



Latin America AND the Caribbean's Long-Term Growth



Made in China?



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September 2011

Foreword

This semiannual report—a product of the Office of the Chief Economist for the Latin America and the Caribbean Region of the World Bank—examines short-run and long-run challenges for economic growth for the Latin America and the Caribbean (LAC) region in the aftermath of the 2008-09 global financial crisis.

The first part of this report provides an overview of recent economic developments, including an analysis of the sources of external risks for short-term economic activity in the region, and an in-depth look at whether LAC can leverage its deepening connections with China and turn it into an important (but not the only one) source of long-term growth. It also discusses policy response options for the short and long-term horizons. The preparation of this part of the report was led by Augusto de la Torre, Regional Chief Economist, in close collaboration with Tatiana Didier, César Calderón, Tito Cordella, and Samuel Pienknagura. Andres Schneider and Magali Pinat provided outstanding research assistance. We would like to thank Laura Chioda, Daniel Lederman, William Maloney, Sergio Schmukler, Sergio Jellinek, and Marcela Sánchez-Bender for their invaluable comments.

The second part of the report documents and analyzes the emergence, over the last decade, of a downward trend in education earnings premia (the additional earnings associated with a higher level of education), which is believed to reflect a re-balancing between higher supply and lower demand for skills. The preparation of this part of the report was led by Cristian Aedo and Ian Walker, and written based on the Regional Study they led, “*Skills for the 21st Century in LCR*” Background papers for this Regional Study were prepared by Tim Gindling with Camilo Bohórquez, Sergio Rodríguez and Romero Barreto Rocha; Ana María Oviedo and Gregory Veramendi; Cristian Aedo and Javier Luque; Pablo Acosta, Guillermo Cruces and Leonardo Gaspirini; Rita Almeida and Jaime Jesus; Ken Dodge, Nancy Guerra and Ian Walker; and Cristian Aedo and John Middleton. Mary Downing, Lerick Kebeck, and Francisco Ochoa provided invaluable logistical, administrative, and editing support. The authors are thankful to the Education and Social Protection units in the LAC region of the World Bank for providing invaluable inputs as well as to the LAC Chief Economist Office for comments and suggestions. Insightful and constructive comments were also received from Barbara Bruns, Michael Crawford, Amit Dar, Emanuela di Gropello, Margaret Grosh, John Giles, Jesko Hentschel, Francisco Ferreira, Jamele Rigolini, and Carolina Sánchez.

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Part One

LAC's Long-Term Growth: Made in China?

Executive Summary

The last ten years or so have been very good for Latin America and the Caribbean (LAC) as a whole. They witnessed the consolidation of a stable and resilient macro-financial framework, relatively high growth rates, and steps forward in the equity agenda. This new face of LAC was perhaps most clearly portrayed by a rather stellar performance of the region, especially of South American countries, in the context of the recent global crisis. The recovery in economic activity in LAC along the cycle is now leading to a more mature, albeit lower, growth dynamics. After having expanded by around 6 percent during the 2010 rebound, GDP growth is estimated to decelerate to between 3.5 and 4.5 percent in 2011 as the high-growth economies in LAC, pushed by the twin tail winds of buoyant capital inflows and high commodity prices, have begun to bump against capacity constraints.

The immediate juncture, however, is caught up in the midst of high and seemingly growing uncertainties, with most of the downside risks to LAC coming from the outside. The main risks emanate from the combination of weak and well-below potential economic activity in the developed world and the rising concerns about the sustainability of fiscal policy and public debt dynamics, particularly in Europe. As the room for policy maneuvering to avert a deeper crisis in the developed world is narrowing, uncertainty aversion has risen and so has the proximity to tail risks. The resolution of these problems remains problematic and how badly would LAC be affected will depend on which scenario eventually unfolds.

The troubles in Europe and the U.S. have already led to a sharp co-movement in stock markets across the globe, including LAC, especially since the U.S. debt downgrade. LAC sovereign spreads have also risen somewhat but proportionally much less than the spreads of European countries, including France. A downward bias is affecting growth forecast for the region. In this context, most central bankers in the region have interrupted the cycle of interest rate increases (Brazil went further and started reducing them) in recognition that the complexity of the political and economic policy challenges facing Europe and the U.S. and that the fickleness of market sentiments are such that tail risks may materialize, leading to a global downturn. Although most baseline scenarios continue to assume a more benign external environment, prudent macro authorities in the region are not ruling out a bad scenario and making preparations for it.

By raising interest rates over the past 15 months or so, and much more aggressively than middle income countries in other regions, the inflation targeting countries in LAC have gained the ability to shift to an aggressive countercyclical monetary policy if needed. Under a bad scenario, these countries could rely on lower interest rates, flexible exchange rates, and strong international reserve positions as a first line of defense. LAC should in the short run continue to rebuild fiscal buffers, to enhance its capacity to deploy counter-cyclical fiscal policy down the line if needed. Preparations have also to be made to scale up social safety nets as appropriate. Unfortunately, the shock absorption capacity across countries within the region varies considerably, implying that a bad global scenario could have crippling implications for some countries in the region, especially those countries in Central America and the Caribbean that lack countercyclical macroeconomic policy capacity and suitable social safety nets. Caribbean countries, furthermore, confront much tighter constraints arising from high public sector indebtedness and vulnerable financial systems.

However, a less bleak scenario for the region may also take place even if the economies of the U.S. and Europe remain stagnant for some time, as long as tail risks in the advanced economies do not materialize and the major international financial markets do not spiral out of control. Under such a scenario, China's growth would not decelerate unduly and commodity prices would not soften much. As a result, the LAC countries with strong macroeconomic policy frameworks and connections to China could be able to keep their economic activity decoupled from that in the advanced nations.

LAC has no influence over developments in the external front. Moreover, with uncertainty dominating risk in the current juncture, the capacity to predict the future is inherently impaired. Hence, rather than speculating over the unknowable, this report focuses on a perfectly known and key question whose answer is largely under LAC's control—whether LAC countries that have so far experienced strong growth can avoid a self-inflicted boom-bust pattern and rather turn what has been so far a vigorous cyclical recovery into a higher rate of trend growth. The fact that precisely the best performing part of the region has been confronted at this stage with inflationary pressures arising from bottlenecks is a clear reminder of a rather sad reality—that the region bumps against “structural speed limits” at comparatively low growth rates. While the high-performing economies of emerging Asia can sustain annual growth rates in the 6-9 percent range without inflationary consequences, in most of LAC the non-inflationary growth rates that can be sustained over long periods tend to hover around 5 percent.

Economic performance within LAC has been highly heterogeneous not just during and after the global financial crisis but also over the entire past decade, with Mexico and most countries in Central America and the Caribbean significantly underperforming the regional average. This heterogeneity is not independent of the extent of economic links to China. This report explores whether this China connection—dependent as it is on LAC's natural resource abundance—can be capitalized so as to help the region enter into a steady process of economic convergence towards the standards of living of the advanced economies—a process that has systematically eluded LAC for more than a century.

The increasing role of China as an independent influence on LAC economies warrants a thorough analysis. The robust growth observed in LAC over the past decade is in fact an important reflection of this connection. Both directly (via trade and increasingly also FDI channels) and indirectly (mostly via China's impact on the international commodity prices), China's role in LAC is far from trivial. Coincidentally or not, productivity growth in the region has in fact surged just as these links have deepened. Hence, the question for LAC is whether a virtuous process could be fostered on this basis. The intensification of trade and other economic links to China matter for sustainable growth only to the extent that they translate into factor accumulation and productivity increases, especially those associated with positive learning spillovers. To shed light on this question, we contrast the nature of LAC's connections to China in the 2000s with those observed between the East Asian economies and Japan from the 1970s to the 1990. Japan was a fast-growing neighbor with impressive technological progress in the postwar era that acted as a major growth pole, fostering growth in these countries for a long period of time.

LAC's trade connection to China has to date relied on the complementarity between the region's natural resource abundance and China's unskilled labor-intensive goods with a low content of advanced technologies. So far, there is no clear evidence that this is being accompanied by a substantial process of technology diffusion and knowledge spillovers. Growth spillovers from Chinese FDI into the region seem to have also been limited so far. These flows have been small and concentrated on the acquisition of large firms in natural resource-based industries, thus deepening the comparative advantage forces that currently lie at the core of this connection. In contrast, the golden years of East Asian Tigers were characterized by large flows of intra-industry trade and FDI with Japan, rising, network-type connections with Japan and among the Tigers, and significant diffusion of technology and knowledge. In sum, we find so far little evidence that China is fostering productivity growth in the LAC region in a similar fashion in which Japan did for the East Asian economies in the past.

The central point is that trade connections alone—i.e., connections that are not accompanied by, and lead to, human capital formation, investments in innovation, technological adoption and adaptation, and cumulative learning—are unlikely to spur productivity growth. And even more so when export revenue expansion relies solely on buoyant prices of high-rent commodities. In spite of the disheartening aggregate depiction of LAC's current connection with China, there are some clear bright spots. LAC's improved institutions and policy frameworks enhance the chances of avoiding the natural resource curse and rather raise hopes of realizing the blessing. There is, moreover, growing case-study evidence of significant technological modernization, clustering effects, and linkages to other sectors in the production of agricultural commodities in the region—in Argentina, Brazil, Chile, and Uruguay, for example. And there is hard evidence of significant movement up the value chain in the production of mineral commodities—with LAC's share in the global exports of higher value added (“worked”) metals increased eightfold over the past 30 years or so.

It may be argued that while China is big enough and growing fast enough to exert a strong pull on the region, it is still less developed than LAC and can thus not be a significant source of learning for the region. But learning (to produce more and better of the same, and to produce new things) in a globalized economy can come from any place, and not just the export destination country, if the right institutional and policy environment is in place. The absence of the latter helps explain why LAC could not capitalize on the tight connection it has maintained with the U.S.—a rich and innovative economy operating at the technological frontier—for much of the post-World War II era. LAC’s poor productivity performance over the last 50 years in a region despite its quantitatively strong trade and FDI links to the U.S. suggests that there are deeper institutional and structural reasons that make LAC economies less able to learn and absorb technology. Much of this handicap is related to lags behind in human capital, skills, infrastructure, and innovation capacity. The new connection to China will not by itself change these deficiencies. That is the job of a well-designed and implemented growth-oriented policy agenda, an agenda that is by and large still missing.

In designing growth-oriented policies, some structural features in the macro-financial front need to be taken into account. Compared to the East Asian Tigers, LAC countries still face a greater challenge of finding the proper policy mix that maintains macro-financial stability, on the one hand, and fosters competitiveness, on the other. The management of economic growth in East Asian economies was clearly geared towards stability-cum-competitiveness—that is, a stable business environment, low inflation, sustainable fiscal policies, and exchange rate policies designed to foster export competitiveness. Fundamentally, it was the high saving rates and a relatively closed capital account in the 1970s and 1980s that allowed the Tigers to sustain an export-led growth model based on competitive exchange rates. In contrast, LAC has opted historically for a different mix of trade and financial openness. LAC’s relatively greater outward orientation in finance (rather than trade) led policymakers to aim in the 2000s for monetary policy independence and exchange rate flexibility with overvalued currencies, which has translated into low domestic savings. This mix, however, to succeed in the growth front, would need to be complemented by an unusually vigorous agenda to reduce the binding constraints to investment, reduce the costs of doing business, and raise productivity growth.

Overall, LAC faces a very tall order in this regard. The overriding challenge in the growth front for LAC’s policymakers is thus to harness the opportunities afforded by deeper and broader links to the global economy in general, and to China in particular. This is essentially a question on how to reap the benefits of its growth momentum through enhanced international trade, FDI, and financial integration. In the shorter run, how LAC manages the mature phase of the recovery cycle will be crucial in this respect, as it would set the stage for the implementation of a more robust long-run growth agenda. Beyond the short run, the premium on productivity enhancing policies will need to be raised. Some of the key external conditions for LAC to raise its growth rate sustainably above the world’s average may be in place (large and growing countries with strong demand for LAC exports; high commodity prices; and low world interest rates). Seizing the opportunity on this favorable external environment will require well-designed, but not necessarily numerous or unduly complex, policies to ignite growth that are adequately tailored to the circumstances of each individual country.

Introduction

In contrast to the “lost decade” of the 1980s and the stabilization and mostly low growth decade the 1990s, Latin America and the Caribbean (LAC) taken as a whole began the 2000s with a great decade, one that saw the consolidation of macro-financial stability, relatively high growth rates, and significant steps forward in the equity agenda. As discussed in our October 2010 report “*Globalized, Resilient, Dynamic: The New Face of LAC*”, helped by high commodity prices and capital inflows, growth raised well above that in the G7 in many LAC countries in this first decade of the new century. Even more remarkable is the fact that this growth has been a pro-poor one. Poverty rates declined steeply, with more than 50 million Latin Americans having been lifted out of moderate poverty between 2002 and 2008 and another 5 million are expected to climb out of poverty between 2009 and 2010 according to the World Bank (2010), and the middle classes expanded in tandem with a decline in income inequality throughout much of the region, albeit from very high levels.¹

The new and shinier face of LAC was perhaps most clearly delineated in the context of the recent global crisis—the worst economic downturn to hit the world economy since the Great Depression—where LAC countries, especially in South America, had a rather stellar performance. In effect, compared to the middle-income country average, the region’s recession in 2009 was relatively shorter lived and, with the notable exception of Mexico, remarkably mild and its recovery in 2010-2011 stronger. This good outcome was not independent of the improvement in LAC’s economic “immune system”, which has made the region much more resilient to external shocks than in the past. This was in turn the legacy of a silent revolution in the macro-financial policy (particularly in monetary policy, but also in fiscal and financial oversight policies) that converted the region’s traditional factors of external shock amplification (weak currencies, weak fiscal processes, and weak banking systems) into shock absorbers (flexible and credible currencies, stronger public finances, and well capitalized and liquid banking systems). This, together with a decline in currency mismatches and a safer (FDI based) integration into international financial markets, has allowed the region to conduct countercyclical monetary, fiscal, and credit policies during the global crisis, to come out of the crisis without balance sheet impairment, and rebound quickly and strongly thereafter.

To be sure, economic performance within LAC has been highly heterogeneous not just during and after the subprime-originated global crisis but also over the entire past decade, with Mexico and most countries in Central America and the Caribbean significantly underperforming the regional average. However, for the relatively high performing countries in LAC (which jointly account for about 69 percent of the region’s GDP) the two key questions as they reach the mature phase of their *cyclical* recovery are: (i) can they avoid the boom-bust pattern that has so often marked the region’s history of commodity price and capital inflow bonanzas? and (ii) can they use their growing, natural resource-based connection to China to achieve a higher and robust non-inflationary growth rate over the medium term? These are the questions over which this report tries to shed some light. They are inherently difficult questions that require in-depth country-specific analysis. Hence, the report sets the modest goal of only illustrating and discussing a few of the relevant issues.

¹ Moderate poverty is defined as living with less than US\$4 per day on a purchasing power adjusted basis. Lustig and Lopez-Calva (2010) complemented with recent estimates by the World Bank’s Office of the Chief Economist for Latin America and the Caribbean show that income inequality, measured by the Gini coefficient, declined between 2000 and 2009 in 13 out of 18 LAC countries for which data exist. In fact, the middle class in the region as a whole grew from about 20 percent of the population in 2002 to about 30 percent by 2010. For these estimates, the middle class is measured as households with income per capita between \$10 and \$50 2005 U.S. dollars PPP adjusted a day.

Before delving into the main subject matter (long-term growth issues associated with LAC's rising connection to China), however, this report briefly characterizes the mature phase of the recovery cycle that many LAC countries are undergoing and discusses the risks to global demand and financial stability stemming mainly from Europe and the U.S.

LAC's Success and the Maturing Recovery

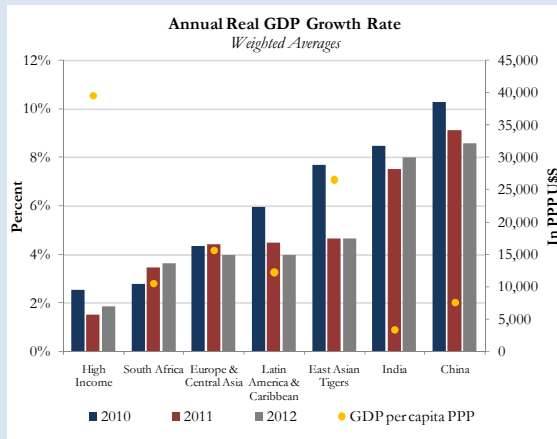
As highlighted in our previous report for the 2011 Spring Meetings of the IMF and the World Bank, “*LAC Success Put To The Test*,” the region is recovering strongly from the global financial crisis, when compared not only to its past but also to the rest of the world. In fact, a number of countries in the LAC region joined the most dynamic emerging economies (EMs) in the recovery, which include China, India, Korea Republic, Malaysia, Philippines, and Thailand. These were the fastest growing countries in the world, leading the economic recovery and playing an increasingly important role in world economic activity. While accounting for less than 29 percent of world GDP in 2011, the top 20 emerging economies were responsible for more than 46 percent of world GDP growth in that same year.

The cyclical recovery is now giving rise to more mature, albeit lower, growth dynamics in emerging markets in general and LAC in particular, consistent with the closing of the gap between actual and potential growth (Figure 1.1A). In effect, after having expanded by around 6 percent during the 2010 rebound, LAC's GDP is estimated to grow in the 3.5-4.5 range in 2011. Pushed by the twin tail winds of buoyant capital inflows and high commodity prices, domestic demand has started to hit capacity constraints in the high-growth economies in LAC and some are showing signs of overheating. Current projections for 2012 suggest a deceleration with growth forecasts at about 4 percent, along with a bias towards further downward revisions in the coming months. Moreover, the variance in growth across countries within LAC, which was very high in 2010, has narrowed in 2011 and is expected to narrow further in 2012 (Figure 1.1B). Importantly, however, the growth forecast for LAC in 2011-2012 is similar to those for East Asia and Eastern Europe and Central Asia, both with forecasts currently at around 4.5 percent. China and India stand ahead of this group with GDP projected to increase by 9 and 7.5 percent in 2011, and about 8.5 and 8 percent in 2012, respectively. In stark contrast, economic activity in the advanced economies remains well-below their potential (full-employment) level while the threat of a double-dip recession lurks in the shadows. For the advanced economies, in effect, anemic growth is projected at best through at least 2013 under most scenarios. The U.S. and Euro zone countries, for example, are currently expected to grow, respectively, by only 1.5 and 2 percent in 2011. Given the high uncertainty that characterizes the present moment, growth forecasts for the U.S. and Europe for 2012 vary widely, between 0 and 3 percent.

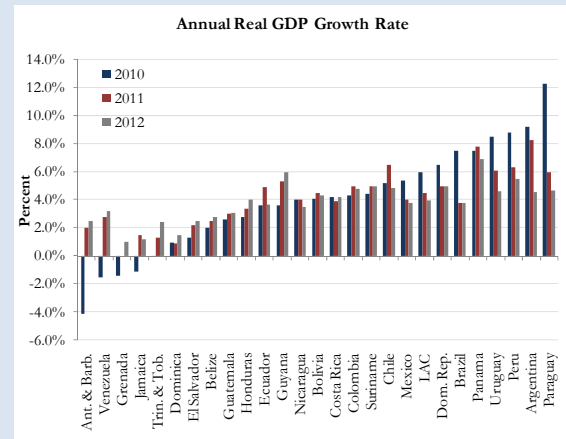
The decoupling of cyclical GDP growth between emerging and advanced economies since 2009 has been a remarkable feature of the global landscape. Going forward, and barring a major collapse in worldwide aggregate demand, EMs will continue to lead global growth. But the current juncture is filled with uncertainties, casting doubt on almost all forecasts. While the bulk of the evidence thus far points towards weak world growth in the near future, the question of whether economic growth in emerging markets will remain decoupled from that of the rich countries will depend on the harshness of the global environment (see below).

FIGURE 1.1. Growth Forecasts

PANEL A. Across Regions



PANEL B. Across LAC Countries



Notes: Regional averages use 2007 nominal GDP as weights. Latest available forecasts are used. Sources: Consensus Forecasts (September 2001, if available, or August 2011), Economist Intelligent Unit (September 2011 forecasts), Bloomberg, and IMF's World Economic Outlook (April 2011).

LAC faces the future and its uncertainties after a decade of strong growth performance, with the average in GDP per capita in the region having increased by almost 25 percent between 2002 and 2011. The luster of the past 10 years or so, however, has not shined equally within LAC (Figure 1.1B). Heterogeneity within LAC has not only been pronounced but it has also been mutating, as a result of growing differences in a number of factors, including the quality of macroeconomic policies, the degree of trade and financial integration, the abundance of natural resources, and extent of economic links to China. To illustrate this point, LAC countries are classified into three groups, depending on their growth (high, intermediate, and low) performance (Figure 1.2 and Table 1.1).²

- For the high-growth countries, real GDP rose steeply during the pre-crisis period (2003 to 2007), and while growth decelerated by about 6 percentage points during the global crisis (2007 vis-à-vis 2009), it picked up strongly thereafter, with GDP getting back to its trend by 2011 on the strength of a cumulative expansion of about 13 percent during 2010-2011. The set of high-growth countries accounts for about 71 percent of the region's GDP and include mostly the South American countries (Argentina, Brazil, Bolivia, Chile, Paraguay, Peru, and Uruguay) but also Panama and the Dominican Republic. Interestingly, Guyana and Suriname are also part of this group, perhaps leveraging themselves on their proximity to Brazil.
- For low-growth countries, aggregate GDP rose much less steeply in the pre-crisis period, growth fell by about 9 percentage points in 2009 vis-à-vis 2007, and the recovery thereafter has been mediocre. By 2011, GDP for this group of countries remains on average almost 18 percent below their 2003-2007 trends. The set of low-growth countries jointly accounts for about 22 percent of the region's GDP and includes mainly Caribbean countries, but also El Salvador, Mexico, and Venezuela.
- The rest of LAC belongs to the set of intermediate-growth countries, which comprises mainly Central American countries but also Ecuador. Aggregate GDP also rose less steeply than in high-growth countries in the pre-crisis period, and while growth decelerated by 4.5 percentage points in 2009 vis-à-vis 2007, it has not recovered well and by 2011, GDP remains about 7 percent below its trend.

