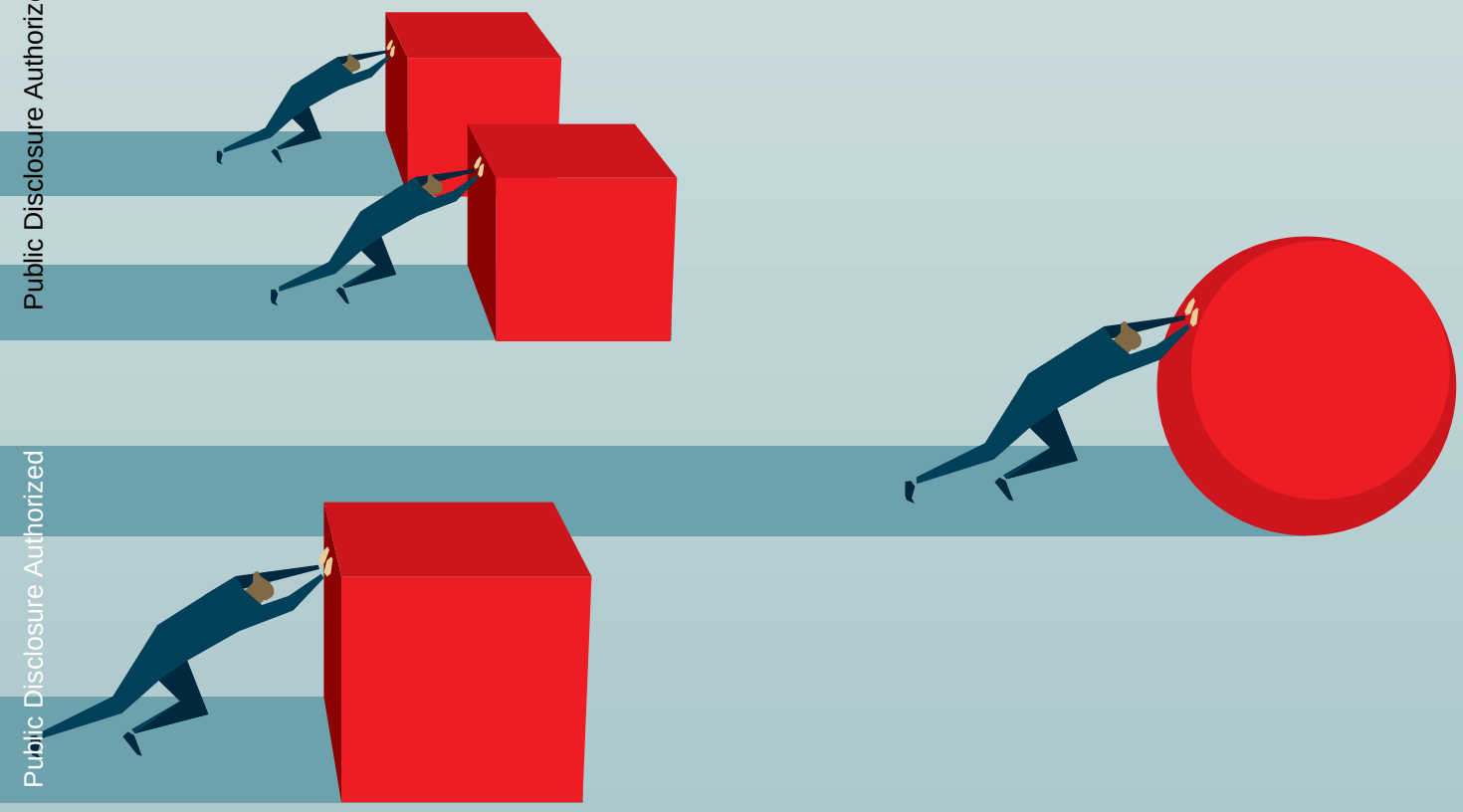
Report No. 91015-LAC

BEYOND COMMODITIES

The Growth Challenge of Latin America and the Caribbean



By Jorge Thompson Araujo, Markus Brueckner, Mateo Clavijo,
Ekaterina Vostroknutova, and Konstantin M. Wacker

WORLD BANK GROUP

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EXECUTIVE SUMMARY

The Latin America and the Caribbean region (LAC) has seen a "decade of convergence". During the last decade, LAC countries have exhibited high growth rates and recovered quickly after the global financial crisis. The region benefited from favorable external conditions, in particular high commodity prices, and relatively loose financial conditions, especially in the United States. LAC had considerably lost ground vis-à-vis US income levels from 1980 until the early 2000s, but has converged somewhat to the US level since. Growth in LAC was thus not only higher in this period than before but also higher than in the United States (and many advanced economies), hence constituting a 'decade of convergence'.

The recent growth performance in LAC has also been especially pro-poor. Not only the overall pattern of growth has changed in LAC – by and large growth was also more favorable to the bottom 40 percent. In fact, incomes of the bottom 40 percent were growing faster than average income in LAC countries over this period and that growth seems to have become more pro-poor in the post-2000 period.

Understanding the factors underlying LAC's growth performance is critical for policy design going forward. Facing future demographic challenges and a likely "new normal" environment ahead, where the commodity-super-cycle has come to an end and external financing conditions turn less favorable, it is important to understand the factors that drove growth in LAC in the recent period. Was LAC significantly different from other regions? Did the determinants of growth in LAC change significantly over the last decade? What role did external conditions play in this context?

This study reassesses LAC's engines of growth in light of new data and information. The external conditions and policy decisions in the 2000s to a large extent favored the region. However, the region's "good luck", in terms of favorable external conditions, seems to be running out and the determinants of growth that are policy-influenced will play a bigger role if the region wants to avoid losing its growth momentum. This study draws on and extends the literature on cross-country regressions as the main empirical strategy to identify the determinants of growth. More specifically, it builds on the econometric approach of Loayza *et al* (2005), with some important extensions. Using dynamic panel data regressions, this approach investigates how aggregate economic, political and social variables affect per capita GDP growth rates for a large sample of countries. On the other hand, to distinguish the impact of policy reforms from the commodity boom of the past decade, this study uses a country-specific commodity export price index, which captures commodity windfalls arising from booms in the international commodity prices.

A main finding of the study is that drivers of growth in LAC have shifted over the last decade. Compared to previous studies on the subject (e.g. Loayza et al., 2005), this study finds less evidence of the role of stabilization-related variables for growth in LAC. This potentially reflects that most LAC countries have already brought their macroeconomic house in order throughout the 1990s, which facilitated reaping benefits from other sources of growth in the period thereafter but did not constitute a means of growth by itself anymore. Conversely, structural features continued to play a key role for growth. But for many LAC countries, most notably net commodity exporters, external conditions were an essential driver of growth over the last decade. This broad pattern suggests that some sources of growth can shift over time. External conditions might change in the future and are mostly beyond the

regions control. Structural features are easier to shape and have turned out as a robust determinant of growth.

Within LAC, however, there is a great deal of heterogeneity across countries and of in-country changes over time. Regarding the former, the contrast between e.g. Panama and Haiti in terms of growth performance is noteworthy. Regarding the latter, Chile's example is instructive: While Chile's growth was mostly explained by structural reforms by Loayza et al (2005), the most important factor in explaining its recent growth performance seems now to be external conditions. This does not mean that Chile's structural reform process stagnated or reversed, but only that its contribution to growth became less relevant than that of external conditions. Combined with a more widespread adoption of structural reform initiatives across the region, the commodity boom also facilitated the emergence of new "growth stars" in LAC. There is now a larger set of faster growing countries in LAC than at the time of Loayza et al (2005) due to both external conditions and structural reforms. Chile is now joined by countries such as Colombia, Panama, Peru and Dominican Republic as fast-growing LAC economies.

A benchmarking exercise carried out in this study sheds light on where the "biggest bang for the buck" could be for LAC countries without attempting to "ultimate" sources of growth. This exercise looks into the counterfactual per capita income a country would have achieved if it were a top performer for each explanatory variable. This helps determine the possible effects that a stellar performance (relative to the rest of LAC) in specific policy-sensitive areas might have had for a country's level of GDP per capita. Better performance in terms of stabilization-related features of the economy would have clearly benefited Venezuela, Ecuador and Argentina, while having a significantly lower impact elsewhere in the region. The counterfactual impact of improved structural features varies widely across the region, where the main would-be beneficiaries of improvements in various structural factors include Guatemala (education), Venezuela (financial development), and Nicaragua (infrastructure).

The empirical findings also provide a window into the potential growth-facilitating role for governments in the region. On the one hand, government consumption would have a negative impact on growth – after controlling for macroeconomic stability and structural features such as national security as well as law and order – to the extent that it represents a proxy for government *burden*, that is, by potentially implying distortions (e.g., high taxes) or inefficiencies (e.g., a bloated public bureaucracy), without generating clear social returns. On the other hand, education attainment and infrastructure services – which are at least partly funded by public sectors – would have a positive impact on growth. Therefore, *the composition of public spending matters for growth*: Its impact will only be positive if it helps support the accumulation of human capital (through education) or physical capital (through infrastructure). More broadly, governments can also facilitate growth by maintaining a stable and predictable policy environment, both at macro and microeconomic levels.

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ACKNOWLEDGEMENTS

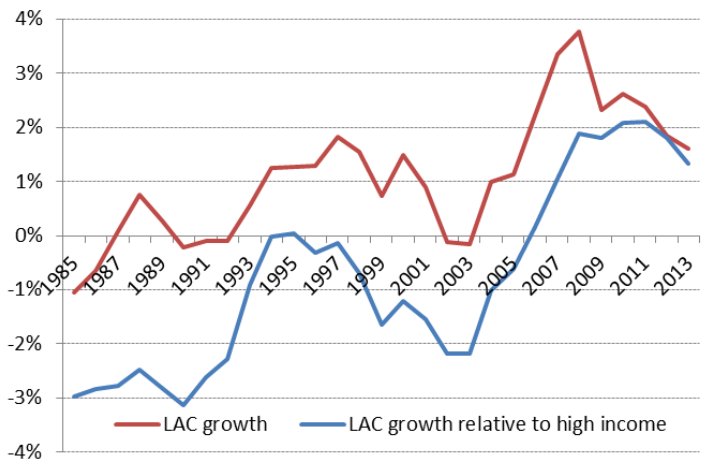
This report was co-authored by Jorge Thompson Araujo (Economic Adviser, LCRVP, and co-TTL), Ekaterina Vostroknutova (Sr. Economist, GMFDR), Konstantin Wacker (Economist, GMFDR), Markus Brueckner (Professor of Economics, National University, Singapore), and Mateo Clavijo (Ph.D. Candidate, Universitat Pompeo Fabra), as part of the Regional Studies Program of the Office of the Regional Chief Economist, Latin America and the Caribbean Vice-Presidency. The authors would like to thank Augusto de la Torre (Chief Economist, LCRCE), Auguste Kouame (Practice Manager, GMFDR) and Daniel Lederman (Deputy Chief Economist, LCRCE) for very effective guidance and support throughout, as well as the peer reviewers Pedro Cavalcanti Ferreira (Professor of Economics, Fundação Getúlio Vargas, Rio de Janeiro, Brazil), Gerardo Esquivel (Professor of Economics, Colégio de México), and César Calderón (Lead Economist, AFRCE) for the excellent comments provided during the concept and decision stages of preparation of this report. Very helpful comments from John Panzer (Director, GMFDR), Norman Loayza (Lead Economist, DECMG), Francesco Caselli (Professor of Economics, London School of Economics), and Jaime de Piniés (Consultant, LCRCE) are gratefully acknowledged. Thanks are also due to Matias Antonio (Junior Professional Associate, GMFDR) for revamping the benchmarking tool derived from the empirical analysis in this report, as well as to Miriam Villarroel (Program Assistant, GMFDR), Silvia Gulino (Program Assistant, GMFDR), and Diana Lachy (Program Assistant, GMFDR) for excellent assistance throughout the preparation of this report.

1. INTRODUCTION

Why this study?

The Latin America and Caribbean region has seen a decade of remarkable growth and income convergence. As Figure 1 illustrates, growth in the Latin America and Caribbean (LAC) region has picked up in the early 2000 and reached rates considerably above those in the earlier decades, notwithstanding the global financial crisis and subsequent economic depression. For the first time since the early 1980s, this has led to a sustained convergence to high income levels, i.e. a higher growth rate than in the high-income economies.

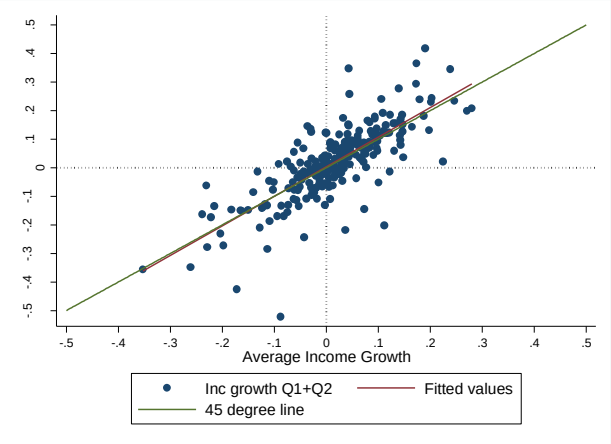
Figure 1: Growth in LAC over the decades



Source: WBG staff calculations based on WDI. Data are 5-year moving averages.

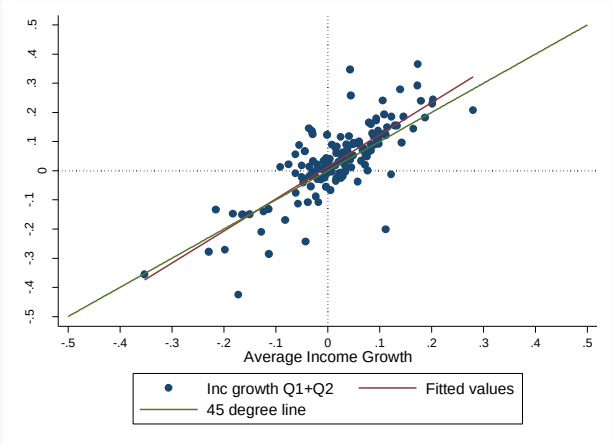
Growth has been a key driver for reducing poverty and boosting shared prosperity. As one can see from Figure 2, growth has been a key driver for reducing poverty and raising the income levels of low-income households across countries. The figure depicts the relationship between growth in average income (horizontal axis) and growth in income in the poorest two quintiles (the "bottom 40 percent" of each country, vertical axis) for LAC countries (using data since 1981). It shows that, on average, there is nearly a 1-to-1 relationship between income growth of the bottom 40 percent and the headline growth rate. Understanding and achieving sustained growth is thus essential for reaching the World Bank's Twin Goals of eradicating poverty and promoting shared prosperity in general. The latest growth episode in LAC might be of particular interest as Figure 3 suggests that the poverty-reducing effect of growth has increased since 2000.

Figure 2: Growth and incomes of the poor since 1981



Source: WBG staff calculation based on the Dollar et al. (2013) dataset. The figure includes all household surveys available in LAC countries since 1981.

Figure 3: Growth and incomes of the poor since 2000



Source: WBG staff calculation based on the Dollar et al. (2013) dataset. The figure includes all household surveys available in LAC countries since 2000.

It has been debated how much of this decade of growth has been driven by policy reforms and how much was due to the favorable external conditions. LAC's remarkable growth performance has taken place amid a largely supportive external environment. Commodity prices soared in the last decade, implying terms of trade improvements for the region's commodity exporters, and international borrowing costs were quite low, due to abundant international liquidity. Apart from the countries that have been relying heavily on US tourist arrivals, most LAC countries were relatively shielded from the financial crisis. Some commentators have thus argued that LAC's recent growth performance was mostly driven by external factors.[1] On the other hand, it is also true that many LAC countries have substantially improved their macroeconomic frameworks over the last two decades and pursued several structural reforms, ranging from improvements in infrastructure, social safety nets, and broad based education fostering human capital development which is expected to generate economic growth. With this study, we assess the relative magnitudes of those two broad effects for growth in LAC over the last decade.

Key results

While external factors were supportive and relevant, the effect of domestic policies was just as relevant for explaining LAC's recent growth performance. As our empirical analysis reveals, terms of trade and commodity price improvements have indeed contributed significantly to growth in the LAC region: they contributed about 5 percentage points to the income improvement over the decade from the late 1990s to the late 2000s. However, this effect is just as important as structural policies that improved, inter alia, human capital and infrastructure.

The emphasis of domestic policy has shifted from stabilization policies to structural policies. While stabilization policies (such as contained inflation) were supportive for these effects to

[1] See e.g. Perry (2014, p. 1): "But the recent slowdown has revealed what a number of analysts insisted on during that era: the boom was fundamentally driven by exogenous factors, first and foremost of which was the commodity prices super cycle that produced continuous increases in our [LAC's] terms of trade (except in 2009)."

materialize, a novel finding over previous analyses of economic growth in the region (e.g. Loayza et al., 2005) it that the growth effect of incremental improvements in this dimension over the last decade was limited. While it will be important to maintain macroeconomic stability in the future – especially in the context of a complex global macroeconomic environment – further structural reforms will be key to sustain growth and income convergence amid a fading commodity price boom.

There is heterogeneity across LAC countries in terms of key drivers of growth. While we find that the individual effects of growth determinants do not vary significantly over countries, they experienced different developments in those variables. For example, while commodity prices were supportive, several net commodity importers saw remarkable growth as well due to improvements in structural policies. This heterogeneity reflects the equally important relevance of external conditions and domestic policies.

In addition, a benchmarking exercise reveals which policy gaps will lead to the highest potential growth-payoffs for each country and helps identify potential trade-offs. We apply the results from our econometric growth exercise to existing gaps in key variables across LAC countries to estimate how these countries could most promisingly sustain growth into the future. For example, some countries could still see high growth effects from improving their macroeconomic stabilization frameworks, while for others — most notably in Central America — structural policy should be a policy priority.

Outline of the report

We analyze growth in LAC using descriptive statistics and growth econometrics. We start the report by highlighting some stylized facts about the recent growth experience in the region (section 2). In section 3 we present the econometric framework and data that underlies this report. This model uses panel data for more than 100 countries over the period 1970-2010 to identify which policies and factors have driven economic growth across countries. We focus on several aspects and outcomes of this model, instead of performing a collection of standard, but often superficial, tools to analyze growth.[2] For that matter, we perform a series of robustness checks that ensures our model works properly.

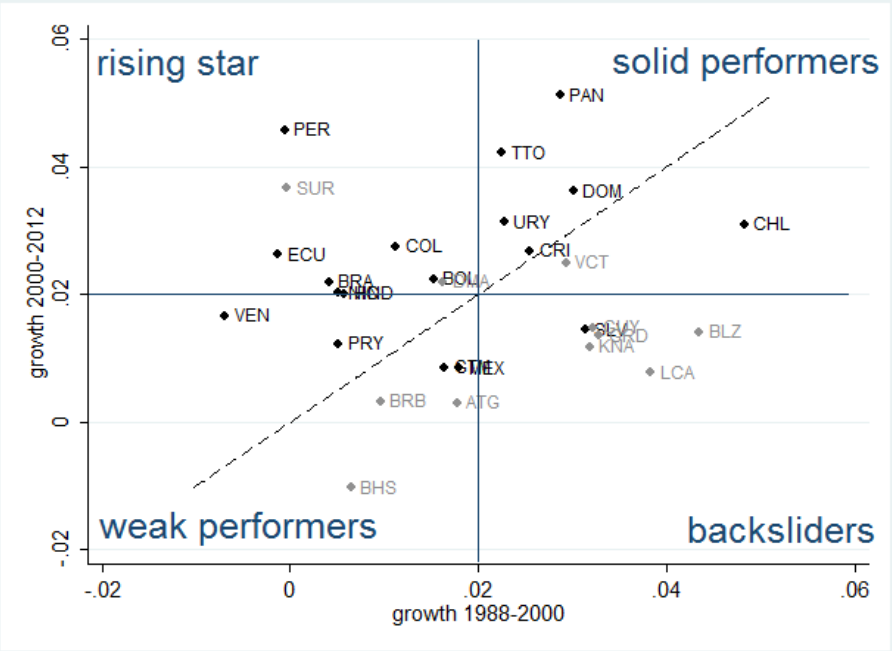
We use these results for explaining the pattern of growth in LAC over the last decade, for looking ahead, and to identify potential policy gaps. In sections 4 and 5, we discuss the roles of external and domestic policy factors, respectively, based on our econometric results. We then look how growth in the region could potentially look like, should past patterns of growth persist into the future (Section 7). A key contribution of our study in this regard is a benchmarking exercise that identifies the potential income effects when countries would close the gap to top-performers in terms of certain variables that are found to have an impact on growth and income.

[2] For example, we do not perform a growth accounting exercise which, inter alia, suffers from the problem that the capital stock cannot respond quickly to economic downturns. However, Caselli (2014) in a background paper to a companion report provides an in-depth development accounting exercise for the region. See Caselli, F. (2014) The Latin American Efficiency Gap. In Araujo, J., M. Clavijo, E. Vostroknutova, and K. Wacker, Eds. (forthcoming) Benchmarking the Determinants of Economic Growth in LAC Region. World Bank. LCR MFM. Washington DC. Forthcoming.

2. STYLIZED FACTS

Throughout the last decade, growth in LAC has generally picked up and growth patterns have shifted across countries. Figure 4 compares growth in LAC economies after 2000 (vertical axis) to growth over an equally-long period before 2000 (horizontal axis). One broad pattern that emerges from this figure and motivates further exploration is the shift of growth to the left of a 45-degree line for most LAC economies – especially large ones.[3] This implies that growth over the past-2000 period has been higher for many of these countries than before. It is interesting to observe that several new "growth stars" emerged – countries such as Peru, Colombia, and Panama moved way to the left of the 45-degree line. Other countries, such as Chile and Uruguay managed to maintain a solid growth performance of above 2 percent over both periods, while some smaller Caribbean and Central American economies did not manage to sustain a similar pace of growth over the last decade and fell back on this dimension. A final category of countries, including Venezuela, Paraguay, and Mexico, remains in the corner of poor growth performance, i.e. below 2 percent p.a. over both periods. This suggests that several factors hold these countries back from achieving higher growth. Countries like Brazil or Bolivia are also close to this quadrant. While they managed to improve their macroeconomic frameworks over the past decade, considerable shortcomings are potentially holding back their performance.

Figure 4: Growth since 2000 compared to the previous period



Source: WBG staff calculation and Haver Analytics. Figure depicts p.c. GDP PPP growth rates p.a.

Growth in the past is a poor indicator for recent growth performance. Another broad pattern emerging from Figure 4 is the small correlation pattern in the data – especially when taking smaller LAC economies into the picture. If growth was fully persistent over time or, equivalently, the factors

[3] We depict economies with a population below one million (as of 2000) in grey in Figure 4.

that drive growth would show no variation over time, this would imply that all countries lie on the depicted 45-degree line in Figure 4.[4] However, this is by far not the case: when considering all LAC countries in the sample, there is basically no correlation at all (correlation coefficient 0.009). If we exclude the smallest countries, the correlation gets somewhat larger (0.252). In neither case, however, regressing later growth on previous one leads to results that are statistically significant on the 10 percent level.[5] Former growth variation thus virtually explains nothing for later growth variation for the depicted sample of LAC economies and only 6 percent for larger LAC economies.[6] The increase in growth rates for most economies and the low correlation in growth rates over time raise the question of which factors influenced the variation in growth over time. Were external factors responsible for the observed developments, as many media and policy reports suggest? Or did institutional improvements foster growth? Did the economic relationship between determinants of growth and growth rates change? Or was there rather an evolvement in the variables explaining growth? These are some of the questions we are trying to address with this report.

The recent growth performance in LAC has been especially pro-poor. Not only the overall pattern of growth has changed in LAC – by and large growth was also more favorable to the bottom 40 percent. Figure 3 highlights that the positive relationship between growth and lower-decile income growth is steeper than a 45-degree line in LAC when focusing on the period after 2000, and thus also steeper than in Figure 2 (which takes into account a larger time horizon). This means that incomes of the bottom 40 percent were growing faster than average income in LAC countries over this period and that growth seems to have become more pro-poor in the post-2000 period, as already pointed out by Dollar et al. (2013) and consistent with Azevedo et al. (2013: tables 7-8) who emphasize the role of employment creation as a main factor for poverty reduction in LAC countries.

Understanding the factors underlying these developments is critical for policy going forward. Facing future demographic challenges and a likely "new normal" environment ahead, where the commodity-super-cycle has come to an end and external financing conditions turn less favorable, it is important to understand the factors that drove growth in LAC in the recent period. Was LAC significantly different from other regions? Did the determinants of growth in LAC change significantly over the last decade? What role did external conditions play in this context?

New data and refined methods allow improving upon earlier studies on growth in LAC. The last endeavor to systematically study the drivers of growth in LAC in a comprehensive econometric framework dates back to Loayza et al. (2005). [7] Since then, more data has become available which allows us to include a decade-worth of new observations and to hence investigate whether the economic relationship between the determinants of growth and growth rates themselves have changed, or whether the missing persistence in overall growth rates depicted in Figure 4 is mainly driven by the fact that there have been major changes in the variables that determine economic growth. For example, have stabilization policies become more important for growth, or did LAC advance more on them than before? Are external conditions becoming more relevant for growth in a world that is increasingly globalized, or has its relevance remained the same but conditions themselves have become more

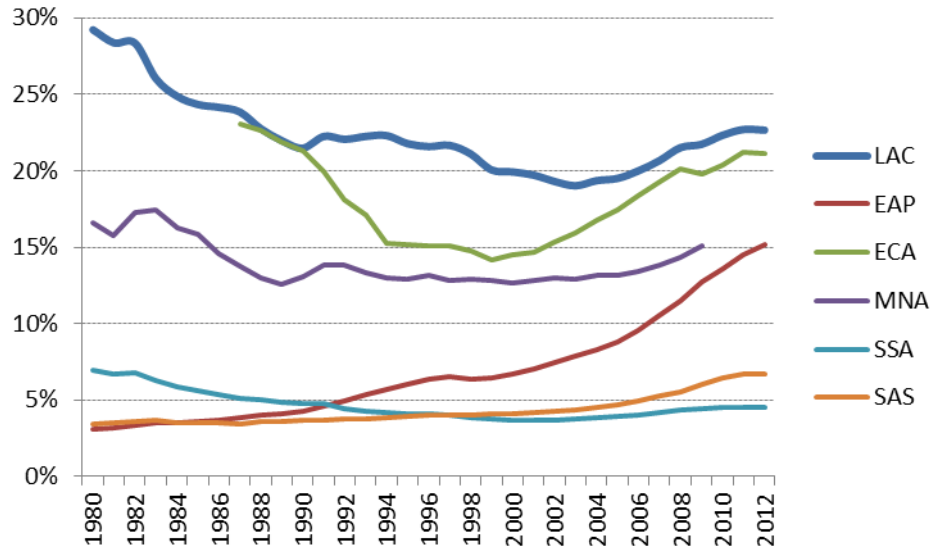
[4] Even if growth determinants would vary in a systematic global fashion, this would imply that all countries would lie on a straight line. For example, if one assumes a simple unconditional convergence model, this would predict that all countries lie on a straight line that is somewhat steeper than the depicted 45-degree line.
[5] However, the sample size for the larger economies is small (N=18).
[6] This is the R-squared from a simple regression of post-2000 growth on a constant and growth in the period before.
[7] Other studies with a more narrow focus include Cole, H.L., L.E. Ohanian, A. Riascos, and J.A. Schmitz Jr. (2005); Daude, C. and E. Fernandez-Arias (2010); and Ferreira, P.C., S.A. Pessoa, and F. Veloso (2012).

favorable? As far as methodology is concerned, we estimate the parameters of these determinants using variation over time and internal instruments with general method of moments (GMM). This approach is similar to the one of Loayza *et al* (2005) and various other research and hence allows us to compare our results with previous work. Despite the broad methodological similarities, it is worth mentioning that progress has been made as to how these models are interpreted and evaluated.

Patterns of growth in LAC

LAC as a whole has seen a decade of convergence. From a wider historical perspective, average income levels in LAC have hovered around 20 to 30 percent of the US income level in the last century. Convergence in income to the most advanced countries, as predicted by standard economic growth models and observed by many Asian economies, has not been achieved by LAC economies at large. Figure 5 depicts relative GDP of LAC to the United States. It shows that LAC has considerably lost ground vis-à-vis US income levels from 1980 until the early 2000s but has somewhat converged to the US level since. Growth in LAC was thus not only higher in this period than before (see Figure 4) but also higher than in the United States (and many advanced economies), hence constituting a 'decade of convergence.'

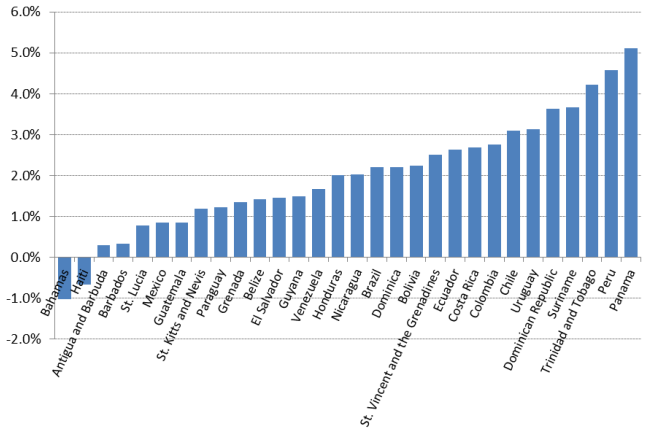
Figure 5: Income levels relative to the US



Source: WBG staff calculations and WDI. Data shows the per capita GDP in PPP relative to the US.

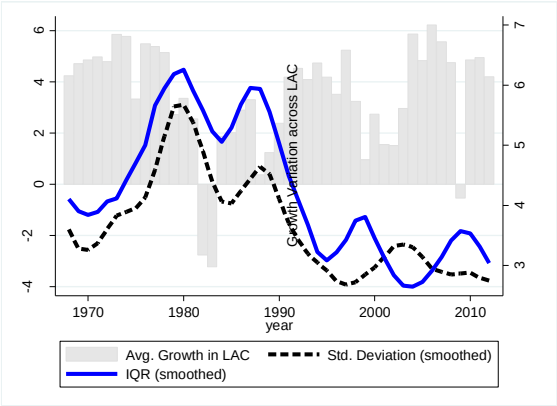
Growth performances of individual LAC countries have varied considerably. Figure 6 depicts that growth has been distributed quite unevenly across individual economies. While countries such as Panama (5.1 percent p.a.), Peru (4.6 percent), Trinidad and Tobago (4.2 percent), Suriname (3.7 percent), Dominican Republic (3.6 percent), Uruguay and Chile (3.1 percent) all saw average growth rates above 3 percent over the last decade, some economies stagnated or even declined. The latter concerned mainly small Caribbean economies but the region's second largest economy—Mexico—saw a rather modest growth performance as well (0.8 percent).

Figure 6: Growth rates 2000-2012 (p.a. PPP p.c.)



Source: WBG staff calculation and WDI

Figure 7: Growth variation across LAC over time



Source: WBG staff calculation based on WDI data

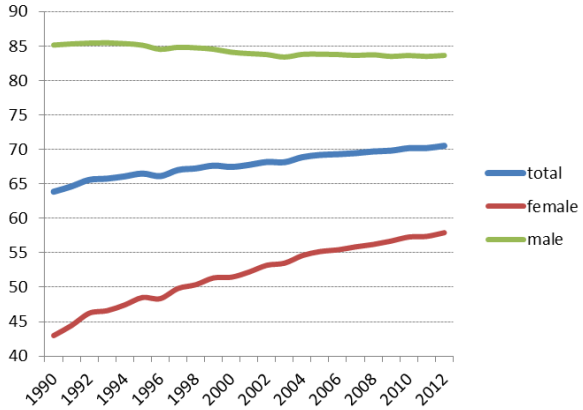
A careful look is needed to understand such growth heterogeneity. In trying to explain this growth heterogeneity across LAC, no single simple story can provide a convincing explanation. Although commodity exporters clearly benefitted from favorable terms of trade, this does neither explain the strong performance of countries such as Costa Rica, or St. Vincent and the Grenadines nor the rather modest performance of Venezuela, Guyana, or Paraguay. While trade openness and more sophisticated macroeconomic frameworks, especially contained inflation rates, are usual suspects that could have added to growth, this argument fails to explain why many Caribbean economies that are open to trade and held inflation in check were stagnating while countries with more heterodox macroeconomic approaches and periods of relatively high inflation, such as Ecuador or Bolivia, achieved at least satisfactory growth rates. It is thus difficult to distill a clear pattern of growth rates across LAC country groups over the post-2000 period. It is tempting to attribute causality to single and simple factors that might each have their influence on LAC's growth performance but without a more detailed analysis one will likely fail to adequately capture the relative diverse growth experience in the region. This raises the familiar question about determinants of economic growth. Moreover, it requires distinguishing factors that boost growth in the short run but have no sustainable effect on income (such as temporary demand or price effects) from fundamentals that have a long-lasting impact on growth, such as changes in the institutional environment and structural improvements in productivity.

Nonetheless, growth is less heterogeneous across the region today than before the 1990s. Figure 7 depicts two measures for the heterogeneity of growth across LAC countries over time: the standard deviation and the inter-quartile range (IQR). It shows that from 1990 onward, LAC experienced a decline of growth heterogeneity. This decrease in growth dispersion is even more remarkable once one considers that growth was picking up in the 1990s and especially 2000s (as illustrated by the grey bars in Figure 6). Usually, one would expect that this leads to an increase in dispersion measures. Conversely, Figure 7 suggests that LAC is "growing together" – not necessarily in absolute income levels but in terms of growth rates. This might reflect convergence in the institutional framework, but also higher reliance on exogenous factors amid less policy idiosyncrasies. Looking at simple cross-country correlation coefficients of cyclical growth rates (derived after HP-filtering, see e.g. Sosa, 2010 or Böwe and Guillemineau, 2006), we find that especially open LAC economies co-move with the region in terms of growth. Mexico and Chile show high cyclical correlations with the rest of larger LAC economies. The strongest pairwise cyclical correlations are found for Colombia and Chile (0.73) and Chile and Mexico (0.71).

