

# Time to Act

Latin America and the  
Caribbean Facing Strong  
Challenges

**2016**

Latin American and Caribbean Macroeconomic Report

*COORDINATED BY ANDREW POWELL*



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## **Latin America and the Caribbean Facing Strong Challenges**

*Coordinated by*  
Andrew Powell

Inter-American Development Bank

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# Foreword

The global recovery has again disappointed, commodity prices have fallen and are likely to stay close to current levels, and the United States' monetary normalization has commenced. Many of the risks analyzed in previous Latin American and Caribbean Macroeconomic Reports have materialized. The region's growth is expected to be negative this year and then to recover relatively slowly. Not until the year 2020 are growth rates expected to approach the average levels that prevailed from 1980.

It is *Time to Act*. Given the sense of urgency, this year's Latin American and Caribbean Macroeconomic Report does not bear a title reminiscent of the great authors of Latin American literature (e.g., Jorge Luis Borges, Octavio Paz, or Gabriel García Márquez). While we hope to return to that tradition of honoring our literary masters, this year we have chosen to emphasize the importance of implementing measures to defend the many gains that the region has made.

Of course, the region does not only face risks and vulnerabilities. There are several positive developments and new macroeconomic, institutional, and social strengths that have evolved over recent decades. Moreover, stronger growth in the United States and lower oil prices have helped countries, particularly in Central America and the Caribbean, that import energy and have strong trade ties with the United States. For commodity exporters, though, the loss of revenues has put both fiscal and external balances under pressure.

Our report argues that urgent action is needed. Despite negative output gaps there is little room for countercyclical monetary and fiscal policy, and the focus is instead on how to adjust while minimizing the consequences for output and living conditions, especially for the poor and more vulnerable. It is thus suggested that countries may wish to conduct a more fundamental review of both spending and taxation. Ensuring a smooth transition, especially for commodity exporters with lower net external income, may require legal and in some cases even constitutional changes to ensure longer-term fiscal sustainability and to enhance efficiency to minimize impacts on current growth.

At the same time, it would be extremely beneficial to find ways to boost potential or medium-term growth. While nominal exchange rates have depreciated, the analysis in this report indicates that this has translated into higher competitiveness for only a few countries. Competition from third countries that have also depreciated has eroded the gains from depreciation, while investment and saving rates have both fallen. A fiscal

rebalancing toward higher levels of investment and finding ways to stimulate private investment are needed. Still, the region may now be more competitive in some products and markets, in which investment may indeed rise. Policies can further help to stimulate export diversification.

More generally, despite advances in reaching many bilateral trade agreements and agreements within subgroups of countries, the region has not truly integrated. Regional trade in intermediate goods is limited, and few firms participate in value chains in the region, limiting their participation in global value chains. A concerted move towards a true regional common market would deepen integration and may allow firms to exploit greater scale, helping them compete more effectively against global players and fostering greater productivity and growth.

The region is facing strong challenges; policy decisions in the coming months may be critical to ensuring a smooth transition and to achieving higher sustainable growth in the future. It is indeed the time to act.

**José Juan Ruiz**  
*Chief Economist*



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## CHAPTER 1

# Global Developments, Risks, and Challenges

Latin America and the Caribbean as a region faces negative growth in 2016, but with greater heterogeneity across countries than witnessed for many years. While the growth rate of the region as a whole is expected to be  $-0.3$  percent, the simple average growth rate across the IDB's 26 borrowing countries is expected to be around 2 percent, with a median of 2.5 percent. Brazil is expected to suffer a recession of  $-3.8$  percent, while a quarter of the countries in the region may grow at rates of around 3.5 percent or higher (see panel a of Figure 1.1). In the medium term, the region is expected to return to stronger growth, but only to a rate near the 40-year average at the year 2020, implying average growth of 1.7 percent in the post-commodity boom period of 2014–20. This is still well below growth levels during the exceptional commodity boom of 2003 to 2013, which (even including the 2009 recession) was on average about 4 percent, and below the 2.9 percent average growth rate of the 1990s (see panel b of Figure 1.1).<sup>1</sup>

Given relatively low world growth, lower commodity prices, and higher global interest rates, the region faces a transition to lower net income from abroad with a significant shift in relative prices. A challenge is to ensure that the transition is smooth, with minimum output costs, and that social gains are protected. Countries in the region with stronger initial economic positions have greater policy space to reduce transition costs. Those with weaker starting positions face harsher trade-offs. The region has made significant economic and social gains, and policies that enhance the likelihood of a smooth transition will also reduce the risk of a crisis and hence protect the social gains that have been made. This chapter discusses the global trends that underlie this perspective, and offers thoughts on risks and challenges facing the region. Subsequent chapters consider more specific aspects and outline policy alternatives.

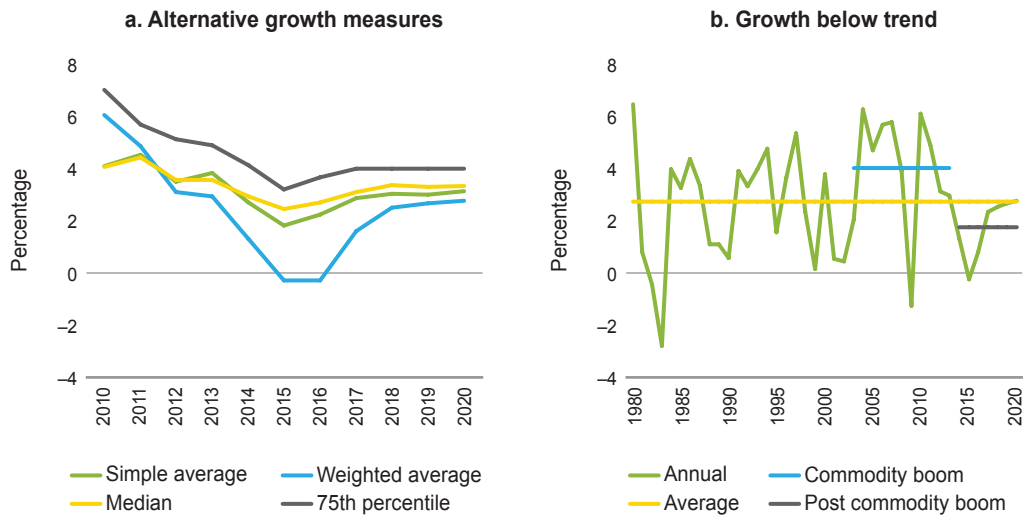
### A Global Perspective

The global recovery continues to disappoint, as shown in Figure 1.2. While there is now greater evidence of a recovery in most advanced economies including the United States,

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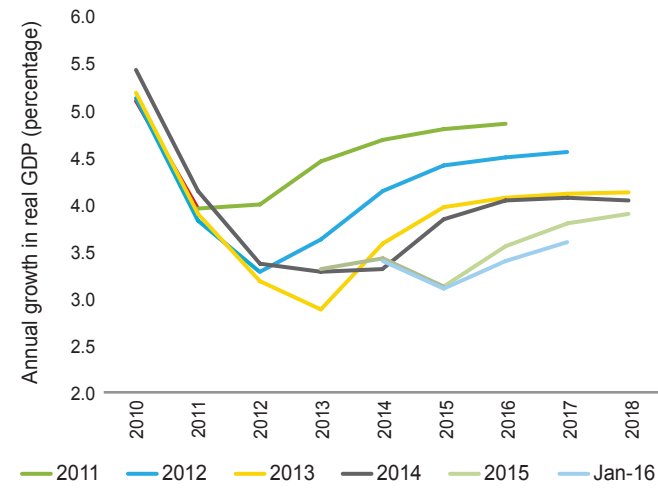
<sup>1</sup> Growth rates from the IMF's World Economic Outlook (published in January 2016 and October 2015) and authors' calculations.

**FIGURE 1.1 ■ Latin American and Caribbean Growth**



Source: Authors' calculation based on IMF(2015c).

**FIGURE 1.2 ■ Falling World Growth Projections**



Source: IMF (2011, 2012, 2013b, 2014, 2015c, 2016).

Europe, and Japan, this recovery remains weaker than anticipated compared to previous forecasts. The United States leads the recovery among advanced economies and is expected to grow by 2.6 percent in 2016. Still, even in the United States there is a lively debate regarding the strength of growth prospects and estimates of medium-term or potential growth. While the Federal Reserve recently lifted its

policy interest rate from zero to 0.25 percent given tighter labor market conditions that have tended to predict future wage and price inflation, underlying productivity growth remains low and several commentators suggest that the U.S. economic recovery remains at risk. The *secular stagnation* view highlights the combination of low interest rates (including low, longer-term, expected real rates), low expected inflation (below the Federal Reserve's 2 percent target), high firm cash balances, and relatively low investment. The

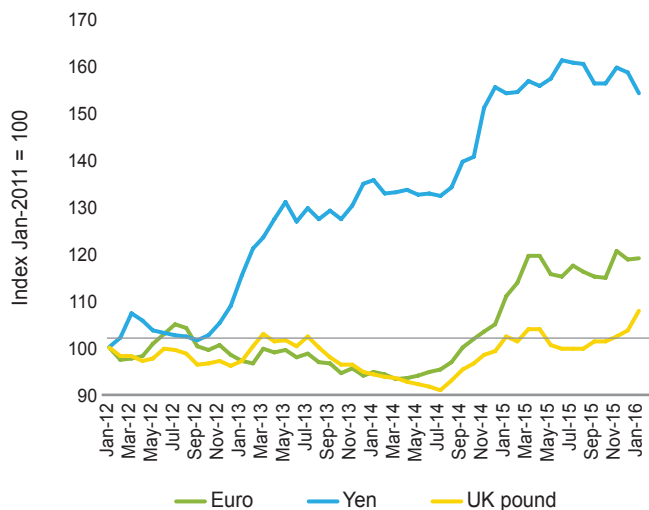
fear is that a premature tightening of monetary policy may stifle an incipient recovery, resulting in economic stagnation.

A related concern is that, according to the December minutes of the Federal Reserve’s Federal Open Market Committee (FOMC),<sup>2</sup> the median Committee member expected the U.S. policy rate to rise by about a percentage point by the end of 2016 while the market appears to expect a much less aggressive process of monetary normalization; there is, however, a range of opinion within the FOMC. If there is an abrupt realization that interest rates are set to rise more rapidly than expected, perhaps driven by signs of rising inflation, then asset prices are likely to suffer.

Concerns regarding U.S. growth are amplified by low growth in other major advanced economies. In the Euro area, growth is expected to be 1.7 percent for 2016, and the European Central Bank (ECB) continues to consider deflation a significant risk. Indeed, some policy rates are now even negative, meaning that banks have to pay the ECB to keep deposits on reserve. Japan is also now growing, albeit at a relatively low rate—around 1 percent is expected for 2016. Massive fiscal and monetary stimulus appears to have helped growth prospects, but there is considerable concern regarding whether even this growth will be sustained in the years ahead.

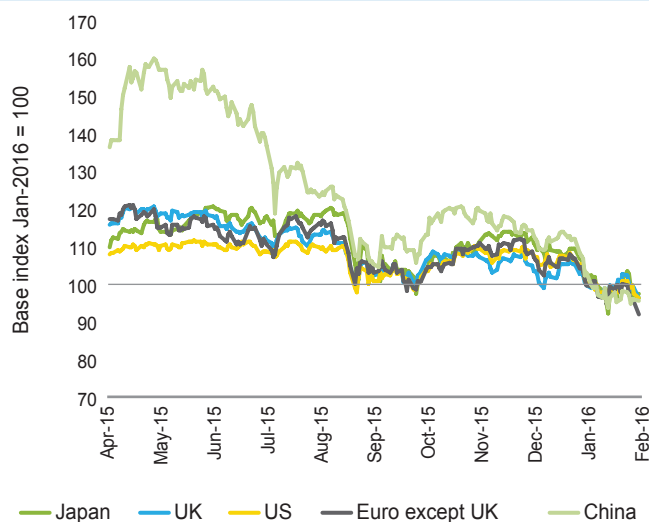
As discussed in last year’s Latin American and Caribbean Macroeconomic Report, there remains the prospect of monetary policy divergence between the U.S. Federal Reserve and other major central banks. This, along with a faster recovery in the United States, has led to significant dollar appreciation against the world’s major currencies, as shown in Figure 1.3. The speed of the U.S. recovery may also be limited by the dollar’s strength, which also affects dollar commodity prices and the dollar value of trade flows. These, in turn, have strong impacts on Latin America and the Caribbean—especially for those countries whose exchange rates are pegged to the dollar and tend to use the dollar to

**FIGURE 1.3 ■ The Appreciating U.S. Dollar**



Source: Authors’ calculations based on data from Datastream.  
 Note: Units of other currency per US\$.

<sup>2</sup> The January minutes, however, indicate a more moderate rise in the policy rate.

**FIGURE 1.4 ■ Falling Global Stock Markets**

Source: MSCI global stock market indices from Bloomberg.

Note: Index January 2016 average = 100.

write financial contracts. With these considerations in mind, Chapter 2 weighs monetary policy alternatives in the region. Chapter 4 focuses on the substantial depreciations in the region, and Chapter 5 considers the financial position of firms, especially those that issued substantial amounts in dollar-denominated debt contracts.

While advanced economies are recovering a little more strongly, growth rates have been

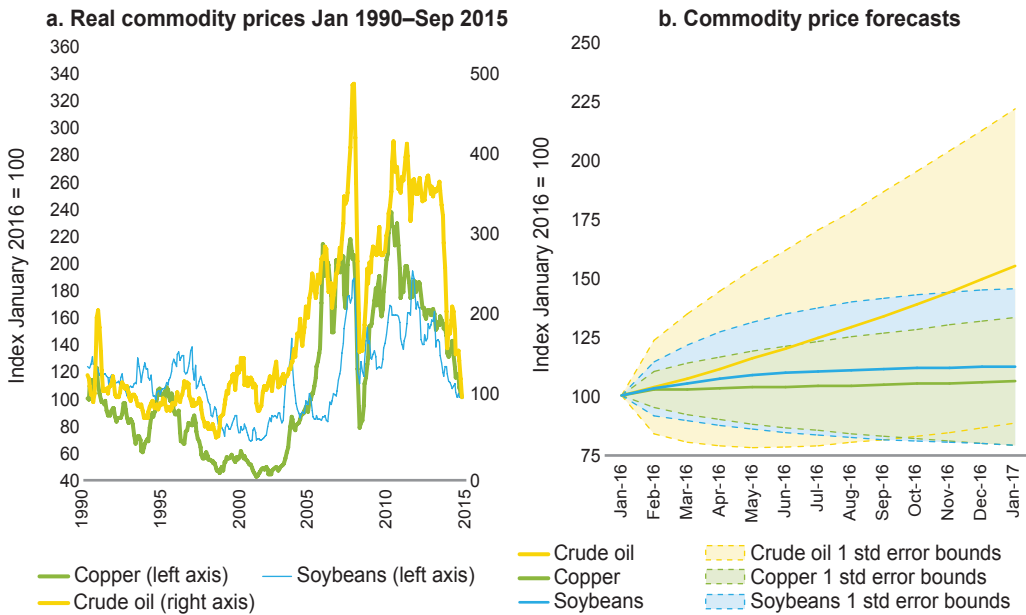
falling in larger emerging economies, most notably China. Since emerging economies now have a much greater share of world GDP and play a larger role in the global economy, their slowdown has affected world growth.

The fall in emerging economies' growth has a variety of causes. In the case of China, continuing weak demand from advanced economies has brought forward the need to rebalance the Chinese economy from a model led by exports, manufacturing, and investment to one based more on domestic consumption and services. Lower growth was expected to accompany this transition. Among other drivers, the recent volatility in Chinese stock markets may reflect uncertainty regarding how smoothly this transition can be managed, especially given the build up of debt by state-owned enterprises and municipalities and a rapid rise in housing prices. While the stock market appears to have little effect on the real economy in China, it may be considered a window into the uncertainty regarding future economic prospects of the world's second-largest economy.

Viewed in this way, it is not surprising that Chinese stock market volatility generates volatility in global financial markets. Moreover, to the extent that investments in China constitute an important part of the emerging economy asset class, there may also have been some measure of financial contagion. That contagion may additionally have been combined with market concern over the sustainability of growth in advanced economies, and the likely trajectory of monetary normalization.

The fall in growth and the rebalancing of the Chinese economy have also had a significant impact on commodity prices, which have been declining since the second quarter of 2011. Those falls have in some instances been accentuated by idiosyncratic supply-related

**FIGURE 1.5 ■ Actual Commodity Prices and Forecasts**



Sources: World Bank (2016) and Datastream.

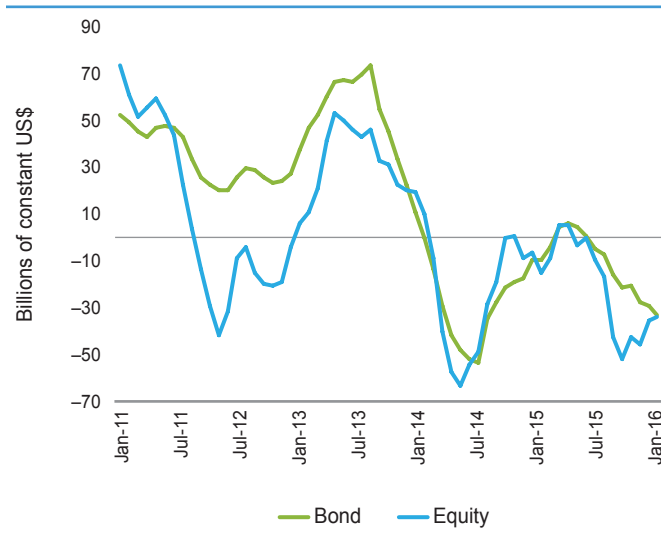
Notes: Historic prices are a real dollar (Dec 2015) index such that January 2016 = 100. Monthly crude oil price forecast from the World Bank, simple average of three standards (Brent, Dubai, and WTI). Monthly copper price forecast: authors' based on yearly price forecast from World Bank for 2016 and 2017. Monthly soybeans price forecast: authors' interpolations based on yearly price forecast from World Bank for 2016 and 2017. Upper and lower forecast error bounds computed from implied volatilities for call options with various expiry dates. Error bounds computed as the monthly growth rate of the forecast series plus/minus one standard deviation calculated from implied volatilities.

developments such as Saudi Arabia’s decision not to cut production to support oil prices, the return of substantial supplies from Libya and Iraq, the recent lifting of sanctions on Iran, and technological advances that have lowered costs. In other commodity markets, demand is now weaker, just as supply responses to previous high prices appear to have come on line. As analyzed in the 2014 Latin American and Caribbean Macroeconomic Report, commodity prices have been falling back close to the levels seen before the period of exceptional growth in the Chinese economy. Indeed, one interpretation is that prices have simply returned to the previous pre-boom equilibrium (see Figure 1.5, panel a).

The implication is that, depending on the idiosyncratic characteristics of each commodity market, it would not be surprising to see prices persist around current levels. Moreover, stocks are at record levels for several commodities and, given the lagged supply response, prices are even in danger of falling below current levels—as has been evident in previous commodity boom-and-bust cycles.<sup>3</sup> It may take many years for supply to once again readjust to weaker demand conditions.

<sup>3</sup> See Powell (2015) and Mariscal and Powell (2014).