² High growth, intermediate growth, and low growth countries in LAC are defined as those where real GDP is expected to expand from 2008 to 2011 by, respectively, more than 10 percent, between 4 and 10 percent, and less than 4 percent.

To the extent that China continue to rise as a growth pole, this changing heterogeneity in LAC may lead in the future to deepening rifts in standards of living within the region, highlighting that, for a given quality of economic policy making, the location of a country in the continental landmass may matter increasingly less than the parts of the world (U.S., Euro zone, Emerging Europe, Emerging Asia) to which it is connected and how it is connected.

High-growth countries in the region are by and large increasingly connected to China and at present tending to bump against capacity constraints to non-inflationary growth (Figure 1.2). Signs of overheating have started to appear more clearly in Brazil, the Dominican Republic, Panama, Paraguay, Peru, and Uruguay, where inflation has been accelerating mainly reflecting an excess of domestic demand over potential output. Chile and Colombia may be also entering this stage.

As LAC countries reach the mature phase of the recovery cycle, the premium on skillful macro-financial policy has been rising, as discussed in our April 2011 report “*LAC Success Put To The Test.*” One of the core challenges has been the need to reconcile the objectives of, on the one hand, keeping inflation expectations anchored in the face of economic overheating and rising international prices of foods and fuels and, on the other hand, avoiding an “excessive appreciation” of the local currency in the face of high and potentially volatile commodity prices and capital inflows. The maneuvering room for macro-financial policy has thus become much constrained. Whether this sort of constraints will continue to dominate macro-financial policy in the future has become an open question given the ongoing deterioration of the external environment. At best, if such deterioration remains contained, it may actually provide some relief to the process of currency appreciation in the region (*i.e.*, through rising global risk aversion) and still permit the high-performing countries in LAC to retain a decoupled growth path. At worst, if the deterioration were to exceed a certain threshold and cause a downward re-coupling of economic activity world-wide, a major shift in policy in the region might become necessary, so as to activate all the available shock absorbers in the macro-financial and social policy fronts.

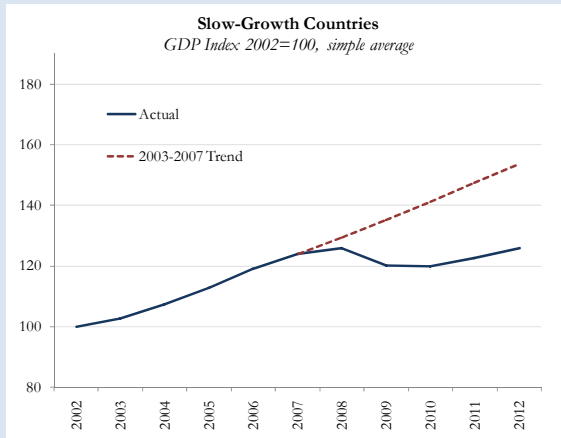
TABLE 1.1. Heterogeneity Within LAC

	Avg. Growth 2003-2007 <i>Simple Average</i>	Avg. Growth 2003-2011 <i>Simple Average</i>	Avg. Growth 2008-2012 <i>Simple Average</i>	Max. 2008-2011	Min. 2008-2011
Low Growth (13) <i>(Antigua and Barbuda, Bahamas, Barbados, Dominica, El Salvador, Grenada, Jamaica, Mexico, St. Kitts and Nevis, St. Vincent and the Grenadines, St. Lucia, Trinidad and Tobago, and Venezuela)</i>	4.4%	2.3%	0.3%	2.9%	-8.3%
Intermediate Growth (7) <i>(Belize, Costa Rica, Ecuador, Guatemala, Haiti, Honduras, and Nicaragua)</i>	4.4%	3.5%	2.8%	10.2%	4.9%
High Growth (12) <i>(Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Guyana, Panama, Paraguay, Peru, Suriname, and Uruguay)</i>	5.4%	5.2%	5.1%	27.8%	10.4%
LAC (All Countries)	4.8%	3.7%	2.7%	27.8%	-8.3%

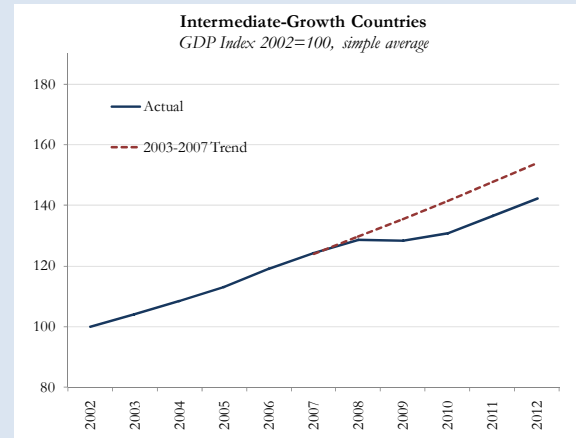
Notes: Countries are classified as follow: low growth countries are those with a 2008-2011 accumulated real GDP growth below 4 percent. Intermediate growth countries are those with an accumulated real GDP growth (same period) between 4 percent and 10 percent. High growth countries are those with accumulated real GDP growth (same period) above 10 percent. Sources: Consensus Forecasts (August 2011) and IMF's World Economic Outlook (April 2011).

FIGURE 1.2. Heterogeneity Within LAC

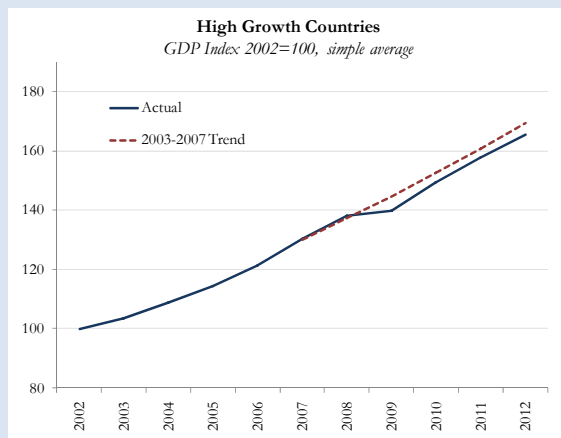
PANEL A. Low Growth



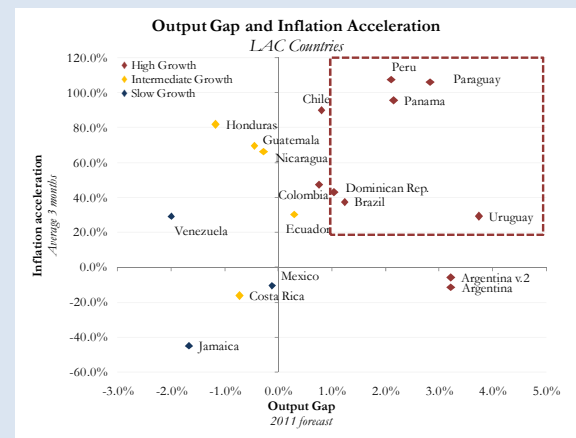
PANEL B. Intermediate Growth



PANEL C. High Growth



PANEL D. Output Gap and Inflation



Notes: 2003-2007 Trend is calculated using the 2003-2007 average GDP real growth rate. In Panel D, the output gap is computed using the HP filter, considering annual data from 1980 until 2012 (forecast). The marked area in Panel D captures countries with an output gap above 1 percent and with inflation accelerating 20 percent or more in the three months through July 2011 vis-à-vis the same period a year earlier. “Argentina v2”, represents the average of the inflation rate in the Province of Santa Fe, the Province of Mendoza, and the Province of San Luis. Sources: Consensus Forecasts (August 2011) and IMF’s World Economic Outlook (April 2011).

Rising Global Uncertainty and Risks

While LAC’s fundamentals remain robust and growth dynamics have been healthy to date, the region has become keenly aware of rise in global uncertainties and risks. As the room for policy maneuvering to avert a deeper crisis in the developed world is narrowing, uncertainty aversion has risen in world financial centers and so has the proximity to tail risks. There are basically two epicenters of uncertainty: the first and most serious one is Europe, the second the United States. The dynamics unleashed from these epicenters of course do not operate completely independently but rather interact in complex ways that, while they cannot be fully anticipated, may lead to vicious spirals.

Consider first the case of the European Union (EU). It is dealing with a confidence crisis of unforeseeable proportions. The tensions on the sovereign debt of several European countries have intensified markedly since the summer, gradually spilling over towards the core of the EU. This is aggravated by a widespread

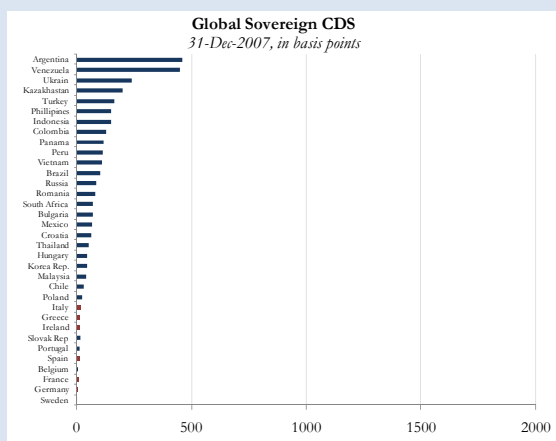
slowdown in economic activity, exacerbated by too strong a Euro relative to fundamentals—the conditions of low productivity and stagnation in Southern Europe—and by the pro-cyclical fiscal adjustments that most of the indebted countries are pursuing to calm down markets. As the room for troubled European countries to grow out of debt narrows, however, the need for further fiscal austerity rises, tightening the grip of the low growth-high debt trap. The articulation of a well coordinated and comprehensive policy response has been quite difficult in this context, and understandably so, not least because of the institutional asymmetry between a single monetary authority (the ECB) coexisting with as many independent fiscal authorities as EU members. Such an arrangement, in turn, reflects the compromises that were put in place 20 years ago to make the monetary union more palatable to the fiscally healthier countries, and thus can be difficult to unwind or bypass in the absence of a very strong political leadership.

Market sentiment has thus turned quite negative and jittery, bringing to the forefront of the debate the deep challenges that the Euro area is facing, giving rise to truly unprecedented evaluations of relative sovereign risks. A comparison of sovereign CDS spreads in the beginning of August 2011 with those at the end of 2007 (Figure 1.3) characterizes the European reversal of fortune. In 2007 there was no high-income European country among the top 20 countries with the highest CDS spreads. At present, in addition to Greece and Portugal, Italy and Spain have joined the top 10 countries with highest CDS spreads in the planet, and Belgium and France are among the top 20. In an unprecedented moment in history, markets now perceive that the sovereign debt default risk of several countries in LAC—including Chile, Colombia, and Peru—is lower than that of France!

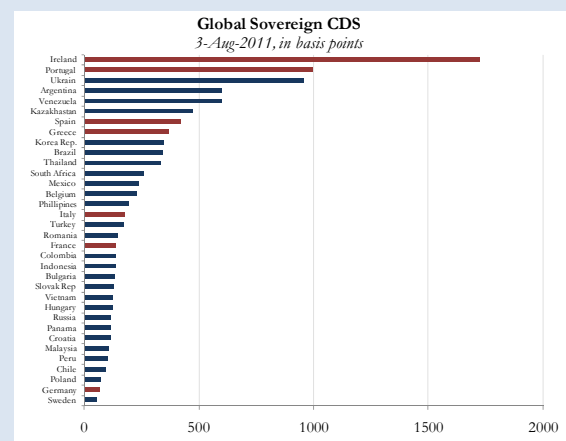
The spot light is thus intensely on policy makers in Europe. There is no easy way out and the operative trade-offs (economic and political) are tough. On the one hand, politicians (hence fiscal authorities), particularly in Germany, are pressed by constituents not to bail out the troubled EU economies. On the other hand, in the absence of a credible and swift agreement that adequately combines liquidity injection and ring fencing for illiquid but solvent countries and orderly loss allocation and burden sharing for the more distressed and insolvent ones, the very process of European integration as we know it now may come under threat. Finding the path forward is now in the hands of the EU political leaders, and the actions they take

FIGURE 1.3. The European Epicenter

PANEL A. CDS Spreads in 2007



PANEL B. CDS Spreads in 2011



Notes: In panel A, for Ireland we use the first CDS quote available (August 2008). Source: Bloomberg.

will be a key determinant of the external environment in which emerging economies, including LAC, will live. In the midst of the high uncertainty that dominates the present juncture, there is indeed considerable upside potential: the mood of markets could quickly shift towards optimism should European leaders converge on a decisive and credible action plan.

Things are also complicated in the U.S., although arguably less dramatic than in Europe. The slowdown in U.S. economic activity has been persistent and growth prospects remain feeble. Despite fiscal and monetary stimuli, the economy grew remarkably little in the first semester on 2011. Labor markets have shown no signs of improvement and there is little evidence so far that the deleveraging of the private sector is over. This has raised questions as to whether the financial crisis has had long lasting adverse effects on the growth potential of the U.S. economy (Figure 1.4A). Such a possibility has been accompanied by rising uncertainties and lower confidence levels (Figure 1.4B). It has also raised some fear of a double-dip recession.

For all of its economic troubles, however, the U.S. dollar remains as the undisputable international reserve currency—the safe haven where investor find refuge in times of high risk and uncertainty aversion. This was clearly confirmed in the aftermath of the U.S. debt downgrade, which led to a massive selloff of stocks worldwide and to a simultaneous shift in favor of the U.S. dollar and U.S. Treasury bills as well as other assets (e.g., gold) perceived to preserve value under systemic risk circumstances. The “exorbitant privilege” (a term coined in the 1960s by Valéry Giscard d’Estaing, then the French Minister of Finance) arising from the safe haven condition of the U.S. dollar, gives the U.S. considerable maneuvering room to deal with its present troubles, as it enables it to borrow at extremely low cost even in circumstances of high distress.³ This should, in principle, help the policy decision making process but, alas, it does not seem to be doing so in a sufficient dose.

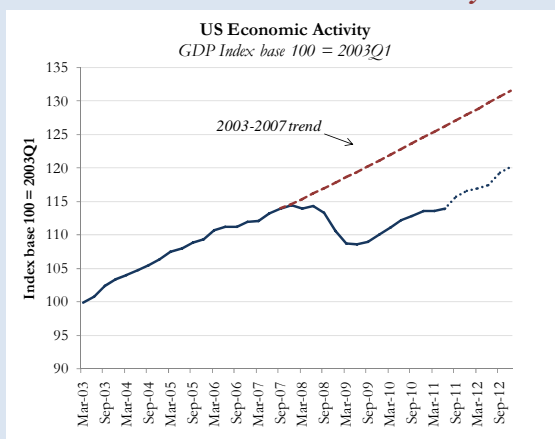
In effect, the political impasse around the debt ceiling issue over this past summer, which triggered the U.S. debt downgrade by Standards & Poor’s, unleashed deep concerns with the political system’s ability to organize the type of collective action that is appropriate to the gravity of the situation. The policy complexity is of course not trivial, for it calls for a sensible balance between the need to support the economic recovery in the short run (arguably through appropriate stimulus and debt restructuring in the mortgage market), on the one hand, and ensuring the long-term viability of public finances through suitable actions on the expenditure and revenue sides of the budget, on the other. In principle and by international and historical comparison, this appears as a manageable problem on the purely technical dimension, especially for a country endowed with the mentioned “exorbitant privilege.” Hence, as in Europe, the onus is mainly with the political process.

In sum, the world in general and LAC in particular are faced with highly contrasting global scenarios, ranging from difficult but tolerable muddling through to a veritable economic catastrophe. Which scenario materializes, and hence how badly will LAC be affected by external developments, will depend heavily on politics in Europe and the U.S. The unfolding of scenarios has thus probabilities that are difficult to ascertain.

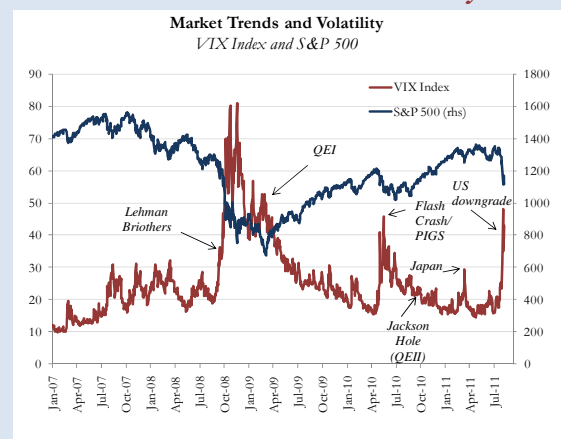
³ There may be a shadowy side to the “exorbitant privilege” from a cyclical perspective, however. The safe-haven condition may limit the effectiveness of macroeconomic policy stimuli by constraining the needed adjustment in relative prices. For instance, expansionary monetary policy in conditions of severe under-employment (where inflation pressures are non-existent) may induce insufficient depreciation of the real depreciation of the safe-haven currency, as its attractiveness introduces a bias in favor of appreciation.

FIGURE 1.4. The U.S. Epicenter

PANEL A. *Economic Activity*



PANEL B. *Market Volatility*



Sources: Consensus Forecasts (August 2011) and Bloomberg.

Against this background, two typological scenarios may be constructed for the region. It is worth emphasizing that these scenarios depend not only on developments in the developed world, but also in China. While there is some debate about the long-run sustainability of internal economic dynamics in China (given rising inequality and wage pressures, the need to modernize the social security system, concerns about quality of the banking system's loan portfolio, the problems of over-investment, etc.), it is arguably the case that most of the risks to China's growth in the short run also stem from the outside, especially the path of global demand for China's exports. Hence, the envisioned slowdown in aggregate demand coming from the developed world raises an obvious question, namely, can China avoid an abrupt downward adjustment in its rate of growth by compensating a fall in demand for its export with a further increase in domestic investment? From LAC's point of view, a key point is that a major slowdown in China would likely affect commodity prices, as suggested by the strong correlation between China's imports and commodity prices (Figure 1.5).

Therefore, at one extreme, we might envision a relatively benign scenario for LAC. In this scenario, although the developed world enters into a prolonged low-growth path, tail-risks do not materialize. As a result, China manages to keep a relative strong growth and global liquidity and commodity prices do not take a nose dive. The high-performing countries in LAC (see above) would thus continue experiencing positive—but diminished—tail winds. Under this scenario, therefore, these countries would need to focus in earnest on sustaining and raising long-term growth via investment and productivity enhancing policies. The situation would of course be different for Mexico and most countries in Central America and the Caribbean, whose growth trajectories will remain strongly tied to developments in the U.S.

At the other extreme we might envision a catastrophic scenario, under which tail risks materialize. As a result, a major downward real and financial re-coupling would obtain, high risk aversion would shut down credit globally, capital inflows to emerging markets would stall or reverse abruptly, China would not fully offset via domestic investment the decline in demand for its exports, and commodity prices would decline sharply. Under such dire circumstances, LAC would need to activate all available shock absorbers while international financial institutions try to coordinate global action and scale up their assistance to the maximum extent possible. Unfortunately, the shock absorption capacity across countries within the region varies considerably, implying that a bad global scenario could have crippling implications for some countries

FIGURE 1.5. China and Commodity Prices



Sources: Bloomberg and Penn World Tables.

in the region, especially those countries in Central America and the Caribbean that lack countercyclical macroeconomic policy capacity and suitable social safety nets. Caribbean countries, furthermore, confront much tighter constraints arising from high public sector indebtedness and vulnerable financial systems.

Available information at present makes it virtually impossible to assign firm probabilities to these types of scenarios. While real economic activity in LAC does not seem to be much affected by the recent turbulence in the developed world so far, downward revisions to growth forecasts for the region are likely to happen in the next weeks, in line with the more pessimistic growth projections that are being produced for the U.S. and Europe. The strong coupling of stock across the world that we documented in our previous reports has tightened further in recent months—stock markets in LAC and elsewhere have moved closely in line with movements in global stock markets. Sovereign spreads for LAC have recently also picked up, but they have in general remained at low and stable levels compared to those for several European countries.