Figure 8: Contribution of expenditure components to real GDP growth in LAC

Source: WBG staff calculations based on UNCTAD Stats.

Figure 9: Labor force participation rates

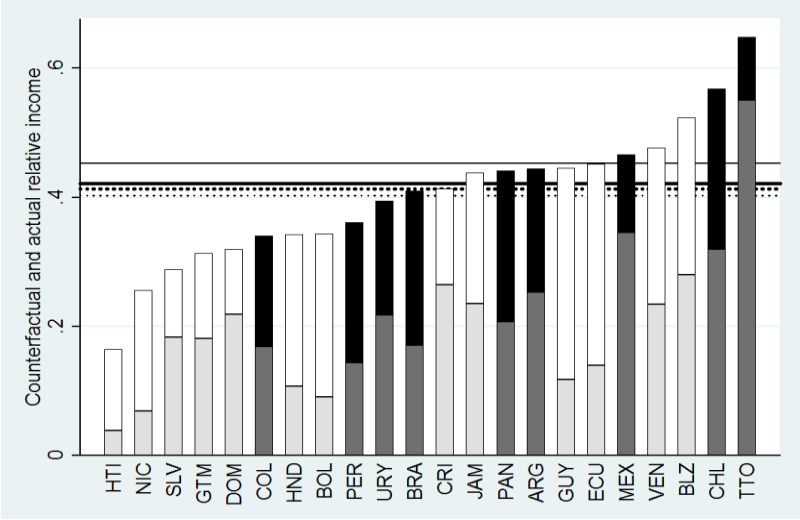


Source: WBG staff calculations and WDI.

The growth contribution of net exports was mostly negative while domestic consumption remained an important demand factor. Looking at the main expenditure component that drove GDP growth in LAC over the last decade in Figure 8, one can observe that the contribution of net exports to growth was mostly negative despite the boom in commodity export prices. The relevant contribution of household consumption and its pro-cyclicality during growth times suggests that growth remains to a considerable degree consumption driven. Eased credit constraints due to increased commodity revenues and loose global financial conditions might have fuelled this development. The negative correlation of net exports with household consumption and investment further suggests that a considerable fraction of domestic demand is satisfied by imports, pointing to potential domestic bottlenecks or frictions in adjustment.

Increased labor force participation was a supportive supply factor but can only explain part of the growth performance. On the supply side, increases in the labor force participation rate of 0.4 percent p.a. since 2000 supported the growth of income per capita (Figure 9). This development was mostly driven by female participation rates (+1 percent p.a.); male participation rates were essentially flat. Demographic developments also helped as the ratio of the young and elderly to the working-age population (15-64 years), the so-called 'age dependency ratio,' declined over the last decade. While higher labor input per capita thus certainly has a role to play for growth, the rise in the labor force participation rate was not stronger than in the 1990s but even somewhat slower, so it cannot per se explain the pickup in growth rates. Furthermore, among the countries with the highest increases were not only top-performers in terms of growth (such as Chile, Costa Rica, Peru, Trinidad and Tobago) but also some that grew moderately (Guatemala) or even shrank (Bahamas). Finally, the country with the highest acceleration of labor force participation rates in the 2000s compared to the 1990s, Suriname (from -1.1 to 0.5 percent p.a.), saw an increase in GDP growth rates, but so did the countries with the strongest deceleration in labor force participation, Colombia (from 1.9 to 0.4) and Honduras (from 1.0 to -0.4). This indicates that increased labor force participation can certainly only be one piece in the puzzle of growth. To fully understand the effect of the increase in labor force participation on growth would require not only taking into account the productivity of labor but to also look at its allocation across industries and firms from a more disaggregated perspective.

Figure 10: Decomposition of the income gap



Source: Caselli (2014).

Development accounting[8] shows that physical and human capital gap relative to the US is large, but closing it will not fully equalize incomes. To better put the contribution of factor accumulation for the recent LAC growth episode into context, it is instructive to see how much of the income gap of LAC relative to the US is due to a capital or efficiency gap. The result of such a hypothetical exercise[9] is displayed in Figure 10. The lower (shaded) areas of the bars depict the actually observed income per worker in LAC countries relative to the US (in 2005). The overall bars show a counterfactual income level assuming that the LAC economies would use their human and physical capital as efficient as the US does. The remaining difference, almost 60 percent on average, is due to differences in human and physical capital accumulation. This is a surprisingly large magnitude. But it is not sufficient to fully explain differences in incomes. In fact, one can see that assuming a use of the capital structure that is as efficient as in the US would certainly increase income per worker, especially for countries such as Haiti, Nicaragua, Honduras, Bolivia, Guyana, or Ecuador. On average, it would roughly double LACs per-worker income if it would use its production factors as efficient as the US. LAC thus suffers from an efficiency gap almost as much as it suffers from a capital gap.

[8] See Caselli (2008): "Level accounting (more recently known as development accounting) consists of a set of calculations whose purpose is to find the relative contributions of differences in inputs and differences in efficiency with which inputs are used to cros-country differences in GDP. It is therefore the cross-country analogue of growth accounting."(p. 1, online version).

[9] See Caselli (2014) for details.

3. MODELING ECONOMIC GROWTH AND BASELINE RESULTS

What are the drivers of economic growth?

Previous studies have identified potential drivers of economic growth. How countries increase their growth rate and thus income per capita has occupied several generations of economists. As they often say: "Once you start to think about growth, it is hard to think about anything else."[10] We build on this vast literature in our empirical model, by taking into account those variables that have been suggested as key for economic growth by previous theoretical and empirical studies.[11]

Structural factors are expected to influence long-run aggregate supply. In basic neoclassical long-run models, output per capita is determined by the long-run aggregate supply curve based on an aggregate production function including capital accumulation and technology (including human capital). In our empirical model, structural policy variables reflecting, for example, human capital, financial development, infrastructure or trade openness proxy for these effects. Furthermore, we consider institutional quality and government consumption, which might affect capital formation and allocative efficiency.

But cyclical factors and stabilization policies have potential effects on growth as well. Over shorter time horizons, demand factors have to be taken into account as well. For example, expansive monetary policy can boost output in the short run. However, its feedback loop through higher inflationary pressures will induce "cyclical" distortions to the economy that might adversely affect the allocation of factors in the economy. Ensuring a stable macroeconomic environment will thus support the most efficient allocation of resources (similar to institutional stability and a level regulatory playing field).[12] In our empirical model, stabilization policies such as the inflation rate, a proxy for exchange rate misalignment, and banking crisis reflect this channel.

Especially for emerging and developing economies, external conditions might matter. Virtually all developing countries are commodity exporters, so higher prices for their exports (as observed over the last decade) will impact their income via export revenues. While such commodity price booms might only have a temporary impact, they can also influence long-term aggregate supply if spent wisely, e.g. in building institutions.[13] Similarly, abundant international liquidity eases access to finance and hence supports capital accumulation in capital scarce countries. In our empirical model, terms of trade growth, growth in (country-specific) commodity prices, and time dummies (capturing global effects such as liquidity) capture these external conditions.

Our goal is to identify and quantify these different effects for growth in LAC. Given the strong growth performance in most LAC countries over the last decade amid a period of booming commodity prices, our aim is to quantify how much of observed growth in LAC economies can be explained by

[10] Lucas Jr. (1988): "The consequences for human welfare involved in questions like these [i.e. about income and growth] are simply staggering: Once one starts to think about them, it is hard to think about anything else."
[11] For a textbook treatment and overview, see Romer (2011).
[12] We discuss and assess the relation between short-run fluctuations, long-run effects and growth in more detail in section 6.
[13] See e.g. Arezki and Brueckner (2012) and World Bank (2014)

external factors as opposed to different domestic innovations and improvements. This requires an empirical estimation strategy that can distinguish mere correlation from economic causation.

Modelling drivers of economic growth

An organizing framework for understanding the drivers of growth needs to align theory and empirical model. While economic theory might lead to clear implications about the drivers of growth, it is often not fully feasible to assess them empirically in view of the available data or empirical methods. For example, some variables such as human capital or financial development might not be perfectly measurable. Furthermore, some variables (such as demographics) might influence growth in the very long run, whereas other variables (such as exchange rate misalignment or demand components more generally) have a shorter-run effect, leading to a trade-off in the most appropriate empirical model. These considerations highlight the complex relationship between economic theory and its empirical assessment.[14]

Our focus is on the drivers of growth over a policy-relevant horizon. To smooth out most cyclical short-run effects that are not sustainable, we estimate our model using 5-year averages of non-overlapping panel data for a sample of 126 countries during the 1970-2010 period. Mainly building on the econometric approach of Loayza et al (2005), our model is set up as a dynamic model (with a lagged dependent variable) for income per capita, which accommodates longer-run effects beyond the 5-year interval.[15] Furthermore this representation allows us to efficiently estimate the model in the form:

$$\ln y_{ct} = \theta \ln y_{ct-1} + \Gamma \ln(X)_{ct} + a_c + b_t + e_{ct} \qquad (1)$$

where $\ln y_{ct}$ is the natural log of real PPP GDP per capita of country c in period t; X_{ct} is a vector of growth determinants; a_c and b_t are country and year fixed effects, respectively; and e_{ct} is an error term.

System-GMM estimation of the levels equation provides efficient and unbiased parameter estimates. While the model in equation (1) explains income per capita, as opposed to growth, this level representation allows for more efficient estimation than alternative instrumental variable (IV) estimators.[16] By using internal instruments, this estimator avoids endogeneity biases of the lagged dependent and explanatory variables.[17] Furthermore, this representation is well-founded by neoclassical growth theory (see Brueckner, 2013, for a details) and still being able to evaluate the effects in terms of growth rates. Therefore notice that equation (1) can also be expressed as:

[14] An elaborate discussion of this relationship is given in Spanos (1993).

[15] Note that a contemporaneous effect of any variable on current income will also impact future income via the lagged dependent variable. While the contemporaneous ("short-run") effect is given directly by Γ, the overall ("long-run") effect is derived as $\Gamma/(1-\theta)$.

[16] Such as, for example, the Arellano-Bond (1991) first-difference GMM estimator.

[17] For example, some of the explanatory variables, X_{ct}, may themselves be a function of the dependent variable and dynamic panel estimation in the presence of country fixed effects generally yields biased estimates (e.g. Nickel, 1981; Wooldridge, 2002). We therefore instrument endogenous variables (in levels) with lags of their first differences. We limit the instrument set to one lag in order to ensure that the number of instruments does not grow too large in the system-GMM estimation and furthermore avoid overfitting the model by using the "collapse" suboption in the STATA *xtabond2* command. We also use the one-step (as opposed to the two-step) estimator in order to avoid severely downward biased standard errors associated with the two-step estimator (Blundell and Bond, 1998). See Brueckner (2013) for further details and discussions.

$$\ln y_{ct} - \ln y_{ct-1} = \varphi \ln y_{ct-1} + \Gamma \ln(X)_{ct} + a_c + b_t + e_{ct} \qquad (2)$$

where $\varphi = \theta - 1$ $\ln y_{ct} - \ln y_{ct-1}$ is the change in the natural log of real PPP GDP per capita in country *c* between period *t* and period *t-1*, i.e. the growth rate of per capita GDP.

Consistently with the standard neoclassical growth model, a change to a variable in X has a permanent effect on income levels but only a transitory effect on income growth. In our model, a permanent perturbation to the level of X has a temporary (i.e. short-run) effect on GDP per capita growth. There is a permanent (i.e. long-run) effect on the level of GDP per capita but not on the GDP per capita growth rate. This is consistent with most neoclassical growth models, as only an improvement to the *growth rate* of fundamental drivers of growth (such as technological progress) will have a permanent effect on the economic growth rate. Similarly, a permanent increase in commodity price *levels* will have an effect on commodity exporters' *income levels*, but no effect on growth rates beyond the transition period from the old to the new income level. Note that in this representation one would expect $\varphi < 0$, i.e. countries that are temporarily below their long-run potential output (reflected in the fixed effect a_c) at the beginning of a 5-year interval, are expected to grow faster in the period ahead, given their steady-state explanatory variables X. This can be described as "cyclical reversion" or "convergence to a country's own steady state" and should not be confused with income convergence across countries. Furthermore it should be noted that when assessing the contributions of innovations in *X* to growth (as we do in in this report), we first-difference equation (1) which makes the lagged dependent variable become a growth-persistence parameter.[18]

Data from different sources proxy for the growth drivers discussed above. Table 1 below provides a list and summary statistics of the main variables of the model. Table 2 displays their bivariate correlations.[19] These pairwise correlations depict how strongly correlated individual variables are with each other.

Table 1: Univariate Descriptive Statistics
(5-Year Non-overlapping Panel 1970-2010)

	Mean	Sdv	Min	Max	Observations
Growth Rate of GDP per capita	0.096	0.168	-1.086	1.659	1494
Lagged GDP per capita	8.267	12.74	5.272	11.346	1494
Schooling	3.765	0.904	-1.434	5.103	1232
Credit/GDP	3.261	0.939	-0.003	5.544	1259
Trade Openness	4.077	0.706	0.552	6.036	1494
Telephone Lines	1.291	1.944	-3.975	4.491	1389
Government Size	2.304	0.625	-0.205	4.165	1494
Polity2	0.976	7.256	-10	10	1174
CPI Inflation	2.214	1.069	-1.753	8.859	1293
Real Exchange Rate	4.119	0.608	2.137	18.640	1494
Banking Crisis	0.056	0.184	0	1	1494
Terms of Trade Growth	-0.005	0.211	-1.291	0.652	684
ComPI Growth	0.003	0.009	-0.023	0.092	1219

[18] The intuition for this fact is as follows: in the first-difference equation $\Delta \ln y_{ct} = \theta(\Delta \ln y_{ct-1}) + \Gamma \Delta \ln(X)_{ct} + \Delta b_t + \Delta e_{ct}$, only contemporary changes in X have an effect on the growth rate. Previous interventions, however, are expected to be reflected in the lagged growth rate, $\Delta \ln y_{ct-1}$, and contribute via this channel to current growth.

[19] Annex Table 1 provides a detailed description of the variables and their sources. Annex Table 2 provides a list of countries and the number of observations for each variable.

Table 2: Bivariate Correlations
(5-Year Non-overlapping Panel, 1970-2010 Period, 126 Countries, 464 Observations)

	Growth Rate of GDP per capita	Lagged GDP per capita	Schooling	Credit/GDP	Trade Openness	Telephone Lines	Polity2	Government Size	CPI Inflation	Real Exchange Rate	Banking Crisis	Terms of Trade Growth	ComPI Growth
Growth Rate of GDP per capita	1.00												
Lagged GDP per capita	0.14	1.00											
Schooling	0.29	0.78	1.00										
Credit/GDP	0.19	0.67	0.62	1.00									
Trade Openness	0.25	0.26	0.32	0.22	1.00								
Telephone Lines	0.31	0.89	0.87	0.71	0.30	1.00							
Polity2	0.07	0.40	0.44	0.30	0.06	0.47	1.00						
Government Size	-0.06	-0.33	-0.39	-0.24	0.03	-0.34	-0.16	1.00					
CPI Inflation	-0.20	-0.20	-0.14	-0.40	-0.29	-0.23	-0.08	-0.00	1.00				
Real Exchange Rate	-0.12	0.36	0.14	0.28	0.01	0.20	0.02	-0.20	-0.08	1.00			
Banking Crisis	-0.12	0.15	0.12	0.12	-0.15	0.09	0.12	-0.12	0.20	0.13	1.00		
Terms of Trade Growth	0.31	0.11	0.14	-0.00	0.17	0.13	0.02	0.01	-0.09	0.03	-0.12	1.00	
ComPI Growth	0.17	0.27	0.19	-0.02	0.27	0.18	-0.15	-0.04	0.02	0.07	-0.14	0.40	1.00

The baseline model

The variables in the baseline model exhibit the expected effect on economic growth, with stabilization policies being on the borderline of statistical significance. As expected, there is strong persistence in income levels, transforming into growth reversals (convergence to the steady state) if one interprets the results in terms of equation (2). As discussed in more detail in section 5, structural policies mostly have the expected and statistically significant effect on income and transitory growth rates. Stabilization policies show the expected signs as well but are not statistically significant in this conditional model, although standard errors are of reasonable size compared to the estimated parameters. Finally, external conditions as proxied by terms of trade and the commodity price index have the expected and highly significant effect on income and transitory growth (see section 4 for a discussion).

Table 3: Baseline regression results
(Conditional Effects, 5-Year Unbalanced Panel)

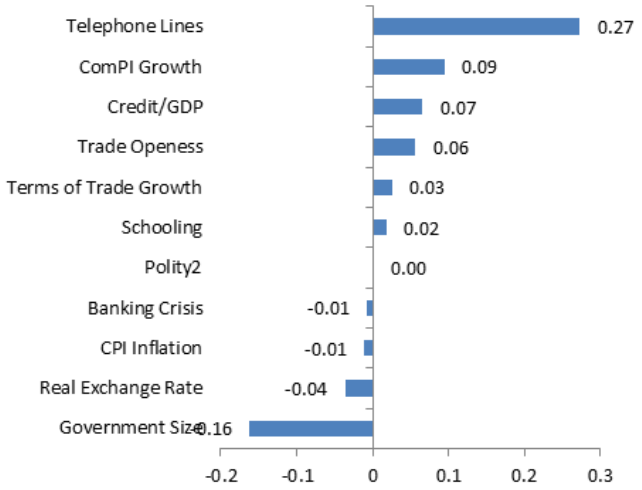
Dependent Variable: ln(GDP p.c.)		
	(1)	(2)
	SYS GMM	LS
ln(GDP p.c.), t-1	0.78***	0.75***
	(0.06)	(0.03)
Structural Policies and Institutions		
ln(Secondary School Enrolment Rate), t	0.02	-0.03
	(0.05)	(0.03)
ln(Private Domestic Credit/GDP), t	0.07***	0.02
	(0.03)	(0.02)
ln(Structure Adjusted Trade Volume/GDP), t	0.08*	0.10***
	(0.05)	(0.03)
ln(Government Consumption/GDP), t	-0.26***	-0.13***
	(0.04)	(0.03)
ln(Telephone Lines p.c.), t	0.14***	0.08***
	(0.03)	(0.02)
Polity2 Score, t	-0.00	-0.01
	(0.03)	(0.02)
Stabilisation Policies		
Inflation Rate, t	-0.01	-0.01*
	(0.01)	(0.01)
ln(Real Exchange Rate), t	-0.06	-0.02
	(0.04)	(0.03)
Banking Crisis, t	-0.04	-0.05*
	(0.03)	(0.03)
External Conditions		
ComPI Growth, t	10.48***	6.96***
	(2.69)	(2.59)
Terms of Trade Growth, t	0.12***	0.11***
	(0.03)	(0.03)
AR (1) Test, p-value	0.02	.
AR (2) Test, p-value	0.10	.
Sargan Test $\chi^2(10)$, p-value	0.13	.
Country Fe	Yes	Yes
Year Fe	Yes	Yes
Observations	464	464
Countries	126	126

Note: The dependent variable is real GDP per capita. The method of estimation in column (1) is system-GMM; column (2) least squares. The system-GMM estimation is based on 10 endogenous variables and 20 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

In the following chapters we use this model to discuss LAC's key drivers of growth and policy challenges. Figure 11 uses overall standard deviations to calculate growth effects, which does not necessarily tell us what has driven growth in LAC specifically. In chapter 2, we thus take a more detailed look at the role of external factors for LAC's growth performance. In chapter 3, we move towards the relevance of domestic factors, especially stabilization and structural policies. In either case, we use our baseline model to assess the specific contributions that each variable had for the growth rate of each LAC country. Similarly, we use this model to predict in chapter 4 what would happen to growth in LAC if recent trends would extend into the future. Given the high reliance on this model, we also demonstrate the robustness of the model to several alternative specifications in the Annex. Furthermore, chapter 4 identifies those variables where individual LAC countries lag most behind their peers, thus highlighting policy areas where constraints are most binding and growth promoting progress could relatively easily be achieved. Chapter 5 then puts more detailed focus on policy priorities. Chapter 6 concludes.

Figure 11: The effects of policies on economic growth in LAC

(estimated coefficients multiplied with standard deviations)



Source: Brueckner (2014).
Note: the growth effect in percent/100, occurring from an average change in explanatory variable by one standard deviation.

Several key conclusions emerge as we look at the factors that affected Latin America and the Caribbean region's growth performance in the 2000s. Our findings suggest that the LAC region does not differ greatly from other regions in the world in terms of its main growth determinants. Furthermore, even after controlling for commodity prices dynamics, structural policies continue to play a significant and relevant role for LAC's growth in the 2000s (as they did in the 1990s), suggesting that there was more to LACs recent growth than the commodity boom. Stabilization policies, however, are found to play a smaller role in explaining growth more recently than was found in Loayza et al. (2005). This might be due to the fact that in the 2000s many LAC countries had had already achieved stable macroeconomic conditions for some time and therefore other factors became key drivers of growth. The economic magnitudes of the different drivers of growth are depicted in Figure 11. However, when looking at individual country level results, there is also a great deal of heterogeneity concerning the contributions of different drivers of growth within the LAC region. This heterogeneity will be discussed in more detail in subsequent chapters.

Box 1: Interpreting the regression parameters

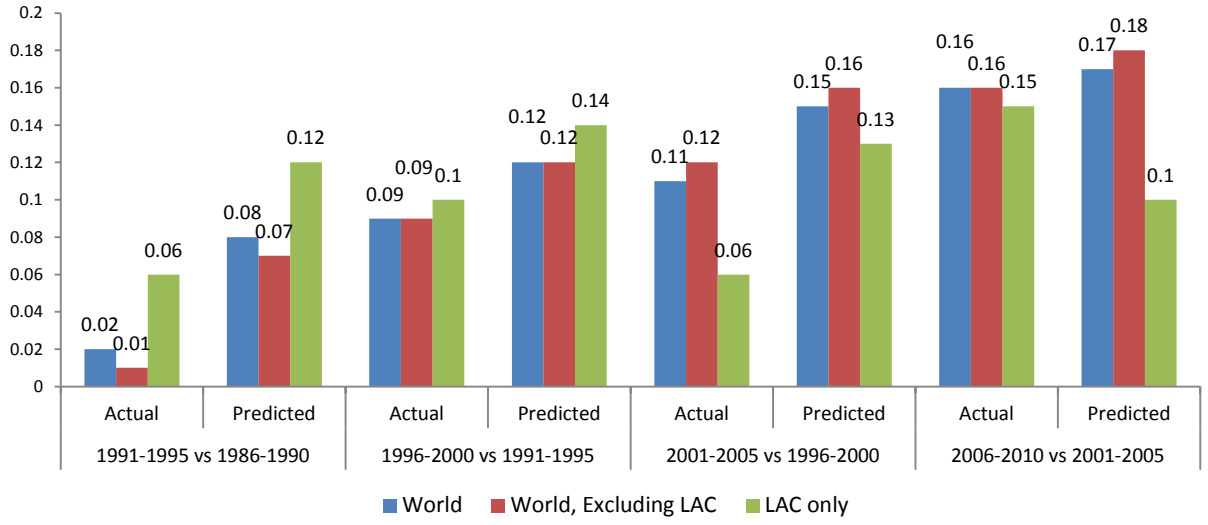
The regression model underlying Table 3 shows the effect of a change in explanatory variables on the level of income, conditional on other factors. The model setup has several implications for parameter interpretation:

- **Effects are not taking into account indirect effects through other channels included in the model**. For example, financial development could be a channel through which schooling affects GDP per capita growth (say, because education is needed for the functioning of courts, and well-functioning courts are necessary for the enforcement of financial contracts). Since both schooling and financial development are included in the model, then the estimated coefficient on schooling captures the (residual) effect that schooling has on GDP per capita growth beyond its effect via financial development. However, we also report unconditional effects for the explanatory variables, and they are used, for example, to derive the benchmarks at the second part of chapter 4.
- **The model is set up in levels of income,** with a lagged dependent variable. The Technical Annex demonstrates that one can derive the effect on growth (instead of the effect on income) from this setup.
- **A change in the level of an explanatory variable has a permanent effect on income but a temporary effect on growth.**
- **The lagged dependent variable captures the persistence of shocks over a 5-year period.** The estimated coefficient on lagged (log) GDP per capita is 0.78. It is important to note that the estimated coefficient is derived from a 5-year non-overlapping panel. The coefficient thus reflects the persistence of shocks to GDP per capita over a 5-year horizon; measured over a one-year horizon the implied persistence parameter is 0.95 and the implied per annum steady-state convergence rate is around 5 percent.

Diagnostic checks

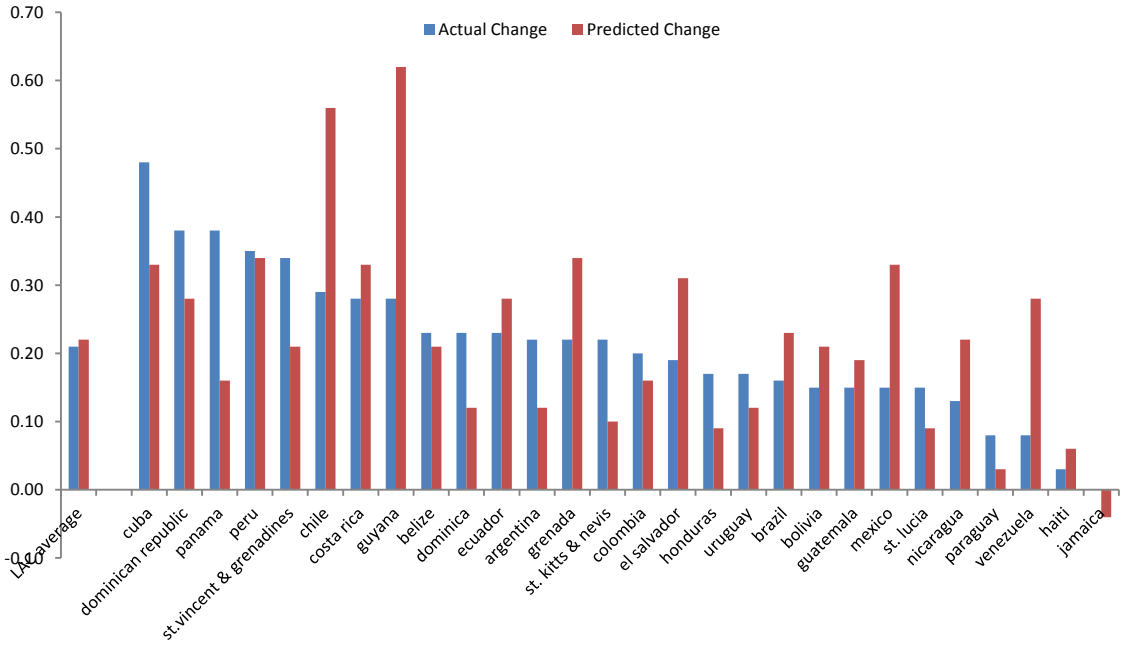
The model works well on aggregated data, comparing the actual and predicted growth rates. In Table 2, we generated predicted GDP per capita growth using the estimated coefficients from column (1) of Table 3 and the observed changes in each of the right-hand-side variables for each time period with data available. Table 3 reports average predictions for: (i) all countries in the sample; (ii) all countries excluding LAC; and (iii) LAC countries only. Qualitatively, the predictions have the right sign for all time periods and regions. Quantitatively, the predictions are also fairly close to the actual values. For example, the actual average change in log GDP per capita for all countries in the sample over a five-year horizon between the 2006-2010 period and the 2001-2005 period is 0.16 log points while the predicted change is 0.17 log points; over a ten-year horizon between 2006-2010 and 1996-2000 the actual average change is 0.21 log points while the predicted change is 0.22 log points (Figure 12).

Figure 12: Economic growth regressions
(Actual vs Predicted Growth)



Source: Brueckner (2014)

Figure 13: Actual and predicted change in log GDP per capita, 2006-2010 vs 1996-2000
(log points)



Source: Brueckner (2014).

Standard tests indicate that the baseline model is well-specified. Column (1) of Table 3 presents our baseline system-GMM estimates.[20] The obtained results do not conflict with theoretical expectations towards the drivers of growth and are consistent with the notion of convergence. However, due to the presence of country fixed effects, this convergence is to countries' own steady states.[21] Standard statistical tests, such as the Sargan test for joint validity of the instrument set or the Arellano-Bond test for serial correlation indicate that the model is well-specified (see Technical Annex for details).

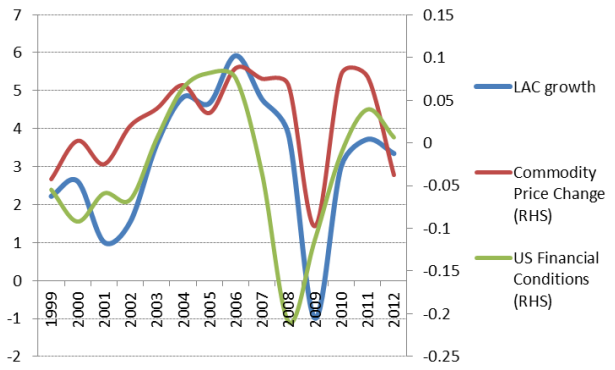
[20] These estimates are based on an unbalanced panel covering 126 countries during 1970-2010. Annex Table 9 shows that the instruments in the system-GMM estimation are relevant: lagged changes have a highly significant effect on levels (Panel A); and lagged levels have a highly significant effect on changes (Panel B). The p-value from the Sargan test is above 0.1. Hence we cannot reject the hypothesis of a correctly specified model.

[21] In this model, convergence in income per capita is to each country's own steady state, because country fixed effects are used. But due to the inclusion of time fixed effects which account for US growth and common external shocks, all results presented are identical to the model with convergence to a common steady state (see Annex Table 8).

4. THE ROLE OF EXTERNAL FACTORS

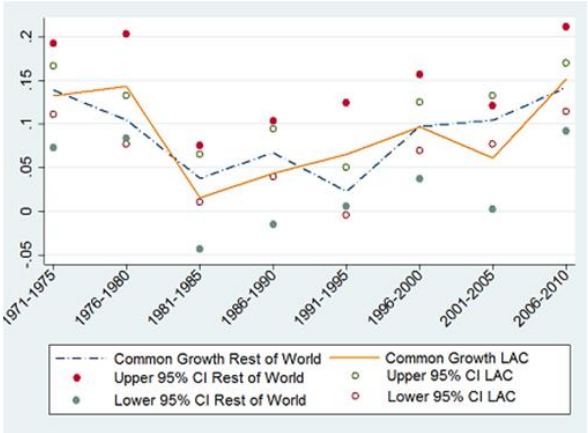
LAC's growth pickup coincided with favorable external conditions. The relatively high growth rates in LAC over the last decade took place against a combination of high commodity prices, low world interest rates, and abundant international liquidity – unprecedented tailwinds for developing countries, since they are mostly commodity exporters and dependent on external financing. Commodity export prices (both energy and non-energy) increased dramatically since the early 2000s. For most LAC countries this implied a considerable improvement in terms of trade. Financial conditions in the United States were also relatively loose over the last decade, making financing costs and market access for LAC countries quite favorable. After the dot-com bubble and again after the global financial crisis, unconventional and supportive monetary policy in the advanced economies led to relatively favorable financing conditions of emerging economies. These external conditions were correlated with growth in LAC as evidenced in Figure 14. Over the period 2000-2012, using annual data, the correlation coefficient of average LAC growth with US financial conditions and non-energy commodity price changes was relatively high (0.56 and 0.82, statistically significant at the 5 and 1 percent level, respectively) which does not necessarily imply a causal relationship, however.

Figure 14: LAC growth and selected external conditions



Source: WBG staff calculations, Haver Analytics, Wacker et al. (2014). LAC growth is an (unweighted) average of 32 LAC countries.

Figure 15: Common economic growth headwinds and tailwinds
(estimated coefficients and confidence intervals)



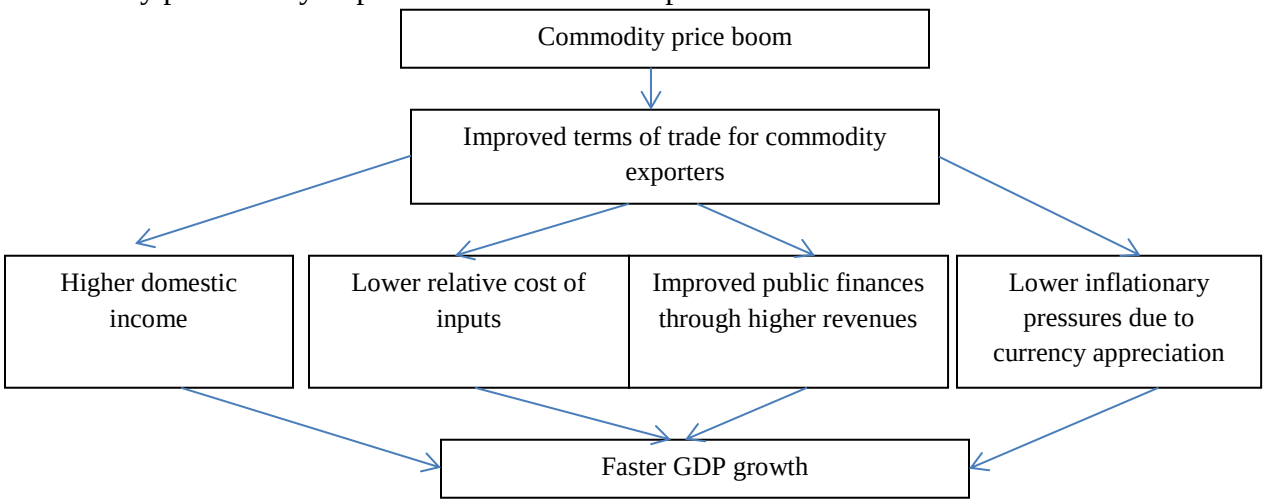
Source: Brueckner (2014)

Compared with other regions, commodity price effects were not significantly different for LAC. Comparing LAC to other regions suggests that these external tailwinds were not exceptional to the region. There is no parameter heterogeneity present between LAC and other countries with respect to the impact of external factors on growth. Also, Figure 15 depicts that the external tailwinds were not significantly different for the LAC region as shown by the overlapping 95 percent confidence bands. Commodity price booms require adequate institutional set up to have a positive impact on long-term growth, highlighting the role that earlier stabilization policies improvement might have played in LAC (Box 2).