**FIGURE 1.6** ■ Net Withdrawals from Emerging Market Funds



Source: EPFR Global. See [www.epfr.com](http://www.epfr.com).  
 Note: Net withdrawals from emerging economy equity and bond funds.

Baseline projections do indicate some pickup for oil prices, with other commodity prices staying fairly close to current levels. Those projections are nonetheless subject to considerable uncertainty, particularly for oil. This uncertainty is apparent in panel b of Figure 1.5, which shows price projections for oil, copper, and soybeans from the January 2016 World Bank Commodity Outlook, combined with error bands constructed from market estimates of

future volatility from commodity option prices—so-called implied volatilities. While the central projection indicates a 50 percent increase in the price of oil to January 2017, a 120 percent increase or a 10 percent decrease in prices defines the plus or minus one standard-deviation error bounds. In the case of copper and soybeans, prices are predicted to increase more moderately and the error bands are also significant, although smaller than for oil.

The strength of the dollar, weak dollar commodity prices, and the disappointing nature of the global recovery have taken their toll on trade, and dollar export values have plummeted for commodity exporters.<sup>4</sup> Capital flows to emerging economies have also fallen significantly. Recent data indicate net withdrawals from emerging market bond and equity funds. This decline reflects pull factors (lower demand from slowing emerging economies), but may also reflect investors’ desire to rebalance portfolios given a reassessment of potential returns and risks, as well as a desire for greater liquidity.

The fall in emerging economy growth thus reflects weak demand from advanced economies, the fall in demand from China, lower trade and commodity prices, and lower capital flows, as well as internal factors. The 2014 Latin American and Caribbean Macroeconomic Report suggested, using counterfactual simulations of a Global Vector Auto-Regression (G-VAR) model of the world economy, that lower growth in advanced

<sup>4</sup> On the fall in global and regional trade, please see Giordano (2015).



**FIGURE 1.7 ■ Counterfactual Analysis of Growth for China, India, Brazil, and Mexico**

Source: Authors' calculations based on national sources and IMF (2015c, 2016).

economies could account for much of the slowdown in Brazil and Mexico—but not in China or India until the end of 2012. An extended exercise is illustrated in Figure 1.7.<sup>5</sup>

As before, China's slowdown continues to be largely idiosyncratic and can only be partially explained by relatively low growth in advanced economies. The same is true for India, although Indian growth has now returned to roughly the levels predicted given that of advanced economies. Mexican growth actually did somewhat better than expected, particularly in light of U.S. growth rates in the 2011–13 period, and it is now also close to predicted values. Brazilian growth was likewise close to the predicted rate until the end

<sup>5</sup> For details of the G-VAR or Global Vector Auto-Regression methodology and this counterfactual exercise, please refer to Powell (2014) and to Cesa-Bianchi et al. (2012).

of 2013. Since then, however, there has been a larger, unexplained component that appears to reflect idiosyncratic or internal factors, arguably reflecting weaker economic fundamentals and the effects of the corruption investigation at Petrobras, including its political repercussions and impact on economic activity.

## Latin America and the Caribbean: Risks and Challenges

Given low global growth and idiosyncratic negative shocks in the region, growth in the Latin American and Caribbean region is set to remain relatively low for the next few years. As discussed in last year's Latin American and Caribbean Macroeconomic Report, growth in the last decade has been helped by demographics that provided a boost to growth through higher labor intensity, but this will dissipate in the years ahead. This means that greater capital intensity or higher productivity will be needed to boost growth.

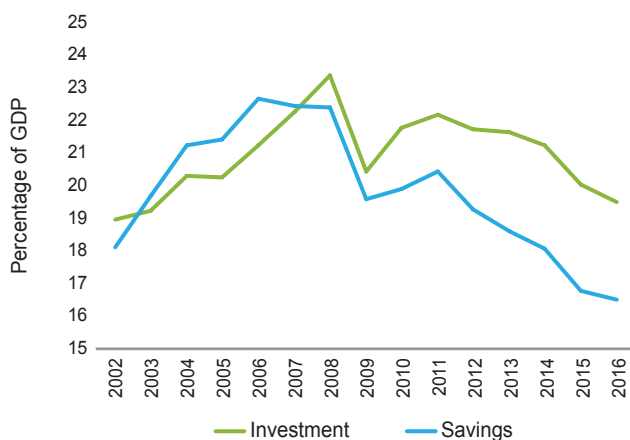
However, as illustrated in Figure 1.8, investment has actually been falling, reflecting not only declines in investment in commodity sectors but also falling public and wider private investment in some countries. National savings have been declining as well, and analysis suggests a strong historical correlation between national savings and investment. The difference between the two series reflects the growing current account deficit, which suggests increased reliance on foreign savings to finance investment. This, in turn, implies greater exposure to the risk of a sudden stop in capital flows. The need to boost domestic savings to finance long-term investment and reduce risks is discussed in further detail in Cavallo et al. (2016).

Many countries, particularly commodity exporters, have seen their terms of trade and export receipts fall dramatically. Export volumes, however, have continued to increase somewhat. Another development has been significant import compression, a symptom

of lower demand, which has limited the rise in current account deficits (see Figure 1.9).

Lower capital flows, a higher cost of capital, and lower dollar export receipts, particularly for commodity exporters, imply a much tighter external constraint and the need to boost other exports to avoid current account adjustment through lower growth and further import

**FIGURE 1.8 ■ Falling Savings and Investment**



Source: IMF (2015c).

Note: National savings and total investment for Latin America and the Caribbean.

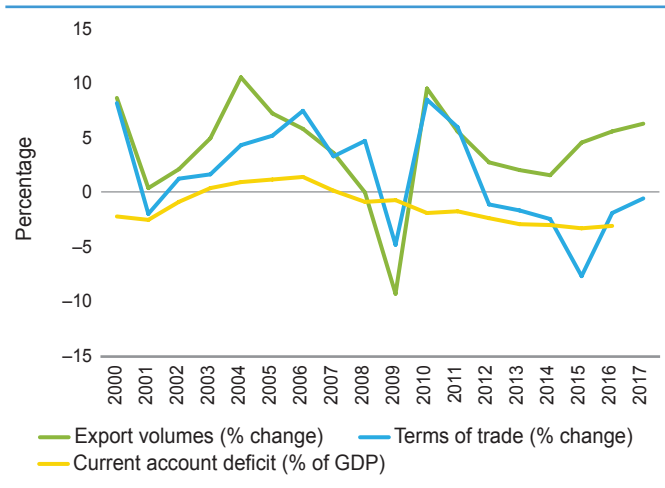
compression. As a result of the appreciating dollar and fall in commodity prices, most of the larger economies in the region that have floating exchange rates have depreciated markedly against the dollar. Chapter 2 considers the implications of this trend for monetary policy, and Chapter 4 considers how much these large bilateral depreciations translate into greater competitiveness, analyzing export performance in specific products and countries.

Given the discussion above, there are at least three notable downside risks to current projections: i) that advanced economies enter a phase of *secular stagnation* and hence their recovery is delayed once again; ii) that China's growth rate falls by more than expected; and iii) that financial asset prices fall, perhaps spurred by a further reassessment of risks in China or a faster rise in U.S. rates than the market currently appears to be expecting.

The first risk is modeled as a one-half standard deviation shock to the growth rates of the United States, the Euro area, and Japan, spread over eight quarters. A one-half standard deviation is roughly 1 percent of GDP for these advanced economies. The second risk is modeled as a one standard-deviation shock to the growth rate in China, again spread over eight quarters. China's economy has been more volatile than that of advanced economies, and one standard deviation is approximately 3 percent of GDP. The final shock is modeled as a half standard deviation in global equity prices in 2015 and 2016, which roughly translates into a 10 percent fall in equity prices. The first panel of Figure 1.10 illustrates the nature of these shocks relative to the baseline. Employing a G-VAR model of the world economy, the second panel illustrates the impact on Latin America and the Caribbean, and Table 1.1 details the impacts of each shock on the region.

The effect of the shock to U.S. growth (of 0.5 standard deviation) would be a 0.6 percent per annum reduction in growth from 2016 to 2018, while the shocks to the Euro area and Japan would lower regional growth by a little under 0.5 percent per annum for the same period. Japan remains important because of the size of its economy and its impacts, particularly through the United States and other countries. Mexico is most

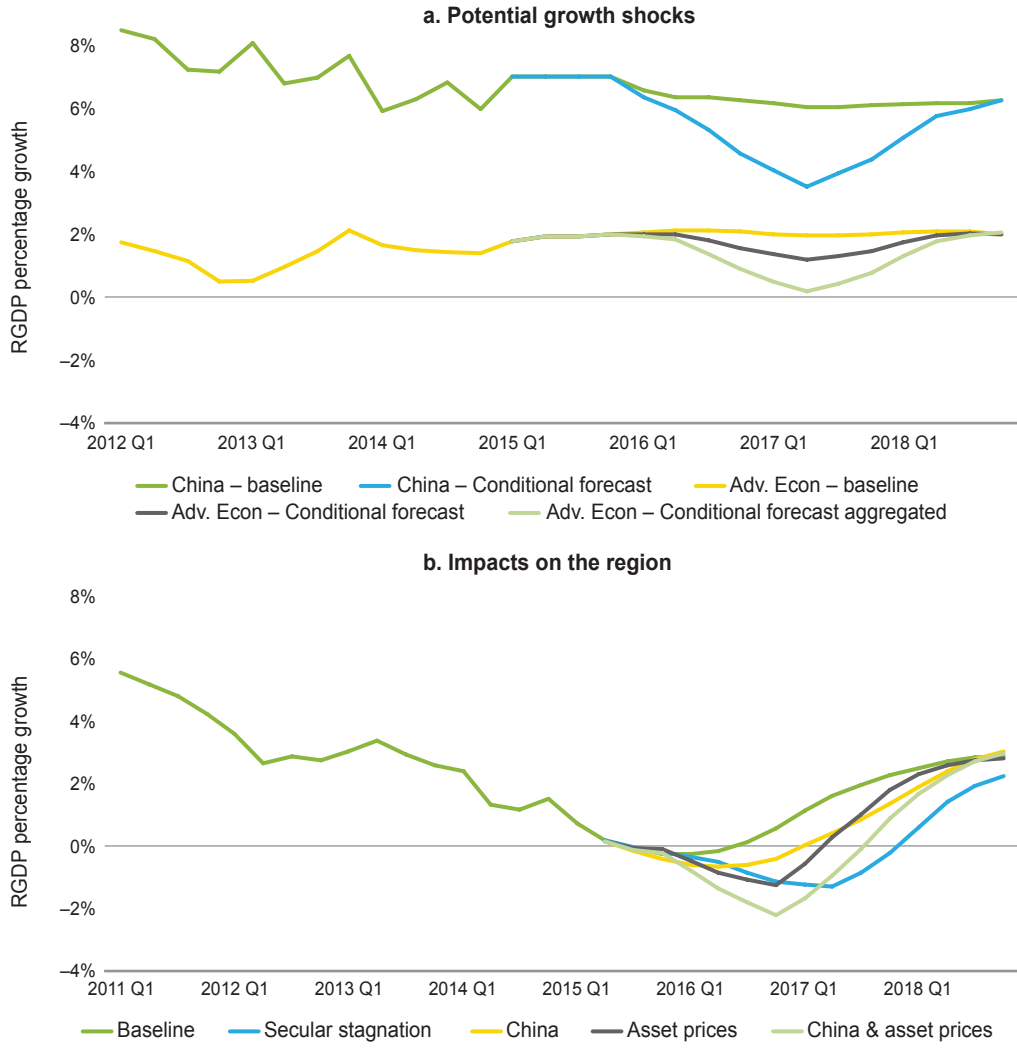
**FIGURE 1.9 ■ Export Volumes, Terms of Trade, and the Current Account**



Source: IMF (2015c).

Note: Change in the terms of trade and the export volumes of goods and services for Latin America and the Caribbean together with the current account deficit as a percentage of GDP.

**FIGURE 1.10 ■ Potential Shocks and Their Impacts on Latin America and the Caribbean**



Source: Authors' calculations and IMF (2015c, 2016).

Note: Secular stagnation is the combined negative one-half standard-deviation shock to growth rate of advanced economies (USA, Euro Area, and Japan).

affected by the U.S. shock (0.83 percent per annum) while the Southern Cone (and particularly Argentina) is most affected by a shock to the Euro area. Brazil is more affected by the Euro area shock than the United States, but as a more closed economy it remains somewhat less affected than other, more open economies in the region. Secular stagnation across advanced economies would have a very considerable impact on the region, with a 1.5 percent per annum reduction in growth over the period considered. A shock in China also has a considerable impact, particularly if combined with a fall in financial asset prices. Together, the impact of a shock to China's growth and an asset price shock would

**TABLE 1.1 Impact of Alternative Shocks on Latin America and the Caribbean**

Country/Region	Baseline growth (%)	Difference with respect to baseline in percentage points (annual averages 2016–2018)						
		Secular stagnation (shocks to growth)				Shock to China growth	Global asset price shock	China growth and global asset price shocks
		USA	Euro	Japan	Secular stagnation			
Brazil	<b>-0.37%</b>	-0.40	-0.41	-0.42	-1.22	-0.54	-0.47	-1.01
Mexico	<b>2.90%</b>	-0.83	-0.58	-0.57	-1.97	-0.71	-1.14	-1.86
Southern Cone (ex. Brazil)	<b>0.63%</b>	-0.65	-0.61	-0.59	-1.83	-0.84	-0.66	-1.50
Andean Region	<b>3.18%</b>	-0.49	-0.45	-0.43	-1.37	-0.61	-0.81	-1.42
Central America	<b>4.39%</b>	-0.21	-0.14	-0.12	-0.47	-0.15	-0.35	-0.51
Caribbean	<b>0.98%</b>	-0.19	-0.07	-0.09	-0.35	-0.15	-0.06	-0.21
<b>Latin America and the Caribbean</b>	<b>1.41%</b>	<b>-0.57</b>	<b>-0.48</b>	<b>-0.48</b>	<b>-1.52</b>	<b>-0.63</b>	<b>-0.74</b>	<b>-1.37</b>

Source: Authors' calculations and IMF (2015c, 2016).

Note: Secular stagnation is the combined negative one-half standard-deviation shock to growth rate of advanced economies (USA, Euro Area, and Japan).

have almost the same impact as the secular stagnation scenario (a 1.4 percent per annum impact on the region for each of the three years considered).

These results highlight that the baseline projections, which only suggest moderate growth of 1.5 percent for the region during 2016–18, are not without risks. On the one hand, there are positive risks, for example if the situation in Brazil improves more rapidly than anticipated or if a boom in foreign direct investment follows a successful agreement between Argentina and its holdout investors. On the other hand, however, the delayed recovery in advanced economies to date suggests that world growth may again disappoint, and considerable uncertainty remains regarding China's growth as well as global asset valuations. On balance, there are likely more downside than upside risks to the baseline projections, implying that policymakers should be very cautious indeed in considering the behavior of fiscal revenues and other variables related to growth.

In the following chapter, the monetary policy implications of lower output and higher inflation are considered, and Chapter 3 discusses their implications for fiscal policy. In both cases, the space for countercyclical policy has diminished. Under the baseline scenario, the region faces strong challenges to ensure a smooth adjustment to lower external net income and lower growth, and under more negative scenarios those challenges become even more demanding. As the title of this report suggests, there is an urgent need for policy action to lower the risks of more serious economic problems in the future, and to ensure a smooth transition, given the central projections and the risks to the global economy.





## CHAPTER 2

# Weaker Activity and Higher Inflation: Calibrating the Monetary Response

**M**onetary regimes in the diverse economies of Latin America and the Caribbean vary widely, ranging from the fully dollarized to those with inflation targeting and exchange rate flexibility, with many countries in between. Inflation has remained extremely low in countries with fixed exchange rates, but inflation has been rising in those with mixed regimes and with inflation targeting (see Figure 2.1, panel a). Inflation targeters have the highest median inflation rate, and inflation has moved above targets in most countries. Moreover, in some countries in this group, inflation expectations, while more stable than inflation, have also moved higher.<sup>1</sup> The median inflation rate in countries with intermediate regimes is somewhat lower than that of inflation targeters, although there is considerable cross-country variation.

At the same time, output gaps have become more negative, especially for commodity exporters. Large exchange rate depreciations have followed falls in commodity prices among exporters with exchange rate flexibility. A comparison between Colombia and Ecuador highlights the benefit of a flexible regime in the face of a large external shock. Still, the analysis suggests that an independent shock to depreciate the real exchange rate in either country does not boost economic activity.

While a nominal depreciation may smooth the reaction to an external shock, the revealed preferences of policymakers indicate that further interest rate hikes appear likely. A looser stance may allow output gaps to close faster but comes at the risk of de-anchoring inflation expectations. A stricter approach may reduce inflation gaps more quickly, but at a cost in terms of output. Assuming flexible exchange rates act to smooth certain shocks, there are good reasons in the open commodity-dependent economies of the region to keep inflation expectations well-anchored in order to maintain a nominal anchor, which then allows for greater nominal exchange rate flexibility.

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<sup>1</sup> Mariscal, Powell, and Tavella (2014) consider the pass-through of inflation shocks to inflation expectations and document that this pass-through has risen for some countries in the region.

## Inflation, Exchange Rates and Output: Recent Dynamics

The median inflation rate of those countries with inflation targeting regimes rose from around 2.5 percent in early 2013 to nearly 5.5 percent towards the end of 2015, as shown in panel (b) of Figure 2.1. This group of countries now has the highest median inflation rate, as shown in panel (a) of the figure.<sup>2,3</sup> The inflationary pressures for commodity exporters, most of which have flexible exchange rates, have been much greater than those for importers, as illustrated in panel (c) of Figure 2.1.<sup>4</sup> Commodity price<sup>5</sup> falls have been met with exchange rate depreciation, increasing the local currency price of tradables and with some pass-through to non-tradable prices.<sup>6</sup> Indeed, tradables account for a significant share of the Consumer Price Index (CPI) basket, representing some 56 and 45 percent of the respective CPI baskets in Chile and Brazil.<sup>7</sup>

Panel (d) of Figure 1 shows that net commodity importers experienced much lower nominal depreciations—in fact, nearly four times lower than those of exporters. Panel (e) additionally shows that higher levels of depreciation are correlated with higher inflation.

As illustrated in panel (f) of Figure 2.1, inflation targeters' inflation gaps, measured as the difference between expected inflation and the target, have widened. Since 2013 they have increased from about 1 percent to 2.5 percent on average. In addition, output gaps—measured as the difference between observed output and its long-run trend—have become negative, falling from about 1.5 percent in 2013 to -0.5 percent in 2015. Higher inflation gaps and negative output gaps imply harsher policy trade-offs, but the blow could be softened if exports and economic activity are boosted by exchange rate depreciations. The relationship between exchange rate depreciations and export performance is considered in further detail in Chapter 4.

<sup>2</sup> Inflation targeters include Brazil, Chile, Guatemala, Mexico, Paraguay, Peru, and Uruguay. Intermediate regimes include Argentina, Bolivia, the Dominican Republic, Costa Rica, Guyana, Haiti, Honduras, Jamaica, Suriname, Trinidad and Tobago, and Venezuela. Fixers include The Bahamas, Barbados, Belize, Ecuador, El Salvador, Nicaragua, and Panama.