All these things considered, authorities in LAC countries have shifted to a much more cautious attitude, focusing on preparedness to act swiftly in case a bad scenario materializes. Having steadily raised interest rates over the past 15 months, and much more aggressively than other emerging economies, several LAC countries, specifically the inflation-targeters, have gained the ability to shift to an aggressive countercyclical monetary policy if needed. Given that inflation is typically more tamed today than it was in the pre-Lehman months, the lowering of interest rates and flexible exchange rates, together with strong international reserve positions, would go a long way in cushioning the region under a bad external scenario. Authorities in LAC also appear to be conscious of the need to continue to rebuild fiscal buffers in the short run, to enhance its capacity to deploy counter-cyclical fiscal policy down the line if needed, although there may be significant political resistance to do so and debate over the amount needed. Clearly, fiscal tightening and monetary easing in LAC would need to remain in tune with the individual economies' business cycles. Authorities should thus move with caution so as to not undermine the credibility of central banks with respect to their ability to maintain inflation expectations appropriately anchored. Financial sector buffers (capital, provision, and liquidity) appear strong in most of LAC, although the authorities would do well in closely monitoring them. Preparations have to be made to scale up social safety nets (including CCTs) as appropriate. The ability to deploy shock absorbers is unfortunately greatly heterogeneous in the region. This underlines the fact that a bad scenario would be particularly devastating for Mexico and countries in Central America and the Caribbean.

While significant disruptions to economic activity in LAC in the short run could take place and, if so, they would substantially occupy the attention of the authorities, the challenge of raising growth for LAC over the long-run will remain as fundamental as ever. In effect, cyclical growth gyrations, even if locally large, pale compared with the effect that growth over the long-trend have on countries' living standards (Lucas, 1987). Moreover, the decoupling of trend growth between the advanced and emerging economies is likely to endure in the future. The question for LAC is whether it will partake of the higher trend growth in store for emerging markets or go back to the relatively low-growth trend that has characterized its history.

In any case, the resolution of the grave and immediate global uncertainties is out of LAC's hands. So, instead of dwelling on speculations about the short-run dynamics, this report turns to a longer horizon and discusses issues that will remain particularly relevant for policy makers in the region no matter what happens in Europe or in the U.S. in the next few next weeks and months. Indeed, the stellar performance of LAC during the 2008-2009 global financial crisis has already brought to the forefront of the debate some well-known structural growth issues. Many countries in the region are already facing bottlenecks in the midst of a maturing cyclical recovery. Buoyant domestic demand is already hitting capacity constraints and resulting in inflation rates that have in some countries reached or exceeded the upper band of their target. The very fact the LAC is confronted at this stage with inflationary pressures arising from the strong economic recovery is a clear reminder of a rather sad reality—namely, that the region typically bumps against “*structural speed limits*” at comparatively low growth rates.⁴ While the high-performing economies of emerging Asia can sustain annual growth rates in the 6-9 percent range without inflationary consequences, in most of LAC the non-inflationary growth rates that can be sustained over long periods tend to hover below 5 percent. This is a key reason why sustained and high growth has eluded LAC for more than a century. In the next section, we visit this issue from the vantage point of LAC connection to China.

The China Connection: Is LAC Getting the Most Out of It?

China has emerged in the last decade directly as an important source of external demand for LAC exports and indirectly as a structural factor behind the high prices of the commodities that LAC exports globally. In fact, as argued in our 2010 Annual Meetings Report, “*Globalized, Resilient, Dynamic: The New Face of LAC*,” growth in LAC countries seems to be increasingly tied to developments in China rather than those in advanced countries. Prior to the 2000s, co-movement in economic activity between LAC and China was virtually non-existent. Over the last decade, however, such co-movement has been frankly rising for several countries in the region, particularly in South America (Figure 1.6A).⁵

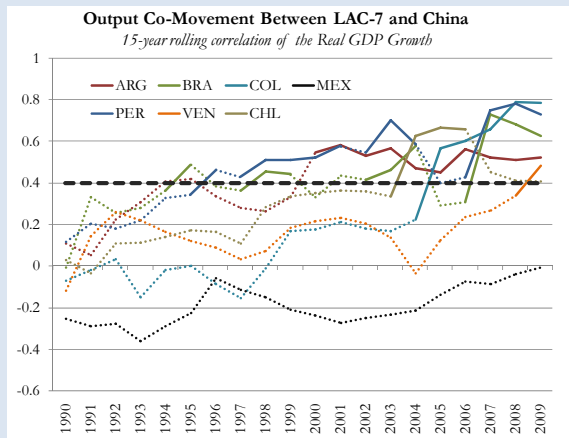
Tighter linkages in economic performance across countries in the region and China are driven to a significant extent by the trade channel (for broader trends, see Calderon, Chong, and Stein, 2007). In 1990, virtually no trade existed between these partners. Since then, China has gained considerable space over the last decade as a major trading partner for a number of countries in the LAC region, and particularly those in South America. For example, China has become the largest trade partner for some LAC countries (such as

⁴ The term “structural speed limits” is borrowed from Alberto Ramos, Vice-President in the Emerging Markets Economic Research Group at Goldman Sachs.

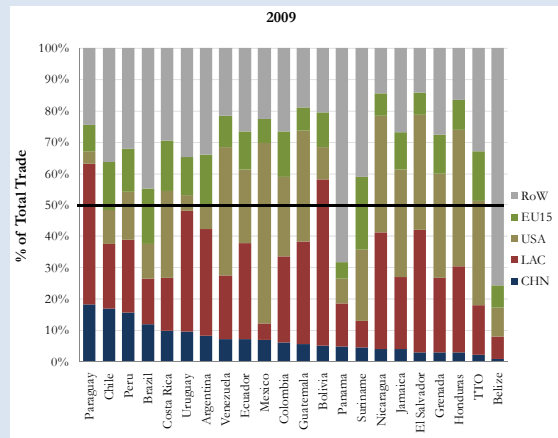
⁵ The results presented here on output correlation are only suggestive of cycle synchronization as we simply present correlation coefficients. There are other factors that may drive these correlations such as external conditions or economic activity in developed countries.

FIGURE 1.6. The Connection of LAC and China

PANEL A. Output Correlation



PANEL B. Main Trade Partners



Notes: For Panel B, the sample of UE15 includes: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom. Sources: WITS and World Bank World Development Indicators (WDI).

Brazil, Chile, and Peru) with flows to and from China in 2009 representing between 10 and 20 percent of total trade (Figure 1.6B).

This increasing role of China as an independent influence on LAC economies is not trivial. For one thing, the historically tight synchronization of economic upturns and downturns between high-income countries and Latin America has become weaker over the last 10 years. Moreover, the non-cyclical component of LAC’s growth (a proxy measure of trend growth) in the 2002-2007 period rose significantly above that of the high income countries, just as the co-movement in economic activity between LAC and China started to intensify (Figures 1.7A and 1.6A). This suggests that the robust growth observed in LAC in the past decade is an important measure of its connections to China, both directly (via trade and increasingly also FDI channels) and indirectly (mainly via China’s impact on the international prices of commodities). In fact, it has led many, including ourselves in past reports, to suggest that the observed real de-coupling between emerging economies and the advanced world largely hinges on the rise of China (and India) in the global economic landscape. The question therefore is whether LAC can leverage on its deepening connections with China and turn it into an important (but not the only one) source of long-term growth.

As one looks with hope and a degree of optimism to the region’s growth prospects, it is worth keeping in mind that LAC countries have, in general and for a long time, not been able to close the gap with the living standards of the rich world. The region, as a whole, has in effect been ensnared in a “hundred years of growth solitude,” as the process of economic convergence has systematically eluded it (Figure 1.7B). For more than a century, LAC’s average per capita income has hovered at around 30 percent of U.S. per capita income. Moreover, the region’s growth in the past decade, strong though as it was, has not yet fully reversed the ground it lost especially during the 1980s but also in the 1990s. This stands in sharp contrast with the experience of the high-performing East Asian countries (the so-called “Tigers”)—their per capita income, which was only about 15 percent that of the U.S. in the 1960s, rose sharply and steadily to reach more than 70 percent by 2010. Further marking a contrast is the convergence process displayed by the comparatively less dynamic East Asian countries and China since the 1980s.⁶

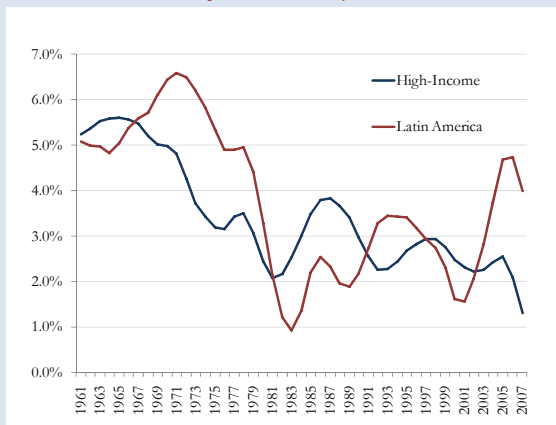
⁶ In this report, we include the following countries among the East Asian Tigers: Hong Kong, Singapore, South Korea, and Taiwan. The less dynamic East Asian economies encompass Indonesia, Malaysia, Philippines, and Thailand.

LAC's uninspiring long-run growth does hide considerable within-region variation. But even when the growth paths of individual LAC countries are considered, the sense of disenchantment still persists. To illustrate this point, LAC countries are classified into four groups according to the stylized shape of their growth patterns (diverging, non-converging, fluctuating, and converging) over the past half a century (Figure 1.8).

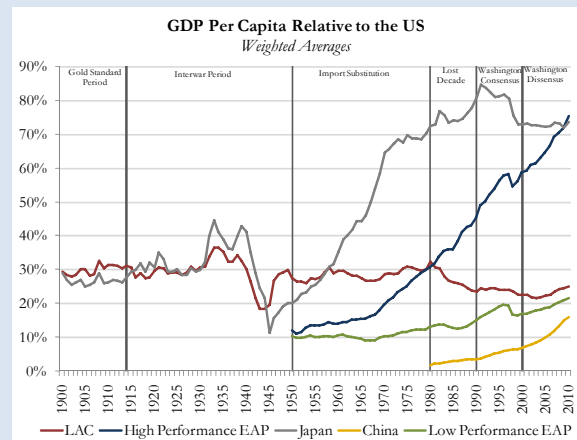
- There are few diverging countries in the region, in the sense that their per capita income fell steadily behind that of the U.S. for most of the period. This group includes Argentina, Uruguay, and Venezuela, although Argentina and Uruguay entered into a converging phase in the last decade.
- Most of the countries in LAC belong to group of non-converging countries, where per capita income has remained for most of the period at a low and boringly stable fraction of that of the U.S. This group includes Bolivia, Colombia, El Salvador, Guatemala, and Paraguay. However, Colombia seems to be moving along a convergent path since 2003.

FIGURE 1.7. Growth Prospects over Long Periods of Time

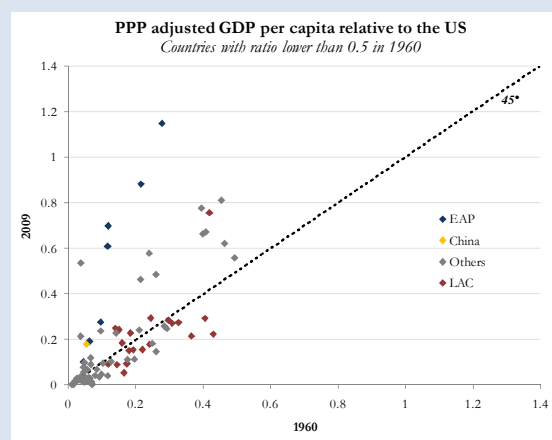
PANEL A. Cyclical-Adjusted Growth



PANEL B. 100 Years of Solitude



PANEL C. Middle Income Trap

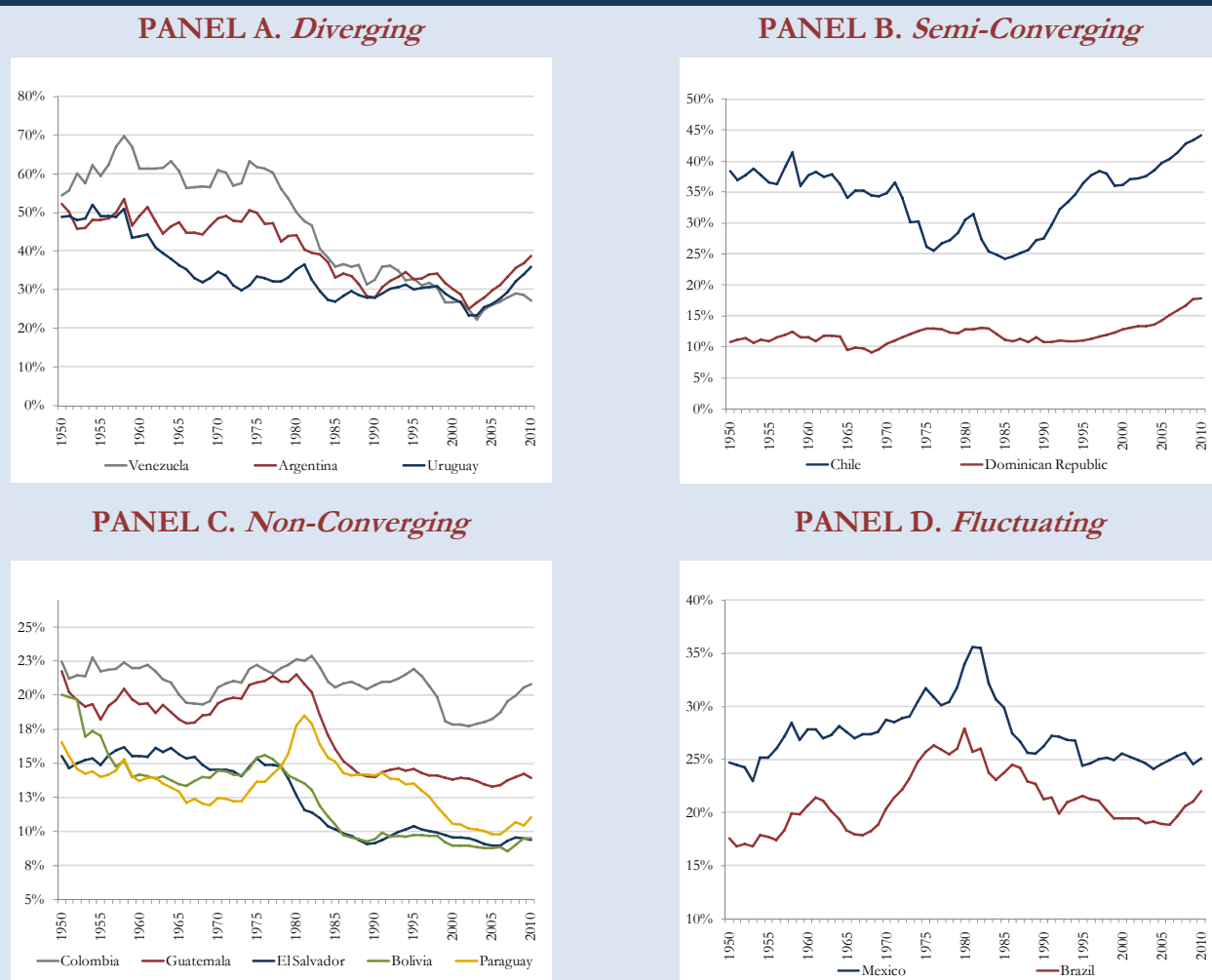


Notes: In Panel B, High Performance EAP countries include Korea Rep., Taiwan, Hong Kong, and Singapore; Low Performance EAP countries include Indonesia, Philippines, Thailand, and Malaysia; LAC includes the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. The weights are calculated using 2007 nominal GDP. Source: Penn World Tables.

- Brazil and Mexico are the salient countries in the third group, where a major convergence in the 1960s and 1970s was followed by an equally significant divergence in the 1980s and 1990s. Brazil, however, has followed visibly converging path since 2003.
- There are no countries in LAC that have steadily converged throughout the entire period. We find a couple semi-converging countries. Chile certainly deserves to be there—it has sustained a significant convergence process over the last quarter of a century, more than recovering the ground it lost vis-à-vis the U.S. from the 1960s to the late-1980s. The Dominican Republic may also qualify, for it has also been able to follow a converging path, albeit a modest one, from the early 1990s to the present.

Although no consolation, LAC's history is not unique. In fact, the vast majority of developing countries do not show any convergence towards the standard of living of high-income countries (Figure 1.7C). On average over the last 50 years a country with an initial income level between 20 to 40 percent of that of the U.S. has had only a 10 percent probability of rising to an income level of 60 percent or above of that of the U.S. This suggests that LAC has hardly an easy task ahead. As highlighted in our 2011 Spring Meetings Report, “*LAC Success Put to the Test,*” skilful macro-financial policies in the current juncture are necessary—

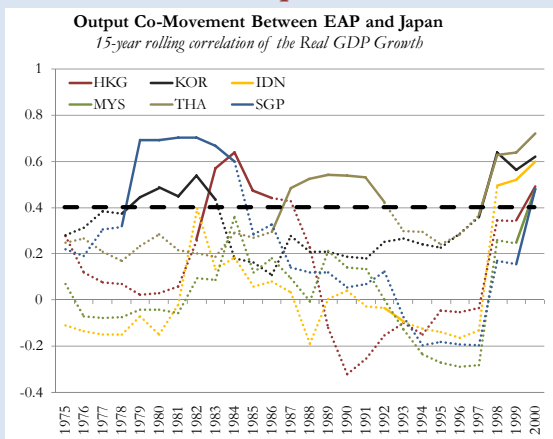
FIGURE 1.8. Post-WWII Growth in LAC



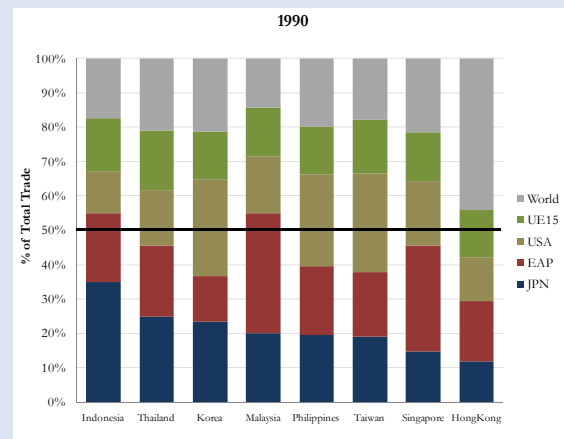
Notes: Maddison (2007-2009) was used from 1900 to 2006 and Real Per Capita GDP growth from WDI was used to calculate the levels from 2006 to 2010. Source: LCRCE Staff calculations based on Maddison (2007, 2009) and WDI.

FIGURE 1.9. The Connection of Japan and the East Asian Countries

PANEL A. Output Correlation



PANEL B. Main Trade Partners



Notes: For Panel B, the sample of UE15 includes: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom; the sample of EAP countries includes Hong Kong, Indonesia, Korea Rep., Malaysia, Philippines, Singapore, Taiwan, and Thailand. Sources: WITS and WDI.

although far from sufficient—to turn what so far has been a cyclical recovery into a higher rate of long-term growth while making further progress in the equity agenda. Nevertheless, the question for LAC remains: can the region sustain over a prolonged period the high growth rates observed during this last cyclical recovery? More specifically, can LAC countries rely on the connection to China to help engineer sustained high growth rates over a long horizon?

There is always an exception to every rule. In this case, there is perhaps a telling one that could arguably shed valuable light on the LAC growth question. That is the case of the East Asian Tigers which have, as noted, escaped the “*Middle Income Trap*” and have been converging towards high-income levels at a rapid pace since the 1970s. The “growth miracle” in these countries was based on a combination of accumulation of factors and technological progress—high investment rates supported by high domestic savings interacted with high levels of human capital accumulation in a stable, market-oriented environment that was conducive to the transfer of technology and thus productivity growth (Stiglitz and Yusuf, 2001; World Bank, 2003).

Perhaps more relevant for LAC is the fact that the Tigers’ “growth miracle” was not independent of the strong connections they forged with Japan and among themselves starting around the 1960s. Japan was a nearby fast-growing neighbor with impressive technological progress in the postwar era that acted as a major growth pole, fostering growth in these countries for a long period of time. As seen in Figure 1.9A, at the height of the growth spur of the East Asian countries, Japan was indeed one of their main trading partners, for instance representing more than 20 percent of trading for Korea Republic. Also suggestive of the active role of Japan as a growth pole, *i.e.* source country for growth, its output comovement with those of the Tigers had been particularly high during most of the 1980s (Figure 1.9B).

Of course, there may be more differences than commonalities between the LAC-China and Tigers-Japan connections, not least the fact that China’s per capita income is at present below that of LAC, while the Tigers’ per capita income was a fraction of that of Japan in the 1960s. Yet a compare-and-contrast exercise can still be helpful to identify the issues on which LAC may have to focus and questions it may have to ask as it tries to capitalize on its links to China, links that should only expand and deepen moving forward. To

examine the potential role that China can play in raising long-term growth for the region, we compare the nature of LAC's connections to China in the 2000s with those observed between the East Asian economies and Japan from the 1970s to the 1990s.⁷

It is clear that significant trade and other links are, by themselves, no guarantee of high long-term growth. Indeed, LAC had strong trade links to the U.S.—an advanced economy that in principle offered unlimited learning for LAC countries—for most of the post-World War II period and yet failed to converge. In the end, trade and other economic links matter for durable growth only to the extent that they translate into factor accumulation and productivity increases, especially those associated with positive learning spillovers. Hence, the question for LAC is whether such a virtuous process could be fostered in the context of a growing connection to China. While Box 1 explores trends in factor accumulation among LAC and the East Asian economies, the next sections focus on productivity increases and technology and knowledge diffusion.