Box 2: How Can a Commodity Boom Drive a Virtuous Cycle of Growth?

Commodity price booms can have a positive impact on growth via various channels. As schematically depicted below, it directly raises domestic income via terms-of-trade effects. Since commodity exporters are mostly capital-scarce, this might foster investment by lowering the relative costs of inputs, such as machines, thereby overcoming existing supply bottlenecks and generating a solid ground for future growth. Similarly, as public enterprises usually play a key role in the commodity sector, a commodity price boom helps improve public finances which in turn can be invested in upgrading the public infrastructure. Finally, when exchange-rate pass-through is high, higher output does not necessarily come at the cost of higher inflation because commodity booms tend to appreciate the exchange rate which in turn might help anchor future inflation expectations.

But the actual growth effects of the commodity boom are controversial, as it also poses several macroeconomic challenges. For example, the associated real exchange rate appreciation reduces the international price-competitiveness of manufactured goods, potentially eroding a country's productive base ("Dutch disease"). Furthermore, high public commodity revenues might have a detrimental effect on institutional quality (see below) and on the efficiency of public spending. It is thus not straightforward that countries can take advantage of a commodity price boom and this capacity seems to critically depend on the institutional framework in place. For example, structural fiscal rules as in Chile or Colombia might prevent the government from overspending during boom periods. This consideration highlights as to what extent the current growth performance in LAC is really driven by commodity prices or by improved macroeconomic policies.



A commodity boom can also trigger a vicious cycle of stagnation, if the typical manifestations of a "resource curse" are observed: government overspending and overborrowing; rent-seeking behavior; and decline of non-booming tradable sectors.

Source: Adapted from De Gregorio (2014).

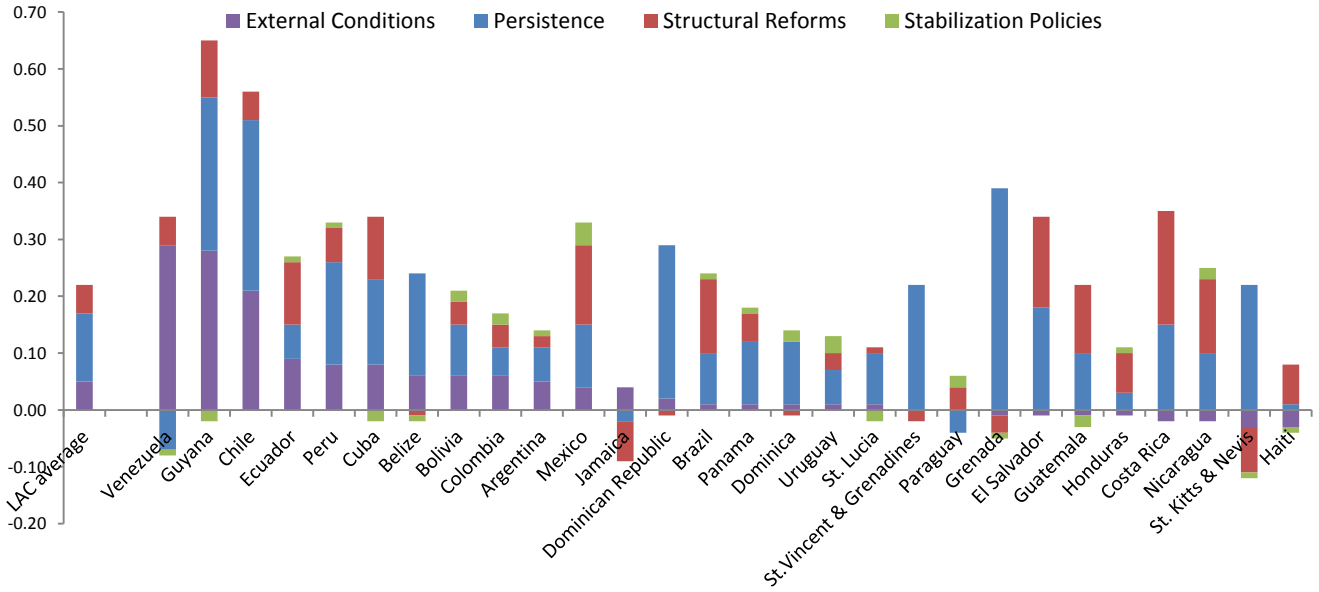
Our regression model confirms that external conditions have had a positive impact on growth in LAC. The multivariate regression model shows that external conditions mattered for economic growth. Variations in countries' terms of trade and international commodity export prices have a positive and

statistically significant impact on growth. Because both the terms of trade and the international commodity export price index are country-specific variables, the estimated coefficients on these variables capture the country-specific effects of external conditions. In Figure 15 we furthermore show that economic growth of countries is also considerably affected by common factors.[22] The figure shows that there were significant tailwinds in the past decade.

The contribution of external factors was as important as structural policies were for growth in LAC, on average. Figure 16 disaggregates the growth rates our model estimates for all LAC countries over the last decade into individual contributions by main variable categories. For the LAC average, it shows that the contribution of external factors were the same as that of structural policies, at 0.5 percentage points per annum, while and a stabilization policies had no impact; growth persistence contributed 1.2 percentage points per annum. This suggests that over the last decade external conditions contributed substantially to growth in LAC. This is especially true for resource-rich countries such as Venezuela, Guyana, or Chile, where average GDP per capita growth during the 2000s was boosted due to positive terms of trade developments by over 2 percentage points per annum.[23]

Figure 16: Predicted growth effect arising from persistence, policies, and external conditions, 2006-2010 vs 1996-2000

(log points, countries ordered by the contribution of external factors)



Source: Brueckner (2014).
Note: To convert into per annum changes in percentage points, all values need to be multiplied by 10.

Figure 16 allows assessing what would have happened to LAC countries without the commodity bonanza and other global factors. By subtracting the parts of the bars in Figure 16 that represent "external conditions," one can assess how growth in LAC would have looked like, if commodity prices remained on their late-1990s level. On average, the slowdown in growth for the region would be

[22] The figure is based on the coefficients and standard errors that are obtained from a regression of GDP p.c. growth on time dummies and the interaction of time dummies with an indicator variable for LAC countries.
[23] In comparison, the model predicts that average GDP per capita growth (per annum) was boosted in these countries due to structural reforms by 0.5 percentage points, 1.1 percentage points, and 0.5 percentage points, respectively.

relatively small, but this should not shadow certain country-specific results., Without the commodity price boom, Venezuela, for example, would have completely stagnated and growth in Guyana or Chile would have been substantially slower (while still remaining relatively high). For most other countries, commodity prices played less of a role; commodity importers would even have benefitted from commodity prices remaining on their late-1990 level. On top of this commodity effect, one could also add the difference in time dummies between periods (i.e. 1996-2000 vs. 2006-2010) to assess how other global factors contributed to LAC growth. However, this effect would be small (0.02 log points and statistically insignificant), so most of external factors should be captured by commodity price and terms of trade developments.

Are there potential long-run consequences from the commodity boom?

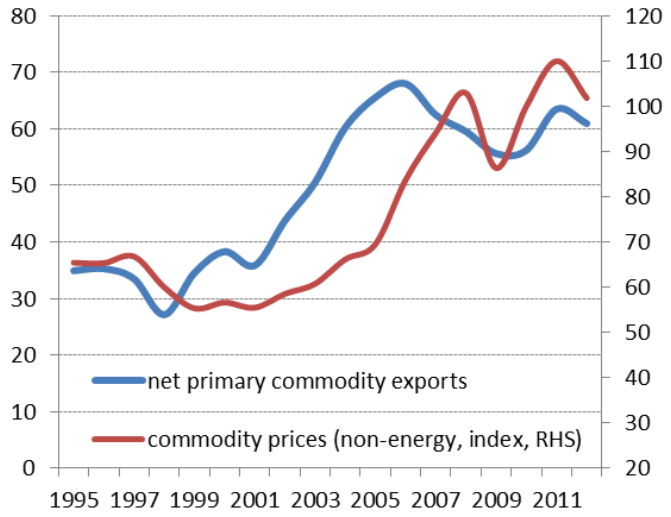
The commodity boom induced a surge in net commodity exports. As discussed, a commodity boom can imply adverse effects for growth via a contraction of the manufacturing sector in favor of a considerable increase in net exports of primary commodities. Such an increase in net commodity exports, driven primarily by the high commodity prices, was indeed present in LAC over the last decade, as depicted in Figure 17. Between 2000 and 2012, net commodity exports as a share of GDP in LAC rose from 38.3 to 60.9 percent. Similarly, the share of commodities in total exports in LAC increased from 40.0 to 54.3 percent over the same period. This increasing reliance on commodity exports might give rise to externally driven vulnerabilities (such as future downward shocks in prices). Furthermore, high commodity revenues may give the government few incentives to establish an efficient tax or institutional system.

Negative effects of the commodity boom on institutions in LAC were limited. Related to the latter argument, windfall commodity revenues may impede institutional reforms and negatively affect governance. Several researchers have suggested that natural resource wealth may impede economic growth as the government may have few incentives to establish an efficient tax or institutional system (e.g. Sachs and Warner, 1995; Mehlum et al., 2006). When revenues are high, fewer other income sources are needed and as citizens pay accordingly fewer taxes, they might demand less representation and accountability. As long as resource revenues are abundant, the government also might not put enough emphasis on efficient spending and governance. And finally, rising commodity prices increase the potential return for political and military incumbents that appropriate those resources, hence potentially inducing political and military conflicts. How relevant was this potential curse for the LAC region? When looking at the developments in LAC over the commodity-boom period, Figure 18 provides some support for the negative relationship between commodity export revenues and governance. It plots the change in an indicator for governance[24] over the period 2000-2012 against the change in terms of trade over the same period for LAC economies and shows that, on average, countries that benefitted from a rise in their export prices made less progress in terms of improving governance. The extent of this relationship is especially driven by Venezuela, which suffered a dramatic decline in governance indicators amid a period of enormous terms of trade increases. When excluding Venezuela from the sample, the relationship is essentially zero, although still slightly negative. Looking at the individual governance indicators, we find that the negative correlation of

[24] This indicator is an average of indicators on the control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, and voice and accountability, as constructed by Kaufmann et al. (2010).

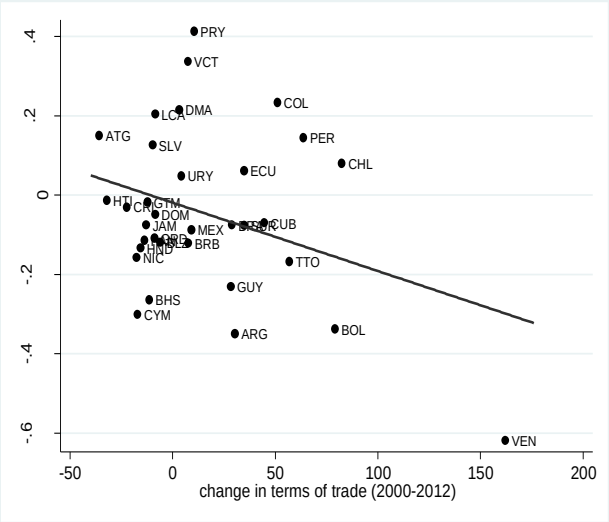
terms of trade is strongest with control of corruption and regulatory quality.[25] The dispersion in the relationship depicted in Figure 18 overall suggests that many other factors, than commodity price developments, have impacted institutional performance in LAC over the last decade; moreover, some countries that are not exclusively net commodity exporters performed poorly in terms of institutional reform.

Figure 17: Net commodity exports in LAC
(nominal exports less imports of primary commodities, in percent of GDP; price index)



Source: WBG staff calculations based on UNCTAD Stats.

Figure 18: Terms of trade and governance
(governance index and terms of trade change)



Source: WBG staff calculations based on WDI and World Bank Governance Indicators.

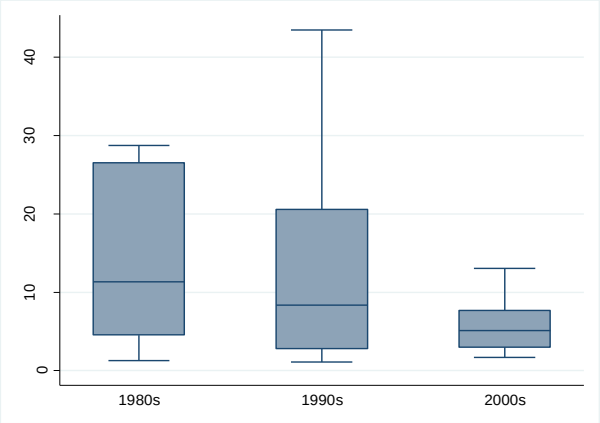
A moderation of commodity prices will pose challenges ahead for many LAC economies. For LAC economies where external conditions were a main growth factor over the last decade, a moderation of commodity prices in the near future would require tapping into new sources of growth. Institutional progress is a natural candidate for those countries where high commodity revenues have hidden or even fostered shortcomings in governance in the recent past. As we argue in more detail in the remainder of this report, these countries have no option than to promote structural policies in the face of receding tailwinds, as structural policies still can have substantial growth effects and will foster economic adjustment beyond commodity exports.

[25] To assess these relationships, we use simple (unconditional) fixed effects regressions for 35 LAC countries. Correlations are negative throughout but only statistically significant for control of corruption and regulatory quality. In the latter case, however, results are not robust to excluding Venezuela from the sample.

5. THE ROLE OF DOMESTIC FACTORS

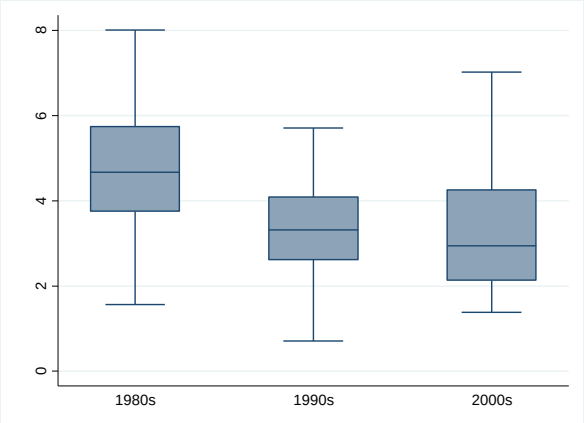
Macroeconomic frameworks largely managed to stabilize output and inflation, and to support overall stability. Figure 19 and Figure 20 suggest that LAC has mostly overcome problems of inflation and macroeconomic volatility that have plagued the region in the past. In previous decades, it did not make much sense to even calculate mean inflation in LAC as inflation levels in some countries would put them off the chart of any meaningful comparison.[26] In fact, average inflation among LAC countries was above 100 percent in the 1980s. But as Figure 19 illustrates, the days of hyperinflation are largely over. Inflation rates fell in the 1990s compared to the previous decade, although some outliers (most notably Brazil) still existed. During the 2000s, inflation rates fell further and one can also observe from the boxplot in Figure 19 that the dispersion of inflation rates has become narrower within the region. The only LAC countries experiencing mean inflation rates above 15 percent since 2000 were Venezuela and Suriname. The achievements with respect to output stabilization in LAC might also be one of the reasons why growth was especially pro-poor in the last decade (see Crespo-Cuaresma et al., 2013).

Figure 19: Inflation across LAC over the decades



Source: WBG staff calculations based on WDI

Figure 20: Growth volatility across LAC over the decades



Source: WBG staff calculations based on WDI

As a result, growth in LAC has become more resilient to downward shocks. In terms of output stabilization, Figure 20 suggests that the most progress in terms of overall output stabilization has already been achieved in the 1990s and sustained after 2000, and that reducing volatility further would be difficult given that market economies inherently have fluctuations in output. As Figure 21 further illustrates, contraction periods in LAC have become somewhat shorter in the 2000s compared to the 1980s and 1990s.[27] Despite the magnitude of the global financial crisis, the last contraction period in LAC only lasted for one year whereas the recession of the early 1990s and the spillovers from the Asian crisis of 1998 generated longer-lasting declines in GDP per capita.[28] When defining downward shocks as years with growth rates below the fifth percentile of annual growth for all countries of the

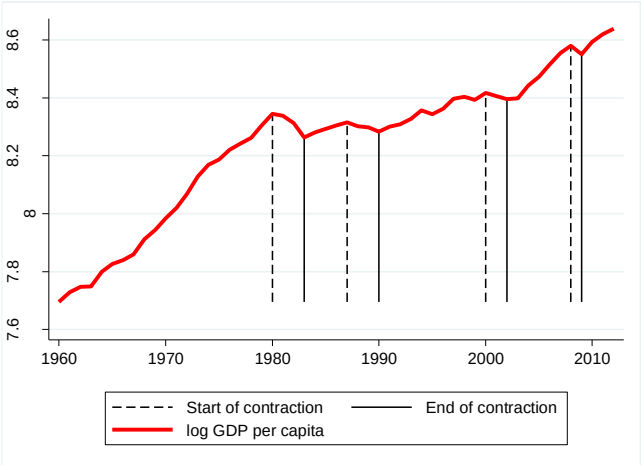
[26] This is also why we look at median (and not average) inflation in Figure 22, as the median is less sensitive to outliers and skewed distributions than the mean.

[27] To evaluate the duration of contraction phases, we use the Harding and Pagan (2002) algorithm to determine turning points (peaks or troughs) in yearly GDP per capita (PPP) using GDP p.c. data from WDI. We impose the following censoring rules on the cycle, number of periods in parenthesis: window (1), phase (1) and cycle (3).

[28] The only country included for which a decline in the duration of economic downturns cannot be evidenced is Argentina.

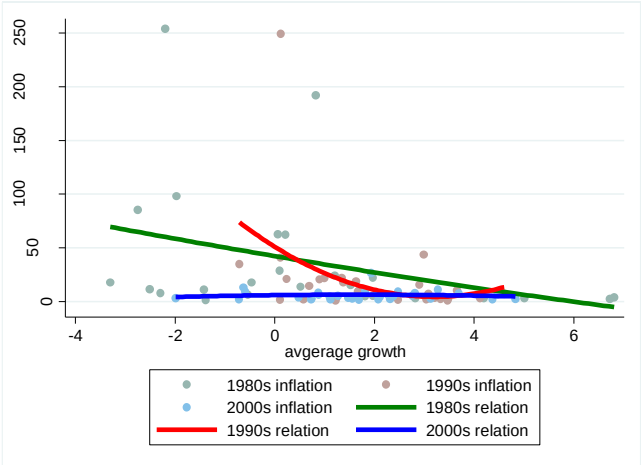
world over the period 1980-2012 (which amounts to a threshold of -7 percent p.a.), we find that 26 of such shocks happened in LAC throughout the 1980s but only 8 of them in the 1990s and after 2000, respectively. These achievements in output stabilization most likely reflect improvements in macroeconomic policies and institutions that most governments in the region promoted during the 1990s.

Figure 21: Peaks and troughs in region's GDP per capita



Source: WBG staff calculation based on WDI

Figure 22: Inflation and growth in LAC over the decades



Source: WBG staff calculations based on WDI

Our model suggests that the impact of stabilization policies on growth in LAC is small, relative to other factors. With regard to variables relating to stabilization policies, such as inflation, the real exchange rate and banking crises, the coefficients are negative though not statistically significant (see Table 3). As the coefficients of these variables are obtained from a multivariate regression model, they should be interpreted as conditional effects.[29] These conditional effects may differ from the unconditional effects. We will explore unconditional effects in the next sub-section. By order of magnitude, the effect of stabilization policies is smaller than that of the structural policies (see Figure 11). A one standard deviation increase in the real exchange rate, inflation, and the risk of banking crisis is predicted to decrease five-year GDP per capita growth by around 4 percentage points, 1 percentage point, and 1 percentage point, respectively.[30] As Figure 21 suggests, stabilization policies have overall contributed little to LACs growth performance over the last decade. The average contribution is zero, suggesting that an average LAC country has approached a plateau on that policy dimension. Only some countries, most notably Mexico and Uruguay, have seen further progress on stabilization that fostered growth over the last decade.

[29] Looking at Table 3, an F-test on the joint significance of variables in the category of structural reforms (stabilization policies) yields a p-value of 0.00 (0.19) in column (1) and 0.00 (0.08) in column (2), strengthening the interpretation that structural reforms are jointly significant.

[30] For comparison to the system-GMM estimates, we report in column (2) of Table 3 least squares estimates. The least squares estimates reveal qualitatively a similar pattern as the system-GMM estimates. Structural policies are significantly correlated with economic growth. Also, least squares estimates on variables related to stabilization policies are significant. Quantitatively, the least squares estimates are generally smaller in absolute value than the system-GMM estimates. This could in part reflect classical measurement error that leads to an attenuation of least squares estimates but not instrumental variables estimates. Another reason could be endogeneity biases that are corrected for in the system-GMM regression but not in the least squares regression.

Payoffs to further price and output stabilization are potentially limited in most LAC countries. While some LAC countries still have substantial room for improving their stabilization policy, the fruits of the latter have already been reaped by many other economies. This is exemplified by inflation stabilization in Figure 22, which depicts the relationship between inflation and growth in LAC over the decades. During the 1980s, there was a clear negative relationship between inflation and growth: countries with higher inflation rates grew slower, or even experienced negative growth rates. In the 1990s, the relationship became more complex, being strongly negative for countries with weaker performance but essentially flat for economies that performed well. After 2000, there was no relationship between observed growth and inflation rates in LAC. This does not mean that these countries do not have to care about inflation anymore, especially taking into account that low inflation during this period was influenced by external factors. In fact, it is hard to imagine that LAC would have benefitted as much from the favorable external environment without strong institutional performance. But it suggests that the effects of further reductions in inflation on growth are likely negligible for many countries in the region (see also Fisher, 1993; Khan and Senhadji, 2001; Kremer et al., 2013).

Nevertheless, stabilization policies had significant effects on per capita income growth in an unconditional model what allows their effect to operate via other variables. While previous results from our model were derived from a multivariate (i.e. conditional) regression, we also estimated an unconditional model.[31] Since the variables are included in the model one at a time, the estimated coefficients should be interpreted as unconditional effects, i.e. they may operate via other channels that are captured by different variables in the multivariate model. In this setup, inflation, the real exchange rate and banking crises have a significant effect on GDP per capita growth. Since the effects of variables related to stabilization policies are significant in the unconditional model, but not in the multivariate panel estimates, this suggests that that stabilization policies also impact on growth through other channels. This is intuitive to the extent that structural and stabilization policies go hand in hand. For example, potential advantages of moderate inflation only materialize in economies where agents trade freely and competitively.

Structural policies were a key growth determinant, and had a sizeable and significant effect on economic growth in LAC. Conversely to stabilization policy, the estimates from the multivariate regression model support the hypothesis that structural policies are important growth determinants. Variables relating to structural policies such as financial development, trade openness, and infrastructure enter with a significant positive coefficient; the size of government enters with a significant negative coefficient. Education and political institutions have a statistically insignificant effect, suggesting that 5 year time frame might be too short to bring about significant variation, that they act mostly through other channels (see balanced panel section), or that the education data has large measurement error (e.g. because educational attainment might not be a strong proxy of actual skills). These results are similar to those obtained on the unbalanced panel, though schooling is mostly significant there, suggesting that it might also have an impact via other channels in the multivariate model.[32] Figure 11 facilitates the interpretation of the estimates reported in column (1) of Table 3 by

[31] The unconditional models include the variables of interest one at a time, controlling for lagged GDP as well as country and year fixed effects (see column (1) of Annex Table 3) as well as the international commodity export price index in order to control for commodity price windfalls (column (2) of Annex Table 3). This estimation strategy has the key advantage that it allows for a much larger sample. Details are available in the Technical Annex.

[32] The estimated unconditional effects are also quantitatively sizeable. It is useful to recall that the coefficients reported in the tables capture the impact elasticity effects; the cumulative long-run effects can be obtained by dividing these coefficients by 1/1-θ, where θ is the coefficient on lagged GDP per capita. For example, with regard to schooling, the estimated coefficient of 0.06 in column (1) of Panel A in Annex Table 3 should be interpreted as a one percent increase in the secondary school enrolment rate leading to an increase in GDP per capita over a five-year period of around 0.06 percent; the

showing the estimated coefficients multiplied with their standard deviations, showing therefore the growth effect occurring from an average change in explanatory variable. The magnitude of the impact that variables relating to structural policies have on economic growth is substantial. For example, a one standard deviation increase in infrastructure, financial development, and trade openness is predicted to increase five-year GDP per capita growth by 27 percentage points, 7 percentage points, and 6 percentage points, respectively; a reduction in the size of government of one standard deviation is predicted to increase five-year GDP per capita growth by 16 percentage points.

The relevance of structural policies has been especially large in countries where external conditions contributed little to growth. When looking at the predicted contributions of the observed changes in structural policies to growth on the country level (Figure 23) one can see that they were most important in Costa Rica, El Salvador, Mexico, Nicaragua, and Brazil. In none of these countries, external conditions contributed much to growth, suggesting that countries that do not benefit as strongly from external tailwinds feel more push for structural reform. Structural reforms in some resource-rich countries, such as Peru, Colombia and Chile during the 2000s, also contributed positively to economic growth, around half a percentage point per annum. Interestingly, for Chile, which has long been seen as the paragon of structural reforms in LAC, estimates suggest that for the 2000s most of growth was due to persistence, followed by external conditions, while only about 0.5 percent per annum of GDP p.c. growth was due to structural reforms, and none to stabilization policies.[33] On the other hand, St. Kitts and Nevis, Jamaica, Grenada, St. Vincent and Grenadines, and the Dominican Republic are the top five countries where the deterioration in structural reforms contributed negatively to growth.

The relevance of structural policies is robust to different measures of key variables. In line with the empirical growth literature (e.g. Mankiw et al., 1992; Loayza et al., 2005) our main measure of schooling is the secondary school enrolment rate. We show in Annex Table 4 that there is also a positive effect when we use alternative measures of schooling, such as the primary school enrolment rate or the tertiary enrolment rate. Moreover, there exists a significant positive effect when education is measured by total years of schooling and the model is not conditioned on other variables.[34] Similarly, our main measure of telecommunications infrastructure is the number of telephones lines per capita. In recent decades, mobile phones have become widely used. Hence, mobile phones are another relevant indicator of telecommunications infrastructure. We show in column (1) of Annex Table 5 that there exists a significant positive effect on GDP per capita growth when using this alternative measure of telecommunications infrastructure.

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cumulative long-run effect of a (permanent) increase in the secondary school enrolment rate is larger, going up to over 0.28 percent.

[33] However, Chile is one of only few countries where model predicted value is not close to the actual value. Furthermore, this does not imply that structural reform did not promote growth. It simply suggests that less structural reform, as measured by our proxy variables, has taken place in the 2000s while structural reforms of the 1990s are reflected in the high relevance of growth persistence.

[34] As in Barro and Lee (2010).Unfortunately, it was not viable to examine at the within-country level the effects of school quality on economic growth. The reason is lack of time-series data. Hanushek and Woessman (2012) argue that Latin American countries have experienced relatively low GDP per capita growth rates over the past half century, despite having relatively high levels of school attainment, because of low educational achievement. The empirical analysis in Hanushek and Woessman (2012) is based entirely on cross-sectional data.

Continued reform effort is needed to achieve convergence to higher income levels. The estimates in Table 3 should be interpreted as improvements in policies leading to increases in GDP per capita of the country where these policies are implemented. Given that innovations to levels of the explanatory variables have a permanent effect on income but a temporary effect on growth, the actual growth effect in the model comes from the innovation (e.g., a political reform), not the level of the explanatory variable. This entails that relatively poor countries that undergo policy improvements will see their income level and associated living standards rise, but growth will only improve as long as this new level is reached. However, observing that poor countries carry out policy reforms does not mean that we will necessarily see convergence in incomes across countries. The reason is that the income gap between rich and poor countries not only depends on policies in poor countries but also on policies in rich countries. If rich countries improve their structural and stabilization policies at a rate faster than poor countries do, then the income gap between rich and poor countries will widen. In order to make this point even clearer, we report in Annex Table 8 estimates from a model where the dependent variable is countries' GDP per capita relative to the GDP per capita of the US. As can be seen, the coefficients on the right-hand-side variables are identical to those of our baseline estimates reported in Table 3.[35]

The estimated impacts of the structural and stabilization policies measured by this model are independent of the common headwinds, such as commodity price dynamic. It is useful to recall that, in the regression model, the common factors are captured by the year fixed effects. The coefficients reported in Table 3 on variables related to structural policies and stabilization policies are therefore not driven by common headwinds and tailwinds.

6. EXTENSIONS OF THE MODEL

How different is LAC? How different are the 2000s? Addressing potential parameter heterogeneity

LAC is similar to other countries when it comes to the impact of structural and stabilization policies on growth. In this section we explore parameter heterogeneity, both across countries and time. We begin by discussing whether the growth effects of structural policies and stabilization policies are significantly different in LAC countries. Econometrically, the question of whether the growth effects are different in LAC countries can be examined by adding to the econometric model an interaction term between the right-hand-side variables and an indicator variable that is unity for LAC countries. The coefficient on this interaction term gives the difference in the marginal effect for LAC countries (relative to the rest). Annex Table 6 shows the relevant results. The main finding is that there is virtually no evidence that the growth effects of structural policies and stabilization policies are different for LAC countries, compared to other regions of the world. This can be seen from the quantitatively small and statistically insignificant coefficients on the interaction terms between variables relating to policies and the LAC dummy variable.[36,37]

[35] Econometrically, the reason for this is that the baseline model controls for time fixed effects.

[36] There is also very little evidence of a significant difference in marginal effects for Caribbean countries, see Annex Table 10.

[37] Country-specific coefficients are similar to those obtained from the restricted panel. In the panel literature (see e.g. Durlauf et al., 2005) an important issue is whether cross-country parameter heterogeneity leads to a bias of the estimated average marginal effect in the restricted panel model. To explore this, we estimate a panel model allowing for country-

There has been no significant variation in the marginal effects of structural and stabilization policies over time. Another interesting question that we can explore with our panel data model is whether the growth effects of structural and stabilization policies vary over time. In Annex Table 7 (1) we report estimates from a model that interacts the variables relating to structural policies and stabilization policies with an indicator variable for the post-1990 period (the mid-point in our sample). Significant coefficients on these interaction terms would suggest that the growth effects of structural and stabilization policies differ for the post-1990 period, i.e. are unstable over time. The main finding, however, is that the coefficients on the post-1990 interaction terms (reported in column (2)) are quantitatively small, especially when measured relative to the coefficients on the linear effects (reported in column (1)). Except for lagged GDP and infrastructure, we also note that the interaction terms are not significantly different from zero. Similar results emerge for the post-2000 period, see Annex Table 7(2). However, this finding does not imply that the contribution of different policies and country-specific external effects did not vary over time. For example, a variable that might have undergone a substantial change in the last decade but remained fairly stable in the decade before would contribute more to growth in the latter decade, although its effect per unit of change would remain the same.

How do policies interact? Looking at potential complementarities

Complementarities among structural and stabilization features could potentially improve upon the in-sample prediction vis-à-vis the baseline model. The idea is to test whether the joint impact of different reforms is greater than the sum of individual impacts. This "complementarity premium" would result from potential synergies among the distinct growth drivers.[38] The empirical literature offers some examples of complementarities: FDI may foster growth in countries with greater human capital[39] or with deeper domestic financial markets;[40] the growth benefits from financial openness are reaped by governments with stronger institutions;[41] benefits from trade growth are greater in countries with greater progress in first and second generation reforms.[42] In fact, there can be multiple interactions among structural policies and between structural policies and other type of shocks.

Potential policy complementarities are studied through the use of interaction dummies.[43] Specifically, the interaction dummy takes the value of 1 if the relevant variable is above the world medium. Structural variables are interacted with (1) inflation above median; (2) infrastructure indicator

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specific slope coefficients. We estimate the model on a balanced panel so that T=8 for all countries; we include each of the policy variables on the right-hand side one at a time as this is the only feasible way of estimating the model given the data at hand. Figure A. 1 in the Annexes shows a kernel density plot and a histogram of the country-specific coefficients for each of the relevant policy variables of interest. Annex Table 11 reports the estimated coefficients for each country in the sample and their standard errors. The important result is that the means (medians) of the country-specific coefficients (reported at the bottom right-hand side of Annex Table 11) are quantitatively close to and not statistically different from the coefficients obtained in the restricted panel model, see Annex Table 3 for comparison.

[38] (Cf. Gallego and Loayza [2002].

[39] (Borensztein, De Gregorio and Lee [1998]).

[40] (Alfaro, Chanda, Kalemli-Ozcan and Sayek [2004]).

[41] (Klein and Olivei [2008]).

[42] (Chang, Kaltani, and Loayza, [2009]).

[43] Following Gallego and Loayza (2002).

above median; (3) financial development above median; and (4) inflation below median, plus financial development as well as infrastructure above median.

However, except for inflation and the real exchange rate, the interaction terms in the expanded model are not found to be significant. Table A. 19 in the annex presents estimates from an interaction model that includes the above suggested interaction terms. Column (4) presents the results when the interaction is done with a joint indicator variable (inflation, infrastructure, financial depth). The main result is that none of the interaction terms are significantly different from zero at the 5 percent level. If variables (1)-(3) are considered individually to construct the interaction term, then there is also no systematic evidence across the range of structural and stabilization policies of significant heterogeneity. Only for inflation (Panel G) and the real exchange rate (Panel H) is the interaction term significantly different from zero at the 5 percent level. The coefficient on the interaction with (above median) financial depth is positive, suggesting that inflation and appreciations of the real exchange rate are less harmful for growth at higher levels of financial development.