<sup>3</sup> Inflation has also varied across geographical regions. On average it has been increasing and higher in South American countries, where most of the inflation targeting countries are located. In contrast, it has been relatively lower and trending downwards in Central America and the Caribbean. The simple average of the inflation rate in these three regions by the end of 2015 was, respectively, 5, 6 and 3 percent.

<sup>4</sup> Net commodity exporters include Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Trinidad and Tobago and Venezuela. Net commodity importers include The Bahamas, Barbados, Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname and Uruguay.

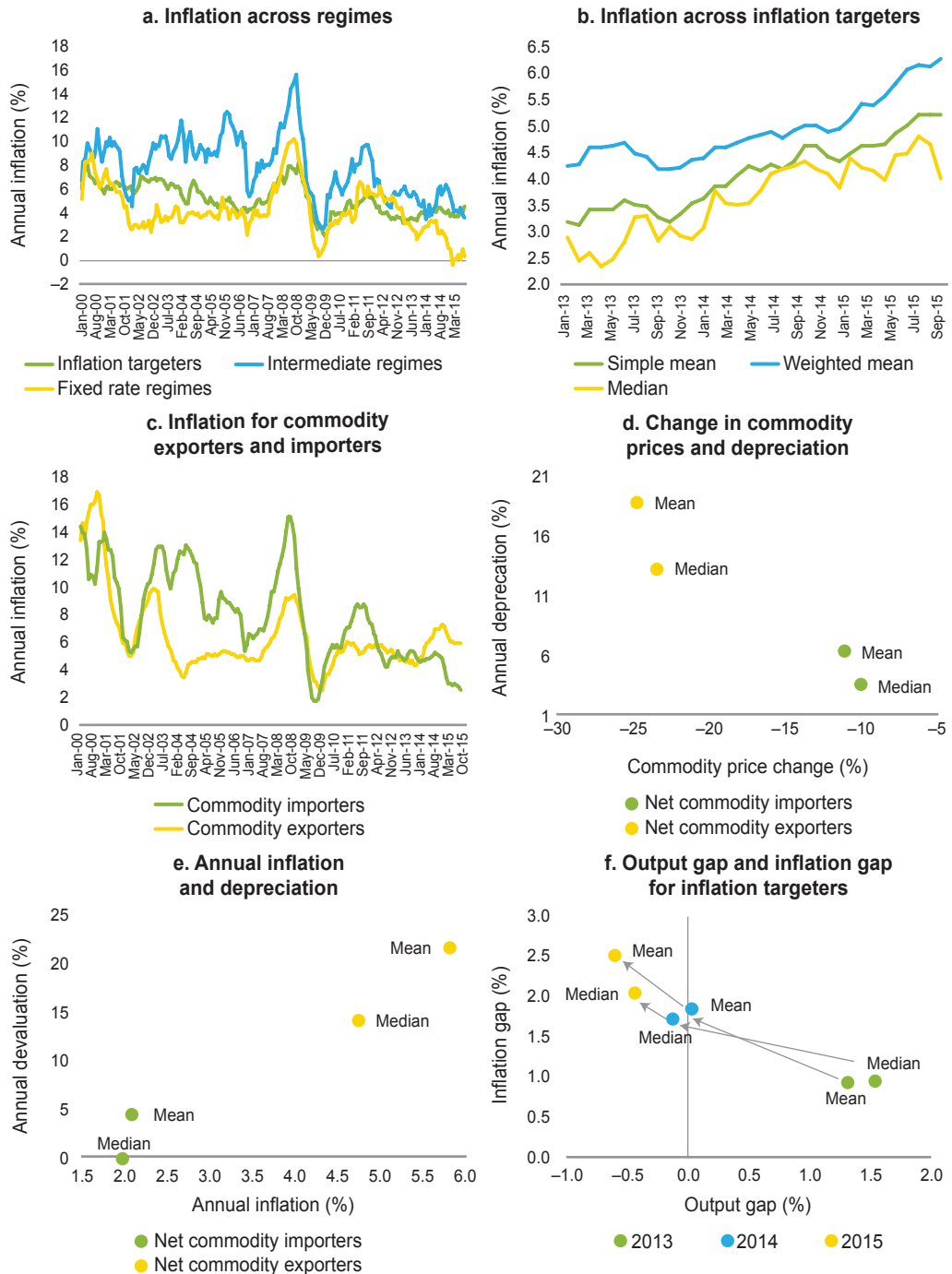
<sup>5</sup> The commodity price indices for each country were computed using aggregate monthly commodity price indices from the World Bank Pink Sheet commodity database and fixed commodity weights and deflated by the U.S. Consumer Price Index (CPI). Indices are taken from Fernández, González, and Rodríguez (2015).

<sup>6</sup> Exceptions among commodity exporters are Ecuador (that is officially dollarized) and Suriname, which maintains a peg to the dollar.

<sup>7</sup> Belaisch (2003) estimates the exchange rate pass-through to tradable and non-tradable prices in Brazil and finds that, while it is smaller in non-tradables, it is nonetheless present and persistent.



**FIGURE 2.1 ■ Inflation in Latin America and the Caribbean**



Source: IFS (IMF), Latin Macro Watch (IDB) World Bank Pink Sheet and authors' calculations.

Notes: In panels (a) and (c) median inflation rates are reported, in other panels means and medians are illustrated. In panel (b) the weighted mean uses GDP in U.S. dollars to construct weights. The output gap is computed as the log deviation from trend estimated using a Hodrick-Prescott filter. The inflation gap is computed as the difference between the observed annual inflation and the inflation target.

## On the Credibility of Monetary Policy

There is some evidence of a de-anchoring of inflation expectations among inflation targeters. For six inflation targeters, as Figure 2.2 illustrates, one and two-year inflation expectations have tended to rise since the beginning of 2015.<sup>8,9</sup>

Moreover, estimating the probability that inflation will be above its target, by employing the inflation expectation as the predicted value and the historical forecast errors to estimate the variance of inflation, suggests that the probability that inflation will exceed the target now stands at over 30 percent in five of the six inflation targeters illustrated in Figure 2.1.<sup>10</sup> It should be stressed, however, that targets differ across countries.

Not all central banks in the region have adopted an inflation targeting framework. Several have chosen to peg their exchange rates to the U.S. dollar (or dollarize completely) and currently have very low inflation rates. In these cases, however, reserves have been falling. Median reserve levels for this group, which were around 15 percent of GDP in 2011, reached only 10 percent in 2015. This indicates an adjustment process, although in these cases the adjustment is made through prices rather than the nominal exchange rate. Still, many countries with fixed exchange rates are oil importers and will benefit from low oil prices, which may stabilize or even reverse the depletion of reserves.

## Response to Shocks: What Can History Tell Us?

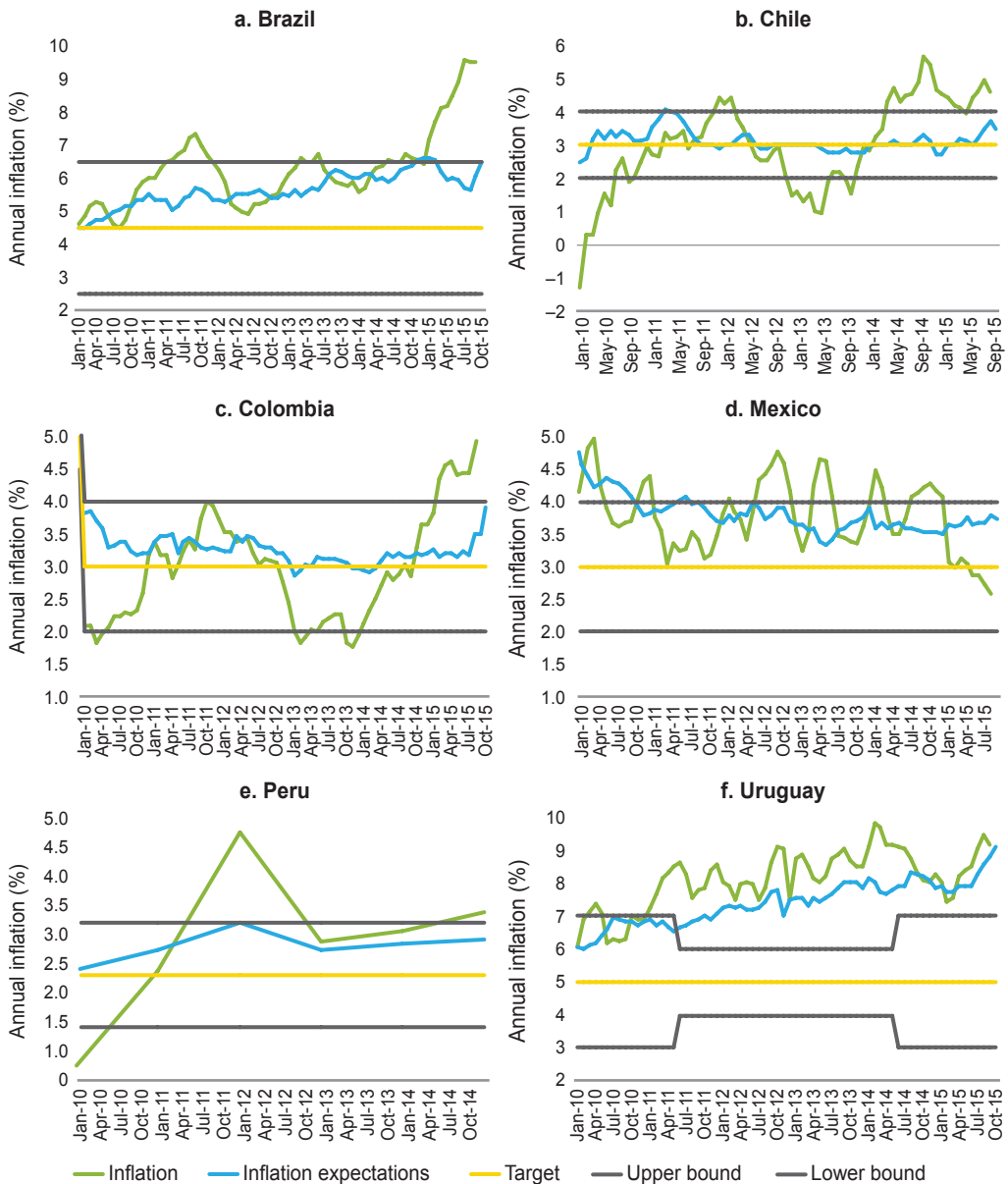
How did Latin America weather recent shocks, including the large fall in commodity prices? Previous large depreciation episodes were also accompanied by increases in inflation and falling commodity prices (see Figure 2.3).<sup>11</sup> However, in previous episodes commodity prices rebounded rapidly, allowing exchange rates and inflation to revert to previous

<sup>8</sup> Inflation expectations come from surveys of market participants conducted by Central Banks, and they are published monthly by the Inter-American Development Bank in *Revela* ([www.iadb.org/revela](http://www.iadb.org/revela)).

<sup>9</sup> In the case of Mexico, one-year inflation expectations have hardly risen at all. In the case of Chile, one-year inflation expectations have risen but two-year expectations remain very stable.

<sup>10</sup> The exercise assumes that inflation has a normal distribution with the point forecast equal to expected inflation as specified in the central bank inflation surveys and the variance calculated from historical forecast errors of those expectations.

<sup>11</sup> The annual nominal devaluation in August 2015 was calculated for each of the five largest inflation targeters. This is labeled  $dev_i$ , where  $i$  is the country index. For the inflation targeting period of each country, the previous months when the annualized devaluation is equal to or above  $dev_i$  are then identified. If the number of such episodes found, excluding the last one, is less than 2, then the identification of episodes is done again when the devaluation is equal to or above  $\alpha_i dev_i$ , where  $\alpha_i$  is between zero and one. The parameter  $\alpha_i$  is reduced until at least two previous episodes (that are not adjacent) are found. Using this algorithm, the episodes identified are: Brazil—Sept. 2001; July 2002; Feb. 2009; Chile—Mar. 2001; Oct. 2008; Feb. 2014; Colombia—Jan. 2003; Feb. 2009; Mexico—Jan. 2003; Oct. 2008; May. 2012; Peru—Sept. 2002; Dec. 2005; Dec. 2008; July 2013.

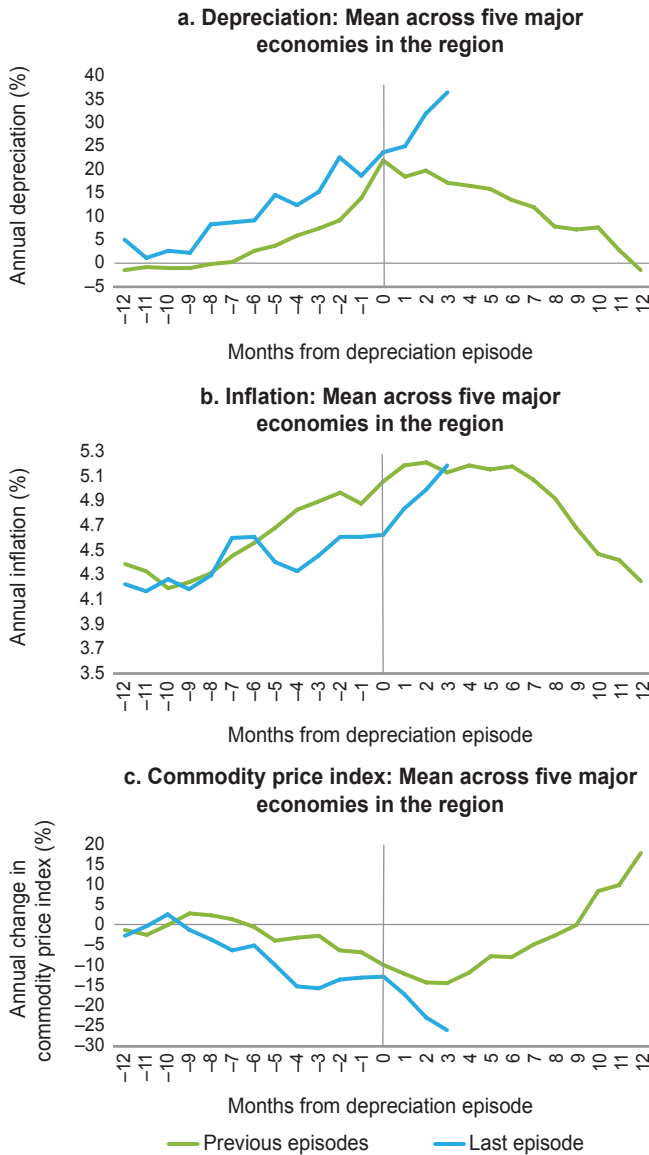
**FIGURE 2.2** ■ Targeted, Observed and Expected Inflation

Source: IFS (IMF), Latin Macro Watch (IDB), central bank surveys available at [www.iadb.org/revela](http://www.iadb.org/revela), and authors' calculations.

levels. In the current episode, annual depreciation reached almost 40 percent and inflation was just over 5 percent. This stands in contrast to previous episodes, where depreciation peaked at only 20 percent but inflation reached similar levels as well.<sup>12</sup>

<sup>12</sup> Depreciation rates were calculated as the change in the rate expressed as pesos per dollar.

**FIGURE 2.3 ■ Episodes of Large Devaluations**



Source: IFS (IMF), Latin Macro Watch (IDB) and World Bank Pink Sheet and authors' calculations.

Note: The figure plots the simple average path of the exchange rate, inflation, and a country-specific commodity price index based on exports for the largest five inflation targeters in the region over different episodes of large exchange rate depreciations.

Considering a simple two-variable VAR analysis, a 4 percent depreciation (one standard deviation) increases inflation for several months, and the effect only dies out after two years.<sup>13</sup> The effect is gradual, as inflation peaks after five months, with a quarter percent increase in that month, as shown in Figure 2.4. This implies a median pass-through of about 16 percent on the inflation rate over a period of 20 months. This estimate suggests a fairly moderate level of pass-through and one in line with other recent estimates.<sup>14</sup>

One quarter of the variance in inflation can be explained by exchange rate shocks. Uruguay and Brazil stand out as the two countries where changes in nominal exchange rates have had the strongest effect on inflation, with inflation variability of 52 and 40 percent, respectively, traced back to

<sup>13</sup> The VAR models were estimated using OLS for eight Latin American countries with monthly inflation and exchange rate data from January 1990 to August 2015. The VAR models were identified using a triangular Cholesky decomposition with no contemporaneous impact on inflation from a depreciation shock.

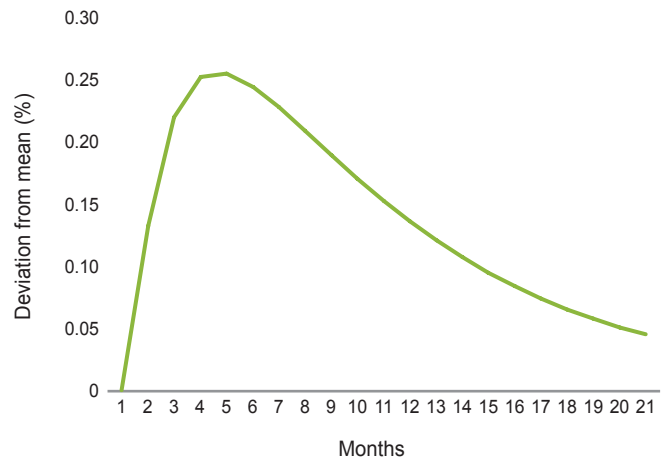
<sup>14</sup> See, for example, Caselli and Roitman (2016).

shocks in the exchange rate (Table 2.1, upper panel).<sup>15</sup> In an expanded VAR, which also includes the change in a country-specific commodity price index, shocks to that variable explain about 20 percent of the variance of the nominal exchange rate and almost 20 percent of the inflation variance (Table 2.1, lower panel).

Panel (a) shows the share of variance accounted for by shocks in the devaluation of the nominal exchange rate in a two-variable VAR of

inflation and devaluation. Panel (b) reports results for an augmented VAR with an index of country-specific commodity prices as a third variable where a shock is given to this variable. VAR models are estimated on a country-by-country basis during the period of adoption of inflation targeting.

**FIGURE 2.4 ■ Inflation Dynamics After a Shock to the Nominal Exchange Rate**



Source: IFS (IMF), Latin Macro Watch (IDB) and World Bank Pink Sheet and authors' calculations.

Notes: The figure is the monthly impulse response function of inflation to a one standard deviation shock in the nominal depreciation of the exchange rate. Graph is the average of results from country-specific VARs with inflation and depreciation. A Cholesky ordering assumes that inflation shocks react to devaluation shocks with a lag. Countries are eight inflation targeters in the region. The period of estimation is from inflation targeting adoption.

## Exchange Rate Flexibility as a Shock Absorber

Economic theory suggests a flexible exchange rate may cushion certain shocks. In the face of a negative real shock, a nominal depreciation that allows for a rapid adjustment of the real exchange rate may lead to less output loss compared to an adjustment through prices, normally considered to be sticky downwards. Moreover, a nominal depreciation may result in a positive or a negative impact on the trade balance, depending on whether

<sup>15</sup> These numbers may actually be just a lower bound. As summarized in recent works, the exchange rate pass-through may be highly asymmetric and could increase substantially during episodes large depreciations, particularly in emerging economies (see Aron, Macdonald, and Muellbauer, 2014, and Caselli and Roitman, 2016). Additionally, Taylor (2000) argues that one reason why exchange rate pass-through may have decreased over time is the adoption of inflation targeting and the anchoring of inflation expectations. If inflation expectations are de-anchored, it is feared that pass-through may then rise.