Box 1. Factor Accumulation: LAC vs. East Asian Economies

Standard growth accounting exercises decompose the rate of growth in real GDP per capita in two parts: accumulation of factors (physical and human capital) and technological progress. The former simply means having a greater share of the population actively working, having more educated and skilled workers, having people working more hours, or having a higher stock of physical capital (e.g., machinery and equipment). Many have in fact highlighted that the success story of the East Asian tigers is tightly linked to the faster accumulation of physical and human capital. Investment rates across the East Asian economies have been above 25 percent of GDP since the 1970s and have averages over 35 percent during the 1990s (Figure B1.1A). High investment rates in Asia were supported by high domestic savings rate (Figure B1.1B). In contrast, saving and investment rates across LAC7 countries have been historically low. Investment has remained stable at the relatively low level of about 20 percent of GDP for the past three decades. Savings have also been particularly low, albeit breaking with a 40-year declining trend and increasing over the past 10 years.

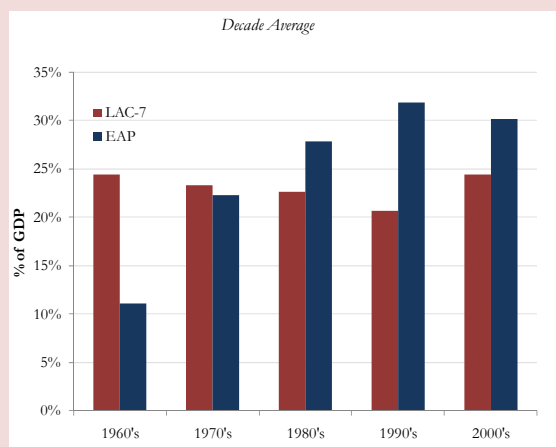
The low investment in LAC has led not only to lower marginal product of labor but also to problems of underproduction of infrastructure services. In fact, the major LAC countries lag the East Asian Tigers in the provision of electricity and road penetration (Figures B1.1C and B1.1D). The deterioration of infrastructure in LAC in the 1980s is attributed to a sharp decline in public infrastructure investment owing to large and often abrupt fiscal adjustments to cope with large macroeconomic imbalances. In the 1990s, stocks of infrastructure in electric power and transportation did not gather significant momentum. In spite of the retrenchment of the public sector and the opening of infrastructure sectors to private participation, the private sector did not pick up the slack, thus making the infrastructure gap in these two sectors between LAC and EAP widen considerably.

During their high growth years, the East Asian Tigers rapidly accumulated physical and human capital—and impressively so compared to LAC7 countries. In 1960, differences between these two regions were striking (Figure B1.2). According to the World Bank (1993), governments in EAP focused initially on education spending in the lower grades by providing universal primary education. Educational attainment improved markedly and by 1990 it already

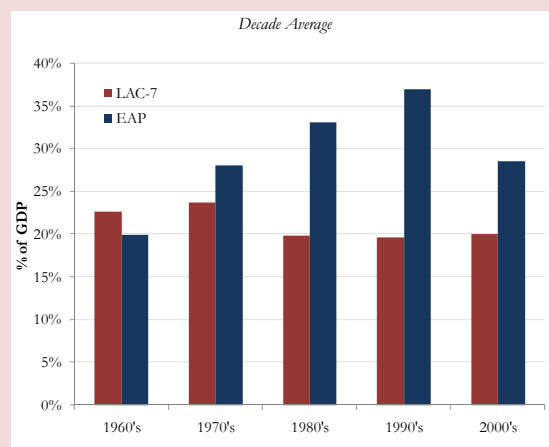
⁷ China has undergone a noteworthy structural transformation in the composition of its trade over the last three decades in such a way that it is now somewhat comparable to that of Japan in the postwar era. In the early 1980s, Chinese commodity trade showed the characteristics of a typical developing country—exports were largely agricultural products, raw materials, and basic manufactures while imports were dominated by sophisticated manufacturing products such as machinery and transportation equipment. Since the early 2000s, Chinese exports have been mostly in the manufacturing sector, representing over 70 percent of its exports in comparison to about 20 percent back then. Meanwhile, imports have changed in the opposite direction with relative increases in the share of agricultural products and crude materials. It is in this context that we evaluate the potential role the role that China can play as a growth pole for the LAC region.

FIGURE B1.1. Accumulation of Physical Capital

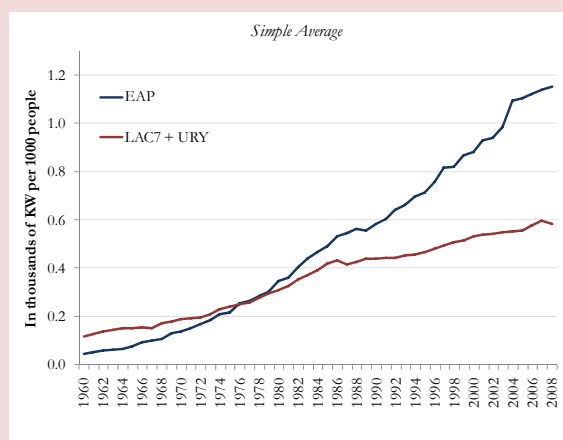
PANEL A. Gross Domestic Savings



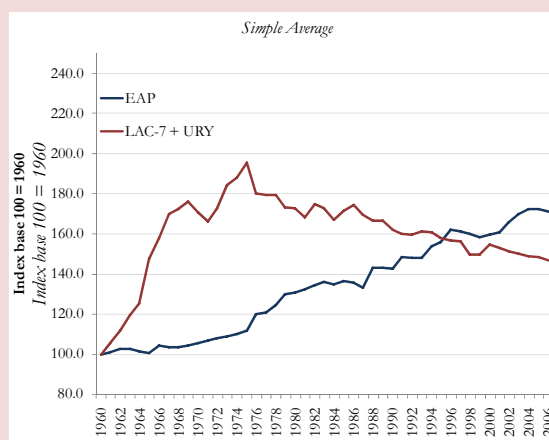
PANEL B. Investment



PANEL C. Electricity Installed Capacity



PANEL D. Road Density



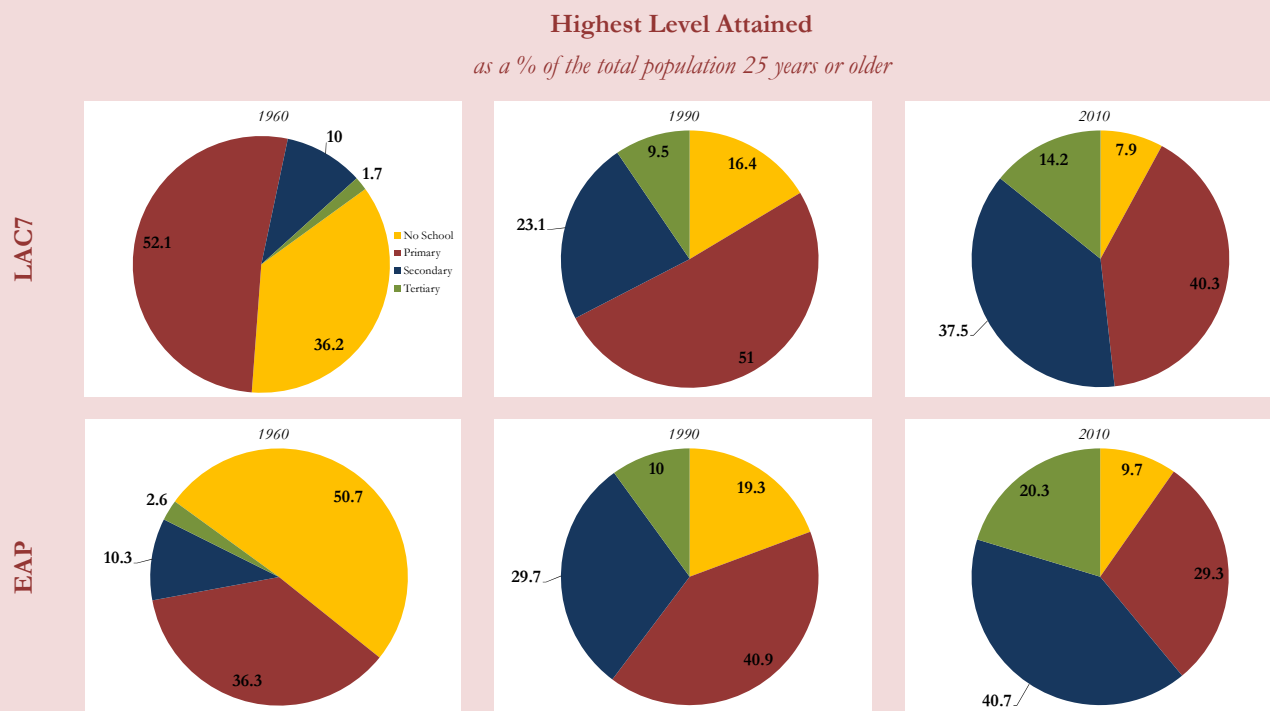
Notes: In Panel A, EAP includes Hong Kong, Indonesia, Korea Rep., Malaysia, Singapore, and Thailand. In Panel B, EAP includes Hong Kong, Indonesia, Korea Rep., Malaysia, Singapore, Taiwan, and Thailand. Both in Panel A and B, LAC-7 includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. Sources: WDI, Penn World Tables, and The International Energy Agency (IEA).

had a very similar composition than that of LAC7 countries. In a second stage, public policies focused on an expansion of the availability of secondary education. By 2010, EAP countries had a greater share of their population with tertiary education than LAC7 countries. The result of these policies has been a broad, technically inclined human capital base well-suited to rapid economic development.

In sum, LAC countries lag behind East Asian tigers in terms of factor accumulation. Worth emphasizing is that physical and human capital affect growth not only directly, but also indirectly through its effects on technological progress, thus increasing further the growth differentials between countries in these two regions. Growth accounting exercises do not adequately deal with the endogeneity of factor accumulation and improved technological conditions. For instance, Lach and Schankerman (1989) provide evidence that industrial research (i.e., accumulation and knowledge development) may be the primitive force behind output growth and investment in capital goods. Hence, methods such as the one adopted here to calculate TFP typically understate the effect of technology on growth. This endogeneity concern is also important when assessing the effects of policy on growth. For example, Klenow and Rodriguez-Clare (1997) suggest that education policies that foster the accumulation of human capital also have an effect on technological progress. Nevertheless, whether it is accumulation of factors or

of technologies and knowledge, captured in the TFP estimates shown in the main text, LAC seems to be following different patterns than those of the East Asian economies. Although the last 10 years might have given rise to some optimism, with domestic savings increasing in a number of countries and the fraction of the population with secondary and tertiary education rising, these improvements still pale in comparison to East Asian trends, suggesting that there is significant scope for policy actions.

FIGURE B1.2. Human Capital



Notes: LAC-7 includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. EAP includes Hong Kong, Indonesia, Korea Rep., Malaysia, Singapore, Taiwan, and Thailand. Source: Barro-Lee (2010).

Can China be LAC's Japan? The Channels of International Growth Spillovers

To understand whether China can indeed have an effect on output growth over the long-term across LAC countries, we first need to ask ourselves whether and how growth can diffuse from one economy to another. There are several channels through which growth in one country can influence economic activity in another as argued in Adams-Kane and Lim (2011). A growth pole may spur economic activity in a peripheral economy simply by absorbing the exports of the latter and fostering the expansion of its exporting industries, as we have seen in the case of China and LAC countries. Moreover, a number of growth-enhancing reallocations within the recipient economy prompted by linkages with the pole might take place. For instance, sectors with an intensive export orientation may also be associated with a reallocation of production from low to high productivity firms (Melitz, 2003), and for some industries, with market size effects stemming from increasing returns to scale (Krugman, 1979). Capital flows, and FDI flows in particular, might lead to the reallocation of production within to more productive sectors and to relatively more productive firms within sectors, thus activating transmission of growth across borders.

The focus of our discussion in the next sections and typically the center of attention in the growth polarity literature is the channel of technological spillovers. As productivity-enhancing technology diffuses from one country to another, economic growth also gets indirectly transmitted from one country to another. These spillovers have richer multiplicative effects of a long-lasting nature and are thus more likely to spur growth in recipient economies over longer periods of time.

There are different ways through which technologies diffuse from one economy to another—directly, through the technology embodied in physical and human capital, or indirectly, through the dissemination of knowledge across countries via not only trade but also capital and migration flows. Through the trade channel, imports may contain intermediate goods and technologies unavailable to the recipient country. The greater the quantity of these imports, the greater will potentially be the spillovers from trade. Exporters might also receive suggestions on how to improve their production process from importing nations. Through FDI flows, technologies and knowledge more broadly can be diffused from foreign parents to subsidiaries (directly or indirectly through intermediate inputs), which may in turn spill to other firms in the host country through labor turnover. Lastly, labor mobility, not only migration but also short-term business travel, can promote knowledge spillovers by facilitating the diffusion of tacit technological knowledge.

Recent Productivity Growth Suggests Some Hopeful Signs

The intensification of growth spillovers from Japan to the East Asian economies starting in the late-1960s and early-1970s are partly attributed to the diffusion of technology and, more broadly, knowledge. A simple growth accounting exercise is able to capture such an effect in the total factor productivity (TFP) term, which measures how the same amount of factors of production is able to create a higher final output. TFP thus encompasses not only creation of new technologies but also the acquisition, assimilation, and adaptation of existing ones into new contexts. It also contains an element of catching up to (or falling behind) the technology frontier. Estimates for East Asian economies reported in Table 1.2 show TFP growth rates consistently above 2 percent per year over the last 50 years, suggesting indeed significant technological progress over this period.⁸ The significantly smaller growth rates observed for the U.S. suggest a process of catching up with the technological frontier by the Tigers.

TFP growth in the LAC region has been uninspiring when looked over this long period. However, after three decades of meager TFP growth, recent estimates suggest that several LAC countries have finally seen some technological progress since 2000 (Table 1.2), precisely at the time when the links to China began to intensify. This is of course a simple correlation that of itself says nothing about causality, but it does invite one to wonder whether LAC's links to China are already, or can in the future be, a driver of productivity growth. For the optimists, therefore, it might be, for instance, that the China's gigantic appetite for LAC's (mineral and agricultural) commodity exports is unleashing a process of capital accumulation and productivity enhancements in the region. For the pessimists, however, this linkage, commodity-based as it is, augurs poorly for LAC—it greatly exposes the region to the risk of being caught under the “natural resource

⁸ Total factor productivity (TFP) is constructed as a residual: the part of output growth that cannot be attributed to the accumulation of any input. See the Appendix for a detailed explanation on how our TFP measure is constructed. There are nevertheless many caveats to this measure of productivity growth. See for example Grossman and Helpman (2001) and references herein for a discussion.

curse”.⁹ In fact, they would argue, the measures of positive productivity growth in LAC for the 2000s may mainly reflect the effects of terms of trade gains.¹⁰ Undeniably though, many LAC countries have entered into a high growth path over the last decade, raising the question of whether such growth performance can be extended into the future, given that the links to China can only intensify going forward. Are we seeing the first stages, perhaps less spectacular than that of the Tigers but impressive nevertheless, of a “growth miracle” in LAC, as a naïve extrapolation based on Figure 1.10 might suggest?

TABLE 1.2 TFP Growth around the World

Average TFP growth per year						
	Avg 61-70	Avg 71-80	Avg 81-90	Avg 91-00	Avg 01-08	Avg 61-08
LAC 7	1.9%	0.4%	-2.0%	0.2%	1.0%	0.3%
Non - LAC 7	1.1%	0.5%	-2.0%	0.1%	1.2%	0.2%
Argentina	1.3%	-0.2%	-2.5%	2.0%	1.4%	0.4%
Brazil	2.9%	3.2%	-3.3%	-1.7%	0.5%	0.3%
Chile	1.5%	0.5%	-0.5%	2.9%	0.5%	1.0%
Colombia	1.4%	1.0%	-1.3%	0.0%	1.3%	0.5%
Mexico	2.0%	0.3%	-0.9%	-1.6%	0.3%	0.0%
Peru	2.4%	-0.2%	-3.8%	0.5%	2.9%	0.4%
Venezuela	2.1%	-2.1%	-1.6%	-0.5%	0.2%	-0.4%
Bolivia	-0.3%	0.4%	-2.6%	0.3%	0.5%	-0.4%
Costa Rica	2.2%	-1.3%	-2.6%	0.2%	0.2%	-0.3%
Dominican Republic	0.1%	0.2%	-0.8%	2.3%	1.7%	0.7%
Ecuador	0.3%	3.5%	-2.4%	-0.5%	1.7%	0.5%
El Salvador	0.9%	-1.6%	-1.9%	0.5%	0.0%	-0.4%
Guatemala	2.1%	1.2%	-1.7%	0.4%	-0.6%	0.3%
Honduras	0.3%	1.0%	-1.3%	-2.7%	1.2%	-0.3%
Nicaragua	2.2%	-1.4%	-3.8%	-1.4%	-1.3%	-1.1%
Panama	3.1%	1.8%	-0.6%	-0.7%	2.5%	1.2%
Paraguay	0.3%	2.3%	-1.8%	-1.9%	-0.8%	-0.4%
Trinidad & Tobago	3.0%	-1.3%	-3.0%	3.3%	8.1%	2.0%
Uruguay	-0.5%	1.1%	-1.2%	2.0%	1.3%	0.5%
EAP	3.1%	2.1%	2.3%	1.3%	2.0%	2.2%
Hong Kong	4.9%	2.9%	2.3%	0.9%	2.4%	2.7%
Indonesia	0.8%	2.0%	0.8%	-0.3%	2.3%	1.1%
Korea Rep.	2.2%	0.0%	3.6%	1.4%	1.9%	1.8%
Singapore	2.3%	3.3%	1.7%	2.9%	2.6%	2.6%
Taiwan	4.1%	2.8%	3.0%	1.9%	0.8%	2.5%
Thailand	4.6%	1.8%	2.7%	0.7%	2.0%	2.4%
China	-0.5%	0.9%	1.6%	3.4%	6.2%	2.3%
United States	0.9%	-0.4%	1.1%	1.0%	0.6%	0.6%
Japan	6.7%	1.1%	1.4%	-0.7%	0.9%	1.9%

Sources: LCRCE Staff calculations based on Penn World Tables.

⁹ The term “natural resource curse” has been made popular by Sachs and Warner (1997) that documented a strong relation between natural resource abundance and low economic growth. There are however econometric pitfalls, which are discussed in great details for example in Sinnott, Nash, and de la Torre (2010).

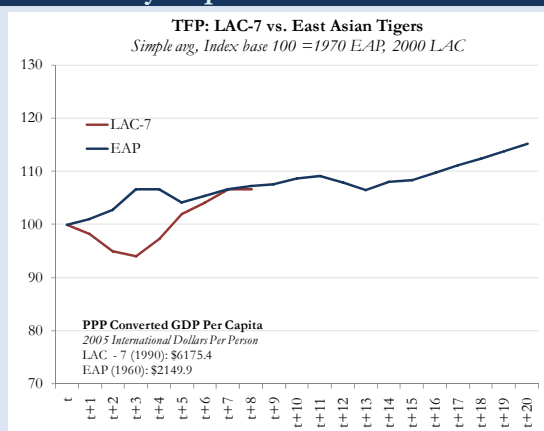
¹⁰ Because TFP is constructed as a residual, it captures the growth rate of income per capita explained by elements other than factor accumulation, including terms of trade effects. The World Bank’s 2010 flagship report for Latin America, “*Natural Resources in Latin America and the Caribbean: Beyond Booms and Busts?*” discusses the various channels through which the “natural resource curse might materialize.” At the same time, it emphasizes that the “curse” is not destiny and that the actual growth outcome of natural resource abundance hinges crucially on the quality of policies and institutions. See Sinnott, Nash, and de la Torre (2010).

But Technological Diffusion through Trade is Disheartening

Technology diffusion through the trade channel is examined, thus going one step further and focusing on more long-lasting effects of the connection to China to LAC countries. A broader discussion on this topic is given in Box 2. Overall, productivity gains through the trade channel and associated with the adoption, adaptation, and mastery of technologies can indeed be substantial. As discussed above, technology can diffuse across countries through not only imports, but also exports. Interestingly, Di Giovanni and Levchenko (2010) provide evidence that the impact of trade intensity on output synchronization at the sectoral level is larger the greater the symmetries in the production structure between countries. In fact, sectors in different countries that use each other as intermediate goods tend to have a higher elasticity of comovement relative to trade than otherwise. These findings suggest that more important than bilateral trade *per se* is the extent of their trade within a sector—*i.e.*, intra-industry trade. Hence, the degree of intra-industry trade between two countries can be used as a proxy for such technology diffusion and spillovers of knowledge more broadly.

It appears that intra-industry trade has not been playing a significant growth-enhancing role in LAC. This result comes through when we measure of intra-industry trade using the adjusted Grubel-Lloyd Index, which ranges from zero (pure inter-industry trade) and one (pure intra-industry trade).¹¹ In effect, the countries within the LAC region that exhibit a high-degree of intra-industry trade according to this measure are not necessarily the ones with relatively stronger growth performance and are rather those with relatively less intense trade with China, mostly Central American and the Caribbean countries. LAC7 countries, which on average have closer trade linkages to China, have very little intra-industry trade (Figure 1.11A). In stark contrast, the extent of intra-industry trade between Japan and the high-performing East Asian Tigers was particularly high in 1990, during the golden years of their economic performance (Figure 1.11B). Indeed, Urata (1993) stresses that vertical intra-industry trade in particular characterized to a large extent the trade dynamics in certain sectors, and especially so for machinery.