Beyond the short/long-run dichotomy: alternative stabilization measures

Modern macroeconomics emphasizes the role of short-run fluctuations for long-run growth. Empirical research has stressed the role volatility plays for long-run growth (.[44] This issue has become especially relevant for the debate about the long-run consequences of the current depression. More generally, the new synthesis in macroeconomics strives for analyzing both short-run fluctuations and long-run growth within a single consistent framework.[45] We thus take a deeper look at variables trying to approximate for macroeconomic fluctuations. More precisely, we look at the output gap at the beginning of each 5-year period, which is measured as the difference between actual output and the one estimated using an HP filter. This gap is expected to have a positive impact on growth due to "cyclical reversion." Furthermore, we look at GDP volatility, which is expected to have a negative impact on growth and is measured as the standard deviation of the cyclical component obtained from HP-filtering over the 5-year period. Finally, we include the same cyclical measure for the real exchange rate.

Cyclical fluctuations matter for economic growth. As Table A. 18 shows, the output gap and GDP volatility have the expected positive and negative impact on transitory growth, respectively. Both of them are statistically significant.[46] On the other hand, real exchange rate volatility does not exhibit a statistically significant effect, possibly reflecting that some degree of exchange rate volatility is a welcome macroeconomic shock absorber while only large swings in the exchange rate are a sign of macroeconomic vulnerabilities and mismanagement. These findings add to our previous statement that stabilization policies do in fact matter (as seen from the unconditional model) although their impact often is indirectly mediated through structural factors. The results from Table A. 18 further highlight that countries which are off their potential output trajectory revert to their longer-run growth rate but that such deviations from potential output are itself harmful to long-run growth.

However, the key results from the baseline model are not significantly altered. When comparing the other parameter estimates from Table A. 18 to our baseline model in Table 3, we find that the key

[44] See e.g. Ramey and Ramey (1995), Hnatkovska and Loayza (2005), Kose et al. (2006), Crespo-Cuaresma et al., 2013)
[45] See Ball (2014) for the long-run effects of the financial crisis and Woodford (2009) for the macroeconomic synthesis. The issue of bringing the short and long run together in neoclassical growth theory was already raised by Solow (2005).
[46] Note that GDP volatility is positive and insignificant in the fixed effect model which is not surprising as it is endogenous to growth swings.

results remain largely unaffected, although some of their magnitudes change. For example, the parameters for external factors and government consumption become smaller (in absolute values). Also note that the persistence term becomes smaller, which is perfectly in line with theory: in the growth equation representation (equation 2), the income persistence term becomes a growth reversion term, which should pick up some degree of the "cyclical reversion" variable. Finally, the effect of the exchange rate becomes statistically significant, whereas significance of financial development (as measured by credit/GDP) ceases.

Alternative measures for infrastructure

The main reason for using telephone lines as the baseline proxy measure for telecommunications is that mobile phones were not widely used until the 1990s. The dataset used in this report covers the period 1970-2010, so a proxy for telecommunications infrastructure that is relevant for the entire period needs to be used.

However, there are some clear limitations to using this proxy alone, highlighting the need for additional robustness tests. First, the explosion in the use of mobile phones has limited the usefulness landlines as a proxy for infrastructure. Not only countries are demanding more cell phones but are also replacing their fixed lines with mobile phones.[47] Furthermore, considering other infrastructure sectors – such as roads – would reduce the potential upward bias of the contribution of infrastructure that takes place by including only landlines in the regression analysis. Finally, the inclusion of more than one infrastructure sector would result in different gaps in the different infrastructure sectors. Since telecommunications is the only sector that have improved dramatically since the opening of the sector and is the only sector that has narrowed the gap vis-à-vis advanced countries, using it as the sole proxy may underestimate the infrastructure bottlenecks observed in LAC countries.

A first robustness test is run where transportation infrastructure replaces telecommunications. Columns (2) and (3) of Annex Table 6 show that transportation infrastructure, as captured by roads and railway lines per capita, also has a significant positive effect on GDP per capita growth.

The second robustness considers more than one sector as a proxy for infrastructure. Following Calderon et al., (2014), a composite infrastructure index is used, comprising roads, telephone lines and power generation capacity. More specifically, the composite infrastructure index is constructed as follows: *0.36*ln(telephone lines per worker) + 0.35*ln(power generation capacity per worker) + 0.29*ln(road networks per worker*. Annex Table 16 reports estimates from regressions that are identical to those of Table 3, except for that now telephone lines are replaced with the composite infrastructure index. The findings show that: (1) the estimated elasticity coefficient on the composite infrastructure index is around 0.08, thus positive and significantly different from zero at the 1 percent level; (2) the coefficients on the other variables change little relative to Table 3. In the sys-GMM estimation of Annex Table 16 column (1), the Hansen J-statistic p-value is below 0.05, but this p-value would be above 0.1 if an additional lag of GDP was included in the model, with little effect on the other coefficients.

[47] However, the number of observations for telephone lines is almost twice as large as for mobile phone. Hence, from an econometric point of view telephone lines are a preferable proxy for telecommunications infrastructure. For this reason, a robustness check using mobile phones is not performed.

While these results confirm the importance of closing the LAC region's infrastructure gap for productivity and growth, they also highlight serious data deficiencies. There is just not enough good quality, internationally comparable data on infrastructure to allow for a more accurate picture of needs and gaps. This underscores the need for a comprehensive effort to address data limitations as a key item in the development policy agenda going forward.

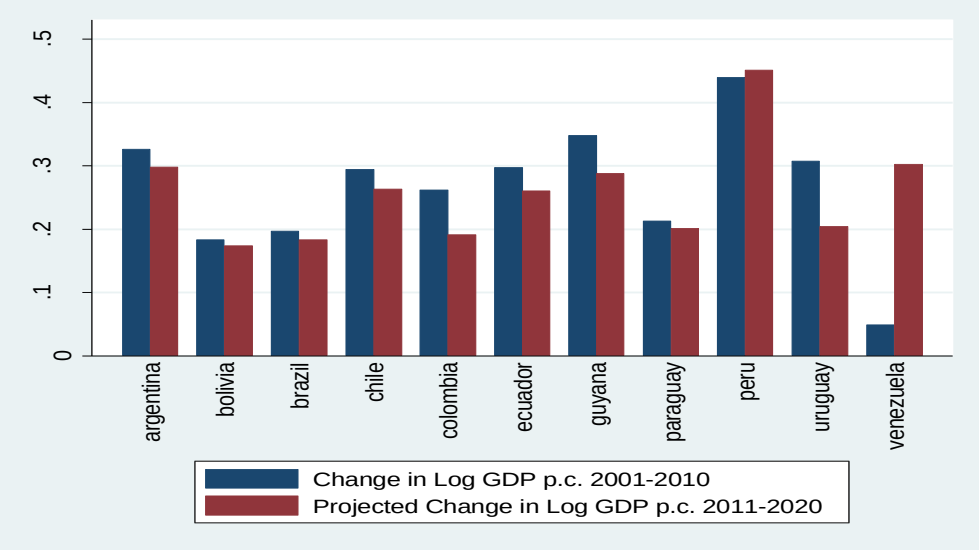
7. WHAT DOES THE FUTURE HOLD FOR LAC?

What if trends in growth drivers persist into the future?

This chapter focuses on estimating growth for the LAC region for the 2010s assuming that recent developments in the determinants of growth extend into the future. The spirit of this chapter is not to attempt to make projections about the future, but rather to extrapolate trends identified by the model to the subsequent decade. Thus, this exercise should be understood as a form of sensitivity analysis and help understanding the economic implications of the econometric model discussed in the previous chapter.

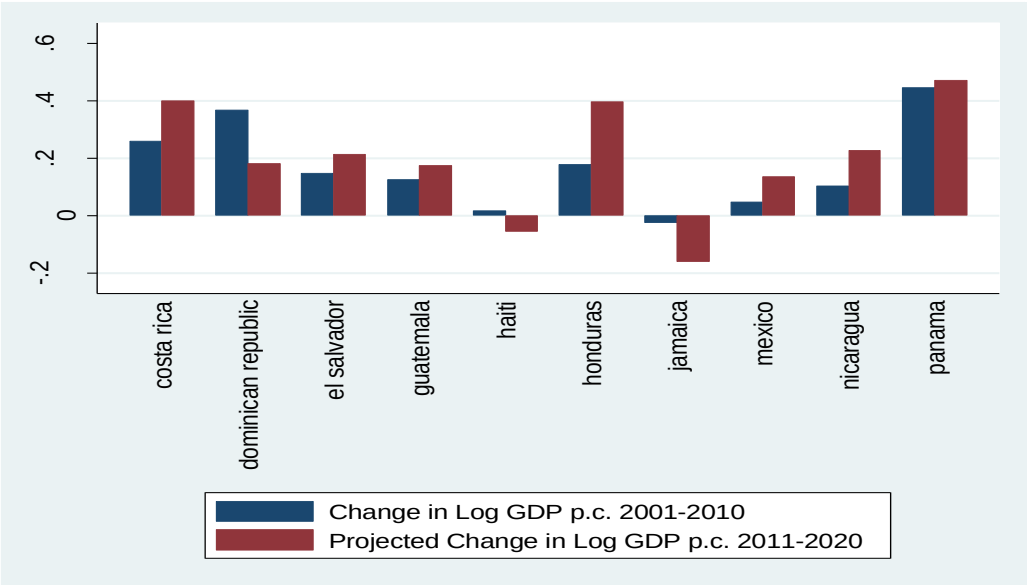
Country-by-country time-series regressions are used to generate growth predictions. More specifically, the predictions are generated using the estimates in column (1) of Table 3 and to obtain future values of the explanatory variables, we used an AR(1) forecast. Because T=8, we estimated this parsimonious model and used this model to compute the predicted change in each variable over two periods, 2011-2015 and 2016-2020.[48] Annex Table 13 presents the growth forecasts for the LAC countries in the sample. The first column shows the change in log GDP per capita between 2001 and 2010, while the second column shows the predicted change for 2011-2020. The remaining columns of the table show how this predicted change is decomposed into persistence of GDP per capita growth and predicted changes in structural policies, stabilization policies, and the terms of trade. The comparison of predicted growth for the next decade (2011-2020) to the previous decade (2001-2020) is facilitated by Figure 23 and Figure 24; these figures show the predicted change in log GDP per capita during the 2011-2020 period and the change in log GDP per capita during the 2001-2020 period for countries located in South America, and Central America and the Caribbean, respectively.

Figure 23: Growth Predictions for South America under a Scenario of Continuous Trends



[48] We have also computed forecasts using richer time-series models that include linear and quadratic trends. Results were similar to the ones reported here. Estimation of ARMA type models was, however, not feasible because for the majority of variables and countries maximum likelihood estimator did not achieve convergence.

Figure 24: Growth Predictions for Central America and the Caribbean under a Scenario of Continuous Trends



The model predicts that, extrapolating current trends, the average LAC country would grow slightly faster in the second decade of this century than in the first. On average, the forecasts predict that countries in the LAC region will expand during the 2010s by around 0.23 log points, or 2.3 percent per annum. This is slightly higher than the expansion in the previous decade, which was around 0.22 log points. For countries located in South America the forecasts predict an expansion of around 2.6 percent per annum, thus slightly down by 0.1 percentage points from the expansion in the 2000s. On the other hand, the model predicts a modest increase in GDP per capita growth for countries in Central America and the Caribbean, up by 0.3 percentage points from 1.7 percent during 2001-2010 to 2.0 percent during 2011-2020. Table 4 below summarizes the main findings.

The countries in the LAC region with the highest growth predictions are Panama, Peru, Costa Rica, and Honduras. Real PPP GDP per capita is predicted to grow in these countries by 4.7 percent, 4.5 percent, 4.0 percent, and 4.0 percent, respectively. For all four of these countries, the predictions for GDP per capita growth during the 2011-2020 period are higher than the GDP per capita growth in the previous decade. More precisely, the predictions suggest an increase in the GDP per capita growth rate by 0.2 percentage points per annum for Panama; by 0.1 percentage points for Peru; by 1.4 percentage points for Costa Rica; and by 2.2 percentage points for Honduras. For Panama, 2.7 percentage points in annual GDP per capita growth during 2010-2020 are predicted to be due to persistence, a quite substantial magnitude. Similarly, for Peru, Costa Rica, and Honduras, these numbers amount to 2.7, 1.1, and 1.6 percentage points, respectively. The predicted contributions from structural reforms are 2.1 percentage points for Panama, 1.6 percentage points for Peru, 2.4 percentage points for Costa Rica and 2.8 percentage points for Honduras. The predicted growth contribution of stabilization policies and external conditions are minuscule for these countries, except for Peru where deteriorations in stabilization policies are expected to shave 0.2 percentage points of growth while favorable external conditions are predicted to increase annual GDP per capita growth by 0.4 percentage points.

There are only two countries for which the model predicts negative GDP per capita growth: Haiti and Jamaica. Both of these countries are part of the Central American and Caribbean region. For

Haiti, the forecasts predict a negative change in real PPP GDP per capita during the 2011-2020 period of around -0.06 log points, or -0.6 percent per annum, thus down by nearly 0.7 percentage points per annum relative to the expansion of the previous decade. For Jamaica the predicted drop in GDP per capita growth is even larger: real PPP GDP per capita is estimated to decrease during 2011-2020 by around -0.16 log points, equivalent to a negative GDP per capita growth rate of -1.6 percentage points. For Haiti, 0.1 percentage points in annual GDP per capita growth during 2010-2020 are predicted to be due to persistence; for Jamaica this number amounts -0.2 percentage points. The predicted contributions from structural reforms are -0.4 percentage points for Haiti and -1.2 percentage points for Jamaica. The predicted growth contributions arising from stabilization policies are -0.1 in Haiti and -0.2 percentage points in Jamaica; deteriorations in external conditions are expected to shave 0.1 and 0.2 percentage points of annual GDP per capita growth in Jamaica and Haiti, respectively.

The countries for which the model predicts the strongest acceleration in GDP per capita growth are Nicaragua, Costa Rica, and – perhaps surprisingly – Honduras and Venezuela. Venezuela's GDP per capita growth rate is predicted to increase by around 2.5 percentage points, from 0.5 percent during 2001-2010 to 3.0 percent during 2011-2020; Honduras's GDP per capita growth rate is predicted to increase by around 2.4 percentage points, from 1.8 percent during 2001-2010 to 4.0 percent during 2011-2020; Costa Rica's GDP per capita growth rate is predicted to increase by around 1.4 percentage points, from 2.6 percent during 2001-2010 to 4.0 percent during 2011-2020; and Nicaragua's GDP per capita growth rate is predicted to increase by around 1.3 percentage points, from 1.0 percent during 2001-2010 to 2.3 percent during 2011-2020. For Nicaragua, 0.6 percentage points in annual GDP per capita growth during 2010-2020 are predicted to be due to persistence; for Costa Rica, Honduras, and Venezuela, these numbers amount to 1.6, 1.1, and 0.3 percentage points, respectively. The predicted contributions from structural reforms are 1.4 percentage points for Nicaragua, 2.4 percentage points for Costa Rica, 2.8 percentage points for Honduras, and 2.7 percentage points for Venezuela. The predicted growth contributions arising from changes in stabilization policies and external conditions are minuscule, except for Nicaragua and Venezuela where improvements in external conditions are predicted to add to GDP per capita growth by around 0.1 and 0.2 percentage points, respectively; deteriorations (improvements) in stabilization policies in Venezuela (Nicaragua) are expected to shave 0.2 (add 0.1) percentage points of (to) annual GDP per capita growth.

The countries for which the forecasts predict the strongest deceleration in GDP per capita growth (by over 1 percentage point per annum) are the Dominican Republic, Jamaica, and Uruguay. The Dominican Republic's GDP per capita growth rate is predicted to decrease by around 1.7 percentage points per annum, from 3.7 percent during 2001-2010 to 1.8 percent during 2011-2020; Jamaica's GDP per capita growth rate is predicted to decrease by around 1.4 percentage points per annum, from -0.2 percent during 2001-2010 to -1.6 percent during 2011-2020; and Uruguay's GDP per capita growth rate is predicted to decrease by around 1.0 percentage point per annum, from 3.1 percent during 2001-2010 to 2.0 percent during 2011-2020. For the Dominican Republic, 2.2 percentage points in annual GDP per capita growth during 2010-2020 are predicted to be due to persistence; for Jamaica, and Uruguay these numbers amount to -0.2 and 1.9 percentage points, respectively. The predicted contributions from structural reforms are -0.5 percentage points for the Dominican Republic, -1.2 percentage points for Jamaica, and 0.2 percentage points for Uruguay. The predicted growth contributions arising from changes in stabilization policies and external conditions are minuscule, except for Jamaica where deteriorations in external conditions are expected to shave 0.2 percentage points of annual GDP per capita growth.

Table 4: Summary of Key Model Predictions under a Continuous Trends Scenario

Highest Growth Predictions	Predictions of Negative Growth	Strongest Predicted Growth Accelerations	Strongest Predicted Growth Decelerations
Panama, Peru, Costa Rica and Honduras	Haiti and Jamaica	Nicaragua, Costa Rica Honduras and Venezuela	Dominican Republic, Jamaica and Uruguay

The chosen proxy for infrastructure matters both for aggregate and individual country results. For Honduras and Venezuela, the most important contributor to the positive growth forecast is telecommunications. During the last decade both of these countries have experienced a significant expansion in telecommunications infrastructure. The model's projection is that this trend will continue and thus positively contribute to growth, about 2 percent per annum. In contrast, the model projects that, in these countries, developments in transportation infrastructure instead of telecommunications would only have a minuscule effect on economic growth, as shown in Annex Table 14. Therefore, replacing telecommunications with roads would remove Honduras and Venezuela from the group of countries with the highest forecast rates of growth acceleration. Overall, in terms of growth forecasts (2010-2020), the main contribution to economic growth comes from the continued expansion in the telecommunications sector; there is little contribution coming from transportation infrastructure. This result can be seen by comparing Table A13 with Table A14. On the other hand, growth forecasts based on the composite infrastructure index (using the estimates in column (1) of Annex Table 16) yield results which are similar to the baseline specification. Annex table 15 shows that the mean (10-year) growth forecast contribution from the composite infrastructure index for LAC is around 0.059; this is very close to the numbers presented in Annex Table 13, based on telecommunications only, i.e. 0.058. There are, however, differences at the individual country level: For some countries the contribution from the composite infrastructure index is lower relative to using telecommunications while for other countries the opposite is the case.

These results highlight the challenges to growth going forward. Our previous analysis has shown that the influence of stabilization policies has approached a threshold plateau where further growth-promoting effects from additional improvements in macro policymaking become harder. Similarly, doing "more of the same," e.g. in terms of public infrastructure provisioning, is unlikely to drive growth in the future. Instead, governments in LAC should find ways to identify the most pressing infrastructure bottlenecks in the future and provide them in an efficient manner. Furthermore, Table 4 highlights that a considerable fraction of predicted growth stems from persistence – i.e. a certain level of path dependence. The obtained predictions should thus not leave policymakers too confident about the future of growth but should alert them to the need to identify new sources of growth by addressing the most pressing domestic bottlenecks.

What if commodity prices remain at their current level while other trends persist?

Another way of gauging the importance of the external environment is to examine its impact on growth forecasts in a situation where it ceases to improve. Therefore, forecasts for 2010-2020

growth are conducted under a scenario of continuous AR(1) trends for all variables, *except* the commodity price index and the terms of trade. The latter are assumed to remain at their 2010 levels, which is the definition of cessation of improvement adopted here. This exercise is broadly consistent with the approach followed by Talvi and Munyo (2013), who look into the relationship between an "External Conditions Index" and the "LAC-7" growth rate.[49,50]

This exercise does not significantly change the baseline forecasts, except for some of the LAC commodity exporters. As shown in Table A17, for the LAC region as a whole, the predicted growth forecast is around 2.2 percent, compared to 2.3 percent in Table A13. For some countries, most notably the commodity exporting countries the difference is somewhat more significant. For example, when keeping external conditions at their 2010 values, Chile's growth forecast declines by around 0.6 percentage points (to 2.0 percent); Peru's growth forecasts declines by around 0.4 percentage points (to 4.1 percent); and Venezuela's growth forecast declines by around 0.2 percentage points (to 2.8 percent).

A benchmarking exercise on the effects of changes to structural and stabilization features

Identifying the performance of LAC countries in structural and stabilization policies is important in order to locate the areas in which the most binding constraints to growth may lie. When looking at the last 5 years of the sample (2005-2010), some countries had good performance both in their structural and stabilization policies within the LAC distribution of countries. Figure 25 shows a scatter plot of a structural policy index and a stabilization policy index. The scatter plot identifies whether structural or stabilization policies, or both types of policies, posed large binding constraint for GDP per capita growth. The structural policy index is constructed for each country in LAC by taking the log-level of the structural policy variables (financial development, education, political institutions, trade openness, infrastructure and government size) in the 2005-2010 period and multiplying them by their respective unconditional effects coefficients[51]. These values are then added together and the resulting distribution for LAC is normalized to the [0, 1] space[52]. This ranks each country's structural policy performance, using the log-level of each variable and its contribution to the level of GDP per capita (evidenced by the unconditional effects coefficients), with respect to the rest of the countries in LAC. The same is done for the stabilization policy index using the stabilization policy variables (inflation, real exchange rate and banking crisis).

There is no country that was a top performer in both structural and stabilization policies, suggesting that there is room for growth gains from policy changes in LAC. The scatter plot in Figure 25 shows who were among the top performers in the two categories of policies (the dotted red lines depict each policy index's median). If a country was a top performer in both stabilization and structural policies, it would be located at coordinates (1, 1) and conversely if it was a bottom performer in both types of policies, it would be located at the origin. This is due to the normalization to the [0,1]

[49] The External Conditions Index is a weighted average of global economic growth, commodity prices, and international financial conditions (as proxied by EMBI spreads). LAC-7 is the simple average of the GDPs of Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

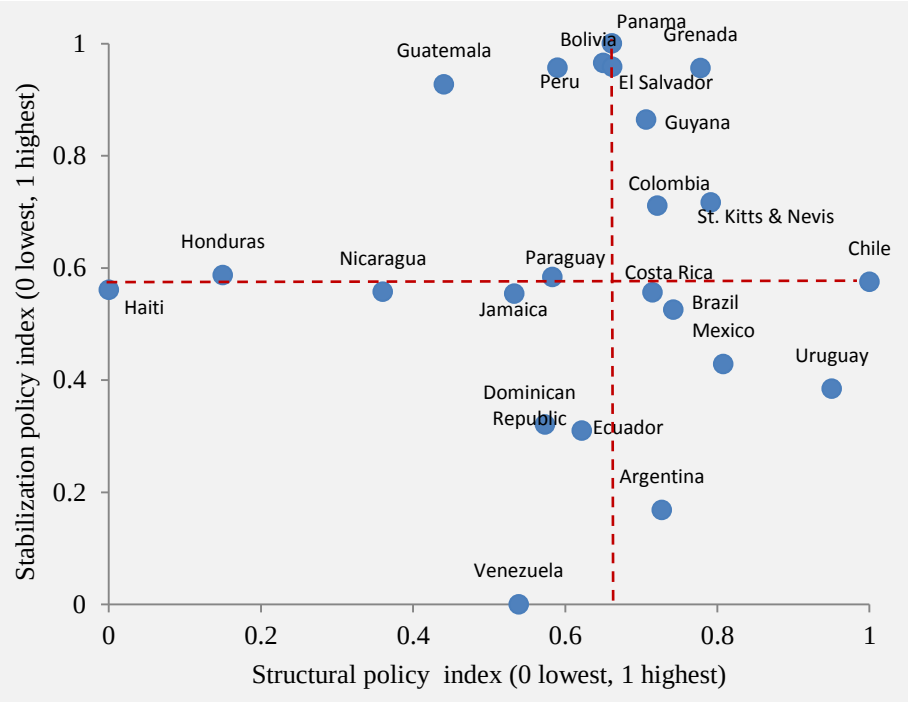
[50] Talvi and Munyo (2013) attribute the ongoing growth slowdown among the LAC-7 to stagnating – albeit still favorable – external conditions: "Therefore, the cooling-off that LAC-7 is currently experiencing is the natural and predictable outcome of external conditions which remain favorable for the region – even more favorable on average than those of the Golden Years, *but that have ceased to improve*". (Op. cit., p. 11, emphasis added).

[51] These unconditional effects are the ones found in Table 3 and are not country specific.

[52] For Haiti and Honduras, data for the education variable (years of schooling) is not available for the 2005-2010 period. We penalize less for no availability of schooling data as the structural policy index is constructed by taking the sum of the multiplication of the log-level of each variable and the unconditional effect coefficient and dividing it by the sum of the coefficients for which there is available data for the 2005-2010 period in each country case.

space among the LAC distribution of countries. The further away from the origin a country is, the fewer binding constraints to growth it potentially has. Chile and Uruguay emerge as top performers in structural policies and Honduras and Haiti as bottom performers, meaning for these latter countries their largest binding constraints are potentially among the structural policy variables. For stabilization policies, Panama and Bolivia are top performers and Venezuela and Argentina are the bottom performers, suggesting that for these latter countries their largest binding constraints are potentially among stabilization policy variables. Countries who do not appear to have been largely constrained by either type of policy are the ones found in the first quadrant (Chile, Colombia, Panama, Grenada, Guyana and St. Kitts & Nevis). It is important to note that these policy indices are calculate with respect to the LAC region and give a sense of the policy areas from which growth benefited the most[53].

Figure 25: Structural and stabilization policies index (2005-2010)



Source: WBG staff calculations based on Brueckner (2014)

This benchmarking exercise looks into the counterfactual per capita income a country would have achieved if it were a top performer for each explanatory variable. This will help determine the possible effects that a stellar performance (relative to the rest of LAC) in specific policy areas might have had for a country's level of GDP per capita. In order to perform this benchmarking exercise we look at the LAC countries' distribution for each of the variables included in the model (those that fall under the structural and stabilization policy category) and take the log-level of the country at the 90th percentile of the distribution[54]. We then multiply that log-level by the unconditional effects

[53] The reasoning behind this is LAC had a sound performance in terms of GDP per capita growth in the last decade compared to other regions of the world (as evidenced in the Stylized Facts section of this report) and hence a within region comparison is appropriate in order to identify adequate performance in certain policy areas and potential binding constraints in other policy areas.

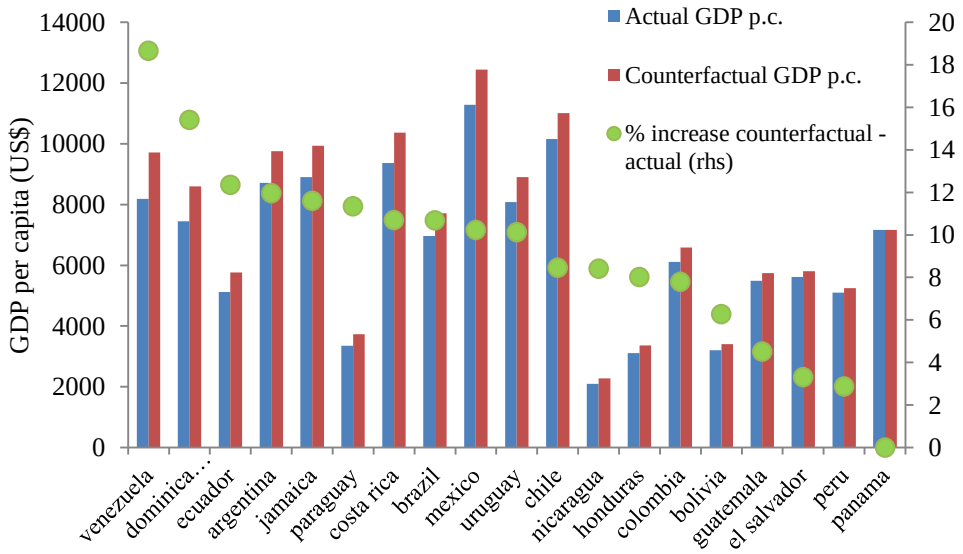
[54] For certain variables a country in the exact 90th percentile in the distribution is not available as the number of countries is limited to those in LAC. In these cases we take the country falling within the 90th to 93rd percentile range.

coefficient in order to obtain the effects on a counterfactual GDP per capita. This in turn allows us to compare the actual level of GDP per capita for a specific country against the counterfactual level of GDP per capita of setting a certain variable at the level of a top performing economy in LAC. This is an indication of the possible gains in the GDP per capita level that a country would have had if it would have been a top performer in a specific area. It is important to highlight that the unconditional effects coefficients are being used as they capture the overall within-country effect that a variable (e.g. schooling, financial development,) has on GDP per capita. Furthermore, our approach is an inspection similar to a triage that tries to quickly prioritize policy areas based on the severity of their actual conditions. This cross-country process has to neglect country specific characteristic and data issues, so its results should not be interpreted mechanically. They rather serve as a starting point to think about policy prioritization.

Stabilization Policy Benchmarking

Countries such as Venezuela, Dominican Republic, Ecuador and Argentina would have seen the greatest increase in percentage terms of the level of GDP per capita if their performance in inflation would have been at the level of the top performers in LAC. Figure 26 shows the actual and counterfactual level of GDP per capita of a better performance in inflation. The green dots represent the percentage difference between counterfactual and actual GDP per capita and can be seen as what a country potentially stands to gain by enhancing its performance in inflation. Venezuela would have seen an 18 percent increase in its level of GDP per capita if its inflation would have been at the level of Panama (the 93rd percentile performer). Subsequently, a country like Argentina would have seen an increase of 12 percent in its level of GDP per capita. Among LAC countries, these two countries stand to gain the most from an improvement in inflation management.

Figure 26: Counterfactual GDP per capita of better performance in Inflation

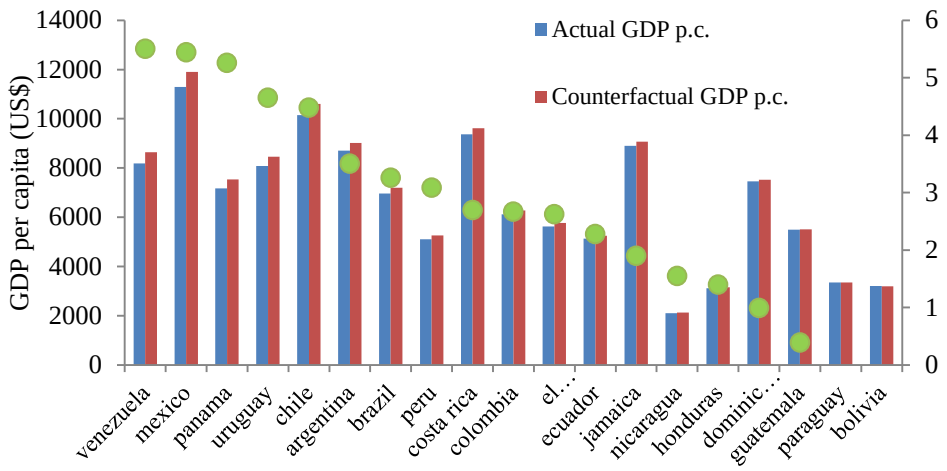


Source: WBG staff calculations based on Brueckner (2014)

Venezuela, Mexico and Panama would have seen substantial increases in the level of GDP per capita if their performance in real exchange rate management would have been at the level of the top performers in LAC. Figure 27 shows the actual and counterfactual level of GDP per capita of a

better performance in real exchange rate management. Venezuela would have seen a 5 percent increase in its level of GDP per capita if its real exchange rate management would have been at the level of Paraguay (the 93rd percentile performer). Mexico would have also seen an increase of 5 percent in its level of GDP per capita. Among LAC countries, these two countries stand to gain the most from an enhancement of real exchange rate management. The result that Panama being the third country that would benefit the most from an enhancement in real exchange rate management, stands out as it was ranked among the top performers in the overall stabilization policy index. This is due to an adequate performance in inflation management as evidenced in the previous paragraph but a very poor performance in real exchange rate management.

Figure 27: Counterfactual GDP per capita of better performance in Real Exchange Rate Management



Source: WBG staff calculations based on Brueckner (2014)

Structural Policy Benchmarking

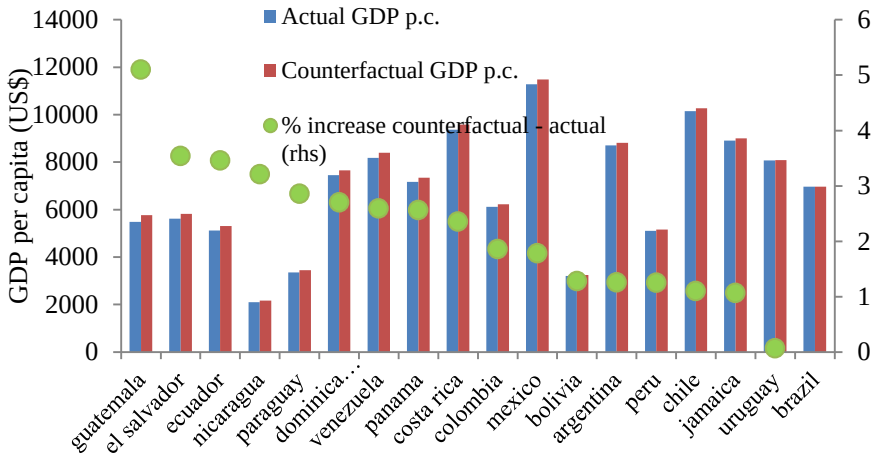
Guatemala and El Salvador would benefit the most in terms of potential increases in GDP per capita if their performance in education would have been at the level of the top performers in LAC. Figure 28 shows the actual and counterfactual level of GDP per capita of more years of schooling, as a proxy for performance in education. Guatemala and El Salvador would have the largest percentage increase in GDP per capita within LAC countries if their level of years of schooling would have been that of Brazil (the 92nd percentile performer)[55]. Guatemala and El Salvador would have seen an increase of 5 and 3 percent in their level of GDP per capita, respectively.