**Table 2.1 Variance Decompositions from a 2 and a 3 variable VAR each of 8 inflation targeters**

	Brazil	Chile	Colombia	Guatemala	Mexico	Paraguay	Peru	Uruguay	Across the 8 countries	
									Mean	Median
<b>Panel (a) — Results from a 2 variable VAR</b>										
Share of inflation variance explained by ex. rate shocks	0.40	0.19	0.07	0.07	0.11	0.19	0.29	0.52	0.23	0.19
<b>Panel (b) – Results from a 3 variable VAR</b>										
Share of inflation variance explained by commodity shocks	0.22	0.21	0.18	0.03	0.43	0.19	0.03	0.02	0.16	0.19
Share of exchange rate variation explained by commodity shocks	0.38	0.04	0.01	0.18	0.55	0.08	0.19	0.03	0.18	0.13

Source: IFS (IMF), and Latin Macro Watch (IDB).

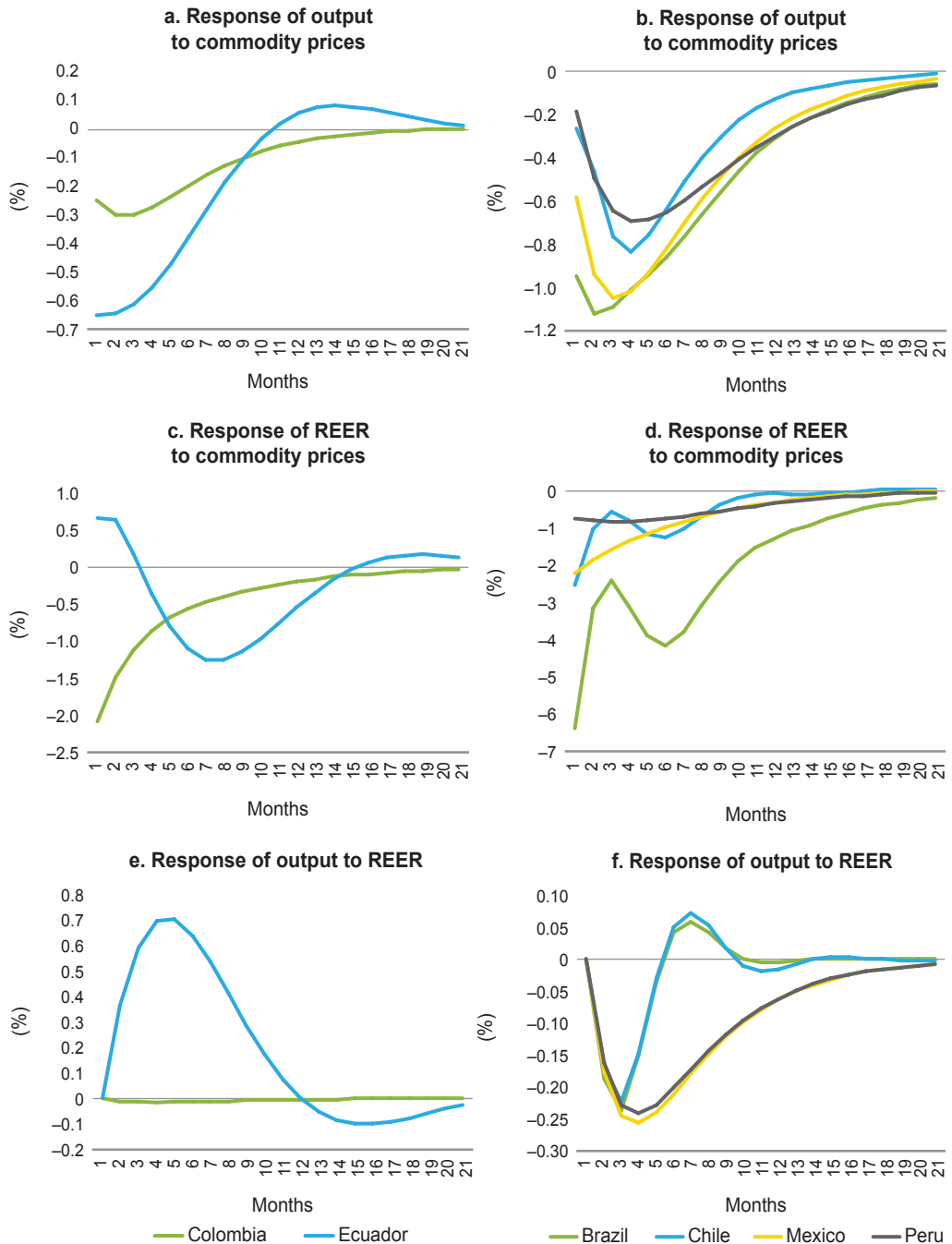
the increase in exports, given their greater competitiveness, outweighs or is outweighed by the negative impact of more expensive imports.<sup>16</sup>

The experiences of Colombia and Ecuador can be used to illustrate these issues. Although oil-related exports constitute between 50 and 60 percent of total exports for both countries, they maintain very different exchange rate regimes. Ecuador fully dollarized in 2000, while Colombia has inflation targeting with exchange rate flexibility. Employing a VAR approach, panel (a) of Figure 2.5 illustrates the response of GDP growth following a negative one standard deviation shock in each country-specific commodity price index.<sup>17</sup> The shock is similar in both cases (a 13 percent fall in commodity price returns), but economic activity contracts some three times more in Ecuador than in Colombia.<sup>18</sup> In the case of Colombia the real exchange rate depreciates immediately, while in Ecuador there is an initial appreciation—perhaps as the nominal exchange rate of trading partners such as Colombia depreciates—and then only a gradual depreciation

<sup>16</sup> The condition for a nominal depreciation to be positive for the trade balance is known as the Marshall-Lerner condition and, roughly speaking, states that export and import elasticities should add up to more than one. See Mundell (1963) for a discussion of when floating versus fixed rates would be superior in the face of different types of shocks.

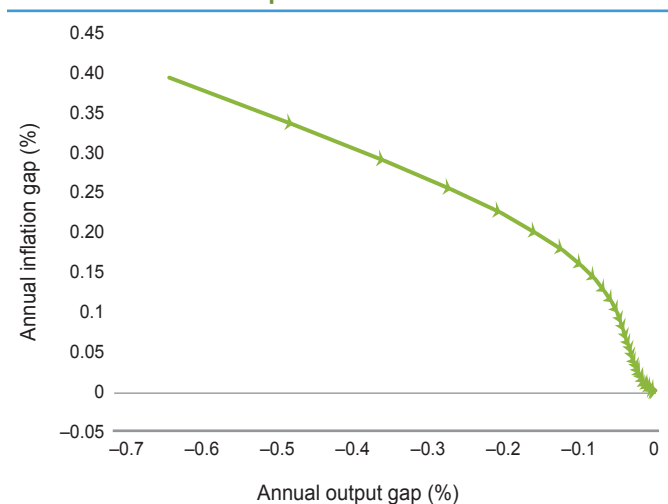
<sup>17</sup> For each of the five inflation targeters (and Ecuador) a three-variable VAR model was estimated using the growth of the country-specific commodity price index, real GDP growth, and the growth of the real effective exchange rate index.

<sup>18</sup> Recently Fernández, González, and Rodríguez (2015) documented the contractionary effects of negative commodity price shocks for several other emerging economies that export commodity goods. They argue that the main mechanism behind the large real effects that follow shocks of this type is the negative income effect, which then translates into large contractions of demand for other non-commodity goods.

**FIGURE 2.5 ■ Growth Responses to Commodity Price and Real Exchange Rate Shocks**

Source: IFS (IMF), Latin Macro Watch (IDB) and World Bank Pink Sheet and authors' calculations.

Notes: The figures depict the impulse response functions of shocks to the REER and to changes in a commodity price index on output growth and other variables, where REER is the Real Effective Exchange Rate. The y-axis shows the percentage deviation from the mean.

**FIGURE 2.6 ■ Mean Convergence Paths of Inflation and Output**

Source: IFS (IMF), Latin Macro Watch (IDB), central banks and central bank surveys (available at [www.iadb.org/revela](http://www.iadb.org/revela)) and authors' calculations.

Notes: The figure illustrates the estimated path of inflation and output to close output and inflation gaps. Estimates are the mean of the unconditional forecasts of the individual country three-variable VAR models. A monthly VAR was estimated for each of the five economies with the monetary policy rate, the inflation gap and the output gap from the adoption of the inflation targeting regime to November 2015. The inflation gap was computed as the difference between inflation expectations and the target. The output gap is the log deviation from the Hodrick-Prescott filter. Monthly output series from individual central banks. Monthly industrial output is used for Colombia.

at a much more modest pace, as shown in panel (b) of the figure.<sup>19</sup> Still, as panel (d) of Figure 2.5 shows, while output fell in Colombia as it did in four other inflation targeting economies analyzed here, the nominal depreciations likely allowed for a less costly real depreciation, as shown in panel (e).

However, estimates for five Latin American inflation targeters suggest that an *independent* depreciation shock to the real exchange rate results in a *fall* in growth—although the response is not statistically significant. This may suggest that there is a negative impact on net exports or

that firm balance sheet effects (discussed in Chapter 5) may outweigh any positive impact. This analysis also highlights the importance of considering the underlying shock (assumed here to be the change in the country-specific commodity price) and not just the exchange rate movement, which may be endogenous.

## Inflation and Output Gap Projections and Monetary Policy Stance

How are output and inflation gaps likely to evolve in the future? In the absence of shocks, the VAR models for the five largest economies with inflation targeting regimes suggest that output gaps will close faster than inflation gaps, as shown in Figure 2.6, indicating considerable inflation inertia.

What will be the monetary policy stance along such predicted paths? Simulations indicate a contractionary stance of policy, with the average policy rate increasing during the coming months by about 1 percent. Thus the historical estimates of central banks' reaction to inflation and output gaps suggest that, in order to counteract inflation inertia, policy rates

<sup>19</sup> On the other hand, fixed exchange rates have resulted in lower average inflation, as detailed above.

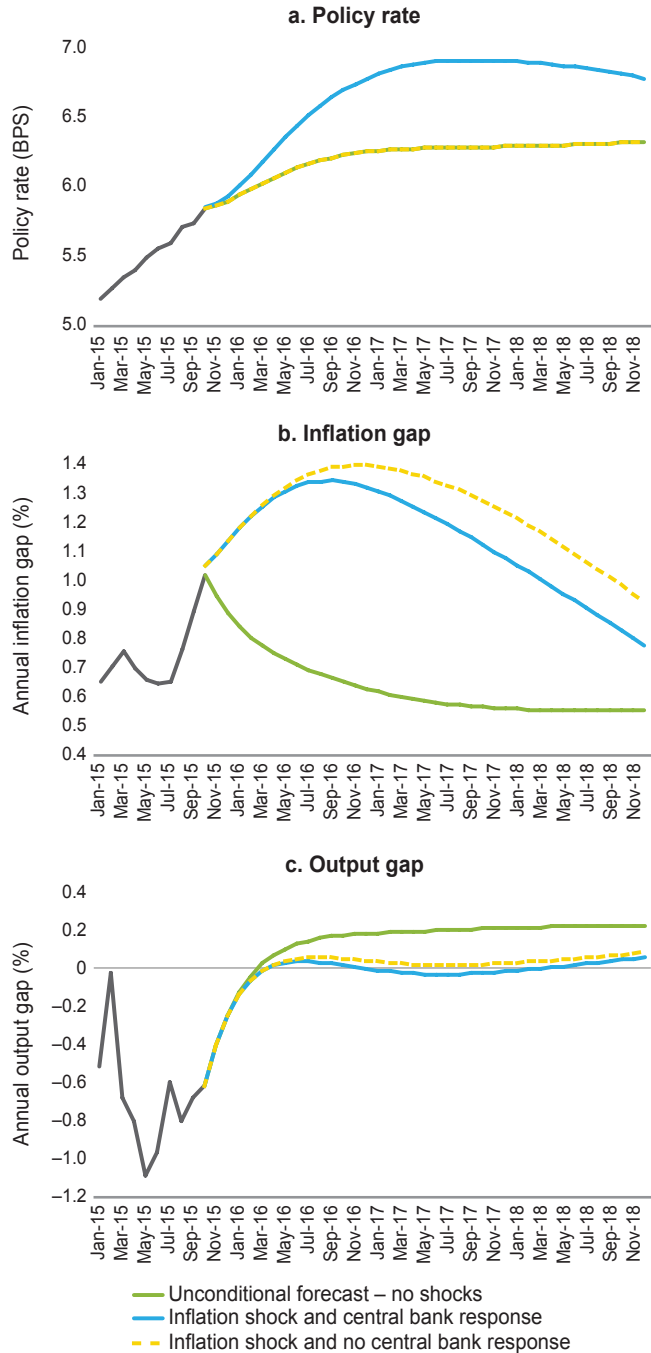


will continue to increase. How would the monetary authorities react, however, to further inflation? A one standard deviation shock would, following past preferences, lead to an additional 1 percent rise in interest rates at the cost of about a quarter of a percent in output.<sup>20</sup> Alternatively, suppose the monetary authorities did not react to this shock and did not change their stance. This would result in further inflation but with virtually no gain in terms of output. Figure 2.7 illustrates both paths.

## Conclusions

This chapter suggests that countries with exchange rate flexibility used nominal exchange rate depreciations to smooth the large shocks related to commodity price declines. However, there has been some moderate pass-through to inflation. Similar shocks to commodity prices and large depreciations were short-lived and offer

**FIGURE 2.7 ■ Policy Rate, Inflation and Output Projections**



Source: Authors' calculations.

<sup>20</sup> The shock to inflation was modeled as one tenth of a standard deviation in the first period, decreasing to zero after 38 months, from November 2015 to December 2018.

little guidance in the face of today's likely more persistent negative shocks. Moreover, as discussed in the following chapter, some countries continue to have expansionary fiscal policies that may also add to inflationary pressures.

Looking forward, policy rates are likely to rise further. If central banks alter their preferences to allow for higher inflation in the coming months then the estimates suggest little gain in terms of output. On the other hand, given the rise in inflation expectations it is important to ensure those inflation expectations are well-anchored so that the nominal inflation target remains credible to allow for greater exchange rate flexibility in the future.

Countries with intermediate regimes face somewhat similar trade-offs with inflation on the rise. Countries with fixed exchange rates continue to have very low inflation, but the challenge in countries with limited or no exchange rate flexibility is to ensure that there are other mechanisms in place to buffer external shocks and that prices are relatively flexible. For those with little exchange rate flexibility that are dependent on commodity fiscal revenues, or indeed are large oil importers, fiscal buffers are particularly important. Fiscal positions and policy alternatives are discussed in the following chapter.



## CHAPTER 3

# Rebuilding Fiscal Fundamentals: Urgent Action Required

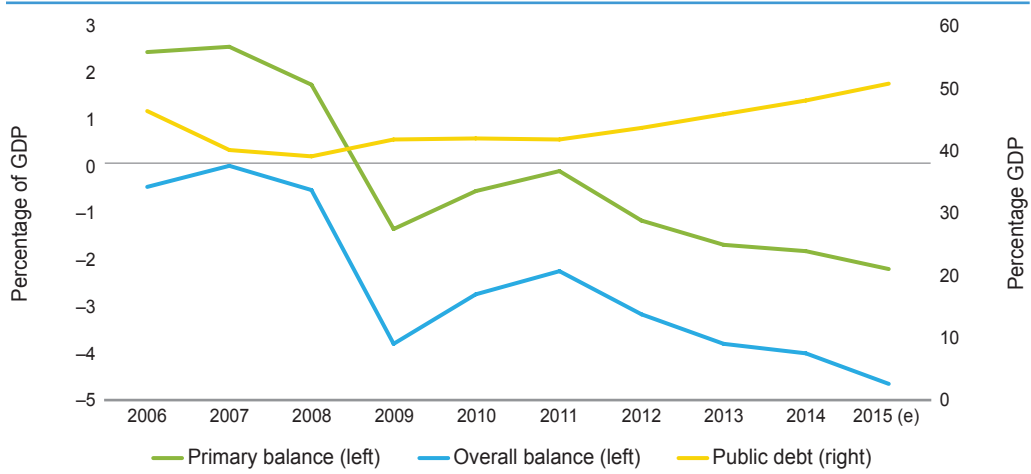
**G**iven lower growth and lower fiscal revenues, especially for commodity producers, actual and structural fiscal positions have deteriorated in the last year for the typical country. There is considerable heterogeneity in the region, however, so appropriate policy actions may vary across countries. Only one or two commodity producers' fiscal positions are strong enough to contemplate using fiscal policy to smooth the transition to lower commodity prices, which are likely to persist for several years. In most countries, fiscal adjustment is required to ensure sustainability in the medium term, and in some countries this adjustment is urgently needed to reduce risks and avoid a more serious and potentially dangerous future adjustment process. In Central America and the Caribbean, countries have benefited from lower oil prices and U.S. economic recovery, but their debt and fiscal positions imply that adjustment is still required for many. Some countries have already adopted strong measures to improve fiscal positions. Moreover, many are considering adjustment by reducing capital expenditures, but this component of spending may have a higher fiscal multiplier than others. Such reductions imply a negative effect on GDP, decreasing the net positive impact on fiscal space and implying that more adjustment is required. In some cases this may even be counterproductive, reducing medium-term sustainability. A more fundamental approach is required for fiscal consolidation that includes fiscal rebalancing and a re-flexibilization of expenditure items. In some cases this may require legal and perhaps even constitutional actions; this would also provide a valuable opportunity to enhance the efficiency of public spending.

### Observed Primary and Overall Balances

Public finances continued to deteriorate during 2015 for the typical country: on average, the primary deficit exceeded 2 percent of GDP (the overall deficit exceeded 4 percent of GDP) while the public debt-to-GDP ratio climbed to 50 percent, increasing by over 9 percentage points (pp) since the Great Recession, as shown in Figure 3.1.