FIGURE 1.10. TFP Growth: Will History Repeat Itself?



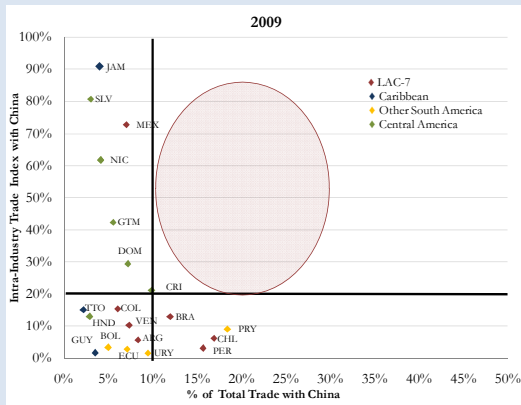
Notes: LAC-7 includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. EAP includes Hong Kong, Indonesia, Korea Rep., Singapore, Taiwan, and Thailand. Sources: LCRCE Staff calculations based on Penn World Tables.

¹¹ This measure is adjusted by the eventual overall trade imbalance if overall intra-industry trade is considered or between countries if only the bilateral trade is analyzed. For further details, see Grubel-Lloyd (1975).

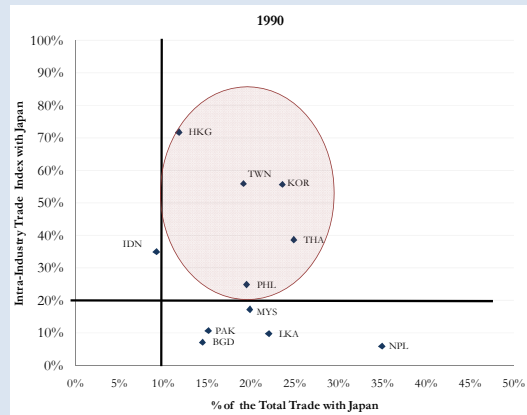
FIGURE 1.11. Trade with Growth Poles

The Degree of Intra-Industry Trade with Growth Poles

PANEL A. LAC and China

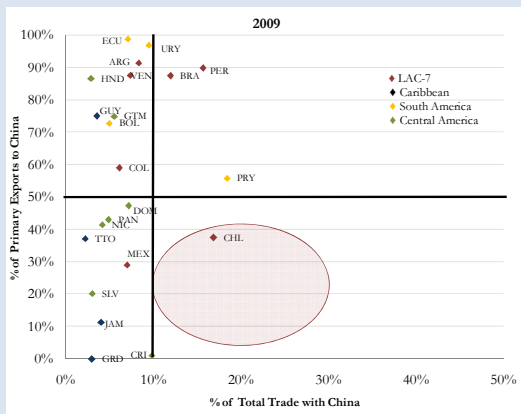


PANEL B. EAP and Japan

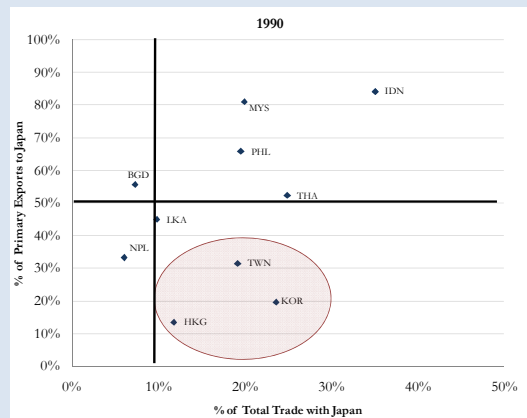


Composition of Exports to Growth Poles

PANEL C. LAC and China

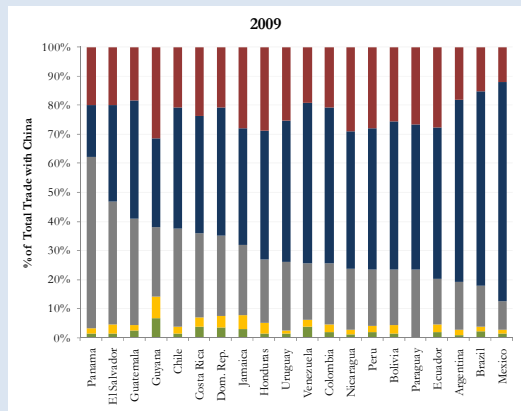


PANEL D. EAP and Japan

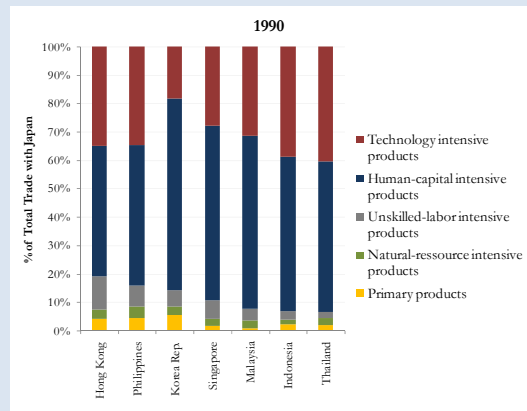


Composition of Imports from Growth Poles

PANEL E. LAC and China



PANEL F. EAP and Japan



Notes: In Panels E and F, only countries with more than 5 percent in total trade with China are reported. The factor intensity classification of products of Hinloopen and Van Marrewijk is used. Source: WITS.

Moreover, the composition of exports and imports between LAC and China compared to that between the Tigers and Japan suggests a different nature, and thus possibly different spillover effects, of the trading relationship. LAC countries with more intensive trade with China, such as Brazil, Chile, and Peru, typically export primary products or natural resource-intensive goods and import manufacturing goods, mostly non-natural resource intensive ones (Figures 1.11C and 1.11E).¹² The majority of East Asian economies in the heyday of their connectivity to Japan not only imported machinery, equipment, and manufactured goods, but also exported them to Japan (Figures 1.11D and 1.11F).

Finally, LAC countries import a significant share of unskilled labor-intensive goods, in sharp contrast with the high proportion of technology, capital and skill intensive goods that the Tigers imported from China in the 1990s. Although China's technological sophistication is growing (Subramanian, 2011), the low intensity of advanced technologies in the imports from China suggests limited potential for technological spillovers.

In sum, despite of the growing trade linkages between China and LAC and some bright spots that are discussed below, the nature of this relationship is not yet very encouraging for the promotion of long-run productivity growth in the region, and particularly so in comparison to the benchmark relation of Japan and the East Asian Tigers. While China may be fostering growth in the region by simply absorbing our commodity exports, sustaining their prices, and driving the expansion of LAC's commodity-based exporting industries, it plays a much more limited role in the diffusion of technology and knowledge spillovers through the trade channel. On the bright side, it is possible that some complementarity exists in the trading relationship between LAC countries and China, where cheap intermediate goods imported from China can lead to greater competitiveness on the part of local LAC producers. Nevertheless, further research is still needed to shed light on whether the imported manufactured goods from China are composed of intermediate goods that or final goods.

In addition, the geographical distance between LAC and China might adversely affect the extent of technological spillovers induced by trade as stressed by many. For example, Keller (2002) and Schiff and Yang (2009) suggest that imports from less distant countries have larger spillovers on TFP. One possible explanation for the negative relation between distance and technological spillovers is the effect of cultural and institutional variables in the process of technological diffusion. This channel is explored by Keller (2002) who finds that distance has a smaller effect on technological spillovers once language is taken into account, highlighting that technological transfer from one country to another is most effective when countries share similar traits. This suggests a more limited role for the potential spillovers from China to LAC compared to those from Japan to the East Asian countries.

The FDI Channel Seems to Play an Even More Limited Role

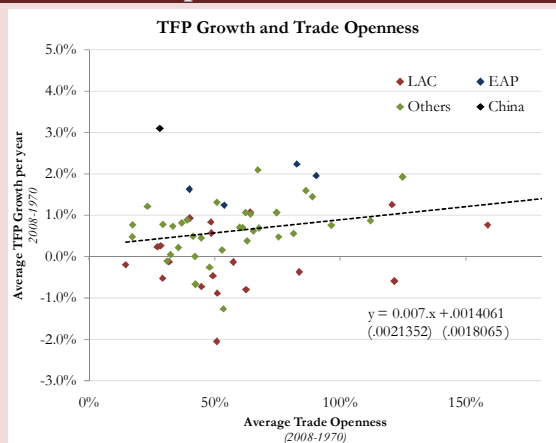
Besides spillovers from trade, Japan acted as major growth pole for the East Asian countries through foreign direct investment (FDI) flows, which capture not only the direct effects of easing financing constraints in recipient economies but can also, and more importantly, provide indirect benefits of knowledge and technology diffusion. For most of the 1970s and the 1980s, Japan's FDI in East Asian economies was significant, driven by pull factors (for instance, low unit labor costs, trade liberalization, and

¹² CEPAL has repeatedly stressed that LAC is joining the growth pole of the 21st century (China) with a production structure (commodity-based) of the 19th century. CEPAL (2005), in particular, highlights LAC's role as a supplier of primary products and resource-based manufactures with relatively low degree of processing.

Box 2. Diffusion of Technology through Trade

Broadly defined, technological innovations are an important driver of economic growth and, as argued by Grossman and Helpman (2001), they are highly intertwined with countries' degree of openness. Indeed, there is a positive correlation between productivity growth and trade openness (Figure B2.1). On the one hand, increased openness can spur the transmission of technical information by for example facilitating networking among innovators and the propagation of new ideas. The larger the volume of international trade, the greater the number of personal connections between residents and non-residents that can give rise to an exchange of information and, thus, knowledge. On the other hand, rapid changes in technology intensify the motives for trade and the consequences of integration into the world trading system. Hence, this brings the diffusion of technology and productivity growth and international competitiveness to the forefront of any discussion of recent growth experiences and prospects.

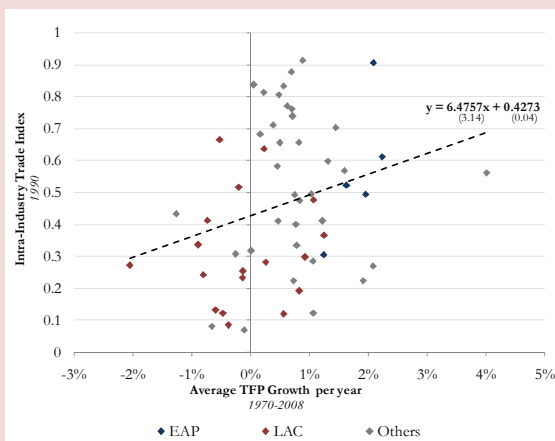
FIGURE B2.1. TFP Growth and Trade Openness



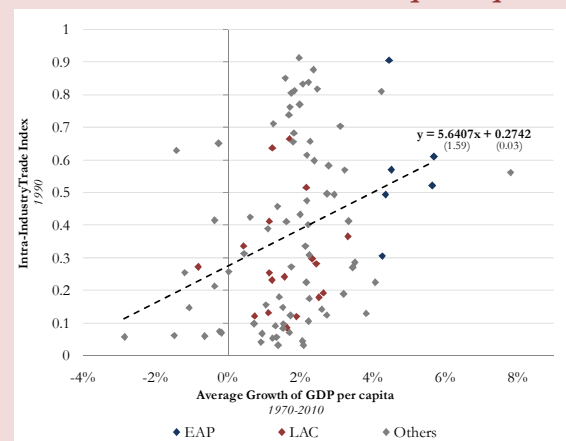
Notes: Trade Openness is measured as exports plus imports as a share of GDP. A fitted regression line is added and the estimated equation is reported. Standard deviations are shown in parenthesis. Source: LCRCE Staff calculations based on Penn World Tables.

FIGURE B2.2. The Degree of Intra-Industry Trade and Economic Progress

PANEL A. IIT and TFP



PANEL B. IIT and Growth per capita



Notes: Fitted regression lines have added and the estimated equations are reported. Standard deviations are shown in parenthesis. Sources: WITTS and Penn World Tables.

In order to benefit from these technological spillovers, countries need to open and developing economies particularly so because the effect of openness on technological spillovers is relatively more important to them (Schiff and Yang, 2004). However, even after accounting for the degree of openness, technological spillovers from trade depend on a number of other factors, the degree of intra-industry trade (IIT) being one of them. Technological spillovers are expected to be more pronounced in a context of vertical IIT, when trade involves products in the same sector but at different stages of the production process—for instance when a country imports intermediate goods for its industries. But it can be expected with horizontal IIT as well, which captures trade of differentiated products at the same stage of development, to the extent that it might help firms keep up with the technology frontier of their competitors. Hence, the extent of IIT for a given country can be used as a proxy for technology diffusion and spillovers of knowledge. Not surprisingly, the degree of intra-industry trade, measured by the adjusted Grubel-Lloyd index, is in fact positively related to not only TFP growth but also real per capita output growth (Figure B2.2). In other words, differences in the structure of overall trade across countries might be related to differences in productivity and economic growth.

pro-FDI policies in the recipient economies) as well as push factors (the declining competitiveness in Japan in some, mainly labor intensive, industries due to rising wages and the strengthening of the yen).

The composition of Japanese FDI flows to East Asia has evolved over time. It has shifted from labor-intensive sectors, such as textiles, to capital- and technology-intensive sectors, such as machinery and equipment. Low production costs in the recipient countries, and especially so the relatively cheaper labor, prompted Japanese entrepreneurs to shift their production base abroad (Kawai and Urata, 1998). In fact, Japanese firms' followed a strategy of breaking up the production process into several sub-processes and locating the labor-intensive ones in labor-abundant countries, leading to the emergence of cross-country production systems highly dependent on intra-firm and intra-industry trade. Particularly important for East Asian economies, according to Urata (1993), a distinctive characteristic of Japanese FDI in Asia was the extensive use of small and medium enterprises, a large portion of which supplied components to large assembly firms, allowing for widespread development in the recipient countries.

As important, these FDI inflows transferred not only the funds for fixed investment, but also technology and managerial know-how, both of which contributed to the expansion and improvement of productive capabilities. In addition, FDI inflows enabled economies to use the extensive sales networks developed by Japanese multinationals. Particularly remarkable in East Asia has been the interaction and simultaneous expansion of FDI inflows and exports, which reinforced each other positive spillovers.

So far, we do not observe such a relationship emerging between LAC and China—FDI flows are not nearly as significant as trade flows between them. According to official Chinese statistics, FDI to Latin America has been relatively limited—averaging just over \$4 billion per year between 2003 and 2009. That is 3-4 percent of total FDI into the region over the same period. According to these statistics, Chinese FDI into Latin America during that period went basically to the Cayman Islands and the British Virgin Islands, well-known offshore centers. Yet, these funds were typically re-invested somewhere else in the region. Gallagher and Porzecanski (2010) estimate that China has been largely pursuing investments in primary industries (metals in particular) such as iron, copper, and soybeans, being thus resource-seeking in nature. On recently some new investments, albeit still tiny (totaling less than US\$1.5 billion), in manufacturing and transport industries in Brazil and Mexico have taken place. Clearly, like Japan with respect to the Tigers, China with respect to LAC does have the financial resources to fund substantial FDI. However, China does not have the edge in technology and knowledge over LAC that Japan had over the Tigers. This is indeed a major difference that limits the potential productivity-enhancing benefits of FDI from China to LAC.

Limited Scope for Virtuous Cycles, So Far

At the intersection of FDI and trade connections are the value chains. UNCTAD's 2011 World Investment Report emphasizes that in addition to being an important driver of FDI and trade flows around the world, these value chains bring not only direct benefits (employment generation, direct local value added, and export generation), but most importantly, indirect ones. They can act as catalysts for not only technology and knowledge enhancement but also capacity-building and economic development more widely, thus leading to virtuous cycles.

The Tigers thrived as they developed these value chains, leveraging on their connection to Japan and to each other. Since their early stages of development in the mid-1980s, East Asian countries were highly active in creating linkages and upgrading their production. UNCTAD's 2011 World Investment Report highlights a number of examples of such virtuous cycles between FDI, trade flows, and domestic development among East Asian countries: from electronics and semiconductors in Taiwan to automotive components in Korea Republic. Insertion and development of these linkages have continued over time and participation in global value chains (e.g., contract manufacturing and services outsourcing) has by now spread widely across Asian economies, whose companies are currently among the largest players in industries such as electronics, semiconductors, garments, footwear, toys, and information technology.

LAC so far lags considerably the Tigers in this regard. There is very little evidence suggesting substantial integration of the region into global production chains. LAC countries, for instance, do not typically appear in UNCTAD's lists of production centers and their companies are not reported among the large ones involved in global value chains. There are two opposing views as to the reasons behind these patterns. One view is that the insufficient connectivity via chains and clusters in LAC is in part a reflection of excessive commodity dependence. Natural resource based industries are perceived in this view as inherently non-congenial to generating linkages (far from value-added and innovative sectors), offering as a result little potential for upgrading to more differentiated, higher quality, higher value products, and associated with weak employment generation.¹³ In addition, by introducing a bias in favor of strong currencies, commodities can displace industries where knowledge spillovers are inherently higher. An alternative view comes mainly from economic historians who document cases where, as a result of appropriate institutions and policies that foster technology diffusion as well as linkages and other positive externalities, natural resource abundance has been dynamically compatible with upstream and downstream linkages, quality upgrading, and technological spillovers.¹⁴ Notable examples often cited are many of today's developed economies such as Australia, Canada, the U.S., and the Scandinavian countries. Natural resource wealth along with a dense network of institutions and policies to generate and diffuse knowledge provided the original basis for growth for these economies, as argued by Blomstrom and Meller (1991) and De Ferranti et al. (2002).

We take this second view, as put forward in our recent (2010) Flagship Report, *Natural Resources in Latin America and the Caribbean: Beyond Booms and Busts*. We argue there that there is no compelling evidence that commodity production is inherently or generally "inferior" to other types of production in its ability to generate linkages and spillovers. Moreover, careful econometric analysis, as in Lederman and Maloney (2006), tend to contradict the Sachs and Warner (1997) empirical finding of a "curse" effect—i.e., that natural resource lead systematically and on average to low growth. We thus conclude that while natural resource abundance does pose downside risks that need to be taken seriously (the curse can indeed

¹³ See for example Hausmann, Hwang, and Rodrik (2005).

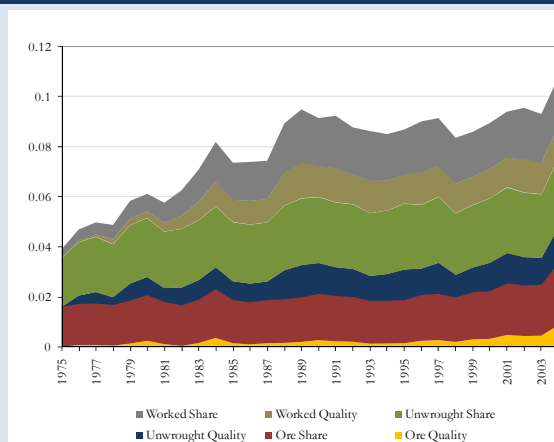
¹⁴ See for example Wright (2006).

materialize through different traps, including high volatility, low productivity/low diversification, and rent seeking), actual growth outcomes crucially depend on the quality of the institutional and policy frameworks.

Vis-à-vis the downside risks of commodity dependence, some bright spots are discernible in LAC. For starters, the quality of institutions in many (not all) of the major commodity exporters in LAC has been on an improving trend, which significantly raises the odds that the most egregious manifestations of rent seeking behavior can be held in check. The caveat in this regard is, however, that deepening of fiscal decentralization in many LAC countries may complicate collective action around strategic national objectives in the management of commodity wealth. Moreover, there is some evidence that certain commodity sectors are benefiting from technological innovation and generating linkages, value upgrading and employment. For instance, there is evidence of increases in value-added, clustering effects, and cross-sectoral linkages in the agricultural sector in Argentina, Chile, and Uruguay, as well as the salmon farming in Chile.¹⁵ A case study of metal commodities also suggests some positive spillovers and upgrading in the metal commodity industries in the region. The share of LAC in metal global trade has expanded over time due to both inter-product upgrade and intra-product quality improvement (Figure 1.12).¹⁶ A study of Peruvian gold mines found rather extensive linkages to local areas with the use of local labor and other inputs.¹⁷ Anecdotal evidence suggests strong clustering effects around Codelco, the copper mining giant in Chile. In sum, there is spotty but robust evidence that LAC has been not only moving towards the production of more sophisticated and higher-valued-added products within its natural resource based industries but clustering and production chains are being developed.

Therefore, commodity abundance is not necessarily a curse and the issues are much more complicated than commonly thought. As we have previously argued (see Lederman and Maloney, 2010), what matters is not necessarily what a country produces but how it is being produced and whether it is generating positive spillovers to the rest of the economy. While being connected to China (and to the rest of the world more broadly) through commodity exports would not automatically lead to greater linkages and insertion into

FIGURE 1.12. LAC Metal Market Share along the Value Chain



Source: Mandel (2009).