Venezuela and Argentina would benefit the most in terms of potential increases in GDP per capita if their performance in financial development, as measured by credit to the private sector over GDP, would have been at the level of the top performers in LAC. Figure 29 shows the actual and counterfactual level of GDP per capita of higher levels of credit to GDP. Venezuela and Argentina would have the largest percentage increase in GDP per capita within LAC countries if their level of credit over GDP would have been that of Chile (the 92nd percentile performer). Venezuela and

[55] Since schooling data for Honduras and Haiti is not available for the 2005-2010 period, these countries were not included in this benchmarking exercise.

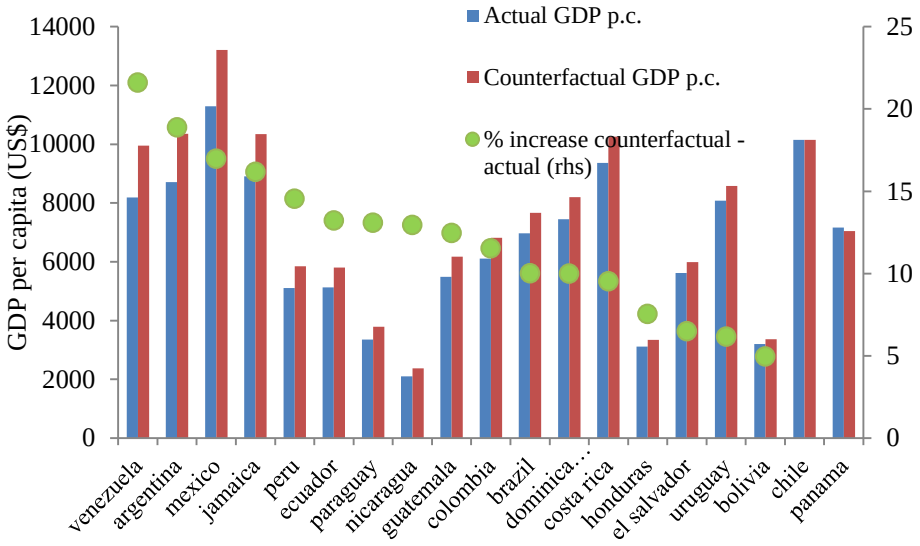
Argentina would have seen an increase of 22 and 19 percent in their level of GDP per capita, respectively. Venezuela, with an increase of 22 percent from its actual to its counterfactual GDP per capita level is the country that stands to gain the most from an enhancement of any type of policy variable included in the model.

Figure 28: Counterfactual GDP per capita of better performance in Education



Source: WBG staff calculations based on Brueckner (2014)

Figure 29: Counterfactual GDP per capita of better performance in Financial Development

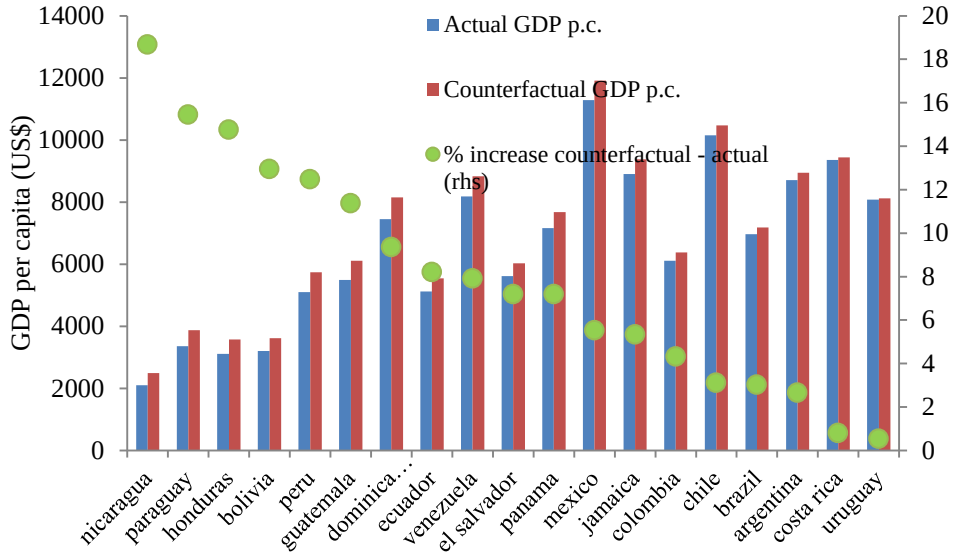


Source: WBG staff calculations based on Brueckner (2014)

Nicaragua, Paraguay and Honduras would have seen the largest increases in percentage terms of the level of GDP per capita if their performance in infrastructure would have been at the level of the top performers in LAC. Figure 30 shows the actual and counterfactual level of GDP per capita of a better performance in infrastructure equivalent to the top performers in LAC. Nicaragua would have seen an increase of 19 percent in its level of GDP per capita and Paraguay of 15 percent if their level of infrastructure as measured by number of main telephone lines per capita would have been that of Grenada (the 92nd percentile performer). It is interesting to note that, in the case of this particular

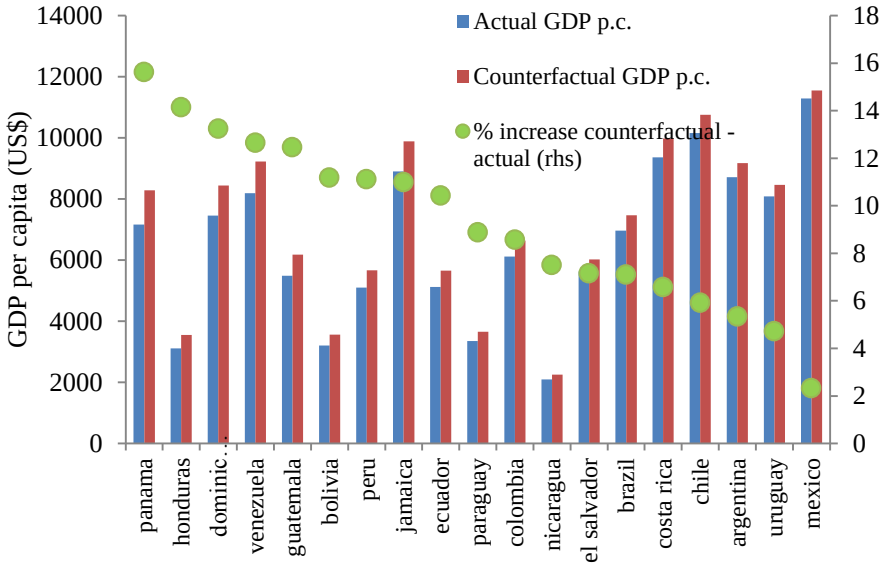
measure of infrastructure, a country's gap with respect to the top performer shows a fairly clear inverse correlation with its per capita income level.

Figure 30: Counterfactual GDP per capita of better performance in Infrastructure



Source: WBG staff calculations based on Brueckner (2014)

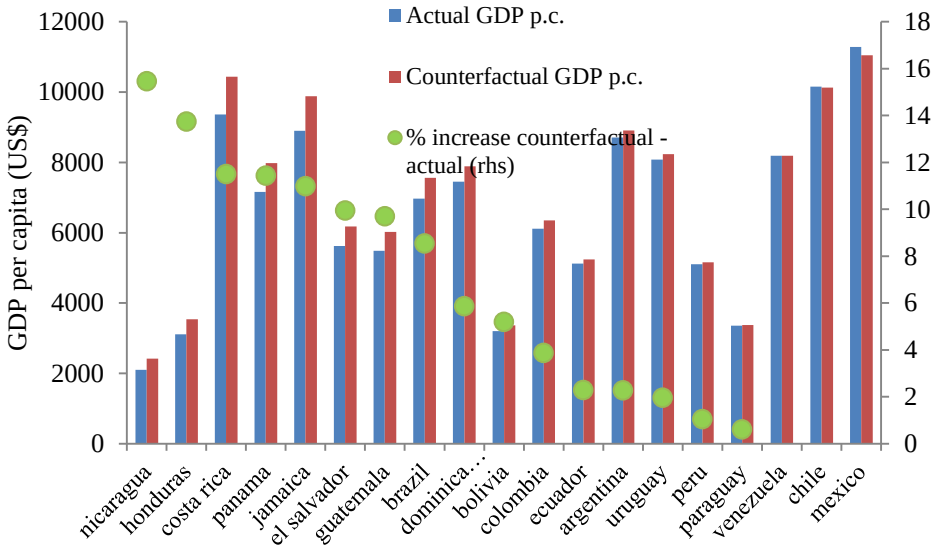
Figure 31: Counterfactual GDP per capita of better performance in Trade Openness



Source: WBG staff calculations based on Brueckner (2014)

Panama and Honduras would have seen the largest increases in percentage terms of the level of GDP per capita if their level of goods trade would have been at the level of the top performers in LAC. Figure 31 shows the actual and counterfactual level of GDP per capita of a better performance in trade openness, equivalent to the top performers in LAC. Panama would have seen an increase of 16 percent in its level of GDP per capita. However, this result comes with a grain of salt as it is based on goods trade and conditional on the population size. Honduras would have experienced a GDP p.c. increase of 14 percent if their level of trade openness, as measured by exports plus imports over GDP, would have been at the level of Uruguay (the 92nd percentile performer).

Figure 32: Counterfactual GDP per capita of better performance in Government Size



Nicaragua and Honduras would have seen the largest increases in percentage terms of the level of GDP per capita if their level of government size would have been at the level of the top performers in LAC. Figure 32 shows the actual and counterfactual level of GDP per capita of a better performance in government size, equivalent to the top performers in LAC. Nicaragua would have seen an increase of 15 percent in its level of GDP per capita and Honduras of 14 percent if their level of government size, as measured by government consumption over GDP, would have been as low as that of Venezuela (the 92nd percentile performer).

8. WHAT DO THESE FINDINGS MEAN FOR THE POLICY DEBATE?

The Growth Commission Report (2008) opens its policy discussion with a rare acknowledgment: "We do not know the sufficient conditions for growth". While it is possible to outline the main features of fast-growing economies, it is a much harder task to pin down the "ultimate" or "fundamental" factors behind growth performance. Based on available evidence and on country experience, the Growth Report enumerates a broad list of ingredients for sustained growth, without attempting to transform such list into a growth strategy or advocating that all elements in it are necessary for growth. The chief ingredients on the list include: (i) high levels of investment (in infrastructure, physical capital, and human capital); (ii) technology transfer; (iii) product market competition; (iv) well-functioning labor markets; (v) macroeconomic stability; (vi) financial sector development; (vii) equity and equality of opportunity; and (viii) effective government.

In this vein, while the findings from this study should not be mechanically translated into policy recommendations, they do reveal broad policy directions which could help inform growth strategies in the region. First and foremost, what promoted growth in the past will not bring the region further. The drivers of growth in LAC have somewhat shifted over the last decade. Compared to previous studies on the subject, we find less evidence of the role of stabilization policies for growth in LAC. This probably reflects the fact that most LAC countries have already brought their macroeconomic house in order throughout the 1990s, which facilitated reaping benefits from other sources of growth in the period thereafter but did not constitute a means of growth by itself anymore. Conversely, structural policies continued to play a key role for growth. But for many LAC countries, most notably net commodity exporters, external conditions were an essential driver of growth over the last decade. This broad pattern suggests that some sources of growth can shift over time. External conditions might change in the future and are mostly beyond the regions control. Structural policies - such as those listed in the Growth Commission Report – are easier to shape and have turned out as a robust determinant of growth.

The benchmarking exercise carried out in this study can help facilitate selectivity, sequencing, and prioritization in the design of growth strategies. It does so by shedding light on where the "biggest bang for the buck" could be for LAC countries without attempting to identify the "ultimate" sources of growth. This exercise, however, should be viewed as a first approximation. As such, it needs to be complemented by other sources of information – especially at the sectoral and microeconomic levels – in order to generate a more comprehensive picture of the main constraints to growth in individual LAC countries.

Benchmarking also reveals significant cross-country heterogeneity across the region. Better performance in terms of stabilization-related features of the economy would have clearly benefited Venezuela, Ecuador and Argentina, while having a significantly lower impact elsewhere in the region. The counterfactual impact of improved structural features varies widely across the region, where the main would-be beneficiaries are Guatemala (education), Venezuela (financial development), Nicaragua (infrastructure and government size), and Panama (trade openness). Thus, the Growth Commission Report's list is broadly reflected in the region's growth experience, but different ingredients have different weights depending on the country.

The relatively smaller role found for stabilization policies as a growth driver should not detract from the fact that a sound macro-policy framework remains a pre-requisite for sustained growth. Recent research has linked low TFP growth in several LAC countries to questionable policy choices

over many years, including fiscal mismanagement and excessive state *dirigisme* in investment and production decisions.[56] An inadequate macroeconomic policy framework adversely affects private investment and growth by lowering the expected return on investment projects and increasing the risk premium demanded by risk-averse investors to undertake a project.[57] Some LAC countries are currently pursuing policies which fall squarely on the Growth Commission's "don't do" list, including excessive currency appreciation, energy subsidies and import and forex restrictions.[58] While such policies may provide a stopgap "solution" to short-term imbalances or address political pressures, they are not easily reversible and could adversely affect countries' ability to converge for years to come.

In fact, maintaining a stable macroeconomic framework is all the more important in natural resource-rich countries – as indicated by the evidence on Argentina, Ecuador and Venezuela. Natural resource-rich countries need to pay particular attention to commodity price volatility, real exchange-rate overvaluation risks, and the heightened potential for corruption and rent-seeking. An integrated approach to fiscal policy[59] in this context could be particularly useful to: (i) reduce the costs of export and fiscal revenue volatility by de-linking government spending from short-term fluctuations on commodity prices; (ii) safeguard the quality of public spending through strengthened public financial management (PFM) systems; (iii) ensure longer-term fiscal sustainability through the application of an appropriate sustainability benchmark, such as the permanent income model (PIM) or other variants,[60] especially for oil exporters; and (iv) manage uncertainty through e.g. the adoption of Medium-Term Fiscal Frameworks. At the same time, enhancing transparency in the management of revenues from natural resources is essential for the credibility of fiscal policy as well as for the overall country governance.

The empirical findings also confirm the existence of a significant gap between infrastructure needs and investments in the region – particularly for its poorer countries. It is a well-known fact that LAC lags behind East Asian economies in terms of infrastructure-related metrics such as electricity installed capacity and road density.[61]The counterfactual exercise conducted in the previous chapter suggests significant potential per capita income gains for countries at the lower end of the regional distribution of income, including Nicaragua, Honduras, and Bolivia. Paraguay, a lower-middle income country, would also stand to gain considerably from infrastructure investments – a result consistent with previous work on the subject.[62] The results are also in line with other recent research on the contribution of infrastructure to aggregate output.[63]

Indirect effects of distinct policy levers may also matter for growth results. A case in point is the proxy for governance, or Polity2, which is found to have had a statistically insignificant impact on growth, despite the positive correlation between Polity2 and per capita GDP growth (as well as lagged per capita GDP), as reported in Table 2. This is reminiscent of Loayza et al (2005), where the estimated coefficients of their governance index were also not statistically significant. They interpreted their

[56] Soto, R. and F. Zurita (2011). as well as the country case studies in the same issue of the journal. The emphasis that this new research places on policies as a main driver of TFP growth contrasts to some extent with Easterly's point that robust associations between economic policy variables and growth occur for extreme values of the former. See Easterly, W. (2005).
[57] Montiel, P. (2011).
[58] Commission on Growth and Development (2008).
[59] Medas, P. and D. Zakharova (2009).
[60] See also Van Der Ploeg, F. and A. Venables (2011).
[61] E.g., World Bank (2011), pp. 26-27.
[62] World Bank (2013).
[63] See, in particular, Calderón et al (2014).

result as meaning that "the effect of governance on economic growth works through the actual economic policies that governments implement".[64] This seems to be a plausible interpretation in the present case as well, particularly given the positive correlation between Polity2 and other "structural" variables such as schooling, credit, and infrastructure. That is, given this potential indirect effect, it cannot be concluded from the empirical analysis that governance is irrelevant for growth. Other indirect growth transmission mechanisms can be thought of as well. For example, human capital-augmenting education spending may affect growth both directly and indirectly through, say, its positive impact on the profitability of private investments, which in turn could prompt an increased availability of private credit.

The empirical findings also provide a glimpse into the potential role of governments in facilitating growth.[65] . On the one hand, government consumption has a negative impact on long-run growth to the extent that it may be associated with crowding-out of private investments (if it leads to higher interest rates through debt-financing of the public deficit), distortions (e.g., high taxes) or inefficiencies (e.g., a bloated public bureaucracy), without generating clear social returns. An important caveat is that higher government consumption embedded in fiscal stimulus may have a positive impact on output in the short term, as long as there is sufficient slackness and fiscal space in the economy. On the other hand, education attainment and infrastructure services – which are at least partly funded by public sectors – would have a positive impact on growth. Therefore, *the composition of public spending matters for growth*: Its impact will only be positive if it helps support the accumulation of human capital (through education) or physical capital (through infrastructure).[66,67] More broadly, governments can also facilitate growth by maintaining a stable and predictable policy environment, both at macro and microeconomic levels.

[64] *Op. cit*, p. 56.

[65] Given the high level of aggregation of the data used in the empirical analysis, this study does not provide much insight into the potential role of industrial or sector-specific policies.

[66] It is also conceivable that government spending on education may positively affect growth through total factor productivity, by means of human capital externalities.

[67] In the short term, increases in government consumption – as part of a fiscal stimulus package – can have an impact on output during a cyclical downturn (and especially so in the context of the zero-lower bound), depending on the size of the fiscal multiplier.

9. CONCLUSIONS

This study re-evaluated LAC's growth performance based on new data available for the first decade of the 21st century. This new information allowed for a reassessment of the respective roles of structural reforms, stabilization policies, and external conditions for LAC's growth performance, taking the seminal contribution Loayza et al (2005) as a starting point. In so doing, this study sheds additional light on a question which has been central to the development policy debate in the region: to what extent has growth being driven by external or domestic factors?

First, as expected, external conditions play a significant role in explaining LAC's growth performance, reflecting the commodity price boom and favorable terms of trade developments. An important fraction of growth during the 2000s in resource-rich countries can be explained by external conditions – as measured by time dummies to capture global shocks, terms of trade growth, and commodity price windfalls. For example, average growth of GDP per capita in Venezuela, Guyana, and Chile during the 2000s was boosted due to positive terms of trade developments by over 2 percentage points.

Second, stabilization policies play a less significant role than they did in earlier empirical assessments of growth performance. This may be due to the fact that many LAC countries managed to put their "macroeconomic house" in order during the 1990s and 2000s, thus reducing the importance of such policies as engines for promoting growth further. This result confirms our considerations on the relationship between inflation and growth in chapter 2. It should be stressed that this does not diminish the importance of macroeconomic stability as a *precondition* for growth:[68] It just means that the contribution of stabilization policies to growth became less pronounced as many LAC countries had already reaped the direct gains from stabilization in the late 1990s and early 2000s. Furthermore, they potentially continued to indirectly support growth in the last decade, since a stable macroeconomic environment can help countries take advantage of favorable external conditions.[69]

Third, and perhaps more importantly, structural reforms continue to play a significant explanatory role, *even after controlling for the commodity boom*. Changes in structural policies have had larger effects on the growth of LAC countries than changes in stabilization policies. Moreover, LAC's recent growth performance cannot be reduced to the commodity boom. Financial development, trade openness, and infrastructure are confirmed to have been growth-enhancing while government size is been shown to be growth-reducing. On the other hand, political institutions are not statistically significant in the multivariate model.[70]

Growth drivers in LAC are not significantly different from other regions. The empirical analysis conducted for this study shows that the main growth engines are not unique to LAC. External tailwinds were not significantly different for the LAC region. The same applies to growth effects of structural

[68] It is useful to recall that macroeconomic policies that contribute to an unstable (volatile) economic environment increase uncertainty about future returns on investment. In doing so, it discourages physical capital accumulation and worsens longer-term growth prospects. For a discussion of these links, see Montiel (2011).

[69] For example, as seen in chapter 3, the model predicts a considerably higher growth rate for Venezuela and Guyana than actually observed, Such predictions are mostly driven by external conditions. The difference between model predictions and actual outcomes might indicate that poor macroeconomic policies and weak institutions impeded these countries from fully exploiting favorable external conditions.

[70] These empirical results should not be interpreted as dismissing the importance of good governance for development. In fact, these variables might be influencing growth through other channels, as discussed in chapter 5.

policies and stabilization policies. From that standpoint, there seems to be nothing very particular about drivers of growth in LAC relative to other regions.

Within LAC, however, there is a great deal of heterogeneity across countries and of in-country changes over time. Regarding the former, the contrast between e.g. Panama and Haiti in terms of growth performance is noteworthy. Regarding the latter, Chile's example is instructive: While Chile's growth was mostly explained by structural reforms by Loayza et al (2005), the most important factor in explaining its recent growth performance seems now to be external conditions. This does not mean that Chile's structural reform process stagnated or reversed, but only that its contribution to growth became less relevant than that of external conditions[71].

Such heterogeneity can also be seen in the benchmarking exercise, which shows that structural and stabilization features have a distinct impact on each country. This finding suggests that different paths to sustained growth are available to different countries. An immediate corollary is that growth strategies should be guided by pragmatism – and country-specific conditions – rather than by "recipes".[72]

Combined with a more widespread adoption of structural reform initiatives across the region, the commodity boom also facilitated the emergence of new "growth stars" in LAC. There is now a larger set of faster growing countries in LAC than at the time of Loayza et al (2005) due to both external conditions and structural reforms. Chile is now joined by countries such as Colombia, Panama, Peru and Dominican Republic as fast-growing LAC economies.[73]

What do these results imply for the region going forward? The continuing importance of structural reform as a growth driver and the fact that external conditions are projected to be less favorable[74] going forward bring structural domestic issues back to the forefront of the policy debate in LAC. At the same time, particularly in light of the risk of policy reversals in some countries, it is critical to stress the continuing importance of a sound macro-fiscal framework as a pre-requisite for sustained growth, even though the empirical analysis placed less weight on stabilization policies as growth engines.

The results from the empirical analysis in this study are also consistent with other recent work on growth in LAC:

- First, as recent research by Caselli (2013, reported in chapter 1) shows, LAC countries could have been much closer to the US in terms of per capita income, given their human and physical capital endowments, if they did not suffer from a sizable efficiency (or TFP) gap. **Closing the efficiency gap would require structural reforms** that improve resource allocation within the economy as well as the incentives for economic agents to innovate.
- Second, as the global environment becomes less supportive, countries in **the region will need to increasingly rely on domestic drivers of growth**. Domestic demand has been a key factor

[71] This is all the more interesting as Loayza *et al* (2005) concluded their study by postulating that, given its past performance in terms of implementing structural reforms, "(…) Chile continues to have the best outlook for growth in the region" (p. 94).
[72] Cf. de la Torre (2014).
[73] De Gregorio (2014) aptly summarizes this phenomenon: "Chile, the earliest reformer, enjoyed its highest growth during the 1990s. In other countries, most of the macroeconomic reforms occurred during the 1990s – including granting independence to central banks, consolidating fiscal policy, taking the first steps toward exchange rate flexibility, and other structural reforms – and these countries enjoyed the benefits almost a decade later."(p. 7).
[74] Or, as argued by Talvi and Munyo (2013), have ceased to improve.

in post-crisis recovery in the majority of countries. But to sustain growth into the medium-term, supply-side domestic constraints might become binding. While some countries have room to increase capacity utilization, many others are operating close to or above their possibility frontier.[75]

- Third, **the structural reform agenda itself remains unfinished in LAC**, as pointed out by Birdsall et al (2010), thus indicating that plenty of scope exists for additional – and often unconventional – growth-enhancing structural reforms.[76]

All these distinct pieces of evidence point to the need for a renewed effort in the domestic structural front by LAC countries - but they also highlight the need for additional work that provides more granularity in terms of specific policy interventions. The cross-country regressions undertaken for this report re-emphasize the continuing importance of structural reforms both for explaining past growth performance and evaluating future growth prospects. In so doing they help demystify claims that recent growth in LAC can be reduced to a mere response to favorable external conditions. However, they say little about the specific interventions that could accelerate and sustain growth in individual countries. Therefore, they should be complemented by both country-specific diagnostics and less disaggregated approaches that can shed light on the particular ways in which market imperfections and government failures interact with growth.[77]

[75] Talvi and Munyo, *op. cit*.

[76] Birdsall *et a*l (2010) highlight four main areas left out by the "Washington Consensus"-type approach which would require active policy interventions: (i) volatility; (ii) institutions; (iii) knowledge and technological innovation; and (iv) equity. See p. 27.

[77] The companion report on "What Is Preventing LAC from Converging to Higher Income Levels?" provides an attempt to generate more granularity by examining trends and structural bottlenecks at sector and firm levels.

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Technical Annex: Setup and Estimation Methodology

The estimation strategy draws on advanced panel data techniques to estimate growth effects. It identifies these effects by exploring variation within countries over time, which avoids most basic biases due to unobserved cross-country heterogeneity. A common approach in the empirical growth literature (see Durlauf et al., 2005) has been to relate the change in the log of real GDP per capita between two periods to the lagged level of GDP per capita and a set of growth determinants. Following this literature, our baseline equation for a 5-year non-overlapping panel during 1970-2010 is:

$$\text{(1)} \qquad \ln y_{ct} - \ln y_{ct-1} = \varphi \ln y_{ct-1} + \Gamma \ln(X)_{ct} + a_c + b_t + e_{ct}$$

where $\ln y_{ct} - \ln y_{ct-1}$ is the change in the natural log of real PPP GDP per capita in country *c* between period *t* and period *t-1*; $\ln y_{ct-1}$ is the natural log of real PPP GDP per capita of country *c* in period *t-1*; a_c and b_t are country and year fixed effects, respectively; and e_{ct} is an error term.

The explanatory variables include proxies for structural and stabilization policies, as well as for transmission channels of the external shocks. As in Loayza et al. (2005), the vector of growth determinants, $X_{ct,}$ includes the logs of secondary enrolment, the GDP share of domestic credit to the private sector, trade openness, government size, telephones lines per capita, inflation, the real exchange rate, an indicator of systemic banking crises, and the growth rate of the terms of trade. Additional variables that we include in X_{ct} are the Polity2 score, which is a measure of the degree of political competition and political constraints, as well as the growth rate of an international commodity export price index that captures windfalls from international commodity price booms.

The model includes country fixed effects to control for omitted fixed country characteristics, and time fixed effects to control for common external factors. The country fixed effects, $a_{c,}$ capture cross-country differences in time-invariant factors such as fixed geographic characteristics (e.g. distance to the equator, mountainous terrain, whether countries are landlocked, natural resource endowments) as well as historical factors (e.g. colonial origin, historical population density, exposure to the slave trade, etc.) that may directly affect GDP per capita growth beyond their effect on X. Early empirical work in the late 80s and 90s employed cross-sectional regressions to identify determinants of economic growth (see, for example, Mankiw et al., 1992). While an advantage of cross-section regressions is that they have the potential to identify long-run relationships, this work has been criticized for being subject to severe endogeneity bias arising from omitted fixed country characteristics (see, for example, Durlauf et al., 2005). The inclusion of country fixed effects in equation (1) is therefore important in order to allay concerns that the estimates are biased due to the omission of historical and geographic variables. The year fixed effects capture (non-linear) time trends and period-specific shocks that are common across countries. For example, they control for changes in the world technology frontier or global demand shocks that arise from changes in the world business-cycle. Lagged GDP per capita is included in equation (1) in order to control for conditional convergence.

Convergence in income per capita in this empirical model means convergence to each country's own steady state, but all results are identical to the model with convergence to a common steady state, the US, due to the inclusion of time fixed effects. Lagged GDP per capita is included as an explanatory variable in order to control for convergence. In a cross-sectional regression, the hypothesis of (conditional) convergence is about whether poor countries grow faster than rich countries (conditional on country characteristics). In a panel regression that includes country fixed effects, the

hypothesis of (conditional) convergence is about whether countries' GDP per capita growth is lower the closer they are to their country-specific steady state, a_c.[78] To see this, note that the country fixed effects capture among other factors cross-country differences in average GDP per capita, i.e. whether countries are rich or poor. By including country fixed effects in the model, the estimated coefficients are identified by the within-country variation of the data. This, in turn, implies that the estimated convergence coefficient φ in the panel fixed effects model is *not* driven by poor countries growing faster than rich countries and that the model therefore does not provide a framework to test for this concept of convergence. However, from a policy perspective it is important to note that the determinants of growth identified in this framework are identical to the macroeconomic determinants of convergence. This becomes obvious if one looks at a model taking relative income to a common frontier, the US, as the dependent variable. Estimation results about growth/convergence determinants are then identical, which is due to the inclusion of time fixed effects (see Annex Table 8).

The shocks to the explanatory variables in this model have a long-run impact on the level of GDP per capita, but only a transitory effect on the growth rate. Steady-state convergence in the level of GDP per capita requires that $|\varphi|<1$. Note that equation (1) is estimated as follows:

$$\text{(1')} \qquad \ln y_{ct} = \theta \ln y_{ct-1} + \Gamma \ln(X)_{ct} + a_c + b_t + e_{ct}$$

where $\theta=1+\varphi$. This formulation makes it clear that, with $-1<\theta<1$, the estimated model is a stationary AR(1) model for the *level* of GDP per capita. In this model, a permanent perturbation to the level of X has a temporary (i.e. short-run) effect on GDP per capita growth. There is a permanent (i.e. long-run) effect on the level of GDP per capita but not on the GDP per capita growth rate.

This particular specification is an approximation around the steady state that allows testing for effects of common and country-specific responses to economic shocks. For interpretation, it is useful to note that the log-log specification of equation (1) is not ad-hoc but rather follows from a first-order approximation around the steady state of any theoretical model which is nonlinear. Take, for example, the Solow-Swan growth model (see Romer, 2011, Chapter 1 for reference).[79] The simplest version of this neoclassical growth model allows to examine the effects of capital accumulation via savings, *s*, long-run population growth, *n*, and long-run total factor productivity growth, *g*. A first-order approximation of growth around the steady state for each country, *c*, yields:

$$\text{(2)} \qquad \ln y_t - \ln y_{t-1} \approx \lambda[-\ln y_{t-1} + \alpha/(1-\alpha)\ln s_t - \alpha/(1-\alpha)\ln(g+n+\delta)] + \ln A_t$$

Or, alternatively,

$$\text{(2')} \qquad \ln y_t \approx (1-\lambda)\ln y_{t-1} + \lambda[\alpha/(1-\alpha)\ln s_t - \alpha/(1-\alpha)\ln(g+n+\delta)] + \ln A_t$$

where $\lambda=(n+g+\delta)*(\alpha/(1-\alpha))$ is the convergence rate between period *t* and *t*-1; $\ln A_t$ is the level of total factor productivity in period *t;* δ is the depreciation rate of physical capital; and α is the capital-output elasticity. Equation (2) is thus an AR(1) model that allows to characterize the dynamic response of

[78] Convergence to a country's own steady state does not say anything about whether countries across the world will converge to the same level of GDP per capita.

[79] In this model, the only way to generate long-run GDP p.c. growth is through permanent TFP growth. A one-time increase in TFP will only have a long-run level effect (but lead to transitional GDP p.c. growth). Similarly, a one-time increase in the domestic savings rate will only have a long-run level effect (but lead to transitional GDP p.c. growth).

GDP per capita to economic shocks for a particular country *c*. If we add to the time-series dimension of equation (2) a cross-country dimension, then this yields:

$$\text{(3)} \qquad \ln y_{ct} \approx (1-\lambda_c)\ln y_{ct-1} + \lambda_c[\alpha/(1-\alpha)\ln s_{ct} - \alpha/(1-\alpha)\ln(g_c+n_c+\delta_c)] + \ln A_{ct}$$

An important point to note from equation (3) is that, even if *g* is common across countries, as assumed, for example, in Mankiw et al. (1992), λ_c is country-specific. The reason is that in the data both population growth and physical capital depreciation rates differ across countries.[80] Effects of variables X_{ct} that affect economic growth through domestic savings, s_{ct}, will thus also have a country-specific growth effect.

We test for inconsistency of coefficient estimates that can arise from cross-country parameter heterogeneity. Cross-country parameter heterogeneity implies that the country-specific effects, φ_c and Γ_c, are part of the error term, e_{ct}, in equation (1). If these country-specific effects are correlated with the right-hand-side variables ($\ln y_{ct-1}$ and $\ln(X)_{ct}$), then estimation of equation (1) will yield inconsistent estimates of the average convergence rate, φ, as well as inconsistent estimates of the average marginal effects, Γ.[81] To check for cross-country parameter heterogeneity, we will estimate:

$$\text{(4)} \qquad \ln y_{ct} - \ln y_{ct-1} = \varphi_c \ln y_{ct-1} + \Gamma_c \ln(X)_{ct} + a_c + b_t + e_{ct}$$

which gives us *C* different φ's and Γ's (where *C* is the number of cross-country units). If the average estimated φ_c and Γ_c is not significantly different from the estimated φ and Γ in equation (1) then there is no evidence that cross-country parameter heterogeneity yields inconsistent estimates of the average marginal effects.

Using system-GMM estimator alleviates dynamic panel data biases. It is well known that dynamic panel estimation in the presence of country fixed effects yields biased estimates (e.g. Nickel, 1981; Wooldridge, 2002). In order to avoid this bias we use system-GMM estimation.[82][83][84] Blundell and Bond (1998) showed that this estimator provides more efficient estimates than other IV estimators that use internal instruments, such as for example the Arellano-Bond (1991) first-difference GMM

[80] According to the World Bank's World Development Indicators (2013) the sample average of the annual population growth rate during the 1970-2010 was around 3.2 percent with a cross-country standard deviation of around 4.5 percent. Bu (2006) presents estimates of physical capital depreciation rates showing that these are substantially higher for (poorer) countries located in the tropics.