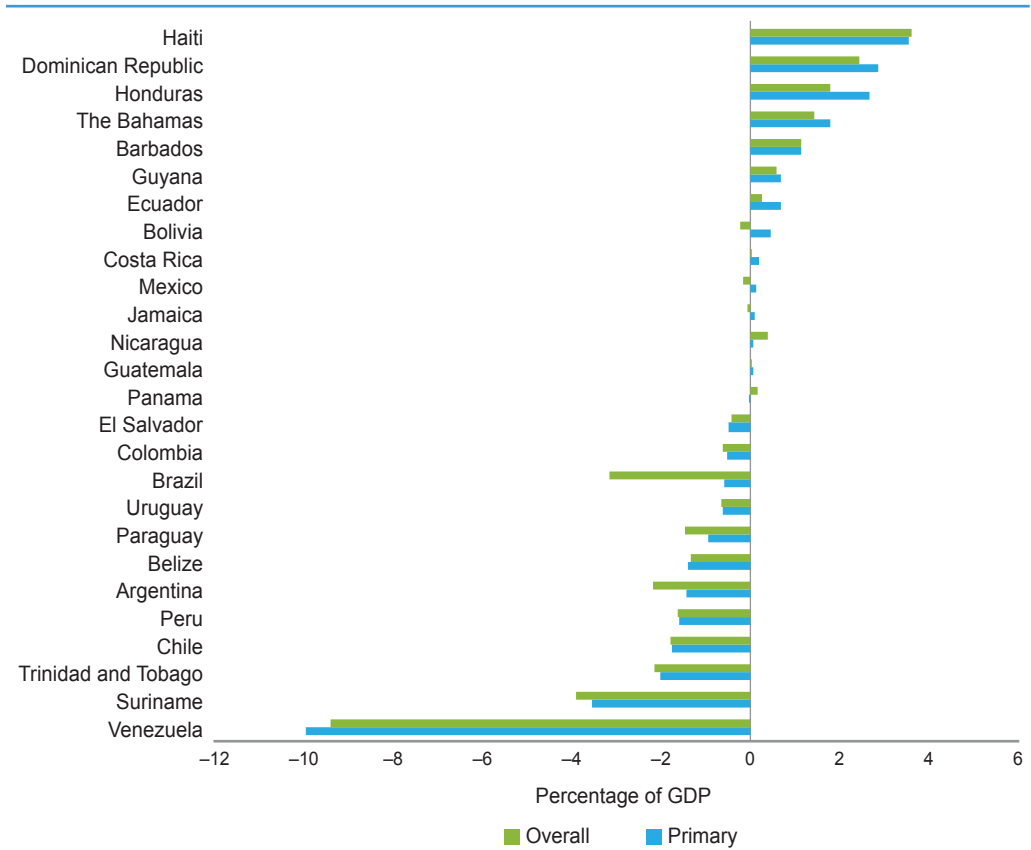
There is also considerable heterogeneity across countries: compared to 2014, the primary balance weakened in half of the countries analyzed, improved slightly (less than

**FIGURE 3.1 ■ Primary, Overall Fiscal Balance and Debt in the Region (2006–15)**



Source: Authors' estimates based on national sources and WEO, IMF (2015c).

**FIGURE 3.2 ■ Change in Primary and Overall Balance (2014–15)**



Source: National sources and IMF (2015c).

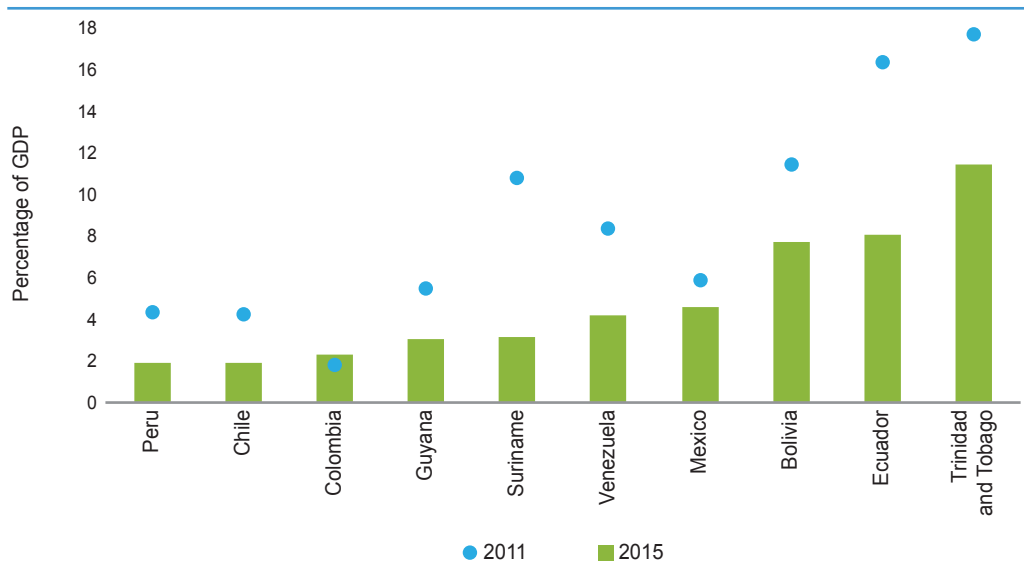
0.5 percent of GDP) in six, and recovered by more than 0.5 percent of GDP in seven (see Figure 3.2).

The reduction in commodity prices contributed to lower proceeds across those countries reliant on non-renewable commodities for fiscal revenues. On average, commodity-related revenues fell by almost 4 percent of GDP from 2011 to 2015 (Figure 3.3). In contrast, fiscal revenues gained ground in oil-importing countries, particularly across Central America and the Caribbean. Growth rose to 2.9 percent on average for these countries, which allowed fiscal revenues to increase by almost 0.5 percent of GDP in 2015.

Thirteen countries that reduced primary expenditures in 2015 tended to cut capital expenditures (the exception being Honduras) rather than current spending, which fell by less and in some cases even rose. On average, capital spending fell by more than 1 percent of GDP (Figure 3.4) among those 13 countries. In most countries where primary spending rose, capital spending as a percentage of total spending remained constant.

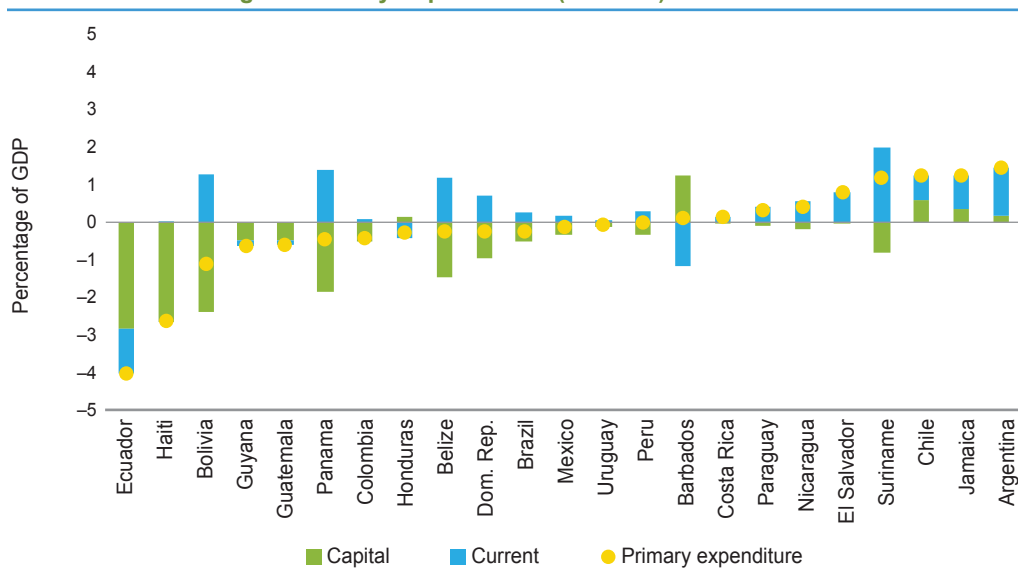
These trends suggest a growing need to fundamentally rebalance expenditure allocation. Moreover, Box 3.1 summarizes new research indicating that capital spending tends to have relatively high fiscal multipliers during recessions—exceeding 1.0 on average across countries. This means that for each dollar of lower capital spending, growth may fall by more than one dollar. But current consumption spending has lower multiplier effects when output is below potential. Thus, investment spending may not only increase future output but also provides the flexibility to cushion the economy from negative short-run output shocks.

**FIGURE 3.3** ■ Fiscal Revenues from Non-Renewable Resources



Source: Structural Fiscal Balances Database for LAC (IDB).

**FIGURE 3.4** ■ Change in Primary Expenditures (2014–15)



Source: Authors' estimates based on national sources and IMF (2015c).

**Box 3.1 Fiscal Multipliers: It's All about Timing—and Expenditure Composition**

Fiscal multipliers measure the impact of fiscal policy changes on output, and they are defined as the ratio of a change in output to an exogenous change in government spending or tax revenue (Spilimbergo, Schindler, and Symansky, 2009). The spending multiplier thus measures the effect of a \$1 change in spending on the level of GDP. Estimating the causal effect of fiscal measures on GDP, given the two-way relationships between these variables, is difficult (see Batini, et al., 2014). For example, fiscal policy reacts automatically to the business cycle through “automatic stabilizers” and also responds to the cycle in a discretionary way: a countercyclical policy may lower tax rates and increase spending when GDP is below potential. By employing forecast errors in government spending (the difference between actual real spending and projected expenditures) to identify spending shocks, differentiating between consumption and investment expenditures, and based on a large sample of both advanced and developing countries, Izquierdo, Riera-Crichton, and Vuletin (2016) offer two main findings on the size of fiscal multipliers:

**1. Adjusting in a recession is very costly...**

Spending multipliers tend to be larger during recessions than in expansions. Reducing (or increasing) one dollar of spending during an expansionary phase is virtually neutral on output. However, reducing one dollar of spending in a recession reduces output almost by the same amount on impact (i.e., the spending multiplier is on impact equal to one) and by about half a dollar after two years (see also Auerbach and Gorodnichenko, 2013, Blanchard and Leigh, 2013 and Riera-Crichton, Végh, and Vuletin, 2015 on this point). These findings support the use of countercyclical fiscal policies when output is below potential, as opposed to procyclical policies that may aggravate inherent output fluctuations. These findings also suggest that it is better to adjust (and so build fiscal space) in good times.

*(continued on next page)*

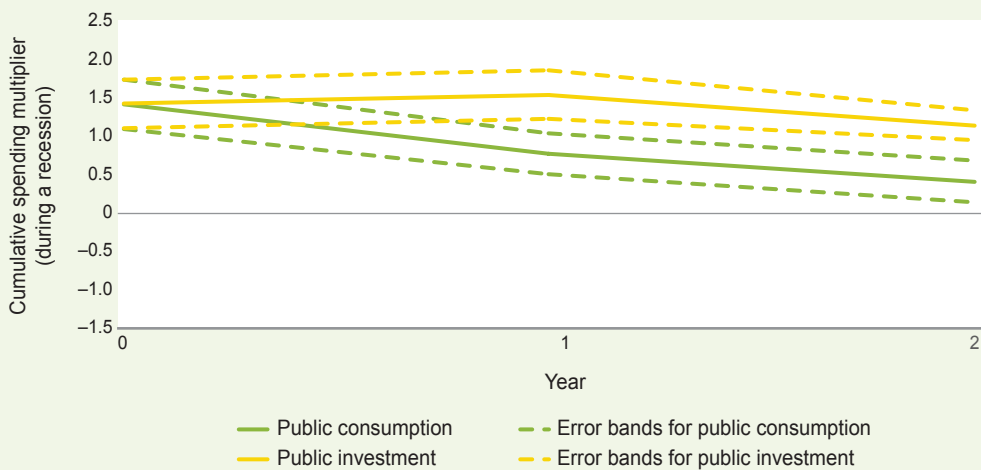
### Box 3.1 Fiscal Multipliers: It's All about Timing—and Expenditure Composition (continued)

#### 2. If adjustment in a recession is necessary, it is less costly to cut consumption than investment expenditures

When fiscal adjustments are implemented during expansions, cutting public investment or public consumption has similar effects on output. However, if such adjustments are implemented when output is below potential, cutting public investment has a more harmful effect than doing so through public consumption (Figure B3.1). After two years, a one dollar cut in public consumption reduces output by less than one half of one dollar of output (\$0.4). On the other hand, a one dollar cut in public investment reduces output by more than one dollar (\$1.3). In other words, the contractionary effect on output associated with cuts in public investment is about 3 times more harmful than cutting consumption. By the same token, increasing public investment when output is low has a much more beneficial effect on growth, with a multiplier greater than 1.

These results hold considering a subset of developing countries and more specifically for a sample of 16 Latin American countries in the sample. Specifically, for the 16 Latin American countries in the sample, the contractionary effect on output associated with cuts in public investment during recessions (\$3.1) is about 20 percent more harmful than cutting consumption (\$2.6). In the Caribbean region, lower-than-one multipliers are found on public sector investment during recessions (\$0.5), although the power of the statistical tests is weaker given the lower number of countries. This evidence of lower multipliers in the Caribbean region coincides with evidence suggesting that such a small output effect occurs because the intended fiscal stimulus ends up expanding imported demand rather than the production of domestic goods (Guy and Belgrave, 2012; González-García, Lemus, and Mrkaic, 2013).

**FIGURE B3.1 ■ Spending Multipliers in Recessions: Consumption vs. Investment Spending**



Source: Izquierdo, Riera-Crichton, and Vuletin (2016) and Izquierdo et al. (2016).

Note: Error bands indicate one standard error. See Izquierdo, Riera-Crichton, and Vuletin (2016) and Izquierdo et al. (2016) for details on the methodology and sample coverage.

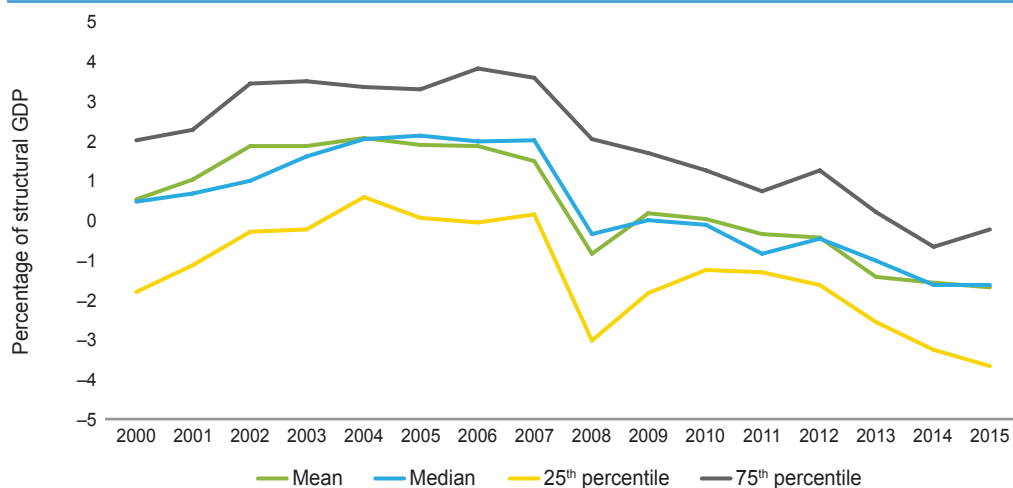
## Structural Balances

On average, estimates of structural primary balances have declined for a sixth consecutive year. In the typical country, the primary structural balance has fallen to its lowest level in 15 years, reaching -1.8 percent of GDP (Figure 3.5) in 2015, and five countries have structural fiscal balances of about -4 percent of GDP or less. The structural primary balance remains below the observed primary balance in 13 countries (out of 20 analyzed) by an average of 1.2 percent of GDP. These figures suggest the fiscal stance has deteriorated considerably, and for many countries it is probably not sustainable in the medium term.

As discussed in previous editions of the Latin American and Caribbean Macroeconomic Report, the fiscal deterioration reflects higher spending as a response to the 2009 recession that was not fully reversed as the recession receded. In general, countries pursued expansionary policies when growth was low but did not pursue contractionary policies when output then moved back above potential. Fiscal policy was then expansionary rather than countercyclical. Indeed, episodes of countercyclical fiscal tightening since 2009 have been the exception: positive output gaps were accompanied by improvements in the structural balance in only 10 cases (out of 100 country-year observations) during 2010–2014 (Figure 3.6). In contrast, episodes of pro-cyclical fiscal expansions were four times more likely.<sup>1</sup>

As a result of these policies, structural fiscal deficits are now the norm, and they have contributed to increasing debt accumulation in recent years (Figure 3.7). Indeed,

**FIGURE 3.5 ■ Structural Primary Balances**

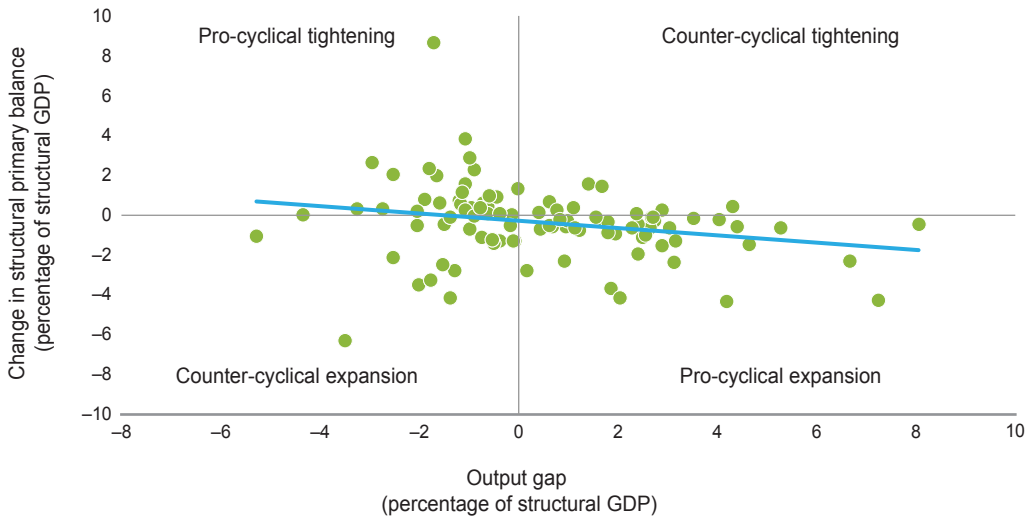


Source: Structural Fiscal Balances Database for LAC (IDB).

<sup>1</sup> The complete frequency distribution is as follows: procyclical expansions (40 percent), procyclical tightening (30 percent), countercyclical expansion (20 percent) and countercyclical tightening (10 percent).

