el Caribe*, ed. by E. Ganuza, L. Taylor, and S. Morley (Madrid: Mundi-Prensa).
- Johnson, S., J. D. Ostry, and A. Subramanian, 2007, "The Prospects for Sustained Growth in Africa," IMF Working Paper No. 07/52 (Washington: International Monetary Fund).
- Kumhof, M., and R. Rancière, 2010, "Inequality, Leverage and Crises," IMF Working Paper 10/268 (Washington: International Monetary Fund).
- Lewis, P., 2007, *Growing Apart: Oil, Politics, and Economic Change in Indonesia and Nigeria* (Ann Arbor: University of Michigan Press).
- Mbaku, J. M., and J. Takougang, eds., 2003, *The Leadership Challenge in Africa: Cameroon under Paul Biya* (Trenton, New Jersey: Africa World Press).
- Piketty, T., and E. Saez, 2003, "Income Inequality in the United States, 1913–1998," *Quarterly Journal of Economics*, Vol. 118, No. 1, pp. 1–39.
- Pritchett, L., 2000, "Understanding Patterns of Economic Growth," *World Bank Economic Review*, Vol. 14, No. 2, pp. 221–50.
- Rajan, R., 2010, *Fault Lines: How Hidden Fractures Still Threaten the World Economy* (Princeton: Princeton University Press).
- Ravallion, M., 2009, "A Comparative Perspective on Poverty Reduction in Brazil, India and China," Policy Research Paper No. 5080 (Washington: World Bank).
- Rodrik, D., 1999, "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses," *Journal of Economic Growth*, Vol. 4, No. 4, pp. 385–412.
- Ropp, S. C., 1992, "Explaining the Long-Term Maintenance of a Military Regime: Panama before the U.S. Invasion," *World Politics*, Vol. 44, No. 2, pp. 210–34.
- Taylor, L., 1991, *Income Distribution, Inflation, and Growth: Lectures on Structuralist Macroeconomic Theory* (Cambridge, Massachusetts: MIT Press).
- Thorp, R., C. Caumartin, and G. Gray-Molina, 2006, "Inequality, Ethnicity, Political Mobilisation and Political Violence in Latin America: The Cases of Bolivia, Guatemala and Peru," *Bulletin of Latin American Research*, Vol. 25, pp. 453–80.
- Wacziarg, R., and K. H. Welch, 2008, "Trade Liberalization and Growth: New Evidence," *World Bank Economic Review*, Vol. 22, No. 2, pp. 187–231.
- Welch, F., 1999, "In Defense of Inequality," *American Economic Review*, 89, pp. 1–17.
- Wilkinson, R. and K. Pickett, 2009, *The Spirit Level: Why Greater Equality Makes Societies Stronger* (New York: Bloomsbury Press).
- World Bank, 2005, *World Development Report 2006: Equity and Development* (Washington).