[81] For a formal discussion of parameter heterogeneity see, for example, Pesaran and Shin (1995) or Philipps and Sul (2003).

[82] In order to avoid over fitting` the model we will use the "collapse" sub option in the STATA xtabond2 command. According to STATA, "the collapse sub option specifies that xtabond2 should create one instrument for each variable and lag distance, rather than one for each time period, variable, and lag distance. In large samples, collapse reduces statistical efficiency. But in small samples it can avoid the bias that arises as the number of instruments climbs toward the number of observations."

[83] We will use the one-step estimator in order to avoid severely downward biased standard errors associated with the two-step estimator (Blundell and Bond, 1998).

[84] Hauk and Wacziarg (2009) examine possible biases of GMM estimators in growth regressions using Monte Carlo simulations. Their finding is that GMM estimators can be severely biased in the presence of measurement error. The reason for this bias is a weak instrument problem -- i.e. classical measurement error attenuates the first stage fit. Whether GMM estimators are biased due to measurement error therefore needs to be evaluated on a case by case basis by the strength of the first stage. We report estimates of the first stage regressions underlying our system-GMM estimates in Annex Table 9. These show a highly significant effect of lagged changes on levels and a highly significant effect of lagged levels on changes; hence weak instrument bias is not an issue in our system-GMM regressions.

estimator that had been designed in earlier work to alleviate biases arising in dynamic panel regressions with fixed effects.

Internal instruments help correct for potential endogeneity bias. A further issue in the estimation of equation (1) is that some of the growth determinants, X_{ct}, may themselves be a function of GDP per capita growth. We will address this type of endogeneity bias by treating the relevant variables as endogenous regressors in the system-GMM estimation. In particular, we will instrument endogenous variables (in levels) with lags of their first differences. We limit the instrument set to one lag in order to ensure that the number of instruments does not grow too large in the system-GMM estimation.

Specification tests are run to ensure that estimates are consistent. Following standard practices in the literature, we will examine whether the conditions for system-GMM estimation to yield consistent estimates are satisfied by reporting two types of specifications tests. The first specification test is the Sargan test of the overidentifying restrictions. This is a joint test on the null hypothesis that the whole set of instruments is valid. Rejection of this null hypothesis is a red light that the model is misspecified. The second set of specification tests examines whether the error term in equation (1') is serially correlated. The standard method is to conduct tests for first and second-order serial correlation of the residual in the first-difference equation. A correctly specified model should yield significant first-order serial correlation in the first-difference equation (no significant first order serial correlation would suggest that the level of GDP per capita follows a random walk). If there is significant second-order serial correlation then this would invalidate the use of first-order lags as instruments and requires using higher order lags as instruments.

To capture the overall within-country unconditional effects of changes in each explanatory variable, and to ensure robustness to missing observations, balanced panel regressions are run for each subset of variables. Because some countries have missing observations during the 1970-2010 period for each subset of variables in the vector X, it is not feasible to conduct the panel regressions on a balanced panel when the full set of variables X is included in the regression model. Nevertheless, it is feasible to report estimates for a balanced panel for a subset of variables in X. In addition to reporting unbalanced panel estimates from the model that includes the entire vector of growth determinants, X, we will thus report balanced panel estimates from a more parsimonious model that includes in the regression only one of the variables in the vector X. In this parsimonious model, the obtained estimates on each variable x should be interpreted as capturing the within-country unconditional effects. For example, financial development could be a channel through which schooling affects GDP per capita growth (say, because education is needed for the functioning of courts, and well-functioning courts are necessary for the enforcement of financial contracts). If we include both schooling and financial development in the model, then the estimated coefficient on schooling captures the (residual) effect that schooling has on GDP per capita growth beyond its effect via financial development. Ultimately, from a policy point of view, one may not care so much about this conditional effect but rather about the overall within-country effect that schooling has on economic growth. This within-country effect can be obtained by estimating the parsimonious but balanced panel model with only lagged GDP per capita and schooling as right-hand-side regressors (in addition to country and year fixed effects).

Robustness Checks

Balanced Panel

As one robustness check, we discuss estimates from balanced panel regressions. The baseline estimates, reported in the previous section, were obtained from a multivariate regression model. This model was estimated using the largest possible sample given data availability for variables used in the estimation. Because not all variables are available for all countries and years during 1970-2010, the panel in the baseline regression above is unbalanced. A balanced panel for the same multivariate model would reduce the number of available countries to only 36. We therefore opted to present balanced panel estimates for one dependent variable at a time but to preserve a higher number of countries in each of these regressions. In column (1) of Annex Table 3 we present estimates from a model that includes the variables of interest one at a time, controlling for lagged GDP as well as country and year fixed effects. In column (2) of Annex Table 3 we add to the model the international commodity export price index in order to control for commodity price windfalls. This estimation strategy has the key advantage that it allows for a much larger sample. Since the variables are included in the model one at a time, the estimated coefficients should be interpreted as capturing unconditional effects. In columns (3) and (4) we repeat the regressions using data on real GDP per capita from PWT 8.0 rather than PWT 7.1.[85]

10-Year Panels

To check robustness and further smooth out business cycle fluctuations, we look at 10-year panels. Our baseline estimates are based on 5-year non-overlapping panel data. In this section, we discuss estimates based on 10-year non-overlapping panels, reported in Annex Table 12. As our interest is in exploring longer-run growth determinants, as opposed to determinants of business cycles, we chose 5-year non-overlapping panel data instead of annual data as our benchmark in order to smooth out business-cycle fluctuations while not compromising too much on reductions in the number of time-series observations. 10-year panel data has the advantage that it allows to further smoothen out business-cycle fluctuations and to analyze effects that may materialize at longer lags; however it also comes at a cost of reducing the number of time-series observations.

The 10-year panel analysis yields similar results to our baseline 5-year analysis. Variables related to structural reforms such as schooling, financial development, trade openness, and infrastructure have a significant positive effect on GDP per capita growth while the size of government has a significant negative effect. Quantitatively, the elasticity coefficients are around 0.1 for schooling and financial development, 0.15 for trade openness and infrastructure, and around -0.25 for government size. On the other hand, political institutions have no significant effect on GDP per capita growth. Regarding variables related to stabilization policies, the 10-year panel analysis shows that inflation, the real exchange rate, and banking crises have a significant negative effect on GDP per capita growth; the elasticity coefficient on these variables are -0.14, -0.03, and -0.11, respectively.

[85] Our main regressions are based on using PPP GDP p.c. data from PWT 7.1. This database provides use with the largest number of country-year observations. It covers the period up to 2010 and 189 countries. In contrast the recently available PPP GDP p.c. data from PWT 8.0 covers the period up to 2011 and 167 countries.

Annex Tables and Figures

Table A. 1 Description of Variables

Variable	Description	Source
Growth Rate of GDP per capita	The change in the natural logarithm of real PPP GDP per capita between period t and t-1.	PWT 7.1
Lagged GDP per capita	The natural logarithm of real PPP GDP per capita in period t-1.	PWT 7.1
Secondary Schooling	The natural logarithm of the secondary school enrolment rate.	WDI (2013)
Total Years of Schooling	The natural logarithm of the total years of schooling in the population aged 25 and over.	Barro and Lee (2010)
Credit/GDP	The natural logarithm of the ratio of domestic credit to the private sector divided by GDP. Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI (2013)
Trade Openness	The natural logarithm of the ratio of exports plus imports over PPP GDP adjusted for countries' population size.	PWT 7.1
Telephone Lines	The natural logarithm of main telephone lines per capita. Telephone lines are fixed telephone lines that connect a subscriber's terminal equipment to the public switched telephone network and that have a port on a telephone exchange. Integrated services digital network channels and fixed wireless subscribers are included.	WDI (2013)
Mobile Phones	The natural logarithm of mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service using cellular technology, which provide access to the public switched telephone network. Post-paid and prepaid subscriptions are included.	WDI (2013)
Government Size	The logarithm of the ratio of government consumption expenditures over GDP.	PWT 7.1
Polity2	The polity2 score measures the degree of political constraints, political competition, and executive recruitment. It ranges between -10 to 10 with higher values denoting more democratic institutions.	Polity IV
CPI Inflation	The natural logarithm of 100+consumer price inflation rate. CPI inflation reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services.	WDI (2013)
Real Exchange Rate	The natural logarithm of the GDP price level divided by the nominal exchange rate.	PWT 7.1
Banking Crisis	Indicator Variable that is unity in period t if the country experienced a banking crisis.	Reinhart and Rogoff (2011)
Terms of Trade Growth	The change in the natural logarithm of the net barter terms of trade index. The net barter terms of trade index is calculated as the percentage ratio of the export unit value indexes to the import unit value indexes, measured relative to the base year 2000.	WDI (2013)
ComPI Growth	The change in an international commodity export price index. The index is constructed as $$ComPI_{it} = \sum_{i=1}^{n} \theta_{ic} \, ln(ComPrice_{it})$$ where $ComPrice_{it}$ is the international price of commodity i in year t, and θ_{ic} is the average (time-invariant) value of exports of commodity i in the GDP of country c. Data on international commodity prices are from UNCTAD Commodity Statistics and data on the value of commodity exports are from the NBER-United Nations Trade Database (Feenstra et al., 2004). The commodities included in the index are aluminum, beef, coffee, cocoa, copper, cotton, gold, iron, maize, oil, rice, rubber, sugar, tea, tobacco, wheat, and wood.	Arezki and Brueckner (2012)

Table A. 2 (1). List of Countries and Variable Frequencies

country	GDP p.c. Growth	Lagged GDP p.c.	Schooling	Credit/GDP	Openness	Telefones Lines p.c.	Polity2	Government Size	CPI Inflation	Real Exchange Rate	Banking Crisis	Terms of Trade Growth	ComPI Growth
Afghanistan	8	8	7	4	8	8	5	8	2	8	8	2	8
Albania	8	8	7	4	8	8	8	8	6	8	8	2	8
Algeria	9	9	8	9	9	9	9	9	9	9	9	6	9
Angola	8	8	8	4	8	8	8	8	5	8	8	5	8
Antigua And E	8	8	5	7	8	8	0	8	7	8	8	2	0
Argentina	9	9	9	9	9	9	9	9	9	9	9	6	9
Armenia	3	3	3	3	3	3	3	3	3	3	3	2	3
Australia	9	9	5	9	9	9	9	9	9	9	9	2	9
Austria	9	9	8	9	9	9	9	9	9	9	9	2	9
Azerbaijan	3	3	3	3	3	3	3	3	3	3	3	2	3
Bahamas	8	8	8	8	8	8	0	8	8	8	8	2	8
Bahrain	8	8	8	7	8	8	8	8	5	8	8	2	8
Bangladesh	9	9	7	8	9	9	8	9	9	9	9	6	9
Barbados	9	9	7	9	9	9	0	9	9	9	9	2	9
Belarus	3	3	3	3	3	3	3	3	3	3	3	2	3
Belgium	9	9	8	9	9	9	9	9	9	9	9	2	0
Belize	8	8	6	7	8	8	0	8	8	8	8	2	8
Benin	9	9	6	9	9	9	9	9	9	9	9	6	9
Bermuda	8	8	4	0	8	8	0	8	8	8	8	2	8
Bhutan	8	8	6	6	8	8	8	8	6	8	8	2	0
Bolivia	9	9	5	9	9	7	9	9	9	9	9	6	9
Bosnia And H	4	4	1	3	4	4	1	4	4	4	4	2	4
Botswana	9	9	9	8	9	9	9	9	9	9	9	6	0
Brazil	9	9	6	9	9	9	9	9	9	9	9	6	9
Brunei	8	8	8	3	8	7	0	8	5	8	8	2	0
Bulgaria	8	8	8	4	8	7	8	8	6	8	8	2	8
Burkina Faso	9	9	8	9	9	9	9	9	9	9	9	6	9
Burundi	9	9	7	9	9	9	9	9	9	9	9	6	9
Cambodia	8	8	5	4	8	5	7	8	4	8	8	2	8
Cameroon	9	9	8	9	9	8	9	9	9	9	9	6	9
Canada	9	9	8	9	9	9	9	9	9	9	9	2	9
Cape Verde	9	9	7	7	9	8	0	9	6	9	9	6	0
Central Africa	9	9	7	9	9	7	9	9	9	9	9	6	9
Chad	9	9	8	9	9	9	9	9	9	9	9	6	9
Chile	9	9	9	9	9	9	9	9	9	9	9	6	9
China Version	9	9	9	7	9	8	9	9	8	9	9	6	9
China Version	9	9	0	0	9	0	0	9	0	9	9	0	0
Colombia	9	9	9	9	9	9	9	9	9	9	9	6	9
Comoros	9	9	6	6	9	9	8	9	6	9	9	6	0
Congo, Dem.	9	9	8	9	9	9	9	9	9	9	9	6	9
Congo, Repub	9	9	7	9	9	9	9	9	8	9	9	6	9
Costa Rica	9	9	9	9	9	9	9	9	9	9	9	6	9
Cote D'ivoire	9	9	6	9	9	9	9	9	8	9	9	6	9
Croatia	4	4	4	4	4	4	4	4	4	4	4	2	4
Cuba	8	8	8	0	8	7	4	8	8	8	8	2	8
Cyprus	9	9	4	8	9	9	9	9	7	9	9	2	9
Czech Repub	4	4	4	4	4	4	4	4	4	4	4	2	4
Denmark	9	9	8	9	9	9	9	9	9	9	9	2	9
Djibouti	8	8	8	6	8	8	7	8	4	8	8	2	8
Dominica	8	8	8	7	8	8	0	8	7	8	8	2	0
Dominican Re	9	9	8	9	9	7	9	9	9	9	9	6	9
Ecuador	9	9	8	9	9	9	9	9	6	9	9	6	9
Egypt	9	9	8	9	9	9	9	9	9	9	9	6	9
El Salvador	9	9	9	9	9	9	9	9	9	9	9	6	9
Equatorial Gu	9	9	6	6	9	6	9	9	4	9	9	5	9
Eritrea	3	3	3	3	3	3	3	3	3	3	3	3	0
Estonia	4	4	4	4	4	4	4	4	3	4	4	2	4
Ethiopia	9	9	7	6	9	9	9	9	6	9	9	3	9
Fiji	9	9	9	9	9	9	9	9	9	9	9	4	9
Finland	9	9	8	9	9	9	9	9	9	9	9	2	9
France	9	9	8	9	9	9	9	9	9	9	9	2	9
Gabon	9	9	7	9	9	6	9	9	9	9	9	6	9
Gambia, The	9	9	7	9	9	9	9	9	9	9	9	6	9
Georgia	3	3	3	3	3	3	3	3	3	3	3	2	3
Germany	8	8	0	0	8	0	5	8	0	8	8	0	8
Ghana	9	9	8	9	9	9	9	9	9	9	9	6	9
Greece	9	9	8	9	9	9	9	9	9	9	9	2	9
Grenada	8	8	7	7	8	8	0	8	7	8	8	2	0
Guatemala	9	9	9	9	9	9	9	9	9	9	9	6	9
Guinea	9	9	8	4	9	8	9	9	5	9	9	4	9
Guinea-Bissa	9	9	7	5	9	6	8	9	8	9	9	6	9
Guyana	8	8	7	8	8	8	8	8	8	8	8	2	8
Haiti	9	9	3	4	9	6	9	9	4	9	9	6	9
Honduras	9	9	7	9	9	8	9	9	9	9	9	6	9
Hong Kong	9	9	7	5	9	9	0	9	8	9	9	6	9
Hungary	8	8	8	6	8	8	8	8	8	8	8	2	8
Iceland	9	9	8	9	9	9	0	9	9	9	9	2	9
India	9	9	8	9	9	9	9	9	9	9	9	6	9
Indonesia	9	9	9	7	9	9	9	9	9	9	9	5	9
Iran	9	9	8	9	9	9	9	9	9	9	9	2	9
Iraq	8	8	8	4	8	7	7	8	3	8	8	2	8
Ireland	9	9	8	9	9	9	9	9	2	9	9	2	9
Israel	9	9	8	9	9	9	9	9	9	9	9	2	9
Italy	9	9	8	9	9	9	9	9	9	9	9	2	9
Jamaica	9	9	8	9	9	9	9	9	9	9	9	2	9
Japan	9	9	8	9	9	9	9	9	7	9	9	2	9
Jordan	9	9	8	9	9	8	9	9	7	9	9	6	9
Kazakhstan	3	3	3	3	3	3	3	3	3	3	3	2	3
Kenya	9	9	8	9	9	9	9	9	9	9	9	6	9
Kiribati	8	8	8	0	8	7	0	8	8	8	8	2	8

Table A.2 (2). List of Countries and Variable Frequencies (Continued)

country	GDP p.c. Growth	Lagged GDP p.c.	Schooling	Credit/GDP	Openness	Telefones Lines p.c.	Polity2	Government Size	CPI Inflation	Real Exchange Rate	Banking Crisis	Terms of Trade Growth	ComPI Growth
korea, republic of	9	9	8	9	9	9	9	9	9	9	9	6	9
kuwait	4	4	4	4	4	4	4	4	3	4	4	2	4
kyrgyzstan	3	3	3	3	3	3	3	3	3	3	3	2	0
laos	8	8	8	5	8	8	8	8	6	8	8	2	8
latvia	3	3	3	3	3	3	3	3	3	3	3	2	3
lebanon	8	8	6	5	8	6	6	8	5	8	8	2	8
lesotho	9	9	9	8	9	9	9	9	9	9	9	6	0
liberia	8	8	3	8	8	6	8	8	8	8	8	4	8
libya	4	4	2	4	4	4	4	4	3	4	4	2	4
lithuania	3	3	3	3	3	3	3	3	3	3	3	2	3
luxembourg	9	9	8	7	9	9	0	9	9	9	9	2	0
macao	8	8	7	6	8	6	0	8	6	8	8	2	0
macedonia	4	4	4	4	4	4	4	4	4	4	4	2	0
madagascar	9	9	6	9	9	8	9	9	9	9	9	6	9
malawi	9	9	8	9	9	9	9	9	9	9	9	6	9
malaysia	9	9	9	9	9	9	9	9	9	9	9	6	9
maldives	8	8	6	7	8	7	0	8	3	8	8	2	0
mali	9	9	8	9	9	9	9	9	8	9	9	6	9
malta	8	8	8	8	8	8	0	8	8	8	8	2	8
marshall islands	8	8	3	0	8	6	0	8	6	8	8	2	0
mauritania	9	9	7	8	9	9	9	9	9	9	9	6	9
mauritius	9	9	8	7	9	9	9	9	7	9	9	6	9
mexico	9	9	8	9	9	9	9	9	9	9	9	6	9
micronesia, fed. sts.	8	8	3	4	8	6	0	8	5	8	8	2	0
moldova	3	3	3	3	3	3	3	3	3	3	3	2	0
mongolia	8	8	8	4	8	6	8	8	6	8	8	2	8
montenegro	4	4	2	2	4	2	1	4	2	4	4	0	0
morocco	9	9	8	9	9	9	9	9	9	9	9	6	9
mozambique	9	9	8	5	9	9	8	9	6	9	9	6	9
namibia	9	9	5	5	9	9	5	9	6	9	9	6	0
nepal	9	9	8	9	9	8	9	9	9	9	9	2	9
netherlands	9	9	8	9	9	9	9	9	9	9	9	2	9
new zealand	9	9	9	9	9	9	9	9	7	9	9	2	9
nicaragua	9	9	9	9	9	9	9	9	9	9	9	6	9
niger	9	9	8	9	9	9	9	9	8	9	9	6	9
nigeria	9	9	8	9	9	6	9	9	9	9	9	6	9
norway	9	9	8	9	9	9	9	9	9	9	9	2	9
oman	8	8	8	8	8	8	8	8	6	8	8	2	8
pakistan	9	9	7	9	9	9	9	9	9	9	9	6	9
palau	8	8	3	0	8	2	0	8	4	8	8	2	0
panama	9	9	9	9	9	7	9	9	9	9	9	5	9
papua new guinea	9	9	7	8	9	9	8	9	9	9	9	2	9
paraguay	9	9	9	9	9	9	9	9	9	9	9	6	9
peru	9	9	9	9	9	9	9	9	9	9	9	6	9
philippines	9	9	8	9	9	9	9	9	9	9	9	6	9
poland	8	8	8	6	8	8	8	8	4	8	8	2	8
portugal	9	9	7	9	9	9	9	9	9	9	9	2	9
puerto rico	9	9	1	0	9	8	0	9	9	9	9	0	0
qatar	4	4	4	4	4	4	4	4	2	4	4	2	4
romania	9	9	6	3	9	9	9	9	6	9	9	2	9
russia	4	4	4	4	4	4	4	4	4	4	4	2	4
rwanda	9	9	8	8	9	9	9	9	9	9	9	6	9
samoa	8	8	8	6	8	6	0	8	6	8	8	2	8
sao tome and principe	8	8	6	2	8	8	8	8	2	8	8	4	0
saudi arabia	4	4	2	4	4	4	0	4	4	4	4	2	4
senegal	9	9	8	9	9	9	9	9	9	9	9	6	9
serbia	4	4	3	3	4	2	4	4	3	4	4	0	0
seychelles	9	9	9	8	9	9	1	9	9	9	9	5	9
sierra leone	9	9	6	9	9	7	0	9	9	9	9	2	9
singapore	9	9	0	9	9	9	9	9	9	9	9	6	9
slovak republic	4	4	4	4	4	4	4	4	4	4	4	2	4
slovenia	4	4	4	4	4	4	4	4	4	4	4	2	4
solomon islands	8	8	8	7	8	6	4	8	4	8	8	4	0
somalia	8	8	5	0	8	6	7	8	4	8	8	2	8
south africa	9	9	5	9	9	9	9	9	9	9	9	6	9
spain	9	9	8	9	9	9	9	9	9	9	9	2	9
sri lanka	9	9	7	9	9	9	9	9	9	9	9	6	9
st. kitts & nevis	8	8	6	7	8	6	8	8	7	8	8	2	0
st. lucia	8	8	8	7	8	8	0	8	6	8	8	2	0
st.vincent & grenadines	8	8	8	8	8	8	0	8	8	8	8	2	0
sudan	8	8	8	8	8	8	0	8	8	8	8	6	8
suriname	8	8	7	8	8	8	0	8	7	8	8	2	8
swaziland	8	8	7	8	8	8	0	8	8	8	8	6	0
sweden	9	9	8	9	9	9	9	9	9	9	9	2	9
switzerland	9	9	7	8	9	9	9	9	6	9	9	2	0
syria	9	9	8	9	9	9	9	9	9	9	9	2	0
taiwan	9	9	0	0	9	0	0	9	0	9	9	0	0
tajikistan	3	3	3	3	3	3	3	3	3	3	3	2	3
tanzania	9	9	7	5	9	9	9	9	5	9	9	4	9
thailand	9	9	8	9	9	9	9	9	9	9	9	6	9
timor-leste	2	2	0	0	2	0	0	2	0	2	2	0	0
togo	9	9	8	9	9	8	9	9	9	9	9	6	9
tonga	8	8	8	8	8	7	0	8	6	8	8	2	0
trinidad &tobago	9	9	8	9	9	9	0	9	9	9	9	4	9
tunisia	9	9	8	9	9	9	9	9	9	9	9	6	9
turkey	9	9	8	9	9	9	9	9	9	9	9	6	9
turkmenistan	3	3	0	2	3	3	3	3	3	3	3	2	3
uganda	9	9	9	9	9	9	9	9	6	9	9	5	9
ukraine	3	3	3	3	3	3	3	3	3	3	3	2	3
united arab emirates	4	4	4	4	4	4	0	4	4	4	4	2	4
united kingdom	9	9	8	9	9	9	9	9	9	9	9	2	9
united states	9	9	8	9	9	9	9	9	9	9	9	6	9
uruguay	9	9	9	9	9	9	9	9	9	9	9	6	9
uzbekistan	4	4	4	0	4	4	4	4	4	4	4	2	4
vanuatu	8	8	8	7	8	8	0	8	7	8	8	2	0
venezuela	9	9	8	9	9	9	9	9	9	9	9	6	9
vietnam	8	8	5	4	8	6	7	8	5	8	8	2	8
yemen	4	4	3	4	4	4	4	4	4	4	4	2	4
zambia	9	9	6	9	9	9	9	9	9	9	9	6	9
zimbabwe	9	9	7	7	9	9	9	9	5	9	9	6	9

Table A. 3 (1). Economic Growth Regressions

(Unconditional Effects, 5-Year Balanced Panel)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	PWT 7.1 Data	PWT 7.1 Data	PWT 8.0 Data	PWT 8.0 Data
		Panel A: Schooling		
ln(Secondary School Enrolment Rate), t	0.06**	0.08***	0.06	0.10**
	(0.03)	(0.03)	(0.05)	(0.05)
ln(GDP p.c.), t-1	0.79***	0.80***	0.72**	0.69***
	(0.04)	(0.04)	(0.04)	(0.05)
ComPI Growth, t		1.69**		2.64***
		(0.69)		(0.88)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.13	0.31	0.15	0.37
Sargan Test $\chi^2(2)$, p-value	0.33	0.58	0.76	0.12
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	760	664	680	608
Countries	95	83	85	76
		Panel B: Financial Development		
ln(Private Domestic Credit/GDP), t	0.10***	0.09***	0.05*	0.06**
	(0.03)	(0.03)	(0.02)	(0.03)
ln(GDP p.c.), t-1	0.68***	0.69***	0.69***	0.67***
	(0.05)	(0.05)	(0.04)	(0.05)
ComPI Growth, t		1.11**		2.67***
		(0.54)		(0.75)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.01
Sargan Test $\chi^2(2)$, p-value	0.34	0.55	0.59	0.87
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	800	744	744	696
Countries	100	93	93	87

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. For each panel and column, the system-GMM estimation is based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.3 (2). Economic Growth Regressions

(Unconditional Effects, 5-Year Balanced Panel)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	PWT 7.1 Data	PWT 7.1 Data	PWT 8.0 Data	PWT 8.0 Data
		Panel C: Trade Openness		
ln(Structure Adjusted Trade Volume/GDP), t	0.11***	0.11***	0.14***	0.14***
	(0.03)	(0.03)	(0.04)	(0.04)
ln(GDP p.c.), t-1	0.82***	0.81***	0.74***	0.71***
	(0.03)	(0.03)	(0.04)	(0.04)
ComPI Growth, t		1.53***		2.75***
		(0.56)		(0.74)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test $\chi^2(2)$, p-value	0.56	0.65	0.50	0.91
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1032	1096	920
Countries	159	129	137	115
		Panel D: Government Size		
ln(Government Consumption/GDP), t	-0.09*	-0.07	-0.32***	-0.25***
	(0.05)	(0.05)	(0.07)	(0.08)
ln(GDP p.c.), t-1	0.82***	0.81***	0.76***	0.73***
	(0.03)	(0.03)	(0.03)	(0.03)
ComPI Growth, t		1.76***		2.81***
		(0.55)		(0.74)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test $\chi^2(2)$, p-value	0.41	0.13	0.98	0.63
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1032	1096	920
Countries	159	129	137	115

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. For each panel and column, the system-GMM estimation is based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.3 (3). Economic Growth Regressions

(Unconditional Effects, 5-Year Balanced Panel)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	PWT 7.1 Data	PWT 7.1 Data	PWT 8.0 Data	PWT 8.0 Data
		Panel E: Infrastructure		
ln(Telephone Lines p.c.), t	0.08***	0.08***	0.04**	0.05**
	(0.01)	(0.01)	(0.02)	(0.02)
ln(GDP p.c.), t-1	0.75***	0.73***	0.75***	0.73***
	(0.03)	(0.03)	(0.03)	(0.03)
ComPI Growth, t		0.83*		1.42**
		(0.49)		(0.67)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test $\chi^2(2)$, p-value	0.22	0.26	0.49	0.20
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	976	824	896	760
Countries	122	103	112	95
		Panel F: Political Institutions		
ln(Polity2 Score), t	0.003	0.002	0.006	0.006
	(0.003)	(0.003)	(0.004)	(0.004)
ln(GDP p.c.), t-1	0.78***	0.75***	0.73***	0.71***
	(0.04)	(0.04)	(0.03)	(0.03)
ComPI Growth, t		2.10***		3.36***
		(0.61)		(0.86)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test $\chi^2(2)$, p-value	0.74	0.81	0.32	0.58
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	920	848	864	792
Countries	115	106	108	99

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. For each panel and column, the system-GMM estimation is based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.3 (4). Economic Growth Regressions

(Unconditional Effects, 5-Year Balanced Panel)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	PWT 7.1 Data	PWT 7.1 Data	PWT 8.0 Data	PWT 8.0 Data
		Panel G: Lack of Price Stability		
Inflation Rate, t	-0.07**	-0.05*	-0.09**	-0.08**
	(0.03)	(0.03)	(0.04)	(0.04)
ln(GDP p.c.), t-1	0.77***	0.78***	0.70***	0.70***
	(0.03)	(0.03)	(0.04)	(0.04)
ComPI Growth, t		2.16***		4.85***
		(0.71)		(0.95)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.01	0.08
Sargan Test $\chi^2(2)$, p-value	0.71	0.80	0.52	0.62
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	784	720	712	656
Countries	98	90	89	82
		Panel H: Real Exchange Rate		
ln(Real Exchange Rate), t	-0.08**	-0.07**	-0.11*	-0.10
	(0.03)	(0.03)	(0.06)	(0.06)
ln(GDP p.c.), t-1	0.79***	0.79***	0.74***	0.72***
	(0.03)	(0.03)	(0.03)	(0.04)
ComPI Growth, t		1.39**		3.82***
		(0.57)		(0.82)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.01
Sargan Test $\chi^2(2)$, p-value	0.17	0.11	0.17	0.07
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	784	720	712	656
Countries	98	90	89	82

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. For each panel and column, the system-GMM estimation is based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.3 (5). Economic Growth Regressions

(Unconditional Effects, 5-Year Balanced Panel)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	PWT 7.1 Data	PWT 7.1 Data	PWT 8.0 Data	PWT 8.0 Data
		Panel I: Banking Crises		
Banking Crisis, t	-0.08***	-0.07***	-0.06**	-0.06**
	(0.02)	(0.02)	(0.03)	(0.03)
ln(GDP p.c.), t-1	0.83***	0.81***	0.76***	0.74***
	(0.03)	(0.03)	(0.03)	(0.03)
ComPI Growth, t		1.92***		3.34***
		(0.55)		(0.73)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test $\chi^2(2)$, p-value	0.12	0.09	0.15	0.25
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1032	1096	920
Countries	159	129	137	115

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. For each panel and column, the system-GMM estimation is based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 4 Economic Growth Regressions

(Alternative Measures of Schooling)

	Dependent Variable: ln(GDP p.c.)		
	(1)	(2)	(3)
	SYS GMM	SYS GMM	SYS GMM
ln(Primary School Enrolment Rate), t	0.07 (0.06)		
ln(Tertiary School Enrolment Rate), t		0.05*** (0.02)	
Average Years of Schooling, t			0.19* (0.10)
ln(GDP p.c.), t-1	0.80*** (0.04)	0.75*** (0.04)	0.82*** (0.05)
AR (1) Test, p-value	0.00	0.00	0.00
AR (2) Test, p-value	0.08	0.00	0.25
Sargan Test $\chi^2(2)$, p-value	0.16	0.21	0.61
Country Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Observations	757	660	632
Countries	95	92	79

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. The system-GMM estimations are based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 5 Economic Growth Regressions

(Alternative Measures of Infrastructure)

Dependent Variable: ln(GDP p.c.)			
	(1)	(2)	(3)
	SYS GMM	SYS GMM	SYS GMM
ln(GDP p.c.), t-1	0.65***	0.53***	0.66***
	(0.04)	(0.10)	(0.04)
ln(Mobile Phones), t	0.02***		
	(0.00)		
ln(Roads), t		0.31**	
		(0.15)	
ln(Railways), t			0.24***
			(0.08)
AR (1) Test, p-value	0.00	0.00	0.19
AR (2) Test, p-value	0.48	0.68	0.09
Sargan Test $\chi^2(2)$, p-value	0.44	0.27	0.41
Country Fe	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes
Observations	526	626	573
Countries	122	181	110

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. The system-GMM estimations are based on 2 endogenous variables and 4 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 6 (1). Economic Growth Regressions

(Are the Effects in Latin American Countries Significantly Different?)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
			Panel A: Schooling	
ln(Secondary School Enrolment Rate), t	0.06** (0.03)	0.05* (0.03)	0.07** (0.03)	0.08*** (0.03)
LAC*ln(Secondary School Enrolment Rate), t	-0.01 (0.01)	-0.01 (0.01)	-0.02 (0.01)	-0.02 (0.01)
ln(GDP p.c.), t-1	0.78*** (0.04)	0.80*** (0.04)	0.82*** (0.04)	0.82*** (0.04)
LAC*ln(GDP p.c.), t-1		0.00 (0.09)	-0.16 (0.11)	-0.15 (0.12)
ComPI Growth, t			1.78** (0.68)	1.75** (0.69)
LAC*ComPI Growth, t				1.33 (3.24)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.14	0.14	0.37	0.37
Sargan Test, p-value	0.46	0.15	0.58	0.58
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	760	760	664	664
Countries	95	95	83	83
			Panel B: Financial Development	
ln(Private Domestic Credit/GDP), t	0.07** (0.03)	0.08*** (0.03)	0.07** (0.03)	0.07** (0.03)
LAC*ln(Private Domestic Credit/GDP), t	0.01 (0.03)	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)
ln(GDP p.c.), t-1	0.70*** (0.05)	0.66*** (0.05)	0.68*** (0.05)	0.68*** (0.05)
LAC*ln(GDP p.c.), t-1		0.15** (0.07)	0.13* (0.07)	0.12 (0.07)
ComPI Growth, t			0.93* (0.53)	0.83 (0.56)
LAC*ComPI Growth, t				1.16 (1.52)
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.10	0.29	0.33	0.27
Observations	800	800	744	744
Countries	100	100	93	93

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.6 (2). Economic Growth Regressions

(Are the Effects in Latin American Countries Significantly Different?)
Dependent Variable: ln(GDP p.c.)