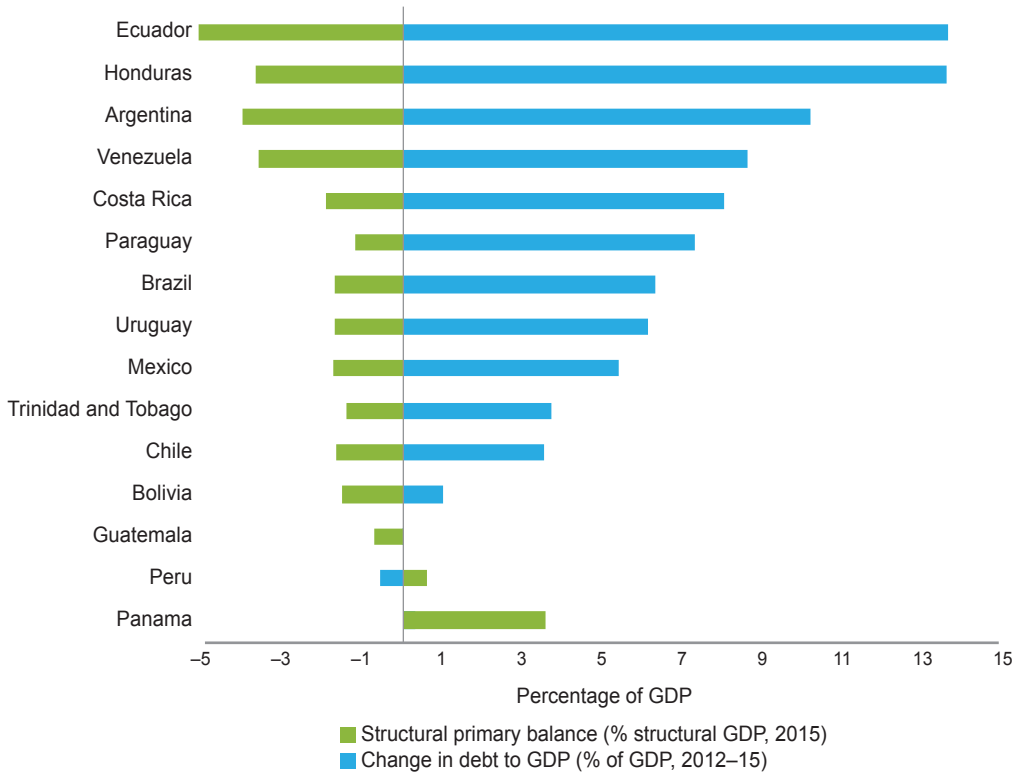


**FIGURE 3.6** ■ Change in the Structural Primary Balance against the Output Gap (2010–2014)

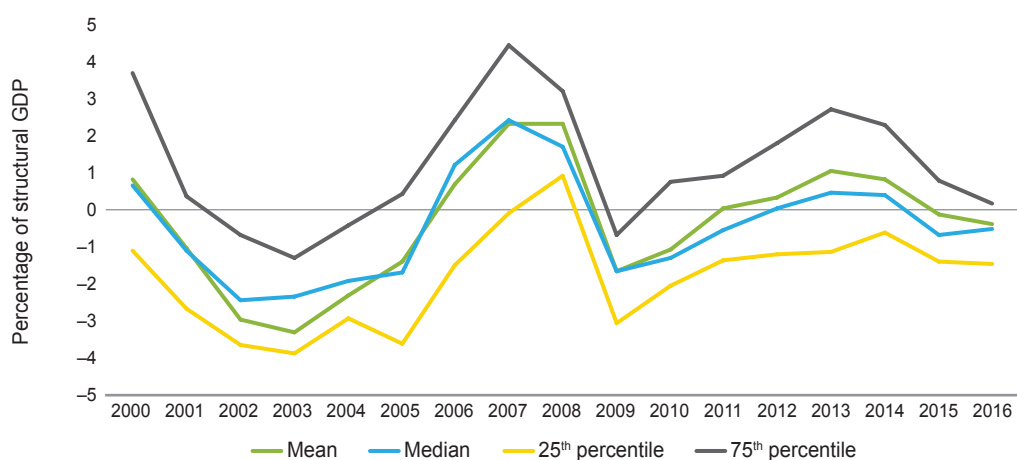


Source: Structural Fiscal Balances Database for LAC (IDB).

**FIGURE 3.7** ■ Structural Balances and Public Debt



Source: Structural Fiscal Balances Database for LAC (IDB) and Standardized Public Debt Database (IDB).

**FIGURE 3.8 ■ Output Gaps**

Source: IDB staff estimates based on IMF (2015c).

countries with the largest structural primary deficits saw their gross public debt increase between 10 percent and 14 percent of GDP in the last three years. By contrast, among countries with moderate deficits or balanced structural budgets, the debt-to-GDP ratio either decreased or remained stable during the same period. As output gaps are expected to become more negative during 2016 (Figure 3.8), the trade-off between cyclical and debt sustainability considerations is becoming starker for several countries in the region.<sup>2</sup>

### Fiscal Space Falling, Required Adjustments Rising

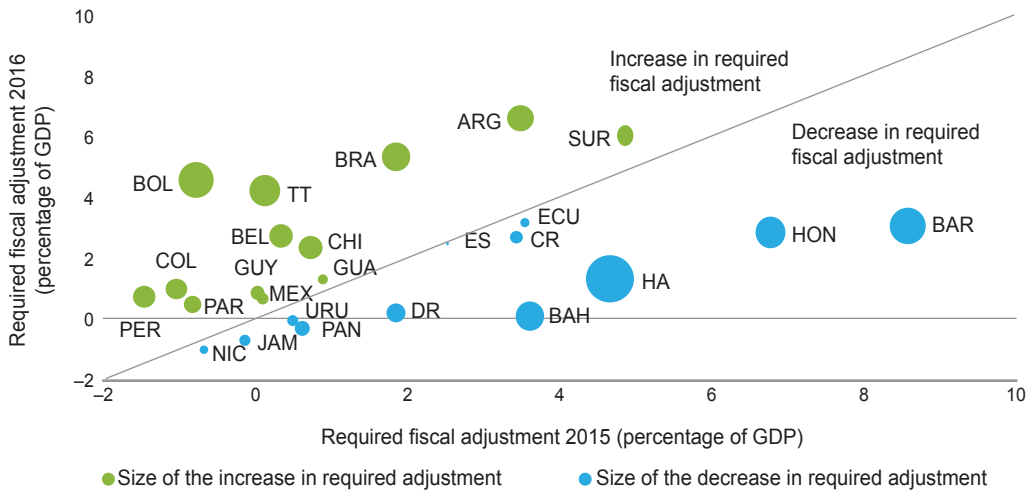
There is no single accepted measure of the fiscal space needed to conduct expansionary fiscal policy; however, all things being equal an increase in the required adjustment to keep debt to GDP constant reduces fiscal space.<sup>3</sup> As the required adjustment becomes relatively large, at some point the policy recommendation, especially for developing countries, is to ensure that primary balances are increasing to ensure debt sustainability and keep risk premia and interest rates low. If the required adjustment is too high then interest rates may soar and fiscal policy becomes counterproductive.

The required fiscal adjustment to keep the debt-to-GDP ratio constant increased in more than half of the countries in the region (see Figure 3.9), and now only three countries have

<sup>2</sup> Output is expected to remain below potential for 19 out of 26 countries during 2016. A similar picture emerges when comparing growth estimates for 2016 with long-term growth projections.

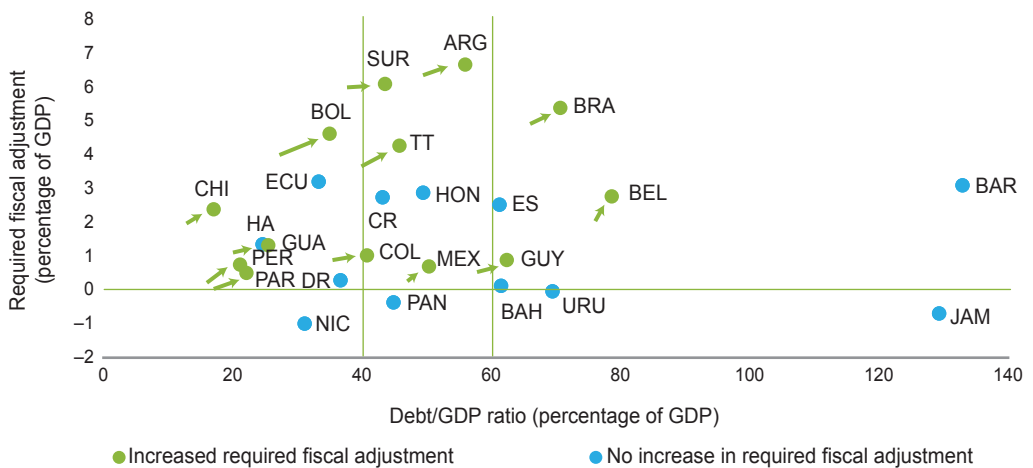
<sup>3</sup> Still, assessing fiscal space requires considering several variables, especially when comparing across countries. For example, a country with high debts and already running a large primary surplus may have very little fiscal space and yet may have no further required adjustment in the primary fiscal balance.

**FIGURE 3.9** ■ Change in Required Fiscal Adjustment (2015–2016)



Source: Authors' estimates based on national sources and IMF (2015c).

**FIGURE 3.10** ■ Debt Ratio and Required Fiscal Adjustment (at Potential GDP Growth)



Source: Authors' calculations.

Note: An arrow indicates the direction of each significant move from last year.

zero (or negative) required adjustments (see Figure 3.10).<sup>4</sup> In many cases, a fiscal adjustment was already required, implying that any consolidation plan is likely more urgent and needs to be more aggressive in nature. Indeed, the arrows in Figure 3.10 indicate that all significant

<sup>4</sup> The required fiscal adjustment is defined here as the difference between the primary fiscal surplus required to maintain the debt to GDP ratio at 2015 levels (assuming medium-term interest rate and growth estimates) and the actual primary balance (average of the IMF and WEO estimates for 2015 and 2016). A higher required adjustment implies rising debt levels and lower fiscal space.

moves from the previous year's figures have been towards higher debt and higher required fiscal adjustments. Non-renewable commodity exporters now tend to have higher required fiscal adjustments, particularly oil producers. For the typical non-renewable exporter, debt has increased by 4 percent of GDP and required fiscal adjustment by 2.2 percent of GDP.

Some commodity-reliant countries saved a significant proportion of the windfall. Peru, for example, ran fiscal surpluses and accumulated additional revenues in the Fiscal Stabilization Fund (*Fondo de Estabilización Fiscal*). Others, such as Mexico, also smoothed revenues using financial hedging instruments. In those countries that did not save or hedge commodity revenues during the boom, the extent of the required fiscal adjustment is both larger and more urgent.

For other countries, mostly oil importers located in Central America and the Caribbean, on average the required fiscal adjustments have been reduced by about 1.8 percent of GDP with respect to 2015. These countries have benefited from lower oil prices and a pick-up in tourism. However, as shown in Figure 3.10, the result for most was not that adjustment is no longer required but rather that the extent of the required adjustment is diminished.

## Initial Country Responses

Many countries in the region are proposing or already pursuing fiscal adjustment programs of varying magnitudes. Indeed, among the 15 countries that have announced explicit programs, an adjustment of between 1 percent and 7 percent of GDP is contemplated over a horizon of one to five years. The burden of adjustment rests on both expenditure reductions and tax revenue increases, with countries that already have high tax rates tending to favor expenditure-based consolidation. Of those that report a program, the objective is for a cut in spending amounting to 1.7 percent of GDP on average, while the targeted additional revenue from tax increases amounts to some 1.1 percent of GDP. For example, Chile recently introduced a major tax reform to raise 3 percent of GDP in additional revenue by 2018 (see Box 3.2 below). On the expenditure side, of the proposed cuts of 1.7 percent of GDP for 15 countries, on average approximately 1 percent will come from reductions in capital spending, with the remainder coming from reductions in current expenditures. It appears that the bias against public investment in the region—highlighted in Figure 3.4—will be deepened.

An examination of the 2015 approved budgets, reveal that in 18 out of 20 countries considered, the assumed growth rate of the economy was overestimated by an average 1.25 percent of GDP, leading to upward biases for budgeted revenues and hence underestimates of out-turn deficits. The region's fiscal reality is likely not yet fully reflected in medium-term fiscal frameworks, since they may be built on the basis of optimistic growth scenarios. Interestingly, a constituent element of many multi-year programs is a growth strategy. While some countries see growth opportunities in granting tax incentives to

### Box 3.2 Fiscal Consolidation Measures in Four Countries

#### Jamaica

By the end of 2015 Jamaica had completed the tenth quarterly review of its four-year economic program with the IMF under an Extended Fund Facility (EFF) agreed upon in May 2013, which followed a Stand-By Arrangement signed in 2010. Jamaica had one of the highest debt ratios in the world (around 145 percent in 2013) and has rarely grown more than 1 percent per annum over the last 20 years as debt soared. The program is attempting to create the conditions for higher growth by reducing the debt overhang; this initially called for a primary surplus of 7.5 percent of GDP, later falling to 7 percent. Two restructurings of internal debt since 2010 have reduced interest rates and extended maturities, and the target is for public debt to reach 100 percent of GDP by March 2020, three years after the current program ends. A tax reform reduced discretionary tax waivers and other tax expenditures, which allowed for the continuation of social protection measures for vulnerable sectors. The program includes multi-year wage agreements to limit nominal wage increases and a reduction in transfers to public entities. A new fiscal rule will assist in maintaining the high primary surpluses required to reduce debt. The economic program has already yielded positive results. Inflation and the current account balance have improved, international reserves have increased, and the government has been able to issue debt at competitive yields (6.8–7.8 percent). With part of these resources the government has been able to repurchase debt, at a 50 percent discount, from Venezuela's Petrocaribe oil-financing scheme. However, important challenges remain: economic growth is still weak and fiscal sustainability is rebuilding only gradually.<sup>a</sup>

#### Honduras

After the global financial crisis of 2009 and a political crisis, Honduran fiscal accounts deteriorated, and in 2014 the authorities commenced a consolidation plan of up to 6.5 percent of GDP over four years. The plan includes measures to strengthen the finances of public enterprises, a new social security law and a fiscal responsibility law to support medium and long-term sustainability. The observed fiscal deficit has now fallen from 7.6 percent of GDP in 2013 to about 2.5 percent in 2015, and program implementation remains on track.

#### Mexico

Mexico's oil-related fiscal revenues have fallen from 35 percent of total revenues in 2013 to 20 percent in 2015, a reduction from 8.3 percent to 4.5 percent of GDP. To manage oil price risks, the government hedged oil revenues to ensure that the effective price was close to the price assumed in the annual budgeting process. This one-year-ahead hedging program plus an oil stabilization fund has allowed Mexico to smooth out negative oil price shocks. Additionally, with the fall in global oil prices, the authorities have phased out subsidies in the domestic market, generating substantial fiscal savings. In addition, a tax reform approved in 2013 is expected to generate additional revenues of 3 percent by 2017 and appears to be on track. Thanks to these measures, Mexico has so far avoided a strongly procyclical adjustment of public expenditure. Beyond fiscal policies, the depreciation of the peso against the U.S. dollar and other reforms have improved the country's fiscal accounts by assisting domestic producers of tradable goods and enhancing investment opportunities.

#### Chile

Chile introduced a major tax reform in late 2014 aimed at raising an extra 3 percent of GDP from 2015 to 2018 in order to: i) fund additional education and social spending; ii) attain a more equitable

*(continued on next page)*

**Box 3.2 Fiscal Consolidation Measures in Four Countries** *(continued)*

tax system; and iii) reduce fiscal structural deficits. Half of the yield (1.5 percent of GDP) is expected to come from increased income tax (especially corporate income taxes), 1 percent of GDP from the introduction of green taxes and the broadening of the VAT base on real estate, and 0.5 percent of GDP from an expected decrease in tax avoidance and evasion (due to the strengthening of the tax administration agency). By reducing dependence on indirect taxes and eliminating tax exemptions benefiting high income earners, the reform has a significant impact on reducing inequality and improving the progressivity of the tax system: estimates suggest that the reform implies a reduction of more than 1 percent of GDP in the share of national income received by the top 1 percent of income earners, reflecting an increase in the effective tax burden of this group from 12.7 percent before the reform to almost 18.5 percent after the reform. (This reform has no impact on the bottom 75 percent of the distribution, and only a limited effect from the 76<sup>th</sup> to 99<sup>th</sup> percentiles). The reform was estimated to raise revenues by 1 percent of GDP (comparing 2015 with 2014), and preliminary information suggests that this may even underestimate the eventual increase.<sup>b</sup>

<sup>a</sup> For further analysis please refer to Schmid and Malcolm (2016).

<sup>b</sup> See [http://www.dipres.gob.cl/594/articles-142808\\_doc\\_pdf.pdf](http://www.dipres.gob.cl/594/articles-142808_doc_pdf.pdf) for further details.

investors or subsidies to certain sectors, the majority identify public capital investment as the main pillar of their plans to boost growth. A challenge is then to ensure consistency between proposed growth plans and fiscal adjustment programs.

Fiscal adjustment is never easy, and it is made more difficult politically in times of lower growth. While in some cases the executive may propose an adjustment program but encounter difficulties in obtaining necessary congressional approval, in many cases in the region executives have been reluctant to propose far-reaching reforms. The expected social cost and economic impact, in terms of slower growth, appear to be the main deterrents to governments' pursuit of fundamental fiscal consolidation.<sup>5</sup> A key problem is delay in attempting required adjustments. Delays frequently increase the extent of the eventual adjustment required and, if the composition of the adjustment is poorly conceived, output costs may be high. Nevertheless, several countries have been pursuing successful fiscal consolidation programs (see Box 3.2 for more details).

### Fiscal Policy: What Happened and What Can Be Done?

The fiscal position of the region has deteriorated significantly in recent years. However, there is considerable heterogeneity across countries, explained in large part by how countries responded to the global financial crisis of 2008–09 and in the post-crisis years

<sup>5</sup> This statement stems from an internal analysis that attempted to pinpoint the potential restrictions to crafting and implementing fiscal adjustment programs.

of higher growth, especially for commodity exporters given the boom in export prices. As argued in previous editions of the Latin American and Caribbean Macroeconomic Report, many countries implemented stimulus measures during the crisis that focused on inflexible spending categories (particularly wages and transfers) that then proved difficult to reverse. These measures were then more expansionary than counter-cyclical and explain why many countries maintained an expansionary stance even when growth returned and output exceeded potential. Countries then moved from “counter-cyclical” expansion to “pro-cyclical” expansion.<sup>6</sup> Unfortunately, as global growth has continued to disappoint, world interest rates have started to rise and commodity prices have fallen, this group of countries now faces the prospect of required “pro-cyclical” fiscal adjustment.

Some countries, however, saved a larger proportion of income during the post-crisis years of higher growth and took measures to save windfall commodity revenues through stabilization funds or to hedge prices in case of price falls. This group of countries has been able to adjust more smoothly to the negative shocks, particularly if fiscal institutions (including strong budgetary frameworks or a credible fiscal rule) give greater assurance regarding medium-term fiscal sustainability, and consequently the fall in growth has tended to be smaller.

Those countries with relatively low debt and strong fiscal institutions may contemplate some type of counter-cyclical fiscal expansion if output is below potential.<sup>7</sup> Considering the statistics presented above, though, there are very few countries in this group. These countries may contemplate positive required fiscal adjustments (and hence increasing debt) for a few years but should tighten fiscal policy as output returns to potential. It is worth stressing that countries with a zero or positive output gap should focus on boosting potential growth through underlying reforms (including fiscal reforms) rather than pursue pro-cyclical fiscal expansion.

In those countries with higher debt levels and a required fiscal adjustment, it is likely that interest rates have already moved to higher levels (especially if fiscal institutions are not very strong), increasing the costs and lowering the effectiveness of any counter-cyclical fiscal policy. Even if output gaps are negative, countries in this position should be finding ways to moderate required fiscal adjustments or, in other words, should be on a path towards stabilizing debt ratios. Several countries are doing exactly that.

Other countries face higher debts and high required fiscal adjustments. In this group, fiscal adjustment is not only recommended but should also be sought with some urgency. As debt rises, likely coupled with higher interest rates, the amount of adjustment eventually required will increase for each month that adjustment is delayed. If adjustment is not forthcoming, eventually the required adjustment may be considered politically unfeasible

<sup>6</sup> Although as commented in the 2015 Latin American Macroeconomic Report, discretionary stimulus measures focused on inflexible items should not really be considered counter-cyclical tools.

<sup>7</sup> The idea here is that strong fiscal institutions lend credibility to the claim that a fiscal stimulus will dissipate as a negative output gap recedes.

and interest rates will tend to soar. This, in turn, risks problems with rolling over debt, and a fiscal crisis may ensue.

When fiscal adjustment is required, what should countries do? As growth is now below potential in many countries (see Figure 3.8), fiscal multipliers may become significant, as discussed in Box 3.1. In those countries the composition of adjustment may then become critical: countries should focus on areas where multipliers are likely to be low. Depending on the case, policies may focus on the revenue or the expenditure side, but on the expenditure side this adjustment is likely to imply cutting current rather than capital expenditure.