¹⁵ See Valdes and Foster (2003), Regunaga (2010), and O’Ryan et al. (2010).

¹⁶ See Mandel (2009).

¹⁷ See Aragon and Rud (2009).

value chains, there is much scope for active policy to determine outcomes. An appropriate set of policies that aim at fostering the diffusion of technologies and learning more broadly can indeed lead to significant positive spillovers in natural resource based industries, hence diminishing the likelihood of being trapped in a natural resource curse. LAC seems to be having a good beginning, but the region still remains far from developments in East Asian economies, thus facing a tall order in this regard. But even in a context of trade based on comparative advantage forces with China, LAC countries have the potential to leverage their connection to China and make the connection a blessing.

Other LAC Connections beyond China

Our simple analysis of the different channels through which international spillovers are propagated suggests that the scope for China in driving productivity growth across LAC countries seems rather limited at this point. However, LAC is also connected to the rest of the world through trade and FDI. Are thus other countries playing a more prominent role in spurring productivity growth in the region? Or are the conditions in LAC less conducive than those in East Asian economies to the absorption of foreign technology irrespective of where it comes from? Perhaps LAC is absorbing technology from different sources or perhaps the problems lie on domestic conditions within LAC countries themselves. We turn to these issues next.

As was highlighted in Box 2, there are different channels through which technology can diffuse across countries—directly, through the technology embodied in physical and human capital, or indirectly, through the dissemination of knowledge across countries via not only trade but also capital and migration flows. Nevertheless, countries need to open and complement such openness with appropriate domestic policies to reap the benefits of these technological spillovers, and the East Asian countries have been frontrunners on this respect.

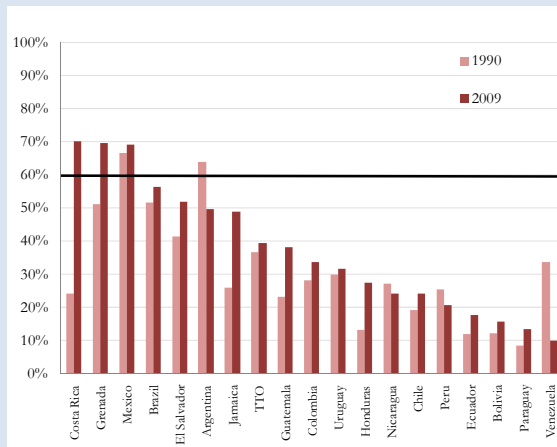
Although most of the East Asian countries, except for Hong Kong, went through an import substitution phase, with high and variable protection of domestic import substitutes, these periods ended earlier than in most other developing economies. According to Page (1994), Hong Kong, Malaysia, and Singapore adopted early on trade regimes that were comparable to free trade; Korea Republic and Taiwan adopted mixed regimes that were largely free for export industries; and Indonesia and Thailand had in the early 1980s begun to reduce protection. Widespread policies with export push strategies were implemented across these countries. In contrast, most LAC countries have started their liberalization process only in the early 1990s and have remained relatively closed to trade since then, Chile being perhaps being one of the few exceptions (see Edwards and Lederman, 1998). For instance, while exports and imports represented about 60 percent of GDP for East Asian economies during the 2000s, they represented only 20 percent on average for LAC7 economies. As a consequence, the outward-oriented structure of the East Asian economies puts them in a better position to take advantage of these spillover effects if compared to the relatively closed LAC economies.

Overall, LAC countries more closed and the composition of their trade also seems to be less conducive to technological spillovers than that of the East Asian economies. The overall extent of IIT also points to striking differences between the East Asian economies and LAC countries (Figure 1.13).¹⁸ Not only do LAC

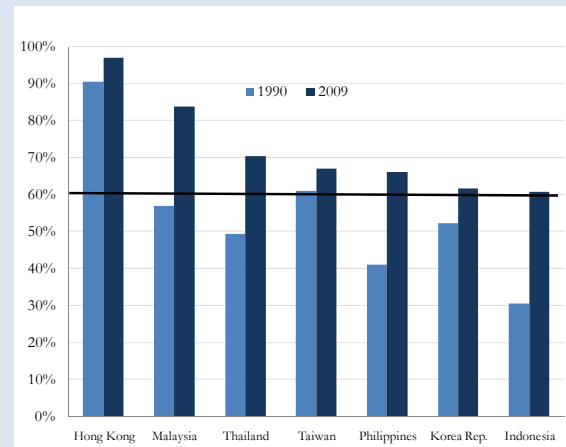
¹⁸ In order to capture the degree of vertical IIT, a rough classification of industries, at the two-digit sector level, was used. Similar country rankings and differences across regions are obtained if we use a finer classification of industries at 4-digit sector level.

FIGURE 1.13. The Degree of Intra-Industry Trade

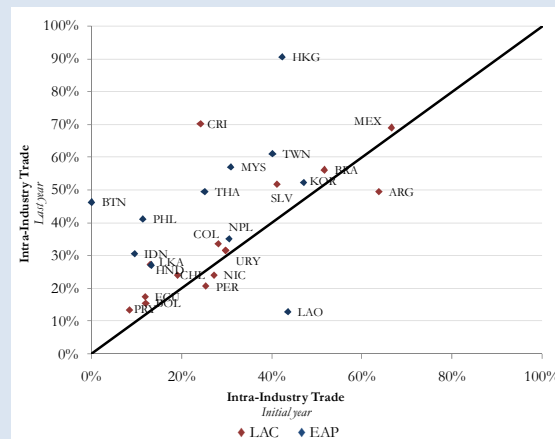
PANEL A. LAC



PANEL B. EAP



PANEL C. Change in the Degree of IIT over Time



Notes: For Panel C, the initial year for LAC countries is 1990 and the last year is 2009; for EAC countries, the initial year is 1970 and the last year is 1990. Source: WITTS.

countries show on average a lower degree of IIT than East Asian countries, but they have seen almost no change in this structure over the past 20 years, Costa Rica being an exception. This stands in marked contrast with the increases observed among the East Asian Tigers. Hong Kong, Korea Republic, Singapore, and Taiwan have developed early on their growth-spur capital-intensive and highly developed industries where intra-industry trade typically plays a major role. Nevertheless, these developments came at later stages for the other East Asian economies—*i.e.*, Indonesia, Malaysia, Philippines, and Thailand. Among LAC countries, Caribbean and Central American countries typically show a higher degree of IIT than South American countries, including most of LAC7 countries, but very small increases are observed over time.

Now let's turn to overall FDI flows. As noted, technologies and knowledge can be diffused from foreign parents (directly or indirectly through intermediate inputs) to subsidiaries, which may in turn spill to other firms in the host country through labor turnover.¹⁹ There is a vast empirical literature, albeit without robust

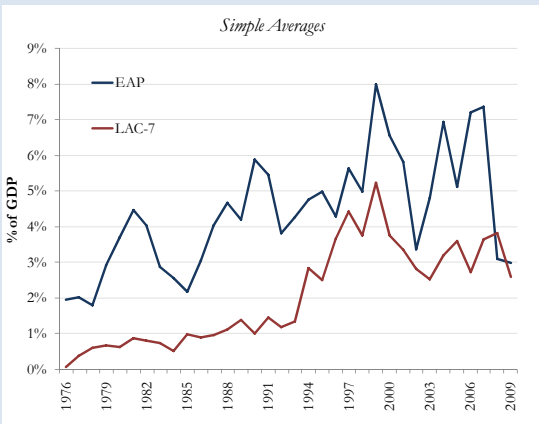
¹⁹ See for example Ethier (1986), Rodriguez-Claire (1996), and Fosfuri, Motta, and Ronde (2001).

conclusions, that considers FDI as an important channel of technology diffusion.²⁰ Once more, the amount of aggregate net FDI inflows suggests that this channel may be particularly weaker for LAC countries in comparison to the East Asian countries for most of the past 40 years (Figure 1.14). Net FDI inflows to LAC countries represented on average less than 2 percent of GDP for LAC7 countries until the mid-1990s, when they rose sharply on account of a one-off wave of privatization of public enterprises. However, in the first decade of the 2000s, FDI flows to LAC rose and stabilized at around 3 percent of GDP. This still falls short of the quantitative importance that FDI has had for East Asian countries, relative to the size of their economies. In effect, over the past quarter of a century, FDI flows to these latter economies, while fluctuating significantly, have generally been at or above 5 percent of GDP.

An important factor explaining the degree of positive spillovers from technology diffusion whether through trade or FDI flows is the existence of skilled labor with high educational and technical capabilities (e.g. well-trained engineers and skilled managers) in the recipient country. This enables and boosts the absorption new technology and knowledge. Schiff and Yang (2010) indeed observe a positive interaction between education and technological diffusion. As important as the stock of human capital is its quality, however. As pointed by Acemoglu and Zilibotti (2001) technological progress in the frontier is biased towards high-skilled workers, suggesting that countries with low levels of education face an important barrier in the process of technology adoption and ability to move towards the technological frontier. Supporting the claim that foreign technology and human capital formation supplement and reinforce one another, Borensztein, de Gregorio, and Lee (1998) find that positive growth effects from FDI requires a minimum threshold of human capital in the host country.

The availability of an advanced stock of human capital is reflected in the overall level of education of a country's population. On this front, LAC faces two important challenges—improving the low levels of higher education enrollment as well as improving the quality of education. For instance, Maloney (2011) provides evidence that, controlling for the stage of economic development, LAC students underperform in standardized tests. In addition, he shows that universities in LAC countries are perceived of worse quality than their European and Asian counterparts. This structural problem faced by the region stems from a deficient level of educational inputs, ranging from ineffective government expenditure on education to unqualified teachers. The latter point is made evident by Thorn and Soo (2006) that show that only 5

FIGURE 1.14. Net FDI Inflows



Notes: EAP includes Hong Kong, Indonesia, Korea Rep., Malaysia, Singapore, and Thailand. Source: WDI.

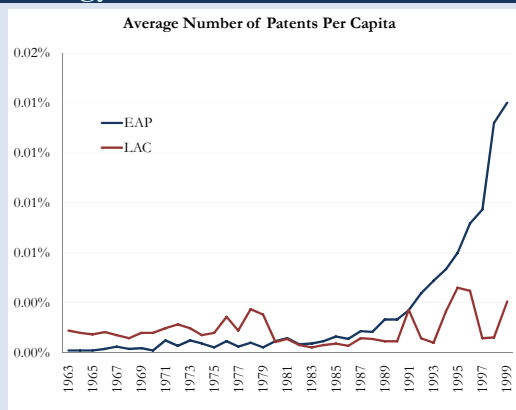
²⁰ See Adams-Kane and Kim (2011) and references herein.

percent of tertiary education teachers in LAC have doctoral degrees (in the UK this number is above 40 percent, for example), putting LAC's universities far from the knowledge frontier. Setting the agenda for the future, efforts to revert these patterns are crucial if we expect LAC to rip greater the benefits from being part of a globalized world. On a positive note, Chapter 2 of this report will discuss in greater detail, some countries in the region might have already started to change, as the quality of education across LAC7 countries has been improving in the past decade in a uniform way within the region albeit at a relatively slow pace.

Domestic policies can also play a crucial role in fostering knowledge spillovers from trade, although they are not independent from the factors highlighted above. Many have argued that behind the high productivity estimates for the East Asian Tigers over the past decades lies a wide set of policies actively seeking foreign technology through a variety of mechanisms. According to the World Bank (1993), East Asian countries welcomed and encouraged technology transfers in the form of licenses, capital goods imports, foreign training, and direct foreign investments. Others have also documented the process of technology diffusion, and particularly the learning by imitation and adaptation, for Japan and the East Asian Tigers in the manufacturing sector.²¹ In contrast to the East Asian experience, Katz (ed. 1987) reports that efforts made by some plants in some of the relatively closed LAC countries to improve the productivity of the existing capital stock with internal innovations did not generate very high productivity growth.

Most likely as a consequence of all these factors and a number of others, LAC countries have been unable to absorb and create technology in a timely way. By and large, and clearly compared to the East Asian countries, LAC has not used its trade and FDI links to learn. In fact, LAC's gap in the production and adoption of knowledge has widened with respect to East Asia. This is illustrated in Figure 1.15, where the dramatic increase in the number of patents granted by the United States Patent and Trademark Office (USPTO) to citizens of East Asian countries stands in sharp contrast with a low number of patents granted to LAC citizens between 1960 and 1990. LAC countries have also consistently taken more time than East Asian countries to implement and use a new technology—*i.e.*, personal computers, cell phones, and the internet—over the last 50 years (Comin and Hobijn, 2010). This innovation underperformance of LAC countries is still present when one takes into account income levels (Lederman and Maloney, 2003).

FIGURE 1.15. Creation of Technology



Notes: EAP countries include: Hong Kong, China, Korea Rep., Indonesia, Malaysia, Philippine, Singapore, Taiwan, and Thailand. LAC countries include: Antigua and Barbuda, Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, and Venezuela. Source: UNIDO.

²¹ See (1954) and Rhee, Ross-Larson, and Purcell (1984), among many others.

Trade and Macro-Financial Asymmetries

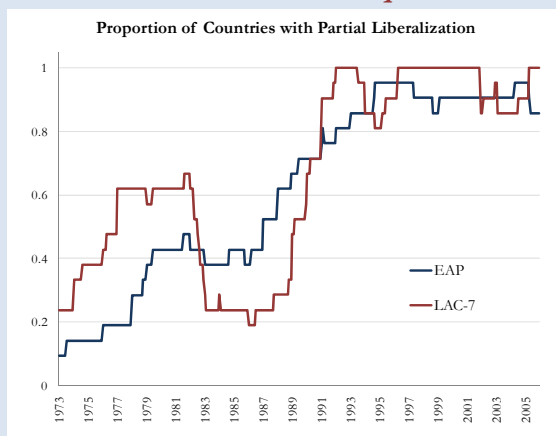
Many have argued that macro-financial policies geared towards stability-cum-competitiveness contributed to the high performance of East Asian countries. In effect, LAC and East Asian economies have followed very different paths in dealing of the so-called impossible trinity—i.e., the inability to simultaneously maintain a stable (and competitive) exchange rate, an open capital account, and monetary policy independence. According to Yusuf (2001), the pillars of macroeconomic management in the East Asia emerging economies included not only a stable business environment with relatively low inflation that encouraged long-term investments and prudent and sustainable fiscal policies, but also an exchange rate policy geared at underpinning export competitiveness. At the same time, as seen in Figure 1.16, East Asian economies back in the 1970s and 1980s maintained a relatively closed capital account. By remaining relatively closed to non-FDI capital and generating high domestic saving rates, East Asian economies were able to sustain an export-led model based on a competitive exchange rate during most of their “miracle” phase.

In contrast, LAC has adhered to a different mix of trade and financial openness and a different approach to coping with the impossible trinity. In general, compared to East Asian countries, LAC countries have revealed a preference for less trade openness while tending to move more aggressively, except for the “lost decade” of the 1980s, towards openness to non-FDI capital mobility. In terms of the impossible trinity, given LAC’s high degree of international financial integration, it has traditionally tended to give up monetary policy independence in exchange for exchange rate stability until the 2000s, when several LAC countries managed to recover such independence on the strength of sounder currencies and greater exchange rate flexibility. Given LAC’s relatively low saving rates (Figure B1.1), however, maintaining a competitive real exchange rate has been difficult for the region. In particular, bouts of real exchange rate overvaluation have tended to accompany (non-FDI) capital inflow and commodity prices bonanzas, which have been traditionally followed by capital flow reversals, commodity price collapses and sharp real depreciations.

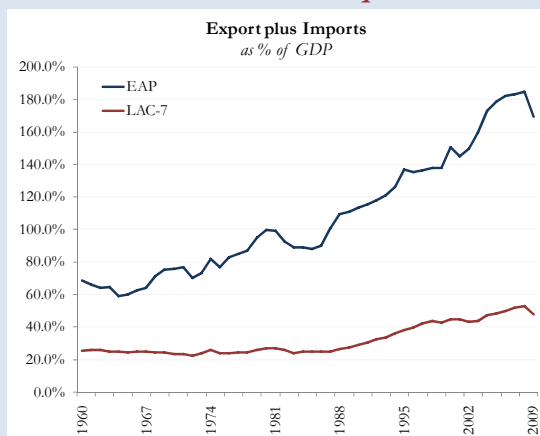
In the last decade, however, as noted earlier, LAC’s flexible exchange rate regimes have been supported by sounder monetary policy frameworks, more viable fiscal processes, and reduced currency mismatches in debtor balance sheets. While these conditions surely ensure healthier and more credible currencies, they are of course not sufficient to ensure a durably competitive real exchange rate. In effect, in the absence of

FIGURE 1.16. The Degree of Financial Openness

PANEL A. Financial Openness



PANEL B. Trade Openness



Notes: In Panel A, EAP countries are Hong Kong, Indonesia, Korea Rep., Malaysia, Philippines, Taiwan, and Thailand. Sources: Kaminsky and Schmukler (2002) and Lane and Milesi-Ferretti (2007).

higher savings, the strong tail winds coming from high but potentially volatile capital inflows and commodity prices are already resulting in stronger currencies and posing significant risks of overvaluation.

Finding out the appropriate policy mix to foster competitiveness, while maintaining low inflation rates and macro-financial stability has thus been the recent challenge faced by many countries in the LAC region. It will likely remain a central challenge also in the future, as LAC tries to capitalize on its natural resource wealth and deepening connections to China. Given the structural conditions of being relatively less open to trade and relatively more open to non-FDI financial flows than its East Asian counterparts, dealing appropriately with such challenge is a necessary, but not sufficient, building block for LAC countries to raise and sustain long-term growth. In the end, LAC will likely have to learn to live with stronger currencies, which implies a high premium on the policy agenda aimed at reducing the costs of doing business and enhance economic productivity.

Concluding Remarks

Hopes that LAC's growth prospects were finally changing for the better emerged before the global financial crisis, over the 2002-2008 period. During those years, several LAC countries recorded Asian-style growth rates on the strength not just of favorable external conditions (low interest rates, abundant liquidity, and high commodity prices) but also a surge in productivity growth. Enabling and reinforcing this performance, a significant reduction in macro-financial vulnerabilities, important steps forward in the equity agenda (i.e., significant poverty reduction and a decline in inequality), and further consolidation of democratic institutions took place. With LAC is coming out of the global financial crisis relatively well positioned, those hopes appear to be rekindling and the region seems unprecedentedly well positioned to embrace a vigorous growth agenda.

China has emerged in the last decade as an important growth pole for LAC. Contrary to initial concerns that China would outcompete and displace LAC out of third markets, the connection with China for much of LAC has been dominated by the complementarity between the region's natural resource abundance and China's commodity-intensive growth pattern. The connection to China has thus raised expectations that LAC may achieve the type of high long-term growth in the future that has eluded the region throughout most of the past century. This is not however the first time that LAC has had the opportunity to develop on the wings of another growth pole. Indeed, the U.S.—the most important trading partner and source of FDI for LAC during the 20th century—could have played such a role. Unfortunately, for a number of internal and external reasons, that connection was not successful in fostering economic convergence (to the standards of living of the advanced economies) for the region. Hence, the connection to China leaves no room for complacency. If anything, the fact that LAC's relationship with China is dependent on commodity exports raises the obvious red flag that, instead of a blessing, it might end up being a curse for growth. This red flag should be taken seriously as LAC's history is marked by recurrent episodes of commodity bonanzas that have ended up in economic desolation.

However, the experience of some natural-resource abundant countries (e.g., Canada and the Scandinavian countries) suggests that natural resource wealth can also be the basis for long-term growth. Most importantly, there is spotty but robust evidence that LAC has been not only moving towards the production of more sophisticated and higher-valued-added products within its natural resource based industries but clustering and production chains are being developed. Therefore, the first order of business as regards to the nature of its connection to China is for LAC to undertake vigorous policies to make natural resource wealth

an engine of sustained growth. As amply discussed in our 2010 regional flagship report, “*Natural Resources in Latin America and the Caribbean: Beyond Booms and Busts?*”, policies need to disable the three main channels through which the curse might materialize.

First are the policies to cope with commodity price volatility—i.e., a suitable combination of fiscal rules and stabilization funds. Second are the policies to avoid falling into a low diversification-low productivity trap—i.e., seeking to stay away from enclave-type productive structures by upgrading value added and technology content in the natural resource-based industry, fostering economic connectivity and clusters of related activities, maximizing learning spillovers, and continuously improving the business environment and conditions for diversification. Third are the policies to immunize institutions and governmental decision-making processes against the “rent seeking” virus—by fostering transparency and accountability and the incorporation of longer horizons and inter-generational equity criteria into the decisions on how to save and invest out of the commodity-based income. In the three risk fronts, a clear sign that the curse is being avoided would be the governments’ ability to save a substantial fraction of the commodity-related revenue windfall, which would entail significant and continuous cyclically-adjusted primary fiscal surpluses going forward.

In all, the overriding challenge in the growth front for LAC’s policymakers will be to harness the opportunities afforded by deeper and broader links to the global economy in general, and to China in particular. This is essentially a question on how to best learn (to improve business processes, adopt new technologies, diversify and connect, etc.) through enhanced international trade, FDI, and financial integration. In the shorter run, how LAC manages the mature phase of the recovery cycle will be crucial in this respect, as it would set the stage for the implementation of a more robust long-run growth agenda. Enhancing the countercyclical stance of fiscal policy and wisely deploying macro-prudential policies will be essential in this regard.