	(1)	(2)	(3)	(4)
		Panel C: Trade Openness		
ln(Structure Adjusted Trade Volume/GDP), t	0.14*** (0.03)	0.14*** (0.03)	0.13*** (0.03)	0.13*** (0.03)
LAC*ln(Structure Adjusted Trade Volume/GDP), t	-0.25** (0.11)	-0.22** (0.10)	-0.11 (0.09)	-0.11 (0.09)
ln(GDP p.c.), t-1	0.81*** (0.03)	0.80*** (0.03)	0.80*** (0.03)	0.80*** (0.03)
LAC*ln(GDP p.c.), t-1		0.05 (0.05)	-0.01 (0.07)	-0.02 (0.07)
ComPI Growth, t			1.44** (0.56)	1.53*** (0.59)
LAC*ComPI Growth, t				-1.00 (1.70)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.24	0.21	0.15	0.16
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1272	1032	1032
Countries	159	159	129	129
		Panel D: Government Size		
ln(Government Consumption/GDP), t	-0.09* (0.05)	-0.11** (0.06)	-0.11* (0.06)	-0.11** (0.06)
LAC*ln(Government Consumption/GDP), t	0.07 (0.06)	-0.00 (0.03)	-0.05 (0.05)	-0.05 (0.04)
ln(GDP p.c.), t-1	0.83*** (0.03)	0.82*** (0.03)	0.82*** (0.04)	0.82*** (0.04)
LAC*ln(GDP p.c.), t-1		0.02 (0.09)	-0.20 (0.19)	-0.20 (0.19)
ComPI Growth, t			1.85*** (0.57)	2.00** (0.60)
LAC*ComPI Growth, t				-1.85 (1.79)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.35	0.83	0.95	0.94
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1272	1032	1032
Countries	159	159	129	129

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.6 (3). Economic Growth Regressions

(Are the Effects in Latin American Countries Significantly Different?)
Dependent Variable: ln(GDP p.c.)

	(1)	(2)	(3)	(4)
		Panel E: Infrastructure		
ln(Telephone Lines p.c.), t	0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)	0.08*** (0.01)
LAC*ln(Telephone Lines p.c.), t	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
ln(GDP p.c.), t-1	0.75*** (0.02)	0.80*** (0.02)	0.79*** (0.03)	0.79*** (0.03)
LAC*ln(GDP p.c.), t-1		-0.00 (0.04)	-0.08 (0.06)	-0.08 (0.06)
ComPI Growth, t			0.98** (0.50)	0.99** (0.52)
LAC*ComPI Growth, t				-0.06 (1.34)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.38	0.29	0.42	0.41
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	976	976	824	824
Countries	122	122	103	103
		Panel F: Political Institutions		
ln(Polity2 Score), t	0.003 (0.004)	0.003 (0.004)	0.002 (0.004)	0.002 (0.004)
LAC*ln(Polity2 Score), t	-0.003 (0.004)	-0.005 (0.003)	-0.005 (0.003)	-0.005 (0.003)
ln(GDP p.c.), t-1	0.77*** (0.04)	0.78*** (0.04)	0.76*** (0.04)	0.76*** (0.04)
LAC*ln(GDP p.c.), t-1		-0.02 (0.08)	-0.09 (0.09)	-0.10 (0.10)
ComPI Growth, t			2.28*** (0.60)	2.46*** (0.63)
LAC*ComPI Growth, t				-1.47 (1.68)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.66	0.52	0.55	0.40
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	920	920	864	792
Countries	115	115	108	99

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.6 (4). Economic Growth Regressions

(Are the Effects in Latin American Countries Significantly Different?)

Dependent Variable: ln(GDP p.c.)

	(1)	(2)	(3)	(4)
		Panel G: Lack of Price Stability		
Inflation Rate, t	-0.07*	-0.06*	-0.05***	-0.05***
	(0.04)	(0.04)	(0.02)	(0.02)
LAC*Inflation Rate, t	0.00	0.01	0.02	0.02
	(0.01)	(0.02)	(0.01)	(0.01)
ln(GDP p.c.), t-1	0.77***	0.75***	0.74***	0.74***
	(0.03)	(0.04)	(0.03)	(0.03)
LAC*ln(GDP p.c.), t-1		0.13	0.13	0.13
		(0.08)	(0.03)	(0.08)
ComPI Growth, t			1.87***	2.06***
			(0.61)	(0.65)
LAC*ComPI Growth, t				-1.41
				(1.51)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.83	0.84	0.22	0.22
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	784	784	720	720
Countries	98	98	90	90
		Panel H: Real Exchange Rate		
ln(Real Exchange Rate), t	-0.15**	-0.13***	-0.13***	-0.12***
	(0.06)	(0.04)	(0.04)	(0.04)
LAC*ln(Real Exchange Rate), t	0.02	-0.02	-0.02	-0.02
	(0.09)	(0.01)	(0.01)	(0.01)
ln(GDP p.c.), t-1	0.79***	0.79***	0.80***	0.80***
	(0.04)	(0.04)	(0.04)	(0.04)
LAC*ln(GDP p.c.), t-1		-0.03	-0.08	-0.08
		(0.10)	(0.11)	(0.11)
ComPI Growth, t			1.36**	1.49***
			(0.58)	(0.62)
LAC*ComPI Growth, t				-0.93
				(1.47)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.77	0.85	0.57	0.61
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	784	784	720	720
Countries	98	98	90	90

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.6 (5). Economic Growth Regressions

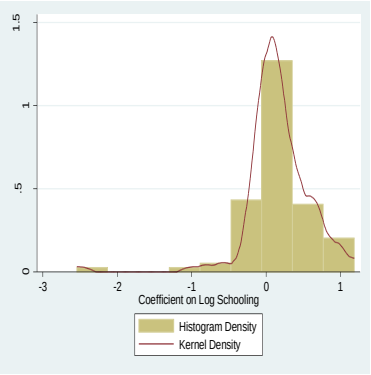
(Are the Effects in Latin American Countries Significantly Different?)

	Dependent Variable: ln(GDP p.c.)			
	(1)	(2)	(3)	(4)
		Panel I: Banking Crises		
Banking Crisis, t	-0.08***	-0.08***	-0.05**	-0.05**
	(0.03)	(0.03)	(0.02)	(0.02)
LAC*ln(GDP p.c.), t-1	0.01	0.01	-0.01	-0.02
	(0.07)	(0.07)	(0.05)	(0.05)
ln(GDP p.c.), t-1	0.83***	0.83***	0.67***	0.67***
	(0.03)	(0.03)	(0.04)	(0.04)
LAC*ln(GDP p.c.), t-1		0.00	-0.13	-0.14
		(0.05)	(0.09)	(0.09)
ComPI Growth, t			1.68***	1.82***
			(0.53)	(0.54)
LAC*ComPI Growth, t				-1.53
				(1.68)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.00	0.00	0.00	0.01
Sargan Test, p-value	0.06	0.10	0.11	0.11
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	1272	1272	1032	1032
Countries	159	159	129	129

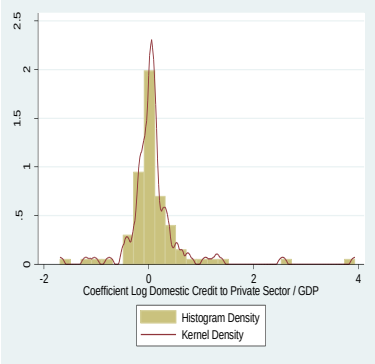
Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Figure A. 1 Kernel density plot and a histogram of the country-specific coefficients for each of the relevant policy variables of interest

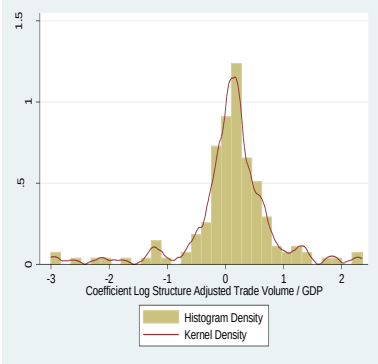
Panel A: Schooling



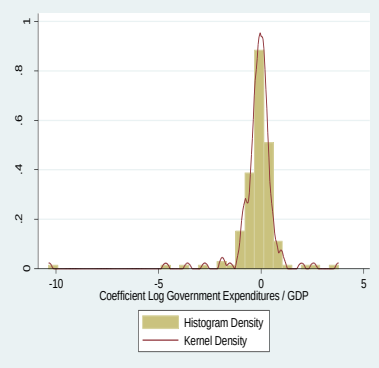
Panel B: Financial Development



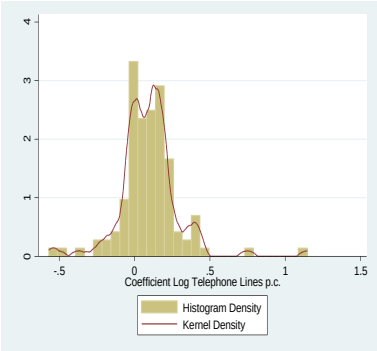
Panel C: Trade Openness



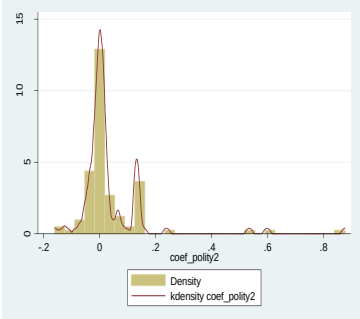
Panel D: Government Size



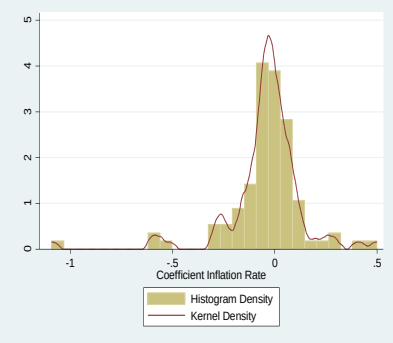
Panel E: Infrastructure



Panel F: Political Institutions



Panel G: Lack of Price Stability



Panel F: Real Exchange Rate

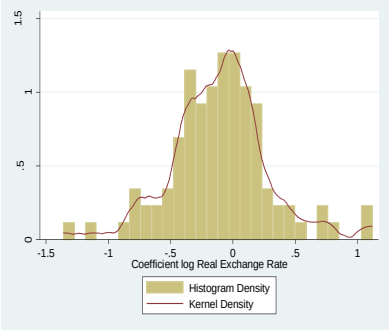


Table A. 7 (1). Economic Growth Regressions

(Time Heterogeneity: Post 1990s)

Dependent Variable: ln(GDP p.c.)		
	(1)	(2)
	SYS GMM	SYS GMM
	Linear Term	Post 1990 Interaction
ln(GDP p.c.), t-1	0.85*** (0.03)	-0.03*** (0.01)
ln(Secondary School Enrolment Rate), t	0.06** (0.03)	-0.00 (0.02)
ln(Private Domestic Credit/GDP), t	0.10*** (0.03)	-0.01 (0.02)
ln(Structure Adjusted Trade Volume/GDP), t	0.19*** (0.07)	-0.15 (0.10)
ln(Government Consumption/GDP), t	-0.10** (0.05)	0.02 (0.02)
ln(Telephone Lines p.c.), t	0.12*** (0.02)	0.03*** (0.01)
Polity2 Score, t	-0.002 (0.002)	-0.001 (0.002)
Inflation Rate, t	-0.04** (0.02)	0.01 (0.14)
ln(Real Exchange Rate), t	-0.16*** (0.05)	0.02 (0.05)
Banking Crisis, t	-0.07*** (0.02)	-0.04 (0.05)

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A.7 (2). Economic Growth Regressions

(Time Heterogeneity: Post 2000s)

Dependent Variable: ln(GDP p.c.)		
	(1)	(2)
	SYS GMM	SYS GMM
	Linear Term	Post 2000 Interaction
ln(GDP p.c.), t-1	0.80***	-0.03***
	(0.03)	(0.01)
ln(Secondary School Enrolment Rate), t	0.05	-0.03
	(0.03)	(0.03)
ln(Private Domestic Credit/GDP), t	0.12***	-0.04
	(0.03)	(0.03)
ln(Structure Adjusted Trade Volume/GDP), t	0.18***	-0.10
	(0.06)	(0.08)
ln(Government Consumption/GDP), t	-0.10**	0.02
	(0.05)	(0.03)
ln(Telephone Lines p.c.), t	0.11***	0.02
	(0.03)	(0.01)
Polity2 Score, t	-0.002	-0.003
	(0.002)	(0.002)
Inflation Rate, t	-0.04	-0.02
	(0.07)	(0.19)
ln(Real Exchange Rate), t	-0.14***	-0.03
	(0.04)	(0.03)
Banking Crisis, t	-0.07***	-0.04
	(0.02)	(0.06)

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 8 Economic Growth Regressions

(GDP per capita relative to the US)

Dependent Variable: ln(GDP p.c. relative to the US)		
	(1)	(2)
	SYS GMM	LS
ln(GDP p.c.), t-1	0.78***	0.75***
	(0.06)	(0.03)
Structural Policies and Institutions		
ln(Secondary School Enrolment Rate), t	0.02	-0.03
	(0.05)	(0.03)
ln(Private Domestic Credit/GDP), t	0.07***	0.02
	(0.03)	(0.02)
ln(Structure Adjusted Trade Volume/GDP), t	0.08*	0.10***
	(0.05)	(0.03)
ln(Government Consumption/GDP), t	-0.26***	-0.13***
	(0.04)	(0.03)
ln(Telephone Lines p.c.), t	0.14***	0.08***
	(0.03)	(0.02)
Polity2 Score, t	-0.00	-0.01
	(0.03)	(0.02)
Stabilisation Policies		
Inflation Rate, t	-0.01	-0.01*
	(0.01)	(0.01)
ln(Real Exchange Rate), t	-0.06	-0.02
	(0.04)	(0.03)
Banking Crisis, t	-0.04	-0.05*
	(0.03)	(0.03)
External Conditions		
ComPI Growth, t	10.48***	6.96***
	(2.69)	(2.59)
Terms of Trade Growth, t	0.12***	0.11***
	(0.03)	(0.03)
AR (1) Test, p-value	0.02	.
AR (2) Test, p-value	0.10	.
Sargan Test $\chi^2(10)$, p-value	0.13	.
Country Fe	Yes	Yes
Year Fe	Yes	Yes
Observations	464	464
Countries	126	126

Note: The dependent variable is real GDP per capita. The method of estimation in column (1) is system-GMM; column (2) least squares. The system-GMM estimation is based on 10 endogenous variables and 20 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 9 First Stage Regressions for System-GMM

Dependent Variable:	ln(GDP p.c.)	ln(Secondary School Enrolment Rate)	ln(Private Domestic Credit/GDP)	ln(Structure Adjusted Trade Volume/GDP)	ln(Government Consumption/GDP)	ln(Telephone Lines p.c.)	Polity2 Score	Inflation Rate	ln(Real Exchange Rate)	Banking Crisis
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					Panel A: Level Equation					
Lagged First-Difference	0.73***	0.18***	0.54***	0.59***	0.55***	0.78***	0.48***	0.25***	0.33***	0.12***
	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)	(0.05)	(0.04)	(0.03)	(0.04)	(0.03)
					Panel B: First-Difference Equation					
Lagged Level	-0.012***	-0.131***	-0.043***	-0.163***	-0.066***	-0.027***	-0.115***	-0.375***	-0.145***	-0.75***
	(0.003)	(0.008)	(0.013)	(0.018)	(0.008)	(0.005)	(0.014)	(0.027)	(0.017)	(0.04)

Note: *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 10 Economic Growth Regressions

(Interaction Effects Caribbean Countries; Estimates of Linear Terms not Reported)

	Dependent Variable: ln(GDP p.c.)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM
ln(Secondary School Enrolment Rate), t *Caribbean Dummy	0.13* (0.07)								
ln(Private Domestic Credit/GDP), t *Caribbean Dummy		-0.33 (0.51)							
ln(Structure Adjusted Trade Volume/GDP), t *Caribbean Dummy			0.34 (0.35)						
ln(Government Consumption/GDP), t *Caribbean Dummy				0.13 (0.50)					
ln(Telephone Lines p.c.), t *Caribbean Dummy					0.01 (0.02)				
Polity2 Score, t *Caribbean Dummy						0.00 (0.02)			
Inflation Rate, t *Caribbean Dummy							0.08 (0.17)		
ln(Real Exchange Rate), t *Caribbean Dummy								-075 (2.99)	
Banking Crisis, t *Caribbean Dummy									0.09 (0.80)
AR (1) Test, p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sargan Test, p-value	0.35	0.47	0.39	0.25	0.37	0.54	0.82	0.77	0.06
Country Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	760	800	1272	1272	976	920	784	784	1272
Countries	95	100	159	159	122	115	98	98	159

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 11 Economic Growth Regressions

(Country-Specific Coefficients)

Panel A: Schooling

country	coefficient	s.e.	country	coefficient	s.e.	country	coefficient	s.e.
algeria	-0.012	0.108	guatemala	-0.011	0.093	niger	-0.089	0.091
angola	0.787	0.152	guinea	-0.087	0.116	norway	0.561	0.469
argentina	0.265	0.277	hungary	0.53	0.611	oman	0.042	0.037
austria	0.638	1.029	iceland	-0.151	0.348	panama	1.08	0.526
bahamas	-2.544	1.079	india	0.515	0.175	paraguay	-0.062	0.098
bahrain	-0.483	0.267	indonesia	0.15	0.119	peru	0.255	0.211
belgium	0.18	0.215	iran	0.273	0.154	philippines	0.183	0.437
botswana	0.022	0.06	iraq	-0.013	0.274	poland	0.852	0.393
brunei	-0.656	0.246	ireland	0.681	0.416	rwanda	0.032	0.075
bulgaria	-0.943	2.911	israel	0.263	0.473	samoa	-0.237	0.535
burkina faso	0.018	0.052	italy	-0.054	0.278	senegal	0.012	0.131
cameroon	-0.202	0.151	jamaica	-0.133	0.212	seychelles	0.058	0.123
canada	0.529	0.804	japan	-0.146	1.06	solomon islands	-0.047	0.139
chad	0.156	0.07	jordan	1.06	0.484	spain	0.068	0.259
chile	0.873	0.361	kiribati	-0.081	0.084	st. lucia	0.142	0.099
china	0.459	0.157	korea, republic of	0.536	0.298	st.vincent & grenadines	0.263	0.089
colombia	0.081	0.12	laos	0.424	0.116	sudan	0.282	0.113
congo, dem. rep.	0.206	0.217	lesotho	0.058	0.12	sweden	0.247	0.207
costa rica	0.134	0.137	luxembourg	0.481	0.267	syria	-0.208	0.278
cuba	0.865	0.262	malawi	-0.093	0.134	thailand	0.073	0.098
denmark	0.403	0.427	malaysia	0.263	0.304	togo	-0.124	0.125
djibouti	0.049	0.109	mali	0.035	0.067	tonga	1.185	0.666
dominica	0.206	0.259	malta	-0.098	0.453	trinidad &tobago	-0.129	0.292
dominican republic	0.203	0.177	mauritius	0.279	0.142	tunisia	0.008	0.082
ecuador	-0.089	0.286	mexico	-0.074	0.16	turkey	0.158	0.1
egypt	0.603	0.166	mongolia	0.819	0.401	uganda	0.143	0.083
el salvador	0.12	0.153	morocco	0.095	0.136	united kingdom	0.615	0.517
fiji	-0.211	0.554	mozambique	0.171	0.081	united states	0.557	1.039
finland	0.596	0.558	nepal	0.169	0.132	uruguay	0.293	0.249
france	0.06	0.33	netherlands	0.298	0.302	vanuatu	-0.016	0.071
ghana	0.675	0.345	new zealand	0.292	0.256	venezuela	0.074	0.258
greece	0.235	0.554	nicaragua	0.048	0.153	mean (median)	0.168 (0.143)	

Panel B: Financial Development

country	coefficient	s.e.	country	coefficient	s.e.	country	coefficient	s.e.
algeria	0.025	0.102	gambia, the	0.066	0.133	pakistan	1.249	3.751
argentina	-1.036	0.81	ghana	0.086	0.131	panama	0.036	0.388
australia	0.112	0.149	greece	0.01	0.169	papua new guinea	0.346	0.773
austria	0.203	0.711	guatemala	-0.215	0.404	paraguay	-0.367	0.589
bahamas	-0.232	0.442	guyana	-0.445	0.364	peru	3.938	13.891
bangladesh	0.088	0.174	honduras	0.14	1.534	philippines	-0.099	0.469
barbados	0.023	0.209	iceland	-0.036	0.098	portugal	-0.031	0.192
belgium	0.053	0.287	india	0.316	0.337	senegal	0.067	0.301
benin	0.086	0.164	iran	-0.137	0.684	seychelles	-0.14	0.204
bolivia	-0.073	0.243	ireland	0.193	0.146	sierra leone	0.331	0.172
botswana	-0.199	0.721	israel	-0.145	0.561	singapore	-0.184	0.795
brazil	-0.015	0.271	italy	-0.155	0.312	south africa	-0.114	0.295
burkina faso	-0.161	0.879	jamaica	2.555	3.883	spain	-0.019	0.197
burundi	-0.463	0.222	japan	0.39	0.586	sri lanka	0.062	1.125
cameroon	0.157	0.162	jordan	1.085	0.645	st.vincent & grenadines	0.098	0.894
canada	0.031	0.33	kenya	0.582	1.079	sudan	0.096	0.104
central african republic	-0.071	0.283	korea, republic of	0.489	0.278	suriname	0.122	0.218
chad	0.01	0.183	lesotho	-0.145	0.317	swaziland	0.324	0.592
chile	-0.233	0.223	liberia	-0.031	0.418	sweden	-0.1	0.97
colombia	0.479	1.162	madagascar	0.333	0.319	syria	-0.469	1.222
congo, dem. rep.	0.073	0.132	malawi	0.32	0.418	thailand	0.076	0.457
congo, republic of	0.132	0.122	malaysia	-0.112	0.364	togo	0.241	0.639
costa rica	0.07	0.162	mali	-0.047	0.455	tonga	0.701	0.346
cote d'ivoire	0.183	0.179	malta	0.146	0.225	trinidad &tobago	-1.197	0.473
cyprus	0.037	0.158	mexico	0.006	0.467	tunisia	-0.753	1.58
denmark	-0.027	0.113	morocco	-0.008	0.276	turkey	0.142	0.299
dominican republic	-0.14	0.886	nepal	0.146	0.215	uganda	0.234	0.171
ecuador	-1.695	5.414	netherlands	-0.023	0.273	united kingdom	0.073	0.175
egypt	0.311	0.276	new zealand	0.031	0.154	united states	0.107	0.267
el salvador	-0.186	0.601	nicaragua	1.356	0.829	uruguay	-0.361	0.315
fiji	-0.122	0.257	niger	0.053	0.147	venezuela	0.029	0.119
finland	-0.262	0.559	nigeria	-0.3	0.32	zambia	0.079	0.253
france	0.79	3.3	norway	0.067	0.424	mean (median)	0.097 (0.045)	
gabon	0.082	0.74	oman	0.581	2.085			

Panel C: Trade Openness

australia	0.29	0.223	guatemala	-0.188	1.143	panama	-0.056	1.108
austria	0.152	0.207	guinea	0.048	0.489	papua new guinea	0.17	0.601
bahamas	-0.155	0.274	guinea-bissau	-0.398	0.21	paraguay	-0.402	0.525
bahrain	0.578	0.342	guyana	0.181	0.237	peru	0.54	0.563
bangladesh	0.172	0.203	haiti	-0.102	0.217	philippines	-0.013	0.21
barbados	-0.538	1.006	honduras	0.286	0.303	poland	0.176	0.089
belgium	0.154	0.205	hong kong	0.137	0.115	portugal	0.104	0.171
belize	-2.043	3.233	hungary	0.024	0.074	puerto rico	2.351	2.892
benin	-0.063	0.478	iceland	-0.241	0.386	romania	0.475	0.244
bermuda	-1.128	2.632	india	0.378	0.122	rwanda	-0.103	0.105
bhutan	0.762	0.235	indonesia	0.114	1.227	samoa	-1.181	1.817
bolivia	0.426	1.428	iran	0.158	0.193	sao tome and principe	-0.168	0.248
botswana	-0.229	0.18	iraq	0.296	0.203	senegal	0	0.315
brazil	-0.069	0.187	ireland	0.348	0.107	seychelles	-0.049	0.102
brunei	1.85	0.972	israel	0.312	1.342	sierra leone	0.663	0.211
bulgaria	0.733	0.384	italy	0.024	0.18	singapore	0.503	0.201
burkina faso	-0.08	0.178	jamaica	1.379	1.182	solomon islands	0.335	0.17
burundi	1.102	0.366	japan	0.051	0.229	somalia	0.278	0.084
cambodia	0.228	0.056	jordan	-0.2	0.233	south africa	0.579	0.535
cameroon	-1.351	2.12	kenya	-0.214	0.408	spain	0.103	0.104
canada	0.124	0.259	kiribati	-0.118	0.215	sri lanka	1.391	1.144
cape verde	-3.004	0.972	korea, republic of	0.689	0.188	st. kitts & nevis	-0.044	0.457
central african republic	0.366	0.351	laos	0.242	0.094	st. lucia	-2.209	1.619
chad	-1.231	1.068	lebanon	-0.377	0.52	st.vincent & grenadines	-0.694	0.422
chile	0.733	0.255	lesotho	-0.233	3.532	sudan	0.141	0.16
china version 1	0.66	0.098	liberia	1.028	0.162	suriname	0.061	2.512
china version 2	0.328	0.059	luxembourg	0.537	0.514	swaziland	-0.211	0.303
colombia	0.011	0.278	macao	-1.788	0.609	sweden	0.096	0.154
comoros	1.255	0.405	madagascar	0.141	0.205	switzerland	-0.023	0.235
congo, dem. rep.	-0.147	0.3	malawi	0.557	0.279	syria	-0.579	1.367
congo, republic of	0.522	0.737	malaysia	0.451	0.25	taiwan	0.906	0.276
costa rica	0.113	0.307	maldives	-1.238	0.266	tanzania	0.153	0.279
cote d'ivoire	0.581	0.404	mali	-0.959	1.56	thailand	0.239	0.177
cuba	-0.038	0.536	malta	0.781	0.708	togo	-0.699	0.448
cyprus	2.2	2.255	marshall islands	1.258	0.686	tonga	-0.19	0.331
denmark	0.139	0.171	mauritania	-2.626	2.929	trinidad &tobago	0.329	0.358
djibouti	0.108	0.294	mauritius	0.032	1.42	tunisia	0.936	1.421
dominica	0.39	0.767	mexico	-0.035	0.09	turkey	0.161	0.129
dominican republic	0.546	1.192	micronesia, fed. sts.	-0.204	0.475	uganda	-0.484	0.604
ecuador	0.209	1.018	mongolia	0.424	0.417	united kingdom	0.254	0.227
egypt	-0.352	0.169	morocco	0.464	0.532	united states	0.12	0.154
el salvador	-0.033	0.284	mozambique	0.636	0.521	uruguay	0.181	0.144
equatorial guinea	1.814	0.143	namibia	0.122	0.246	vanuatu	0.31	0.382
ethiopia	0.34	0.424	nepal	0.19	0.512	venezuela	-0.166	1.026
fiji	0.814	1.237	netherlands	0.122	0.163	vietnam	0.597	0.17
finland	0.13	0.179	new zealand	0.177	0.23	zambia	0.29	0.185
france	0.025	0.179	nicaragua	0.063	0.261	zimbabwe	-0.541	0.212
						mean (median)	0.0866 (0.130)	

Panel D: Government Burden

country	coefficient	s.e.	country	coefficient	s.e.	country	coefficient	s.e.
afghanistan	-0.49	0.197	gabon	-0.785	0.535	niger	0.198	0.209
albania	0.429	0.366	gambia, the	0.102	0.147	nigeria	0.139	0.096
algeria	-0.844	1.244	germany	0.137	0.364	norway	0.081	0.667
angola	-0.49	0.161	ghana	-0.387	0.943	oman	-0.187	0.658
antigua and barbuda	0.468	0.707	greece	-0.157	1.014	pakistan	0.261	0.826
argentina	-0.111	0.312	grenada	-0.371	0.269	palau	-0.063	0.305
australia	-0.175	0.4	guatemala	-0.279	0.332	panama	-0.232	0.214
austria	-0.002	0.432	guinea	-0.187	0.209	papua new guinea	-0.094	0.189
bahamas	-0.071	0.219	guinea-bissau	-0.147	0.139	paraguay	-0.349	0.613
bahrain	0.166	0.332	guyana	0.305	0.428	peru	-3.59	2.473
bangladesh	0.296	0.406	haiti	-0.824	0.874	philippines	0.072	0.446
barbados	-0.024	0.334	honduras	0.217	0.456	poland	0.03	0.45
belgium	-1.055	3.223	hong kong	-0.596	0.568	portugal	0.134	0.2
belize	0.118	0.705	hungary	-0.36	0.423	puerto rico	0.12	0.777
benin	0.036	0.547	iceland	-0.298	0.284	romania	-0.765	0.281
bermuda	0.023	0.912	india	0.623	0.597	rwanda	-0.467	0.436
bhutan	1.033	0.359	indonesia	0.011	0.462	samoa	0.7	0.671
bolivia	-0.744	1.336	iran	-0.438	0.446	sao tome and principe	-0.114	0.181
botswana	0.226	0.263	iraq	-1.903	0.594	senegal	-0.051	0.397
brazil	-0.713	3.293	ireland	-0.385	0.199	seychelles	0.222	0.412
brunei	-0.309	0.153	israel	-0.006	0.153	sierra leone	-0.097	0.192
bulgaria	-0.019	0.08	italy	-1.521	2.453	singapore	-1.882	0.98
burkina faso	-0.155	1.195	jamaica	-0.859	0.537	solomon islands	-0.729	0.464
burundi	0.31	0.239	japan	-0.865	1.042	somalia	-4.655	3.615
cambodia	0.636	0.167	jordan	-0.05	0.239	south africa	0.611	1.337
cameroon	0.147	1.348	kenya	0.157	0.818	spain	0.266	0.384
canada	-0.157	0.567	kiribati	-0.216	0.396	sri lanka	-0.486	2.041
cape verde	-0.932	0.987	korea, republic of	-0.665	0.277	st. kitts & nevis	-0.345	1.31
central african republic	0.518	0.437	laos	0.893	0.473	st. lucia	-0.576	0.99
chad	-0.398	0.244	lebanon	0.203	0.356	st.vincent & grenadines	-1.06	0.991
chile	-0.478	0.174	lesotho	0.364	0.395	sudan	-0.203	0.173
china version 1	1.966	0.526	liberia	0.505	0.543	suriname	-0.01	0.079
china version 2	-10.356	2.636	luxembourg	-0.183	0.187	swaziland	-0.24	0.166
colombia	-0.032	0.138	macao	-0.137	0.24	sweden	0.127	0.633
comoros	0.654	0.26	madagascar	0.171	0.774	switzerland	0.227	0.711
congo, dem. rep.	-0.192	0.09	malawi	-0.242	0.158	syria	-0.249	0.299
congo, republic of	-0.824	0.396	malaysia	-0.365	0.51	taiwan	-0.598	0.281
costa rica	-0.123	0.266	maldives	0.341	0.21	tanzania	0.388	0.368
cote d'ivoire	0.216	0.458	mali	0.149	0.213	thailand	-0.897	1.429
cuba	0.484	0.82	malta	0.011	0.333	togo	0.425	0.342
cyprus	2.552	1.778	marshall islands	0.09	0.294	tonga	0.287	2.785
denmark	0.184	0.733	mauritania	-0.062	0.23	trinidad &tobago	-0.519	0.211
djibouti	-0.173	0.372	mauritius	-1.008	0.57	tunisia	0.043	0.46
dominica	-0.422	0.581	mexico	-0.021	0.425	turkey	0.101	0.456
dominican republic	0.884	0.699	micronesia, fed. sts.	3.778	4.628	uganda	-0.302	0.555
ecuador	-0.053	0.323	mongolia	-0.004	0.41	united kingdom	-0.293	0.403
egypt	-0.384	0.253	morocco	-0.216	0.469	united states	-0.024	0.447
el salvador	0.254	0.508	mozambique	0.032	0.482	uruguay	-0.324	3.25
equatorial guinea	-0.664	0.062	namibia	-0.372	0.769	vanuatu	0.087	0.116
ethiopia	0.222	0.349	nepal	0.431	0.455	venezuela	0.224	0.59
fiji	0.011	0.42	netherlands	-0.22	1.133	vietnam	-2.749	1.184
finland	1.071	1.44	new zealand	-0.126	0.679	zambia	-0.211	0.15
france	0.321	1.249	nicaragua	-0.428	0.169	zimbabwe	0.42	0.328
						mean (median)	-0.192 (-0.063)	