Improved targeting of certain subsidies and transfers could further reduce expenditures by between 0.5 percent and 2 percent of GDP without unduly affecting output growth. Subsidies include those on gas, gasoline, electricity and public transportation, and in some cases leak to middle and even higher-income households rather than focusing on the poor. In some countries, improved targeting of conditional cash transfer programs could produce significant savings.<sup>8</sup> Given very low international oil prices, taxes could be levied on gasoline in domestic markets so that low prices are not fully passed on to consumers. While there may be a cost in terms of foregone output (by not passing on lower oil prices in the form of final prices for gasoline) it would not lower existing output and could produce substantial fiscal revenues; such taxes may also be justified for energy efficiency and environmental reasons. In the case of many oil-producing countries of the region, there are significant subsidies on gasoline that could be phased out or at least reduced. These measures could produce a significant amount of revenue with little impact on economic growth and further both equity and environmental objectives. Similarly, tax expenditures (through exemptions and incentives) amount to about 4 percent of GDP on average in the region, and in many cases those expenditures may be reduced without affecting output growth.

On the expenditure side, the current economic situation provides an opportunity for a rebalancing in favor of public investment, which would serve to reduce the pro-cyclicality of fiscal policy. In some cases boosting maintenance and infrastructure repair programs can have almost immediate positive effects on employment and output, while it normally takes longer for larger infrastructure programs to take effect. These measures would also serve to protect formal employment and enhance recent gains in reducing income inequality.<sup>9</sup> As there has been a substantial increase in the share of current expenditures in most countries in the region, countries may wish to reevaluate such expenditures and ensure that they are obtaining the highest levels of efficiency and services. This is particularly desirable for education and health, which tend to account for a large proportion of expenditure. There may be ample space to improve efficiency or, in other words, to provide the same level of services but at lower costs. Above all, there appears to be

<sup>8</sup> See Pecho (2014) and the Sector Framework Document of Fiscal Policy and management (IDB, 2016).

<sup>9</sup> See Chapter 6 for analysis of labor market trends.



considerable space to reevaluate social spending policies to ensure that they exclusively benefit those really in need.

The current economic context is also an excellent opportunity to strengthen fiscal institutions that would help consolidate fiscal sustainability and may then help reduce borrowing costs given market perceptions of risk. Depending on the case, fiscal rules with debt limits and targeted structural primary balances, medium-term budget frameworks and independent fiscal councils (similar to the United States' Congressional Budget Office) may be appropriate innovations in this direction. Moreover, for countries dependent on commodities for fiscal revenues, well-designed stabilization funds and hedging programs are highly recommended to protect against future commodity price shocks and to reduce fiscal pro-cyclicality.<sup>10</sup> For countries that are significant commodity (especially oil) importers, today's prices are an opportunity to hedge against price rises by buying call options or using other hedging products.

Finally, there is ample room for countries to improve tax administration to reduce tax evasion and smuggling through the implementation of full-fledged electronic invoicing for Value Added Taxes and to improve public expenditure and financial management through a system of Unified Treasury Accounts (CUTs), e-Procurement with reversed options, Integrated Financial Management Information Systems (IFMIS) and Results Based Budgeting (RbB), among other measures. These improvements to tax and financial administration processes may produce significant savings and improve the effectiveness, efficiency and delivery of public sector services.<sup>11</sup>

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<sup>10</sup> See Powell (2015) and Villafuerte, López-Murphy and Ossowski (2013).

<sup>11</sup> See Corbacho, Fretes Cibils, and Lora (2013), Powell (2015) and Pimenta and Pessoa (2015).





## CHAPTER 4

# How Large Have Exchange Rate Depreciations Really Been?

### Introduction

The Brazilian real and the Colombian peso have depreciated by more than 35 percent against the U.S. dollar since the middle of 2014, and other countries in the region with floating exchange rates have also seen substantial nominal depreciations.<sup>1</sup> In fact, 11 countries in the region have experienced currency depreciations, eight of which have been more than 15 percent over the same period. Other countries such as The Bahamas, Barbados, Ecuador, El Salvador and Panama have fixed their exchange rates or officially adopted the U.S. dollar and hence seen no change. Still other countries, including Guatemala and Costa Rica, have actually seen nominal appreciations against the U.S. currency, as shown in Figure 4.1.

Exchange rate depreciation has come as commodity prices have declined, economic activity has slowed and dollar export values plummeted.<sup>2</sup> Will depreciations allow countries to reverse such trends? How will depreciation affect export competitiveness? Could non-commodity exports compensate for falling commodity exports and allow growth to pick up? These, plus the salient policy issues that they raise, are the focus of this chapter.

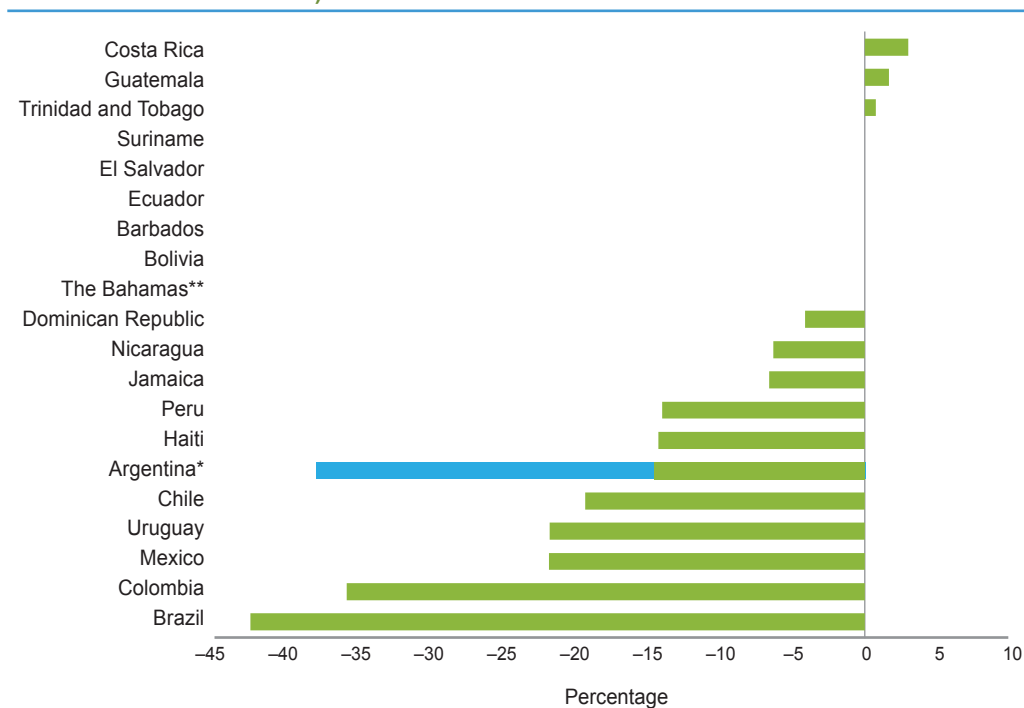
While headlines focus on nominal exchange rates, when analyzing export competitiveness it is real exchange rates and, more precisely, the real effective exchange rate (REER) that matters. The latter takes into account the difference in inflation across trading partners to calculate a weighted exchange rate. However, an additional consideration is whether a country in the region competes with others in particular products in a third export destination. For example, Mexico may not trade much directly with China, but both countries compete in selling similar products to the United States. The combination of a shared export destination and a similar product mix implies that how the Mexican peso moves against the Chinese yuan is extremely important for Mexican competitiveness. For

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<sup>1</sup> The period of analysis for the nominal depreciations extends only until October, 2015 so it does not capture the Argentine depreciation of the official rate associated with the change in regime of December 2015. Figure 4.1 presents numbers for Argentina before (ARG, until October 2015) and after the depreciation (ARG\*, until December 2015).

<sup>2</sup> See Giordano (2015), recently featured in an article by Andrés Oppenheimer (2015) in the *Miami Herald*.

**Figure 4.1 ■ Nominal Depreciation in Latin America and the Caribbean (June 2014 – October 2015)**



*Source:* Authors' calculations based on: International Financial Statistics (IMF); Thomson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC—Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

*Note:* \* Blue represents nominal exchange rate for December 31, 2015. \*\* Data available until June 2015. Venezuela and Panama are excluded.

example, while a depreciation of the yuan against the peso would make Mexican firms less competitive and a nominal appreciation of the dollar against both countries may yield little benefit, a REER calculated in the traditional way for Mexico would give China a low weight. As discussed in Stein, Fernández, and Rosenow (2016), this chapter consequently calculates Adjusted REERs (AREERs), taking exactly these considerations into account.

The results regarding the evolution of AREERs are surprising: most countries in the region have not depreciated in real terms. Only three countries—Brazil, Colombia and Mexico—have had substantial depreciations, while 15 countries have experienced real appreciations. Furthermore, in some countries, such as Bolivia, Ecuador, Suriname and Trinidad and Tobago, appreciations are quite substantial, exceeding 15 percent. In the case of Argentina, a substantial appreciation was partially reversed by the nominal devaluation at the end of the year.

What has been the impact on exports? While it may be too early to observe the full impact, there is some evidence that AREER depreciations are associated with better export performance, but only when exports are measured in local currency in real terms. The impact seems to be larger for the case of manufactured goods.

The chapter also discusses the impact of further depreciations in two key countries, Brazil and China, as well as the impact of the recent Argentine depreciation. It then illustrates the importance of measuring AREERs at the product level; different products can be affected very differently as the exchange rate moves.

### Adjusted Real Effective Exchange Rates (AREERs)<sup>3</sup>

Real Effective Exchange Rates (REERs) are calculated as weighted averages of bilateral real exchange rates between pairs of countries, whereas traditional REERs use trade shares as weights. Thus, for example, if the United States and India represent 40 percent and 8 percent of Colombian exports, their weights in a REER calculation would be 40 percent and 8 percent, respectively.<sup>4</sup> But Colombian exporters also compete with those from other countries in the U.S. market, and that competition is stronger the more similar the products. To consider another example, Mexican flat-screen TV exporters compete with Chinese and Korean firms in the U.S. market, and not just with U.S. manufacturers. In order to address this problem, an adjusted REER (AREER) is required, taking into account competition from exporters in third markets.<sup>5</sup>

#### *Accounting for Competition*

To return to the Colombian example, rather than assigning a 40 percent weight to the United States, as in the traditional measure, now the share corresponding to the U.S. market is divided into two portions. One part, representing the share of domestic U.S. demand for (non-Colombian) tradables that is satisfied by domestic producers (50.8 percent, according to national accounts data), is still assigned to the United States. The rest, representing the share of imports in U.S. demand for tradables, is assigned to countries (other than Colombia) that export to the United States, in proportion to their exports' shares. A country's total weight is the sum of its share in its own market and in other markets, weighted by the importance of each market as a destination for Colombia's exports. Intuitively, part of China's weight in Colombia's REER will be associated with the fact that Colombia competes with Chinese producers in the Chinese market, while another part will be associated with the extent to which Chinese exporters compete with Colombian firms in other markets that are important destinations for Colombia's exports.

<sup>3</sup> This section draws on Stein, Fernández, and Rosenow (2016).

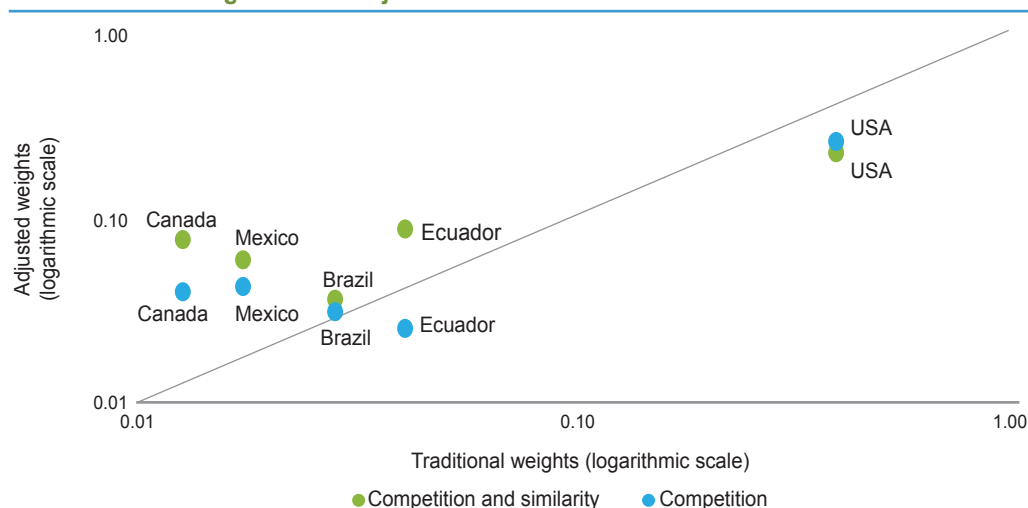
<sup>4</sup> Some measures of REER consider shares of both imports and exports. Given the focus on export competitiveness, only export shares are used. Unfortunately, bilateral data for trade in services are unavailable, which would be particularly relevant for the measurement of REER in some Caribbean countries.

<sup>5</sup> Appendix A discusses the data and methodology in more detail.

### Accounting for Similarity

Two countries may export to the same destination market but may have very different export baskets. If this is the case, they are not really competing. For example, Colombia and India may both export to the United States, but their export baskets could be quite different. The index of export similarity by Finger and Kreinin (1979), which reflects the degree of overlap of market shares for different products in countries' export baskets, and varies between 0 and 1, is used to adjust for this factor. To obtain the final weights for each country, adjusting for competition and similarity, the weights for competition in third markets are multiplied by the similarity index.<sup>6</sup> To illustrate the impact of adjusting for similarity and competition, Figure 4.2 plots the weights for selected countries under different REER measures for the case of Colombia. The horizontal axis depicts weights in the traditional computation of the real effective exchange rate, while the vertical axis displays adjusted weights (both are expressed in a log scale). Countries above the 45 degree line indicate increased weights in comparison to the traditional REER measure. As expected, the weight corresponding to the United States declines considerably after adjusting for competition, as competition with other exporters in the U.S. market far outweighs competition in third markets with U.S. exporters. The U.S. weight declines further after adjusting for similarity, as the export baskets of the United States and Colombia are very different. The weights for Mexico and Canada,

**FIGURE 4.2 ■ Weights in the Adjusted REER for Colombia**



Source: Authors' calculations based on: International Financial Statistics (IMF); Thomson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

Note: Weights were calculated using 2013 data.

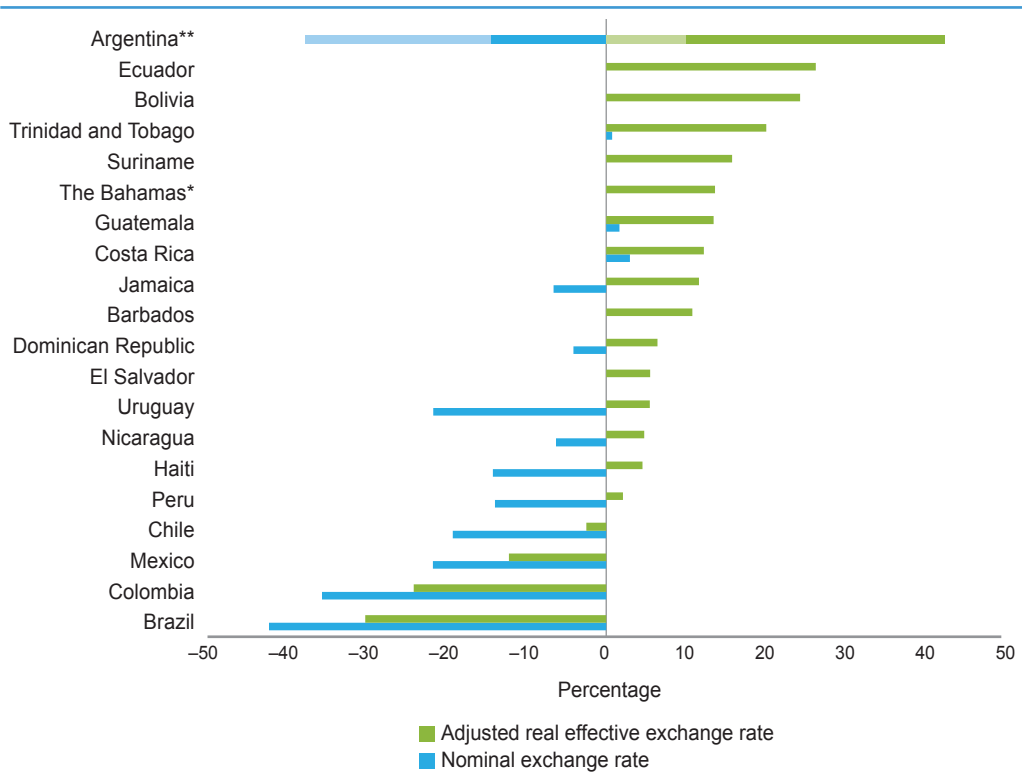
<sup>6</sup> Since the similarity index varies between 0 and 1, as a result of the multiplication the sum of the weights would no longer be 1. For this reason, the weights are renormalized so that they add up to 1.

in contrast, are much larger once adjusted, since these countries have the United States as their main export destination, and those weights become even larger once export similarity is taken into account. Ecuador's weight moves the most due to the export similarity adjustment, since Colombia and Ecuador export similar products, such as oil, flowers, gold and bananas.

## Changes in Competitiveness

Despite many large nominal depreciations, only three countries, namely Brazil, Colombia and Mexico, have substantially increased competitiveness according to AREERs (see Figure 4.3). In 16 of the 20 countries reported there is actually a real *appreciation*. Argentina stands out as the county with the largest real appreciation of more than 40 percent, despite the fact that its nominal exchange rate depreciated about 15 percent over the same period. Notice that there is a second measure for Argentina, which represents the change in AREER up

**FIGURE 4.3** ■ Changes in the Nominal and Adjusted REER in Latin America and the Caribbean (June 2014–October 2015)



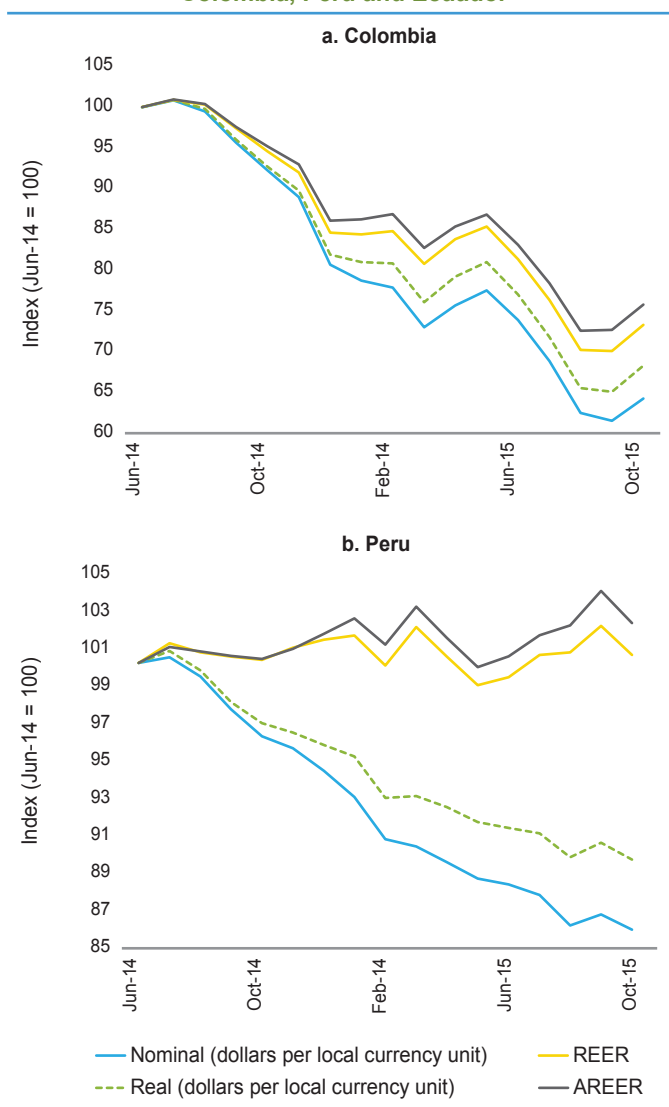
Source: Authors' calculations based on: International Financial Statistics (IMF); Thomson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

Note: Negative (positive) values correspond to depreciation (appreciation). \* Data available until June, 2015.