Should the external environment deteriorate sharply, however, LAC’s cycle management will need to activate all the available shock absorbers. In this regard, it is comforting to note that, by appropriately having raised interest rates over the past 15 months or so, many countries in LAC are in a position of strength—they could easily move towards aggressive countercyclical monetary policy and let the exchange rate absorb the adverse shocks, if needed. In the fiscal front, several countries, including Brazil, have signaled appropriately the need to continue to build fiscal buffers while they maintain a wait-and-see attitude until the direction in which global risks develop becomes clearer. The authorities should similarly monitor the strength of financial system buffers (capital, provisions, and, particularly, liquidity). Finally, linked to fiscal buffers, the social safety nets may also need to put in full readiness, in case quick deployment on an expanded basis becomes needed. Unfortunately, the shock absorption capacity within the region varies considerably, implying that a bad global scenario could have crippling implications for some countries in the region, especially for those in Central America and the Caribbean that lack countercyclical macroeconomic policy capacity and suitable social safety nets. Caribbean countries, furthermore, confront much tighter constraints arising from high public sector indebtedness and vulnerable financial systems.

Beyond the short run, the premium on productivity enhancing policies will need to be raised. Some of the key external conditions for LAC to raise its growth rate sustainably above the world’s average may be in place (large and growing countries with strong demand for LAC exports; high commodity prices; and low world interest rates). But the jury is still out on whether the region will be able to fully capitalize on these conditions. We have argued in this report that LAC faces a very tall order in this regard. There is little evidence so far that China can play a similar role in fostering productivity growth in the region, in a similar fashion to that of Japan for the East Asian economies in the past. Moreover, the underlying, fundamental

factors behind the high growth performance of the East Asian economies have not been observed across LAC countries either. Savings and investment rates have typically remained at low levels over the past decades and productivity growth was virtually zero between 1960 and 2000. On the bright side, productivity has picked up over the last few years. Whether this recent trend is sustainable or not remains to be seen.

Seizing the opportunity on this favorable external environment will require well-designed, but not necessarily numerous or unduly complex, policies to ignite growth that are adequately tailored to the circumstances of individual countries. Once ignited, growth would have to be sustained through perseverant and major reform efforts aimed at eliminating well-known obstacles that undercut efficient resource allocation—such that competitive market forces are honed and relative prices better reflect relative scarcities. Also, the large gaps that LAC has in education, physical infrastructure, and the ability to adopt and adapt new technologies relative to, say, the Asian Tigers would have to be systematically closed. The associated need for high investment levels would have to be supported via higher fiscal savings, particularly in countries benefiting from the commodity price bonanza, as well as prudent access to foreign savings, particularly in the form of FDI. That would in turn require a leap in the quality of the investment climate, including through a better contractual environment, much reduced corruption levels, and a major reduction in crime and violence.

Appendix A. Methodology behind TFP Estimates

The methodology implemented to calculate total factor productivity (TFP) follows Easterly and Levine (2001), Daude and Fernández-Arias (2010), and Daude (2011), while considering some methodological insights from Hall and Jones (1999) and Klenow and Rodríguez-Clare (1997).

First, the capital series are constructed using the *Penn World Tables 7.0*. In particular, following Easterly and Levine (2001), we use the perpetual inventory method to construct the capital stock. That is, we use:

$$K_t^i = (1 - \delta)K_{t-1}^i + I_t^i \quad (1),$$

where K_t^i is the stock of capital in period t for a country i , I_t^i is investment in period t for a country i , and δ is the depreciation rate, assumed to be 0.07 for all countries. From equation (1), and assuming *steady state* conditions, the initial capital to GDP ratio is computed as:²²

$$\frac{K_0^i}{Y_0^i} = \frac{i_0^i}{g + \delta} \quad (2),$$

where i_0^i is the average investment-output ratio for the first ten years of the sample for country i and g is the weighted average between world growth (weight of 0.75) of 4.23% and the average growth of the country (weight of 0.25) for the first ten years of the sample.²³ Then, to obtain the initial capital stock K_0^i we multiply Equation (2) by the average output of the first three years of the sample.

For human capital, we follow Daude and Fernández-Arias (2010) coupled with the standard approach of Hall and Jones (1999). We construct the human capital index h as a function of the average years of schooling given by:

$$h_t^i = \exp(\varphi(s)) \quad (3),$$

where the function $\varphi(s)$ is such that $\varphi(0) = 0$ and $\varphi'(s)$ is the Mincerian return on education. We approximate this function with a piece-wise linear function. Based on Psacharopoulos (1994), we assume the following rates of return for all the countries: 13.4 per cent for the first four years of schooling, 10.1 per cent for the next four years, and 6.8 percent for education beyond the eight year. For each country in our sample, we use the Barro-Lee (2010) data on the average years of schooling for the population older than 15 years.

Regarding the TFP computation, we follow the standard literature and assume a Cobb-Douglas production function, which is given by:

$$y_t^i = A_t^i \cdot k_t^{\alpha,i} h_t^{1-\alpha,i} \quad (4),$$

²² We are assuming that the initial capital-to-GDP ratio is the steady state one. Daude and Fernández-Arias (2010) present some robustness checks showing that from 1970s onwards TFP measures are not very sensitive to initial conditions and assumptions.

²³ For all the countries in our sample, we use the 1960 as the starting point in order to avoid differences coming from the sample size.

where y_t^i is GDP per worker in country i in period t , k_t^i physical capital per worker, A_t^i measured total factor productivity, and h_t^i human capital per worker. Lastly, we assume that the production function parameter α is the same across countries, and equal to 0.3. Equation (4) can be rewritten as:

$$y_t^i = A_t^{1-\alpha^i} \cdot \left(\frac{k}{y}\right)_t^{\alpha^i} h_t^i \quad (5).$$

We use Equation (5) instead of Equation (4) for decomposing GDP per worker gaps into TFP, capital intensity measured by k/y and human capital, as it takes into account that capital per worker is affected the level of TFP.²⁴

²⁴ There are good reasons for causality also to go from factors towards TFP. For example, human capital might be needed to adopt technological progress or technological progress might be embodied in new capital good.

Part Two

Declining Education Earnings Premia: Good or Bad News?

Abstract

Enhancing productivity growth and improving job quality are crucial to sustain growth on a longer term perspective. The phenomenon that motivates this chapter is the emergence, over the last decade, of a downward trend in education earnings premia (the additional earnings associated with a higher level of education), which reflects a re-balancing between higher supply and lower demand for skills. This decline represents both good and bad news. In the last two decades, the region achieved substantial increases in the supply of skilled labor with secondary and tertiary education. These higher education achievements could be reducing relative scarcity, facilitating a decline in income inequality. But the decline in education earnings premia could also highlight some serious challenges the region is facing. It could be telling us that the skills our graduates bring to the market are worth less than they used to be worth, due to quality problems in our education and training systems. At age fifteen, the average Latin American student lags two years behind in learning achievements with respect to his OECD alter ego. Analysis of skills contents of Latin American jobs also suggest that, at best, few efforts have been made to take advantage of an increasingly skilled labor force; and, at worse, firms are adapting production to second-best technologies because of the lack of a workforce with relevant skills, at the expense of their competitive edge. The trends we observe call for more thorough studies and analysis to identify the nature of the current skill deficiencies and mismatches, so as to guarantee the long term competitiveness of the region.

Introduction

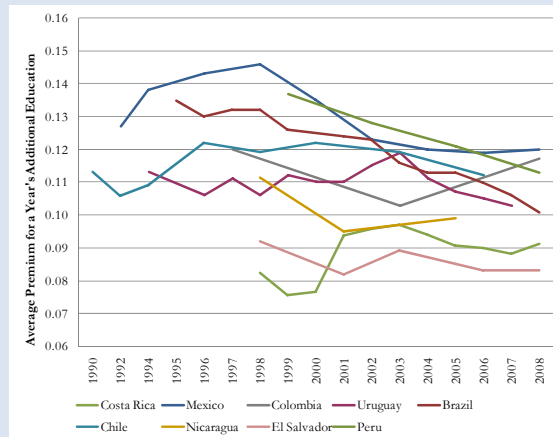
The heated debate centering on options for macroeconomic management should not distract attention from longer term challenges the regions is facing. In the short run, growth might be sustained, at least in part, on high commodity prices and strong capital inflows, if properly managed. But in the longer term, as highlighted in Chapter 1 of this report, enhancing productivity growth as well as improving some dimensions of job quality, such as employment stability and social protection, are crucial.

The phenomenon that motivates this chapter is the emergence, over the last decade, of a downward trend in education earnings premia--*i.e.* the additional earnings associated with a higher level of education. The pattern emerges clearly from Mincerian regressions for nine countries for the 1990s and 2000s (Figure 2.1), although it differs by education level. In most countries there was a steady decline in the premium for secondary education through the 1990s and 2000s. In contrast, the wage premium for tertiary education rose in most countries in the 1990s, but has been declining since 2002 (Figure 2.2).

There is little evidence that this turn-around in the trend of education earnings premia is due to changes in the composition of the workforce or in the sector composition of employment; rather, it seems likely that declining returns to education reflect a re-balancing between higher supply and lower demand for skills.

Is that good or bad news? It might be good news. LAC's education and training systems could be catching up in a "Tinbergen's race" between education and technology. By responding to the skill needs of the labor market, they could be reducing relative scarcity, leading to lower relative earnings for more-educated people and facilitating a decline in income inequality. But it might also be bad news. The decline in education earnings premia could be telling us that the skills our graduates bring to the market are worth less than they used to be worth, due to quality problems in our education and training systems.

FIGURE 2.1. Evolution of Education Earnings Premia



Source: Author's calculation based on Household datasets.

Certainly, recent trends in the region's earnings premia contrast with other regions of the world. In East Asia, for instance, premia have continued to rise in many countries, even though educational expansion has kept ahead of Latin America. This raises the concern that the patterns of labor demand in the region may be diverging from that observed in leading growth regions, possibly due to skill quality limitations that are dragging down Latin America's competitiveness.

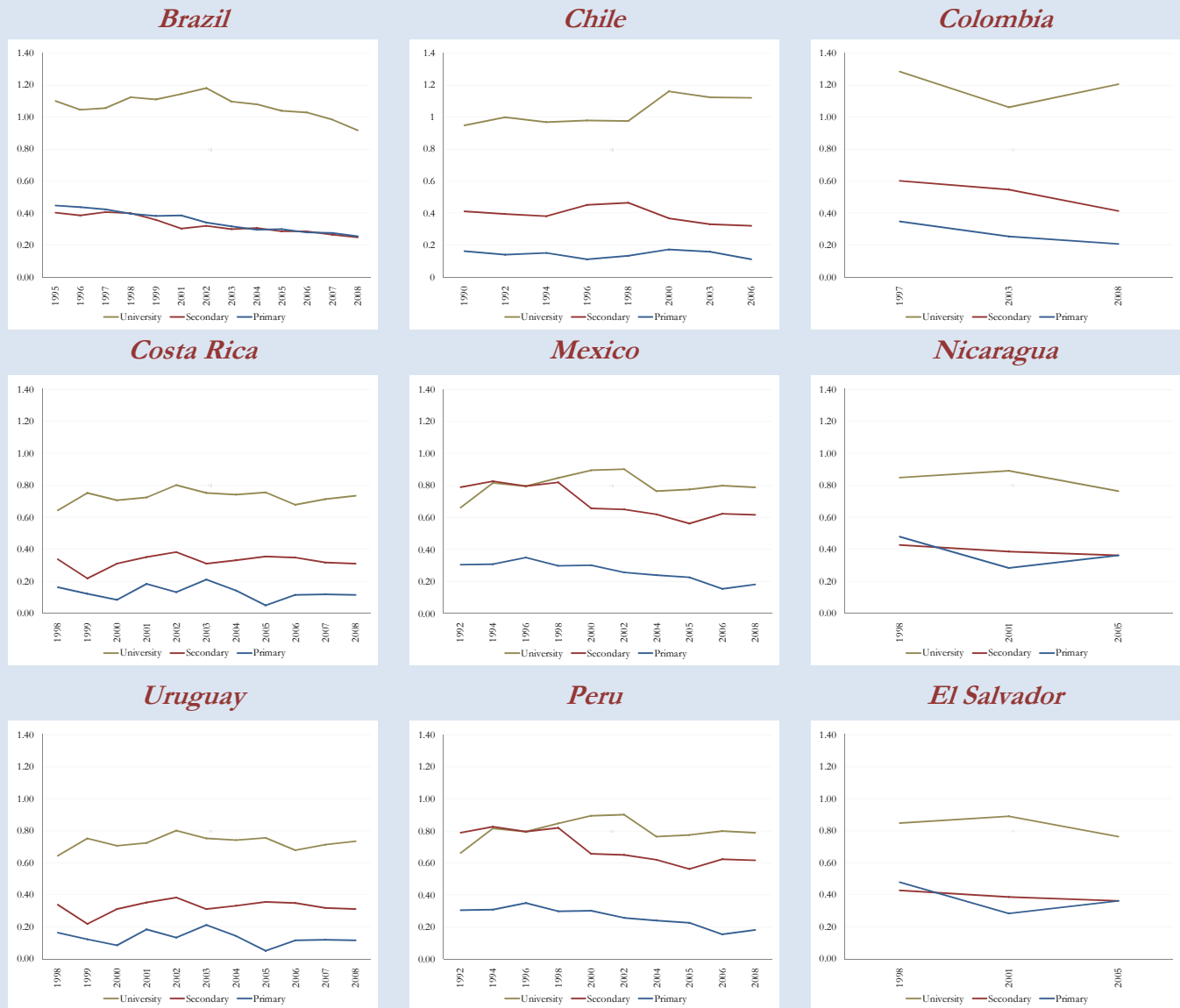
Education Expansion and the Demand for Skills

Over the last two decades, almost all countries in Latin America have greatly expanded the proportions of their emerging labor force with secondary and tertiary education (Figure 2.3), and some--such as Brazil--have registered truly spectacular gains. As a result, the mean years of education of the population and labor force aged 15-35 have increased markedly (Figure 2.4).

Although starting points, rates of expansion, and distributions of coverage vary from country to country, countries in the LAC region have advanced a long way towards generalizing secondary education, and even the proportion of the workforce with tertiary skills rose well above 10 percent. The expansion has been particularly rapid in Brazil, Chile, Colombia, and Mexico but somewhat slower in Nicaragua, Peru, El Salvador, and Costa Rica; only Uruguay (where coverage was already relatively high) reports a flat trend.

Notwithstanding these advances, Latin America lags behind most other regions (apart from Africa) in the expansion of education. The strong push in the expansion of coverage of the East Asian Tigers started in the 1960s, and by 1990 the average educational attainment was already almost one year above the average attainment in Latin America. Since 1990, the rate of expansion in the East Asian Tigers was faster than in Latin America so that by 2010 the gap had widened further, with East Asian Tigers reaching on average 9.5 years (equivalent to completed lower secondary), against 8.4 years for Latin America (Figure 2.3).

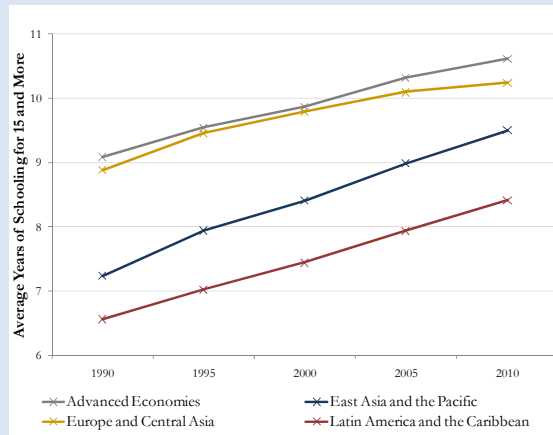
FIGURE 2.2. Evolution of Education Earnings Premia in Latin America



Notes: Basic OLS Estimates of Mincer-style regressions. The education earnings premium for primary is the difference in the logarithm of monthly earnings between complete primary and incomplete primary education; the education earnings premium for secondary is the difference in the logarithm of monthly earnings between complete secondary academic and complete primary education; and the education earnings premium for university is the difference in the logarithm of monthly earnings between complete university and complete secondary academic education. Regressions control for potential experience, gender and region. Source: Author's calculations based on Household datasets.

It is clear that educational attainment in Latin America has risen markedly. But to what extent has the increased supply of skilled labor been met by demand from the labor market? To unravel the supply and demand side drivers of the trends in earnings premia, we apply a methodology originally presented in a seminal article for the U.S. labor market (Katz and Murphy, 1992). Our analysis, undertaken for 16 countries, computes the trend of relative demand for different skill levels, based on the observed trend in relative prices for skilled and unskilled labor, using plausible assumptions about the possible range of elasticity of substitution between the two types of labor.

FIGURE 2.3. Educational Attainment



Source: Author's calculation based on Household datasets.

The analysis suggests that the reduction in earnings premia relates to a slowing of demand growth for skilled labor, relative to the demand for unskilled labor. This is reflected in the change of sign for relative demand growth from positive to negative between the 1990s and 2000s in virtually all the countries analyzed (Figure 2.5). A slowing in the growth of demand for skills, while the secular expansion continued unabated, eased the relative shortage of skilled labor, which was previously generating high returns to tertiary education and constraining profitability and growth.

But where does this change in demand come from? Many factors affect demand, and while we are able to provide some suggestive evidence, it remains difficult to pin down the importance of each one. Changes *within* sectors or industries (as opposed to inter-sectoral shifts in demand) can explain most of the decline in premia. This would be consistent with a shift away from the pattern of generalized skill biased technical progress that characterized the 1990s. However, the decline in premia may also relate to other features of Latin American labor markets, such as quality issues in education and training programs (in the broad sense, including both the quality of training and the match between training and the demands of the labor market), and the impact of institutional changes (such as rising minimum wages, which tend to compress the earnings distribution and therefore lower education earnings premia). Next, we review in greater details some of these structural factors.

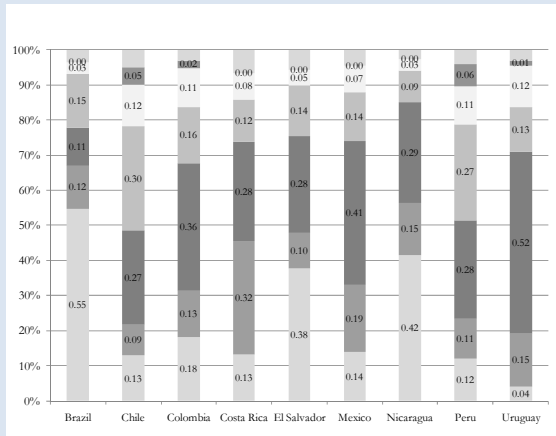
Education Quality and Student Achievement

Expanding the coverage of secondary and tertiary education implies creating new schools and colleges; hiring new teaching staff; and increasing the proportion of children from less-advantaged backgrounds. All these factors could undermine learning outcomes, especially if the expansion is rapid. But the available evidence suggests that despite the rapid pace of expansion, there is no sign of erosion in learning achievement. Nevertheless, the region still reports large achievement gaps compared with the OECD, suggesting the need for a drive to improve quality.²⁵

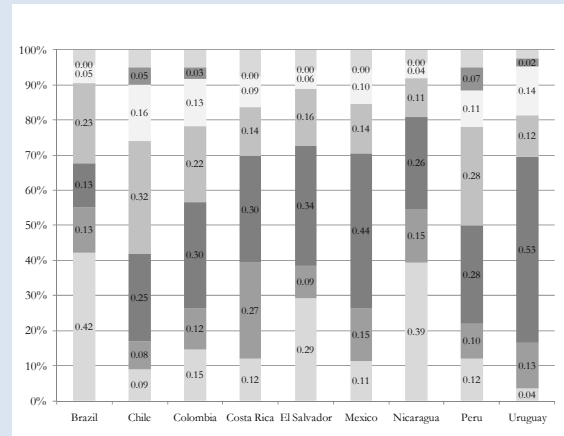
²⁵ See for example Aedo and Luque (2011).