Panel E: Infrastructure

country	coefficient	s.e.	country	coefficient	s.e.	country	coefficient	s.e.
afghanistan	1.146	0.178	fiji	-0.011	0.051	norway	0.19	0.128
albania	0.129	0.033	finland	0.027	0.144	oman	0.121	0.034
algeria	-0.015	0.046	france	-0.013	0.102	pakistan	0.084	0.038
angola	0.429	0.112	gambia, the	-0.081	0.037	papua new guinea	0.098	0.237
antigua and barbuda	0.169	0.03	ghana	0.073	0.049	paraguay	-0.031	0.053
argentina	0.025	0.061	greece	0.021	0.09	peru	0.027	0.045
australia	0.31	0.162	grenada	0.16	0.04	philippines	0.007	0.042
austria	0.169	0.139	guatemala	-0.036	0.033	poland	0.124	0.04
bahamas	0.105	0.074	guyana	0.069	0.037	portugal	0.147	0.052
bahrain	-0.37	0.092	honduras	-0.031	0.03	puerto rico	0.205	0.076
bangladesh	0.126	0.04	hong kong	0.41	0.088	romania	0.11	0.063
barbados	-0.018	0.055	hungary	0.043	0.037	rwanda	-0.047	0.06
belgium	0.169	0.107	iceland	-0.001	0.132	sao tome and principe	-0.068	0.067
belize	0.146	0.049	india	0.159	0.028	senegal	0.004	0.036
benin	-0.001	0.044	indonesia	0.072	0.024	seychelles	0.09	0.043
bermuda	0.147	0.09	iran	-0.015	0.03	singapore	0.306	0.1
bhutan	0.181	0.026	ireland	0.254	0.057	south africa	-0.072	0.116
botswana	0.127	0.033	israel	0.139	0.094	spain	0.142	0.083
brazil	-0.031	0.043	italy	0.184	0.113	sri lanka	0.102	0.026
burkina faso	0.016	0.033	jamaica	-0.001	0.037	st. lucia	0.166	0.037
burundi	-0.177	0.046	japan	0.436	0.179	st.vincent & grenadines	0.248	0.043
cameroon	-0.223	0.052	kenya	-0.042	0.105	sudan	0.107	0.04
canada	0.211	0.16	korea, republic of	0.25	0.042	suriname	-0.093	0.055
cape verde	0.105	0.023	laos	0.179	0.032	swaziland	0	0.051
chad	0.109	0.038	lesotho	0.071	0.049	sweden	0.155	0.368
chile	0.234	0.037	luxembourg	0.748	0.141	switzerland	0.065	0.153
china	0.213	0.019	malawi	-0.096	0.064	syria	-0.033	0.044
colombia	0.035	0.047	malaysia	0.169	0.037	tanzania	0.247	0.102
comoros	-0.138	0.034	mali	0.086	0.034	thailand	0.174	0.028
congo, dem. rep.	0.382	0.069	malta	0.214	0.065	trinidad &tobago	-0.026	0.052
congo, republic of	0.156	0.096	mauritania	-0.016	0.033	tunisia	0.056	0.035
costa rica	0.031	0.044	mauritius	0.162	0.03	turkey	0.078	0.03
cote d'ivoire	-0.193	0.061	mexico	-0.007	0.054	uganda	0.22	0.073
cyprus	0.2	0.054	morocco	0.062	0.036	united kingdom	0.368	0.107
denmark	0.312	0.161	mozambique	0.396	0.192	united states	0.412	0.186
djibouti	-0.57	0.322	namibia	-0.002	0.113	uruguay	0.129	0.05
dominica	0.153	0.035	nepal	0.07	0.024	vanuatu	0.001	0.061
ecuador	-0.026	0.046	netherlands	0.199	0.137	venezuela	-0.104	0.065
egypt	0.178	0.032	new zealand	0.341	0.27	zambia	0.075	0.206
el salvador	0.028	0.03	nicaragua	-0.147	0.053	zimbabwe	-0.507	0.095
ethiopia	0.086	0.053	niger	-0.268	0.073	mean (median)	0.095 (0.088)	

Panel F: Political Institutions

country	coefficient	s.e.	country	coefficient	s.e.	country	coefficient	s.e.
albania	0.008	0.008	france	-0.042	0.121	nicaragua	-0.012	0.009
algeria	-0.011	0.013	gabon	-0.046	0.024	niger	-0.008	0.009
angola	0.059	0.023	gambia, the	0.016	0.009	nigeria	-0.026	0.037
argentina	0.008	0.02	ghana	0.012	0.011	norway	0.143	0.017
australia	0.134	0.017	greece	-0.015	0.019	oman	-0.027	0.057
austria	0.135	0.017	guatemala	-0.008	0.013	pakistan	-0.003	0.012
bahrain	0.037	0.041	guinea	-0.01	0.013	panama	0.003	0.009
bangladesh	0.005	0.01	guinea-bissau	-0.023	0.01	papua new guinea	0.126	0.023
belgium	0.074	0.139	guyana	0.017	0.009	paraguay	-0.014	0.009
benin	-0.012	0.01	haiti	-0.013	0.008	peru	0.01	0.014
bhutan	0.026	0.035	honduras	-0.024	0.024	philippines	-0.008	0.015
bolivia	-0.001	0.012	hungary	0.006	0.008	poland	0.011	0.009
botswana	-0.001	0.061	india	0.239	0.126	portugal	0.003	0.019
brazil	-0.013	0.012	indonesia	0.002	0.009	romania	0.002	0.008
bulgaria	0.001	0.009	iran	0.069	0.039	rwanda	0.022	0.028
burkina faso	-0.001	0.022	ireland	0.13	0.016	sao tome and principe	0.018	0.07
burundi	-0.027	0.01	israel	-0.041	0.138	senegal	-0.032	0.008
cameroon	-0.045	0.03	italy	0.129	0.016	singapore	0.009	0.011
canada	0.134	0.017	jamaica	0.157	0.117	south africa	0	0.016
central african republic	-0.035	0.015	japan	0.132	0.016	spain	-0.008	0.024
chad	-0.053	0.037	jordan	-0.018	0.016	sri lanka	0.023	0.015
chile	0.019	0.009	kenya	-0.007	0.008	st. kitts & nevis	-0.133	0.068
china	0.876	0.361	korea, republic of	0.017	0.011	sweden	-0.065	0.094
colombia	0.058	0.109	laos	-0.084	0.112	switzerland	0.136	0.018
comoros	-0.033	0.01	lesotho	0.005	0.008	syria	0.065	0.01
congo, dem. rep.	-0.035	0.01	liberia	-0.022	0.014	tanzania	0.032	0.025
congo, republic of	-0.116	0.031	madagascar	-0.024	0.013	thailand	0.012	0.01
costa rica	0.095	0.013	malawi	-0.003	0.008	togo	-0.061	0.032
cote d'ivoire	-0.018	0.009	malaysia	-0.047	0.136	tunisia	0.004	0.02
cyprus	-0.161	0.02	mali	-0.003	0.008	turkey	0.012	0.029
denmark	0.132	0.017	mauritania	0.001	0.019	uganda	-0.008	0.022
dominican republic	0.013	0.025	mauritius	0.534	0.27	united kingdom	0.13	0.016
ecuador	-0.01	0.014	mexico	-0.008	0.008	united states	0.137	0.017
egypt	0.036	0.04	mongolia	-0.002	0.008	uruguay	0.014	0.014
el salvador	0.003	0.02	morocco	0.028	0.052	venezuela	0.024	0.029
equatorial guinea	0.598	0.068	mozambique	0.021	0.008	zambia	0.007	0.009
ethiopia	0.007	0.014	nepal	0.008	0.015	zimbabwe	0.019	0.022
fiji	0.008	0.013	netherlands	0.134	0.017	mean (median)	0.034 (0.005)	
finland	0.13	0.016	new zealand	0.123	0.016			

Panel G: Lack of Price Stability

country	coef_inflation	se_inflation	country	coefficient	s.e.	country	coefficient	s.e.
algeria	-0.043	0.246	gabon	-0.009	0.147	norway	0.013	0.409
argentina	-0.019	0.034	gambia, the	0.102	0.14	pakistan	-0.039	0.303
australia	0.001	0.306	ghana	-1.09	1.376	panama	0.175	0.146
austria	-0.047	0.278	greece	-0.041	0.123	papua new guinea	-0.134	0.249
bahamas	0.05	0.094	guatemala	-0.046	0.131	paraguay	0.068	0.14
bangladesh	-0.254	0.277	guinea-bissau	0.085	0.072	peru	-0.022	0.029
barbados	-0.028	0.106	guyana	-0.088	0.077	philippines	-0.09	0.268
belgium	-0.052	0.333	honduras	0	0.378	portugal	0.109	0.11
belize	-0.042	0.255	hungary	0.008	0.118	puerto rico	-0.58	0.342
benin	-0.028	0.174	iceland	0.134	0.211	rwanda	0.086	0.115
bermuda	0.006	0.223	india	-0.52	0.455	senegal	-0.027	0.232
bolivia	-0.054	0.106	indonesia	0.062	0.21	seychelles	-0.092	0.18
botswana	0.057	0.392	iran	0.043	0.242	sierra leone	0.103	0.094
brazil	0.02	0.039	israel	0.03	0.07	singapore	-0.274	0.244
burkina faso	0.047	0.215	italy	0.089	0.13	south africa	-0.195	0.297
burundi	-0.28	0.12	jamaica	0.295	0.402	spain	0.029	0.147
cameroon	0.044	0.134	kenya	0.118	0.225	sri lanka	-5.271	5.92
canada	-0.043	0.136	kiribati	0.727	0.666	st.vincent & grenadines	-0.225	0.175
central african republic	-0.124	0.188	korea, republic of	0.04	0.204	sudan	-0.076	0.128
chad	0.031	0.05	lesotho	-0.133	0.405	swaziland	0.5	0.325
chile	-0.16	0.072	liberia	-0.095	0.049	sweden	-0.056	0.125
china version 1	0.41	0.126	luxembourg	-0.17	0.31	syria	-0.089	0.142
colombia	-0.023	0.132	madagascar	0.264	0.359	thailand	-0.073	0.503
congo, dem. rep.	-0.047	0.044	malawi	-0.256	0.177	togo	-0.592	0.596
costa rica	-0.151	0.36	malaysia	0.224	0.292	trinidad &tobago	-0.121	0.35
cuba	-0.046	0.193	malta	-0.021	0.252	tunisia	-0.008	0.211
denmark	-0.015	0.141	mauritania	-0.127	0.269	turkey	-0.016	0.097
dominican republic	-0.148	0.115	mexico	-0.031	0.079	united kingdom	-0.068	0.125
egypt	-0.006	0.429	morocco	-0.067	0.126	united states	-0.076	0.211
el salvador	0.008	0.512	nepal	0.069	0.334	uruguay	0.009	0.077
fiji	-0.081	0.268	netherlands	0.065	0.215	venezuela	-0.044	0.479
finland	-0.004	0.099	nicaragua	-0.002	0.035	zambia	-0.073	0.093
france	0.037	0.184	nigeria	-0.291	0.177	mean (median)	-0.089 (-0.027)	

Panel H: Real Exchange Rate

country	coef_inflation	se_inflation	country	coefficient	s.e.	country	coefficient	s.e.
algeria	0.063	0.374	gabon	0.221	0.377	norway	-0.265	0.322
argentina	-0.141	0.175	gambia, the	0.118	0.107	pakistan	-0.19	0.234
australia	-0.752	0.515	ghana	-0.1	0.059	panama	-0.226	0.378
austria	-0.126	0.28	greece	0.034	0.22	papua new guinea	-0.004	0.138
bahamas	-1.361	0.491	guatemala	-0.258	0.404	paraguay	1.097	0.542
bangladesh	-0.475	0.379	guinea-bissau	0.155	0.088	peru	0.101	0.211
barbados	0.053	0.201	guyana	0.029	0.269	philippines	0.677	0.848
belgium	-0.1	0.272	honduras	0.211	0.362	portugal	-0.137	0.194
belize	-0.331	0.933	hungary	-0.075	0.155	puerto rico	-0.72	0.786
benin	-0.531	0.306	iceland	-0.338	0.27	rwanda	-0.7	0.666
bermuda	0.181	0.28	india	-0.319	0.164	senegal	-0.18	0.283
bolivia	-0.152	0.303	indonesia	-0.083	0.199	seychelles	-1.113	1.182
botswana	-0.475	0.561	iran	-0.638	0.217	sierra leone	0.086	0.199
brazil	-0.083	0.161	israel	0.282	0.462	singapore	0.195	0.601
burkina faso	-0.024	0.24	italy	-0.343	0.264	south africa	-0.747	1.104
burundi	0.278	0.102	jamaica	-0.359	0.298	spain	-0.084	0.224
cameroon	0.395	0.27	kenya	0.021	0.191	sri lanka	-0.185	0.459
canada	-0.792	0.738	kiribati	0.516	0.422	st.vincent & grenadines	1.119	0.427
central african republic	0.092	0.186	korea, republic of	-0.331	0.479	sudan	0.045	0.2
chad	-0.444	0.245	lesotho	0.791	1.675	swaziland	-0.068	0.298
chile	-0.63	0.437	liberia	0.48	0.28	sweden	-0.261	0.386
china version 1	-0.392	0.118	luxembourg	-0.126	0.262	syria	0.107	0.173
colombia	0.418	1.376	madagascar	0.01	0.325	thailand	-0.882	0.815
congo, dem. rep.	-0.346	0.137	malawi	-0.033	0.257	togo	0.318	0.351
costa rica	0.374	0.294	malaysia	-0.064	0.247	trinidad &tobago	-0.368	0.358
cuba	-0.4	0.266	malta	0.023	0.523	tunisia	0.155	0.394
denmark	-0.275	0.282	mauritania	0.064	0.112	turkey	0.06	0.245
dominican republic	-0.129	0.403	mexico	-0.334	0.408	united kingdom	-0.438	0.527
egypt	0.075	0.213	morocco	0.148	0.353	united states	-0.087	0.15
el salvador	0.053	0.064	nepal	-0.118	0.26	uruguay	0.694	0.622
fiji	0.159	0.288	netherlands	-0.027	0.292	venezuela	-0.215	0.244
finland	-0.535	0.429	nicaragua	-0.4	0.286	zambia	-0.266	0.16
france	-0.293	0.341	nigeria	-0.378	0.191	mean (median)	-0.106 (-0.093)	

Table A. 12 Economic Growth Regressions (10-Year Panels)

	Dependent Variable: ln(GDP p.c.)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM
ln(GDP p.c.), t-1	0.66***	0.71***	0.72***	0.72***	0.65***	0.73***	0.72***	0.73***	0.72***
	(0.05)	(0.04)	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)	(0.04)	(0.04)
ln(Secondary School Enrolment Rate), t	0.13***								
	(0.04)								
ln(Private Domestic Credit/GDP), t		0.11***							
		(0.03)							
ln(Structure Adjusted Trade Volume/GDP), t			0.15***						
			(0.04)						
ln(Government Consumption/GDP), t				-0.25***					
				(0.05)					
ln(Telephone Lines p.c.), t					0.17***				
					(0.02)				
Polity2 Score, t						-0.01			
						(0.01)			
Inflation Rate, t							-0.14***		
							(0.03)		
ln(Real Exchange Rate), t								-0.03*	
								(0.01)	
Banking Crisis, t									-0.11*
									(0.06)
AR (1) Test, p-value	0.01	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00
AR (2) Test, p-value	0.31	0.13	0.61	0.58	0.36	0.33	0.51	0.33	0.35
Country Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	661	681	795	795	743	633	707	795	795
Countries	184	178	190	190	186	155	186	190	190

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 13 Growth Predictions 2011-2020 under a Scenario of Continuous Trends

			Contributions to Projected Change									
country	Change in Log GDP p.c. 2001-2010	Projected Change in Log GDP p.c. 2011-2020	Persistence	Education	Financial Development	Trade Openness	Government Burden	Infrastructure	Inflation	Real Exchange Rate	Banking Crisis	External Conditions
argentina	0.326	0.298	0.198	0.000	0.000	0.020	0.036	0.034	-0.002	-0.003	0.005	0.010
bolivia	0.183	0.174	0.111	-0.002	-0.033	0.005	0.012	0.061	-0.002	-0.007	0.000	0.029
brazil	0.197	0.183	0.120	0.001	0.036	0.032	0.002	-0.005	0.004	-0.025	0.000	0.018
chile	0.294	0.263	0.179	0.000	-0.002	0.021	0.022	-0.009	0.003	-0.016	0.000	0.065
colombia	0.262	0.191	0.159	0.006	0.009	0.024	0.006	-0.026	0.004	-0.004	0.000	0.013
costa rica	0.260	0.400	0.158	0.013	0.057	0.001	0.132	0.041	0.000	0.000	0.000	-0.002
dominican republic	0.367	0.182	0.223	0.003	-0.026	-0.024	0.009	-0.009	0.008	-0.007	0.006	-0.001
ecuador	0.297	0.260	0.181	0.003	0.000	0.003	-0.006	0.058	0.002	-0.006	0.006	0.019
el salvador	0.147	0.214	0.089	0.002	0.002	0.004	0.017	0.107	0.000	-0.010	0.000	0.003
guatemala	0.125	0.175	0.076	0.010	0.015	-0.012	-0.021	0.108	-0.004	-0.004	0.000	0.007
guyana	0.348	0.288	0.212	0.000	-0.053	0.008	0.002	0.158	-0.009	-0.020	0.000	-0.010
haiti	0.017	-0.056	0.010	0.008	0.001	0.007	-0.001	-0.052	-0.005	-0.012	0.000	-0.012
honduras	0.179	0.397	0.109	0.001	0.029	-0.016	-0.005	0.273	0.001	-0.007	0.008	0.004
jamaica	-0.024	-0.159	-0.015	0.002	0.006	0.005	-0.020	-0.108	0.000	-0.005	0.000	-0.024
mexico	0.048	0.135	0.029	0.003	0.009	0.021	0.021	0.045	0.008	-0.002	0.000	0.001
nicaragua	0.103	0.228	0.063	0.003	0.010	0.025	0.009	0.089	-0.003	-0.001	0.018	0.015
panama	0.445	0.472	0.271	0.002	-0.003	0.003	0.158	0.046	-0.002	0.001	0.000	-0.004
paraguay	0.213	0.201	0.130	0.001	0.008	0.017	-0.010	0.045	0.003	-0.008	0.005	0.010
peru	0.439	0.451	0.267	0.000	0.002	0.007	0.007	0.145	-0.002	-0.011	0.000	0.036
uruguay	0.307	0.204	0.187	-0.005	-0.024	0.033	0.017	-0.004	0.006	-0.007	-0.003	0.004
venezuela	0.049	0.302	0.030	0.007	0.081	-0.005	-0.026	0.212	0.003	-0.022	0.000	0.022
mean	0.218	0.229	0.133	0.003	0.006	0.009	0.017	0.058	0.001	-0.008	0.002	0.010

Note: The predictions are generated based on the estimates reported in column (2) of Table 5 and forecasts for changes in the determinants of growth obtained from univariate time-series models. To convert numbers into per annum changes, all values have to be divided by 10. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 14 Growth Predictions with Roads as Proxy for Infrastructure

			Contributions to Projected Change									
country	Change in Log GDP p.c. 2001-2010	Projected Change in Log GDP p.c. 2011-2020	Persistence	Education	Financial Development	Trade Openness	Government Burden	Roads	Inflation	Real Exchange Rate	Banking Crisis	External Conditions
argentina	0.326	0.281	0.198	0.000	0.000	0.020	0.036	0.017	-0.002	-0.003	0.005	0.010
bolivia	0.183	0.141	0.111	-0.002	-0.033	0.005	0.012	0.028	-0.002	-0.007	0.000	0.029
brazil	0.197	0.139	0.120	0.001	0.036	0.032	0.002	-0.049	0.004	-0.025	0.000	0.018
chile	0.294	0.223	0.179	0.000	-0.002	0.021	0.022	-0.049	0.003	-0.016	0.000	0.065
colombia	0.262	0.148	0.159	0.006	0.009	0.024	0.006	-0.069	0.004	-0.004	0.000	0.013
costa rica	0.260	0.281	0.158	0.013	0.057	0.001	0.132	-0.078	0.000	0.000	0.000	-0.002
dominican republic	0.367	0.168	0.223	0.003	-0.026	-0.024	0.009	-0.023	0.008	-0.007	0.006	-0.001
ecuador	0.297	0.129	0.181	0.003	0.000	0.003	-0.006	-0.073	0.002	-0.006	0.006	0.019
el salvador	0.147	-0.029	0.089	0.002	0.002	0.004	0.017	-0.136	0.000	-0.010	0.000	0.003
guatemala	0.125	0.041	0.076	0.010	0.015	-0.012	-0.021	-0.026	-0.004	-0.004	0.000	0.007
guyana	0.348	0.172	0.212	0.000	-0.053	0.008	0.002	0.042	-0.009	-0.020	0.000	-0.010
haiti	0.017	-0.041	0.010	0.008	0.001	0.007	-0.001	-0.037	-0.005	-0.012	0.000	-0.012
honduras	0.179	0.080	0.109	0.001	0.029	-0.016	-0.005	-0.044	0.001	-0.007	0.008	0.004
jamaica	-0.024	-0.034	-0.015	0.002	0.006	0.005	-0.020	0.017	0.000	-0.005	0.000	-0.024
mexico	0.048	0.118	0.029	0.003	0.009	0.021	0.021	0.028	0.008	-0.002	0.000	0.001
nicaragua	0.103	0.114	0.063	0.003	0.010	0.025	0.009	-0.025	-0.003	-0.001	0.018	0.015
panama	0.445	0.419	0.271	0.002	-0.003	0.003	0.158	-0.007	-0.002	0.001	0.000	-0.004
paraguay	0.213	0.095	0.130	0.001	0.008	0.017	-0.010	-0.061	0.003	-0.008	0.005	0.010
peru	0.439	0.327	0.267	0.000	0.002	0.007	0.007	0.021	-0.002	-0.011	0.000	0.036
uruguay	0.307	0.208	0.187	-0.005	-0.024	0.033	0.017	0.000	0.006	-0.007	-0.003	0.004
venezuela	0.049	0.104	0.030	0.007	0.081	-0.005	-0.026	0.014	0.003	-0.022	0.000	0.022
mean	0.218	0.147	0.133	0.003	0.006	0.009	0.017	-0.024	0.001	-0.008	0.002	0.010

Note: The predictions are generated based on the estimates reported in column (1) of Table 5. To convert numbers into per annum changes, all values have to be divided by 10. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 15 Growth Predictions with Composite Index as Proxy for Infrastructure

			Contributions to Projected Change									
country	Change in Log GDP p.c. 2001-2010	Projected Change in Log GDP p.c. 2011-2020	Persistence	Education	Financial Development	Trade Openness	Government Burden	Infrastructure Index	Inflation	Real Exchange Rate	Banking Crisi	External Conditions
argentina	0.326	0.275	0.199	0.000	0.000	0.020	0.036	0.011	-0.002	-0.003	0.005	0.010
bolivia	0.183	0.123	0.111	-0.002	-0.033	0.005	0.012	0.011	-0.002	-0.007	0.000	0.029
brazil	0.197	0.209	0.120	0.001	0.036	0.032	0.002	0.022	0.004	-0.025	0.000	0.018
chile	0.294	0.286	0.179	0.000	-0.002	0.021	0.022	0.012	0.003	-0.016	0.000	0.065
colombia	0.262	0.223	0.160	0.006	0.009	0.024	0.006	0.004	0.004	-0.004	0.000	0.013
costa rica	0.260	0.373	0.158	0.013	0.057	0.001	0.132	0.015	0.000	0.000	0.000	-0.002
dominican rep	0.367	0.433	0.223	0.003	-0.026	-0.024	0.009	0.242	0.008	-0.007	0.006	-0.001
ecuador	0.297	0.214	0.180	0.003	0.000	0.003	-0.006	0.013	0.002	-0.006	0.006	0.019
el salvador	0.147	0.295	0.089	0.002	0.002	0.004	0.017	0.187	0.000	-0.010	0.000	0.003
guatemala	0.125	0.256	0.076	0.010	0.015	-0.012	-0.021	0.189	-0.004	-0.004	0.000	0.007
guyana	0.348	0.232	0.212	0.000	-0.053	0.008	0.002	0.103	-0.009	-0.020	0.000	-0.010
haiti	0.017	0.051	0.010	0.008	0.001	0.007	-0.001	0.055	-0.005	-0.012	0.000	-0.012
honduras	0.179	0.425	0.109	0.001	0.029	-0.016	-0.005	0.302	0.001	-0.007	0.008	0.004
jamaica	-0.024	-0.047	-0.014	0.002	0.006	0.005	-0.020	0.002	0.000	-0.005	0.000	-0.024
mexico	0.048	0.108	0.029	0.003	0.009	0.021	0.021	0.018	0.008	-0.002	0.000	0.001
nicaragua	0.103	0.141	0.063	0.003	0.010	0.025	0.009	0.001	-0.003	-0.001	0.018	0.015
panama	0.445	0.426	0.271	0.002	-0.003	0.003	0.158	0.000	-0.002	0.001	0.000	-0.004
paraguay	0.213	0.155	0.130	0.001	0.008	0.017	-0.010	0.001	0.003	-0.008	0.005	0.010
peru	0.439	0.314	0.267	0.000	0.002	0.007	0.007	0.009	-0.002	-0.011	0.000	0.036
uruguay	0.307	0.136	0.187	-0.005	-0.024	0.033	0.017	-0.073	0.006	-0.007	-0.003	0.004
venezuela	0.049	0.213	0.030	0.007	0.081	-0.005	-0.026	0.125	0.003	-0.022	0.000	0.022
LAC mean	0.218	0.231	0.133	0.003	0.006	0.009	0.017	0.059	0.001	-0.008	0.002	0.010

Table A. 16 Economic Growth Regressions

(Conditional Effects, 5-Year Unbalanced Panel)

	Dependent Variable: ln(GDP p.c.)	
ln(GDP p.c.), t-1	(1)	(2)
	SYS GMM	LS
	0.81***	0.78***
	(0.05)	(0.03)
Structural Policies and Institutions		
ln(Secondary School Enrolment Rate), t	0.02	-0.01
	(0.05)	(0.03)
ln(Private Domestic Credit/GDP), t	0.08***	0.03
	(0.03)	(0.02)
ln(Structure Adjusted Trade Volume/GDP), t	0.11**	0.12***
	(0.05)	(0.03)
ln(Government Consumption/GDP), t	-0.30***	-0.13***
	(0.04)	(0.03)
Infrastructure Index, t	0.08***	0.06***
	(0.02)	(0.02)
Polity2 Score, t	0.01	-0.01
	(0.03)	(0.02)
Stabilisation Policies		
Inflation Rate, t	-0.01	-0.01
	(0.01)	(0.01)
ln(Real Exchange Rate), t	-0.06	-0.02
	(0.04)	(0.03)
Banking Crisis, t	-0.05*	-0.06**
	(0.03)	(0.03)
External Conditions		
ComPI Growth, t	7.81***	5.78**
	(2.63)	(2.58)
Terms of Trade Growth, t	0.14***	0.12***
	(0.03)	(0.03)
AR (1) Test, p-value	0.02	.
AR (2) Test, p-value	0.03	.
Sargan Test $\chi^2(10)$, p-value	0.03	.
Country Fe	Yes	Yes
Year Fe	Yes	Yes
Observations	464	464
Countries	126	126

Note: The dependent variable is real GDP per capita. The method of estimation in column (1) is system-GMM; column (2) least squares. The system-GMM estimation is based on 10 endogenous variables and 20 instruments. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 17 Growth Forecasts 2011-2020 Keeping the Commodity Price Index and Terms of Trade at their 2010 level

(All other variables are under the Scenario of Continuous Trends)

			Contributions to Projected Change									
country	Change in Log GDP p.c. 2001-2010	Projected Change in Log GDP p.c. 2011-2020	Persistence	Education	Financial Development	Trade Openness	Government Burden	Infrastructure	Inflation	Real Exchange Rate	Banking Crisis	External Conditions
argentina	0.326	0.288	0.198	0.000	0.000	0.020	0.036	0.034	-0.002	-0.003	0.005	0.000
bolivia	0.183	0.145	0.111	-0.002	-0.033	0.005	0.012	0.061	-0.002	-0.007	0.000	0.000
brazil	0.197	0.165	0.120	0.001	0.036	0.032	0.002	-0.005	0.004	-0.025	0.000	0.000
chile	0.294	0.198	0.179	0.000	-0.002	0.021	0.022	-0.009	0.003	-0.016	0.000	0.000
colombia	0.262	0.178	0.159	0.006	0.009	0.024	0.006	-0.026	0.004	-0.004	0.000	0.000
costa rica	0.260	0.402	0.158	0.013	0.057	0.001	0.132	0.041	0.000	0.000	0.000	0.000
dominican republic	0.367	0.183	0.223	0.003	-0.026	-0.024	0.009	-0.009	0.008	-0.007	0.006	0.000
ecuador	0.297	0.241	0.181	0.003	0.000	0.003	-0.006	0.058	0.002	-0.006	0.006	0.000
el salvador	0.147	0.211	0.089	0.002	0.002	0.004	0.017	0.107	0.000	-0.010	0.000	0.000
guatemala	0.125	0.168	0.076	0.010	0.015	-0.012	-0.021	0.108	-0.004	-0.004	0.000	0.000
guyana	0.348	0.298	0.212	0.000	-0.053	0.008	0.002	0.158	-0.009	-0.020	0.000	0.000
haiti	0.017	-0.044	0.010	0.008	0.001	0.007	-0.001	-0.052	-0.005	-0.012	0.000	0.000
honduras	0.179	0.393	0.109	0.001	0.029	-0.016	-0.005	0.273	0.001	-0.007	0.008	0.000
jamaica	-0.024	-0.135	-0.015	0.002	0.006	0.005	-0.020	-0.108	0.000	-0.005	0.000	0.000
mexico	0.048	0.134	0.029	0.003	0.009	0.021	0.021	0.045	0.008	-0.002	0.000	0.000
nicaragua	0.103	0.213	0.063	0.003	0.010	0.025	0.009	0.089	-0.003	-0.001	0.018	0.000
panama	0.445	0.476	0.271	0.002	-0.003	0.003	0.158	0.046	-0.002	0.001	0.000	0.000
paraguay	0.213	0.191	0.130	0.001	0.008	0.017	-0.010	0.045	0.003	-0.008	0.005	0.000
peru	0.439	0.415	0.267	0.000	0.002	0.007	0.007	0.145	-0.002	-0.011	0.000	0.000
uruguay	0.307	0.200	0.187	-0.005	-0.024	0.033	0.017	-0.004	0.006	-0.007	-0.003	0.000
venezuela	0.049	0.280	0.030	0.007	0.081	-0.005	-0.026	0.212	0.003	-0.022	0.000	0.000

Table A. 18 Economic Growth Regressions

(Controlling for the Output Gap, GDP p.c. Volatility, and RER Volatility)

Dependent Variable: ln(GDP p.c.)		
	(1)	(2)
	SYS GMM	LS
ln(GDP p.c.), t-1	0.64***	0.68***
	(0.06)	(0.05)
Output Gap, t-1	1.66***	0.92***
	(0.33)	(0.26)
GDP p.c. Volatility, t	-1.22**	0.15
	(0.56)	(0.44)
RER Volatility, t	0.18	0.03
	(0.14)	(0.12)
Structural Policies and Institutions		
ln(Secondary School Enrolment Rate), t	-0.09	-0.04
	(0.06)	(0.04)
ln(Private Domestic Credit/GDP), t	0.04	0.03
	(0.03)	(0.02)
ln(Structure Adjusted Trade Volume/GDP), t	0.10*	0.10**
	(0.06)	(0.04)
ln(Government Consumption/GDP), t	-0.16**	-0.18***
	(0.07)	(0.05)
ln(Telephone Lines p.c.), t	0.18***	0.11***
	(0.03)	(0.03)
Polity2 Score, t	-0.04	-0.02
	(0.04)	(0.02)
Stabilisation Policies		
Inflation Rate, t	0.00	-0.01
	(0.01)	(0.01)
ln(Real Exchange Rate), t	-0.11**	-0.03
	(0.05)	(0.04)
Banking Crisis, t	-0.02	-0.05*
	(0.04)	(0.03)
External Conditions		
ComPI Growth, t	5.81**	6.01**
	(2.99)	(2.98)
Terms of Trade Growth, t	0.07**	0.08**
	(0.04)	(0.04)
AR (1) Test, p-value	0.01	.
AR (2) Test, p-value	0.45	.
Country Fe	Yes	Yes
Year Fe	Yes	Yes
Observations	350	350
Countries	126	126

Note: The dependent variable is real GDP per capita. The method of estimation in column (1) is system-GMM; column (2) least squares. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

Table A. 19 Economic Growth Regressions

(Interaction Model)

Dependent Variable: ln(GDP p.c.)				
	(1)	(2)	(3)	(4)
	SYS GMM	SYS GMM	SYS GMM	SYS GMM
Interaction Variable	Inflation above median	Infrastructure above median	Financial development above median	Inflation below median, and infrastructure and financial development above median
		Panel A: Schooling		
ln(Secondary School Enrolment Rate), t	0.07 (0.05)	0.06** (0.03)	0.06** (0.03)	0.05 (0.03)
ln(Secondary School Enrolment Rate), t * Interaction Variable	-0.02 (0.02)	0.01 (0.01)	0.00 (0.01)	-0.02 (0.02)
Interaction Variable	0.05 (0.08)	-0.01 (0.04)	0.01 (0.04)	0.12 (0.08)
ln(GDP p.c.), t-1	0.77*** (0.04)	0.80*** (0.04)	0.79*** (0.04)	0.79*** (0.04)
AR (1) Test, p-value	0.00	0.00	0.00	0.00
AR (2) Test, p-value	0.10	0.12	0.13	0.13
Sargan Test, p-value	0.23	0.20	0.25	0.31
Country Fe	Yes	Yes	Yes	Yes
Year Fe	Yes	Yes	Yes	Yes
Observations	760	760	760	760
Countries	95	95	95	95
		Panel B: Financial Development		
ln(Private Domestic Credit/GDP), t	0.09*** (0.04)	0.12*** (0.04)	.	0.11*** (0.03)
ln(Private Domestic Credit/GDP), t* Interaction Variable	0.01 (0.01)	-0.02 (0.02)	.	-0.04 (0.01)
Interaction Variable	-0.03 (0.05)	0.13** (0.06)	.	0.15*** (0.04)
ln(GDP p.c.), t-1	0.68*** (0.05)	0.65*** (0.05)	.	0.68*** (0.05)
AR (1) Test, p-value	0.00	0.00	.	0.00
AR (2) Test, p-value	0.00	0.00	.	0.01
Sargan Test, p-value	0.36	0.30	.	0.45
Country Fe	Yes	Yes	.	Yes
Year Fe	Yes	Yes	.	Yes
Observations	800	800	.	800
Countries	100	100	.	100

Note: The dependent variable is real GDP per capita. The method of estimation is system-GMM. *Significantly different from zero at the 10 percent significance level, ** 5 percent significance level, *** 1 percent significance level.

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