FIGURE 2.4. Educational Expansion in LAC's Emerging Workforce

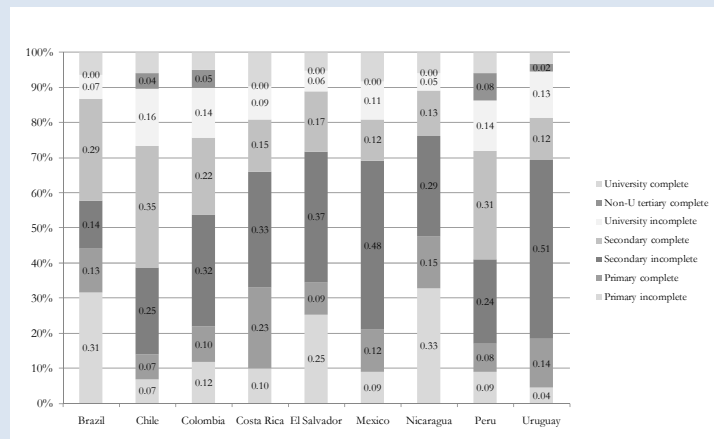
PANEL A. 1998



PANEL B. 2003



PANEL C. 2008



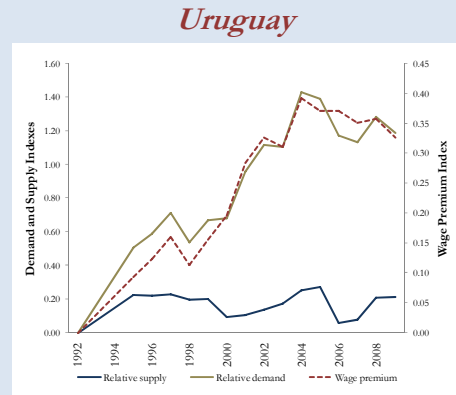
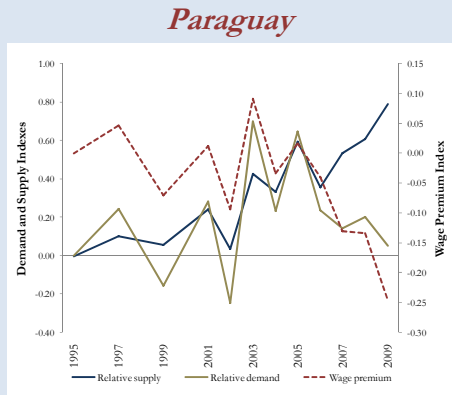
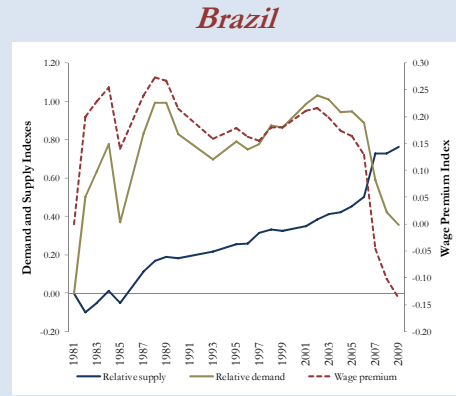
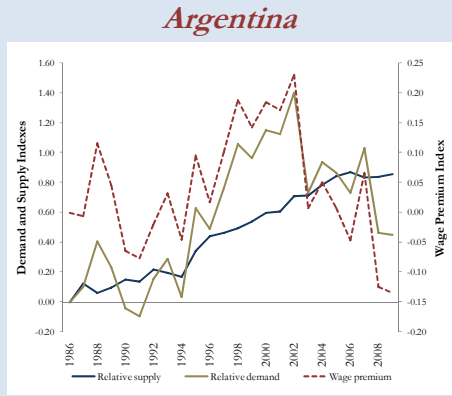
Notes: In the first row, university complete includes all those with a university complete or non-university tertiary complete education. In the second row we separate university complete and non-university tertiary complete. In both rows, university incomplete includes all those with a university incomplete or non-university tertiary incomplete education; secondary complete includes both academic and secondary technical complete, and; secondary incomplete includes both academic and secondary technical incomplete. In panel A, data available for Colombia are 1997 and data available for Peru are 1999; in panel B, data available for Mexico and Peru are 2002 and for Nicaragua 2001; in Panel C, data available for Chile is 2006 and data available for Nicaragua is 2005.

The best source of evidence on trends in learning achievements is the OECD's PISA evaluation. This test is given to 15 year olds who are in school. It was applied most recently in 2009, with the participation of nine Latin American and Caribbean countries. The PISA scores show that in the region, expansion has not undermined average learning achievement (Figures 2.6 and 2.7). Consistent with that finding, there is also positive news about the education of children from poorer socio-economic backgrounds. In several countries (including Brazil, Chile, and Mexico), the educational attainment (years of schooling) of children from low income families has improved relative to less-poor children.

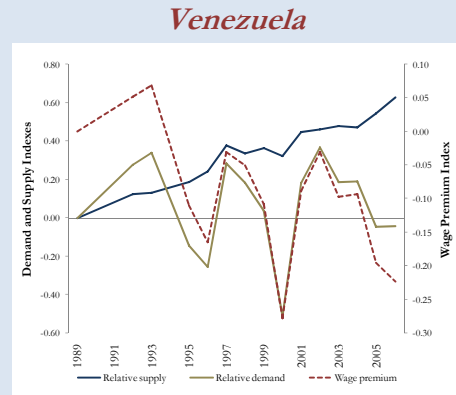
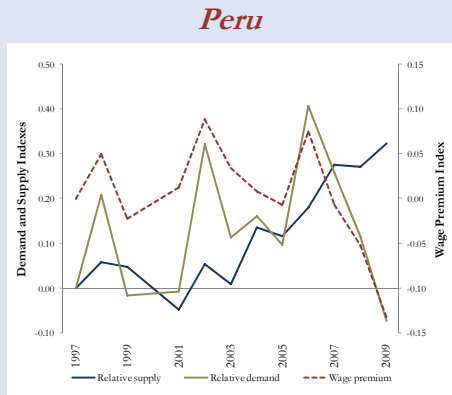
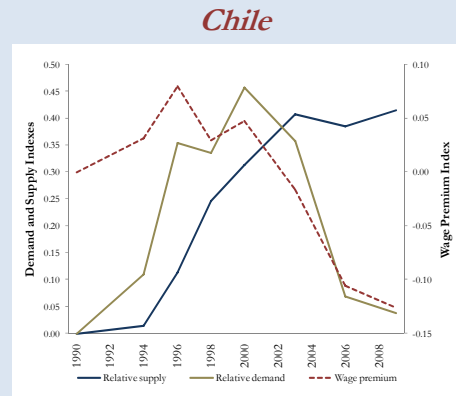
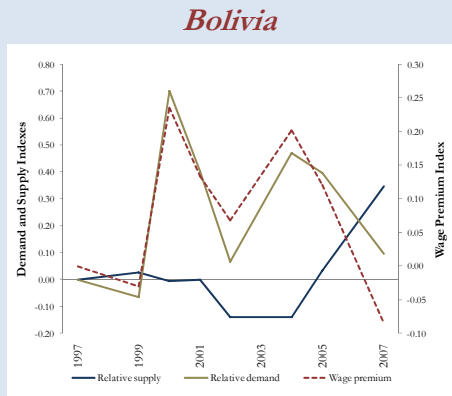
Nevertheless, there are still big challenges ahead. An important part of the recent advances in learning achievement is attributable to improving grade-age correspondence (getting more 15 year olds into the right class for their age). This process has benefitted especially children from poorer households, which is very positive, from the point of view of equality of opportunities. But the same analysis also indicates that the

FIGURE 2.5. Wage Premium and Supply and Demand Indexes

Panel A. MERCOSUR



Panel B. Andean Countries



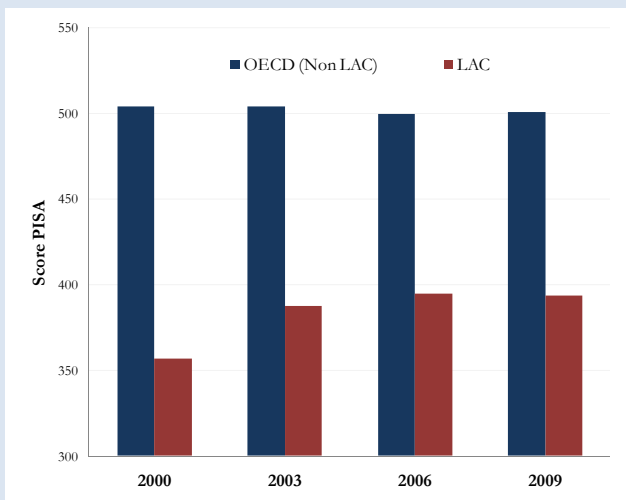
Notes: Demand computation assumes an elasticity of substitution of 3. See Acosta, Cruces, Gasparini (2011) for more details on sample years, surveys, and methodology.

average learning achievement of those that are already in the appropriate grade for their age is hardly improving at all. This is worrying, since once all children are in the appropriate grade, the only way to improve PISA scores will be to improve learning within each grade.

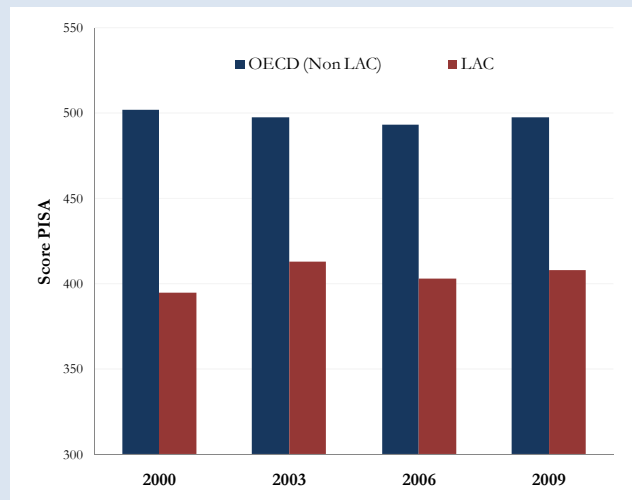
Most importantly, the gap in PISA scores between most Latin American countries and the OECD remains large--equal to the outcome of about two years of schooling. Correcting the below-par performance of basic and secondary education programs that produces this gap is a credible policy opportunity to greatly enhance the region's productive potential.

FIGURE 2.6. Comparison of LAC Countries and OECD in PISA

PANEL A. Math



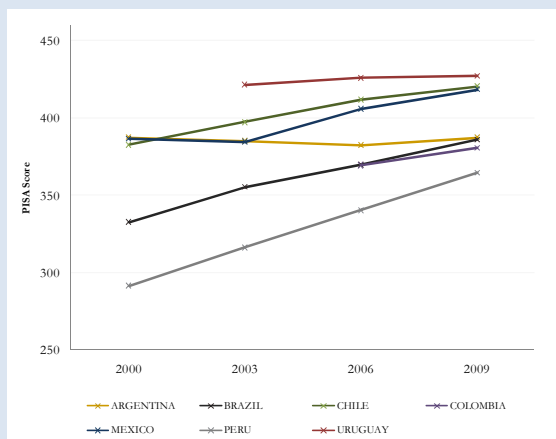
PANEL B. Reading



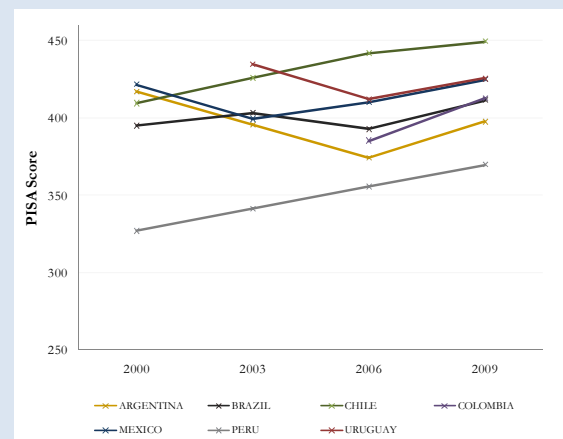
Notes: The LAC line represents the average performance of Argentina, Brazil, Chile, Mexico, and Peru in PISA. Source: Author's calculations based on OECD PISA tests, various years.

FIGURE 2.7. PISA Performance across LAC Countries

PANEL A. Math



PANEL B. Reading

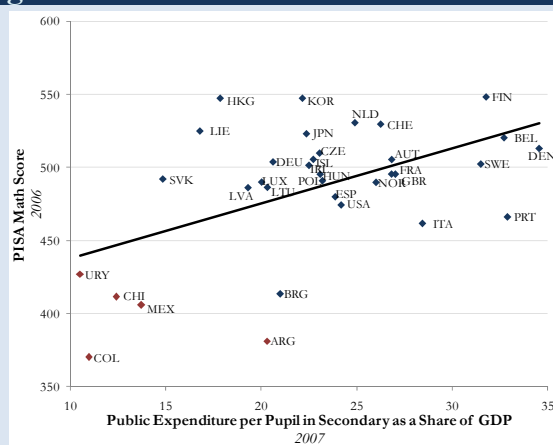


Source: Author's calculations based on OECD.

Benchmarking the evidence on the ratio between resource assignments in secondary education (normalized based on per capita GDP) and PISA scores in Latin America, compared to other PISA participants, gives further cause for concern. Most countries in Latin America exhibit *both* relatively low per-student investment in secondary education; *and* deficient productivity in turning that investment into learning achievements (as reflected in PISA scores).

As an example, Figure 2.8 plots PISA math scores against public spending per pupil in secondary education. All the Latin American countries, apart from Argentina, report much lower public spending per pupil in secondary than the OECD mean. This might reflect, at least in part, the more important role played by private provision of secondary education in Latin America. But they are also all situated below the regression line - some of them (e.g. Argentina and Colombia) well below—suggesting that even the meager resources available are not being effectively used.

FIGURE 2.8. Public Spending and PISA Scores



Sources: OECD, UNESCO, and World Bank.

Is Labor Demand in Latin America Accommodating to Inferior Skills?

The pattern of labor demand is not necessarily exogenous: it might reflect the accommodation of the market to the type of skills that are on offer. If so, the slowing of demand for more educated workers might be a response of the economy to the quality of skills. Our analysis raises concerns in that regard.

We study diverse Latin American countries (e.g. Brazil, Costa Rica, and Nicaragua) and find that the occupational pattern of employment has developed differently, compared with the pattern observed in the United States in the last two decades. In Latin America, there has been a greater expansion in jobs with relatively lower skill requirements. The analysis applies a methodology originally developed by Levy and Murnane (1996), which uses information about the specific skill requirements of different occupations in the United States, and the occupational balance of total employment in Latin American countries, to impute the trends in overall demand for different types of skill. The classification of skill types used in this analysis is illustrated in Table 2.1.

TABLE 2.1. Skill Categories

<i>Skills</i>	<i>Non-routine cognitive: Analytical</i>	<i>Non-routine cognitive: Interpersonal</i>	<i>Routine cognitive</i>	<i>Routine manual</i>	<i>Non-routine manual physical</i>
Tasks	Analyzing data/ Information	Establishing and maintaining personal relationships	Importance of repeating the same tasks	Pace determined by speed of equipment	Operating vehicles, mechanized devices, or equipment
	Thinking creatively	Guiding, directing and motivating subordinates	Importance of being exact or accurate	Controlling machines and processes	Spend time using hands to handle, control or fell objects, tools or controls
	Interpreting information for others	Coaching/ Developing others	Structured v. Unstructured work (reverse)	Spend time making repetitive motions	Manual dexterity, Spatial orientation
Examples of occupations demanding high levels of skills	Lawyers; College, university and higher education teaching professionals; medical doctors; training and development managers		Telephone operators, bus drivers, Book keeping, accounting and auditing clerks, meter readers-utilities, cashiers	Industrial truck operator, Cutting and Slicing machine Setters, Operators and Tenders, Shoe machine Operators and Tenders, Food Cooking Machine Operators and Tenders, Construction Carpenters	

Source: Acemoglu and Autor (2010).

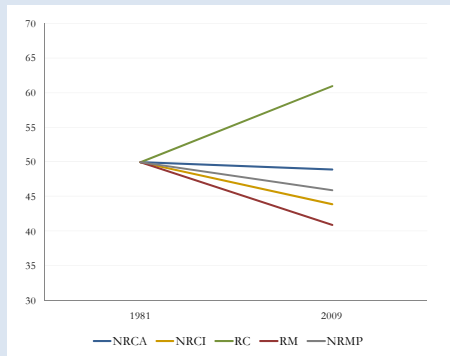
Levy and Murnane's analysis for the United States showed a marked increase in the effective demand for higher-level analytical and organizational skills, as shown in Figure 2.9. In contrast, trends for Brazil, Costa Rica, and Nicaragua suggest that the main recent expansion is in jobs that demand traditional cognitive skills, such as those associated with tasks in manufacturing, while the demand for higher-level skills has apparently flat-lined.

This differential trajectory of the skill content of jobs in Latin America, compared with the United States, could reflect the intrinsic characteristics of the region's economies, linked to comparative advantages arising from natural resource endowments, climate or location. If so, it would not be a great cause for concern. On the other hand, if it reflects firms' need to adapt to the skills of the labor force, it would raise much stronger causes for concern.

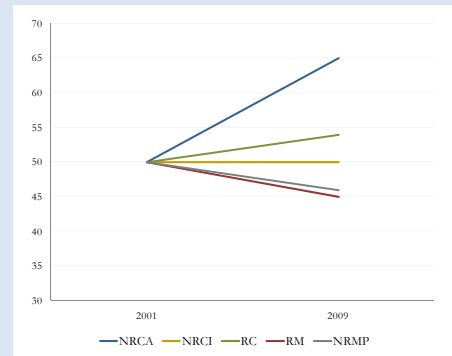
The data on skill constraints at industry level is limited, but there is suggestive evidence from World Bank enterprise survey data that firms in Latin America face greater problems hiring skilled staff than those in other regions of the world (Figure 2.10). A more detailed analysis suggests that Latin American companies that are more inserted into the global economy (as proxied by technology adoption and export activity) are more likely to face problems recruiting the skilled labor they need. This finding further supports the hypothesis that the available skill sets might be constraining the region's development in some areas with potential for faster growth.

FIGURE 2.9. Dynamic Trends in Skill Distribution

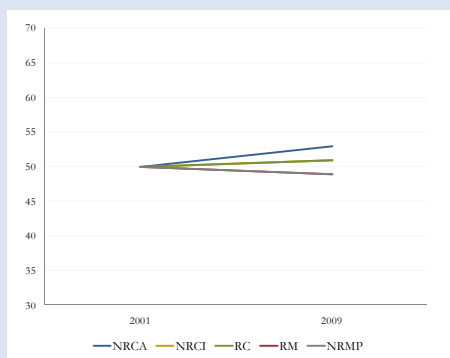
PANEL A. Brazil



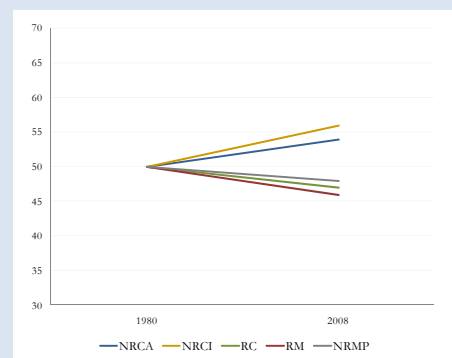
PANEL B. Costa Rica



PANEL C. Nicaragua



PANEL D. United States



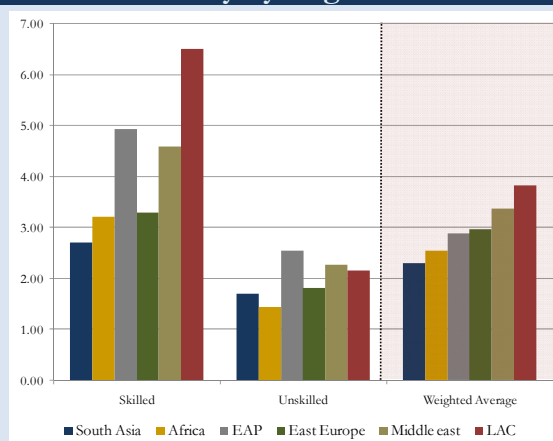
Notes: NRCA: Non-Routine Cognitive Analytical, NRCI: Non-Routine Cognitive Interpersonal, RC: Routine Cognitive, RM: Manual, NRMP: Non Routine Manual Physical.

Is the Decline in Education Earnings Premia Good or Bad News?

The answer is likely to be: both. On the one hand, declining premia are clearly related to dramatic increases in the supply of skilled labor (in particular at the secondary level). The region has invested lots of effort in increasing enrollment, and the fact that it has managed to do so without affecting overall quality of learning achievement is commendable. And the resulting reduction in earnings premia has contributed to improved income distribution patterns across the region. All this is good news.

On the other hand, our analysis suggests that the stability of achievement in the region's expanding education system owes much to improving age-grade correspondence, which has limited scope to continue. Meanwhile, the quality of learning within specific grade levels has not been improving. At the same time, decomposition analyses suggest that the region has experienced a worrying drop in the relative demand for skilled labor. This contrasts with other regions, East Asia in particular, which have done better on absorbing skilled new entrants in the labor force. An analysis of the underlying causes of these differences raises worrying questions about trends in the quality and relevance of the skills being produced, which could affect the region's long term growth prospects.

FIGURE 2.10. Average Time to Fill a Vacancy by Region



Source: Author's calculations based on World Bank Enterprise Surveys.

Having achieved very large increases in secondary and tertiary enrollment, the region must now invest in improving the quality of its education systems and the pertinence of education curricula for the labor market. At age fifteen, the learning achievement of the average Latin American student lags two years behind his or her OECD contemporary--a huge difference that, if unchallenged, will continue to undermine the region's competitiveness.

Analysis of trends in the skill content of Latin American jobs shows that, in spite of having an increasingly skilled labor force in terms of educational attainment, the region is not expanding in sectors which demand "new economy" skills. This suggests that, faced by constraints in the availability of relevant skills, firms might be constraining their choice of products and technologies to second-best options, at the expense of their competitive edge.

Our analysis so far is preliminary. While the evidence on the trends in education earnings premia is clear, our conclusions about the causes and significance of those trends are based on suggestive evidence for a limited number of countries, and are not definitive, due to data limitations. But the trends we observe point to new challenges ahead, and call for further in-depth analysis of the nature of skill mismatches, in order to inform policies that can strengthen the region's future economic growth by enhancing the productivity, earnings potential of the workforce as well as its quality.

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