\*\* In the case of Argentina the light blue and light pink bars represent the change in the nominal exchange rate and the AREER to December 31, 2015.

to December 31, 2015, in order to include the impact of the nominal depreciation that took place that month. This depreciation, while substantial, was not enough to fully reverse the real appreciation experienced beginning in mid-2014. Officially dollarized Ecuador and Bolivia (with an exchange rate that did not move against the dollar) also experienced large real appreciations on the order of 25 percent. In Guatemala and Costa Rica, real appreciation of around 15 percent exceeds the modest appreciation in nominal rates. Chile, Haiti, Peru and Uruguay, despite significant nominal depreciations of 15 to 20 percent, saw little change in their AREERs. Only Brazil, Colombia and Mexico saw significant AREER depreciations.

**FIGURE 4.4 ■ Nominal and Real Exchange Rates for Colombia, Peru and Ecuador**



(continued on next page)

Considering the movement of the AREER through October 2015, countries can be clustered into three categories: i) those with large appreciations of more than 20 percent, including Argentina, Ecuador, Bolivia and Trinidad and Tobago; ii) those with large depreciations, namely Mexico, Colombia and Brazil; and iii) those with moderate appreciations, plus Chile with a mild depreciation. Colombia, Peru and Ecuador, respectively, are reasonable representatives of each cluster.

In Colombia, the adjusted index depreciates sharply in two steps, first within the second half of 2014 and then from May 2015 onwards, reaching a real depreciation of about 24 percent, while the nominal peso lost about 35 percent of its value against the dollar. In sharp contrast, the Peruvian index remains

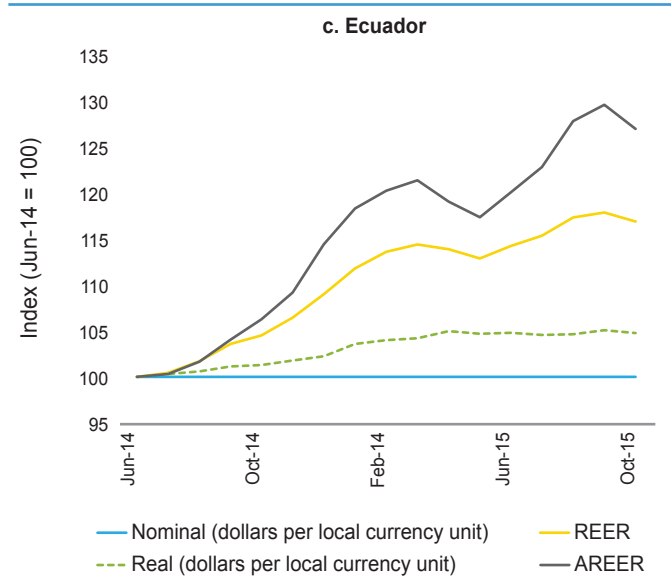


mostly constant while the nominal exchange rate depreciates slowly at a constant rate. At the other extreme, Ecuador had a sharp real appreciation of around 25 percent (see Figure 4.4).

Notice that in the three cases shown, AREERs are always stronger (i.e., they appreciate more or depreciate less) than traditional REERs. This is the case for most countries in the region, as the weight of the dollar, a currency that has appreciated substantially over this period, tends to decrease with the adjustment for competition and similarity. In other words, while many countries export to the United

States, which has appreciated substantially against other floating currencies, this gain in competitiveness has been attenuated because countries in the region tend to compete with countries that export similar products to the U.S. market and whose currencies have also depreciated against the dollar. On average, the differential in the rate of depreciation between both measures for the period June 2014 to October 2015 is 2.2 percentage points, although in cases such as Ecuador the difference is closer to 10 percentage points.

**FIGURE 4.4 ■ Nominal and Real Exchange Rates for Colombia, Peru and Ecuador (continued)**



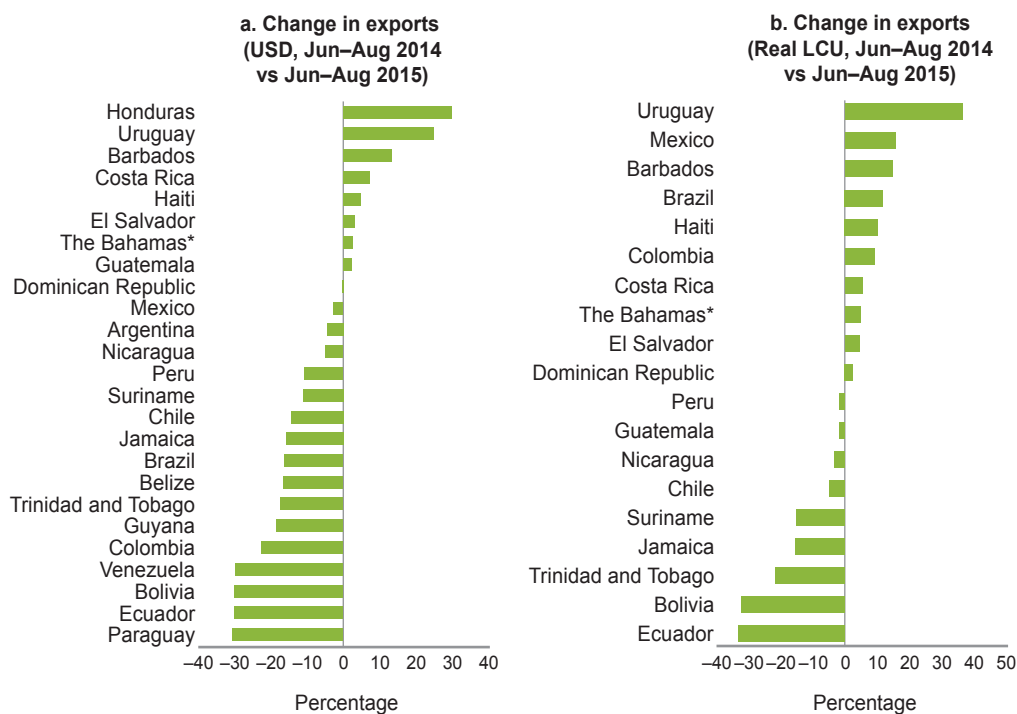
*Source:* Authors' calculations based on: IMF's International Financial Statistics; Thomson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators. *Note:* The three plots in the figure capture the time series evolution of the adjusted REER index, from June 2014. For comparison, the plots also report the evolution of the nominal exchange rate against the U.S. dollar, the bilateral real exchange rate with the U.S., and the traditional real effective exchange rate without adjusting for competition or similarity. All four variables are normalized to 100 at the beginning of the period of analysis. REER is the real effective exchange rate.

### Export Performance and the Real Effective Exchange Rate

Export performance measured in dollars has been discouraging. Eighteen countries have seen dollar export values fall, 10 of them by more than 10 percent. Given the appreciation of the U.S. dollar against virtually all currencies (discussed in Chapter 1), this may not be too surprising (see panel (a) of Figure 4.5).

An alternative is to measure total exports in local currency units. To the extent that a large component of total export costs is priced in local currency, measuring exports in

**FIGURE 4.5 ■ Change in Export Values**



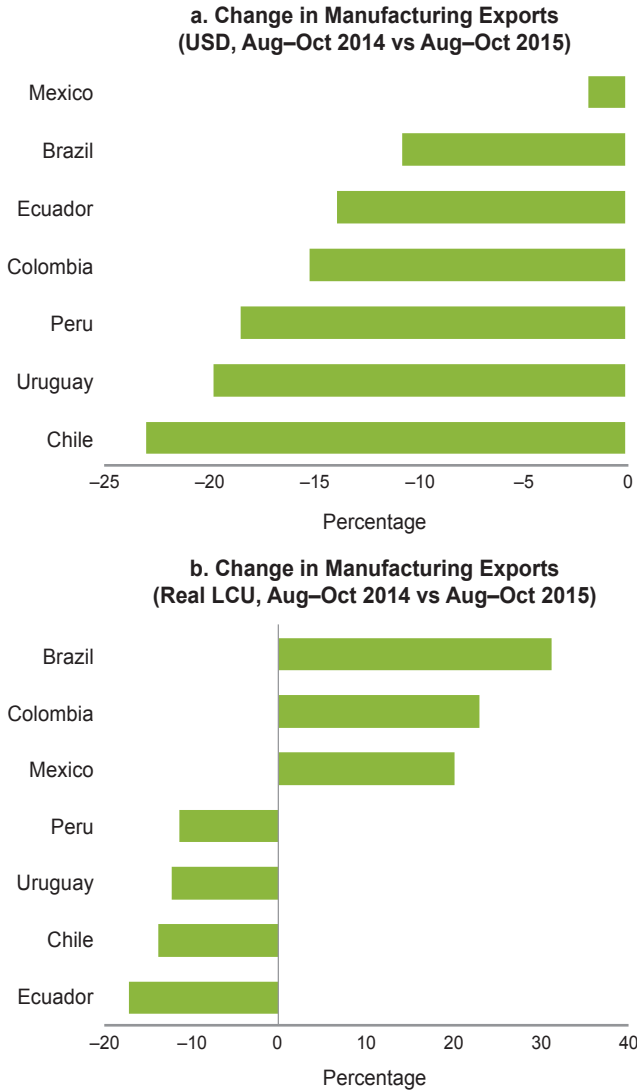
Source: Authors' calculations based on Direction of Trade Statistics (International Monetary Fund).  
 Note: Graphs show the change in average export values between June-August 2014 and June-August 2015 in dollars and in real local currency units.

(real) local currency units may be more informative about the impact on exporters' profits. The picture is then more optimistic, as exports valued in real local currency rise in roughly half of the countries analyzed.

Part of the decline in total exports is associated with large falls in commodity prices. Considering manufactures of industrial origin (MIO), three of seven countries analyzed—Brazil, Colombia and Mexico—saw increases in local currency export values, as shown in Figure 4.6.

Is there a relation between export performance and AREERs? When measuring exports in dollars (total or manufactures), no clear relationship emerges (see Figure 4.7). However, when measured in local currencies, countries with AREER depreciations saw export performance improve. For every 1 percentage point depreciation in AREER, total exports in real local currency units increased by 0.9 percentage points, while exports of manufactured goods of industrial origin (MIO) increased by 1.2 percentage points.<sup>7</sup>

<sup>7</sup> The two slope coefficients are statistically significant at 5 and 1 percent for total exports and manufactured exports, respectively, when measured in real local currency units. When measured in U.S. dollars, the correlation is not statistically significant regardless of which kind of exports is considered.

**FIGURE 4.6 ■ Change in Manufactured Export Values**

*Source:* Authors' calculations based on the following national sources: Central Bank (Chile); Ministério do Desenvolvimento, Indústria e Comércio Exterior (Brazil); Departamento Administrativo Nacional de Estadística (Colombia); Central Bank (Ecuador); Banco de México, Banxico (Mexico); Superintendencia Nacional de Aduanas y de Administración Tributaria (Peru) and Central Bank of Uruguay (Uruguay).

*Note:* Graphs show the change in average export values between August–October 2014 and August–October 2015 in dollars and in real local currency units. The data represent manufactures of industrial origin.

There is also a relation between AREER depreciations and export volumes, albeit somewhat weaker compared to using real local currency units, as shown in Figure 4.8.<sup>8</sup> Still, it should also be taken into account that it takes time for exports to respond. So-called long-run elasticities (the percentage change in exports given a depreciation of one percent) are generally considered larger than those in the short run.

### The Effects of Unilateral Depreciations

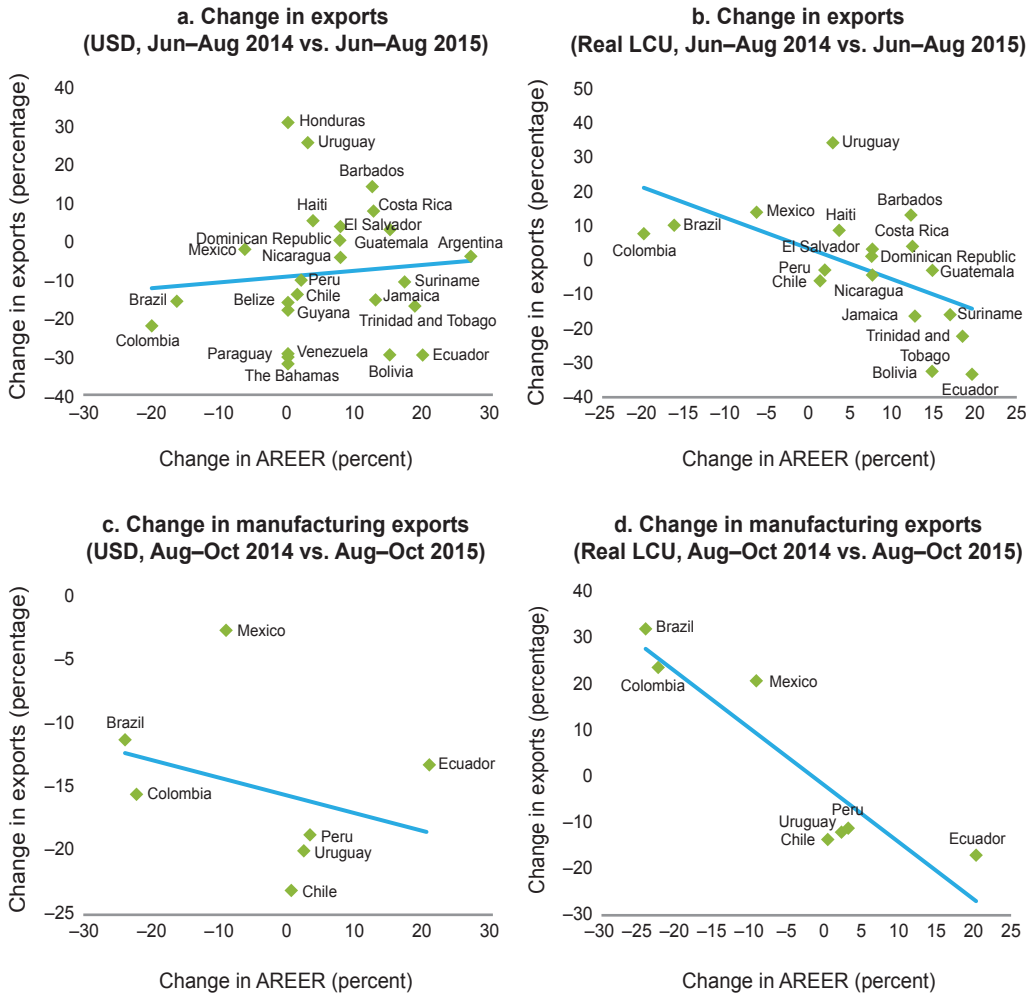
How would further depreciations in key countries (such as China, Brazil and Argentina) affect the region's export competitiveness?<sup>9</sup>

A 10-percent depreciation of the Chinese yuan would result in appreciations in Brazil, Chile, Costa Rica, Haiti, Peru and Uruguay of more than

<sup>8</sup> The slope coefficient of the OLS fitted line in Figure 4.8 implies that a percentage point of depreciation in the adjusted REER is associated with a growth in exports of 0.15 percent. However, the relationship is not statistically significant due to the small sample of only nine countries/observations available.

<sup>9</sup> These countries are chosen given their importance for regional trade and, in the case of China, as an export competitor.

**FIGURE 4.7 ■ AREERs and Export Performance**

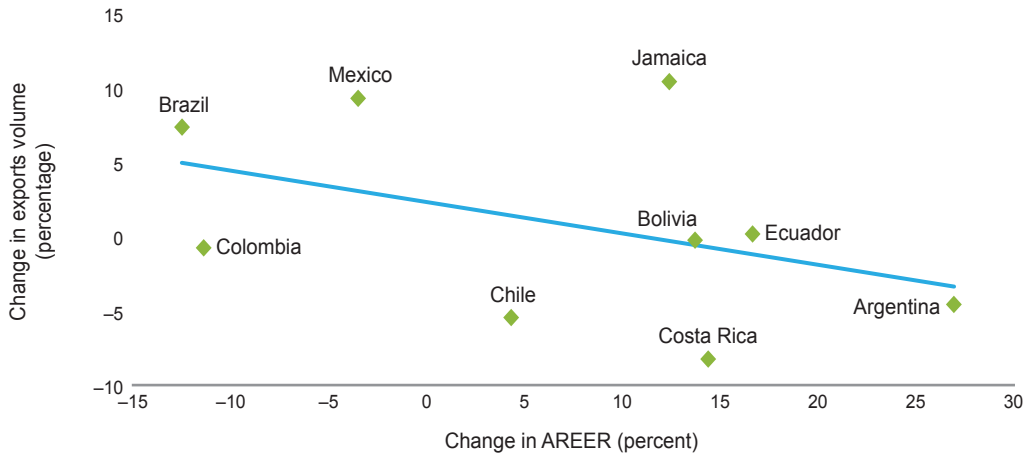


Source: Authors calculations based on Direction of Trade Statistics (international Monetary Fund) for total exports and the following national sources for manufactured exports: Central Bank (Chile); Ministério do Desenvolvimento, Indústria e Comércio Exterior (Brazil); Departamento Administrativo Nacional de Estadística (Colombia); Central Bank (Ecuador); Banco de Mexico, Banxico (Mexico); Superintendencia Nacional de Aduanas y de Administración Tributaria (Peru) and Central Bank of Uruguay (Uruguay).

Note: The graph illustrates the change in export values measured in U.S. dollars (left column) and in real local currencies (right column) against the change in the adjusted real effective exchange rate for the case of total exports (first row) and exports of manufactured goods of industrial origin (second row). REER = real effective exchange rate.

1.5 percent.<sup>10</sup> In the Dominican Republic, El Salvador, Guatemala, Haiti, Nicaragua, and Mexico the impact of using the AREER is greater than if a traditional REER had been employed, as China is not an important direct export destination but is a competitor in third

<sup>10</sup> For comparison, the median real appreciation across all 76 countries in the sample as a result of a 10 percent depreciation of the Chinese yuan is 1.05 percent.

**FIGURE 4.8 ■ AREER and Export Volumes**

Source: Authors' calculations based on Organization for Economic Cooperation and Development for Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico, and International Finance Statistics (International Monetary Fund) data for Bolivia, Ecuador, and Jamaica. Argentina's value is for the second quarter of 2015.

Note: The graph shows the annual change in export volumes between 2015.Q3 and 2014.Q3 and the change in AREERs during the same period for 9 countries. AREER = adjusted real effective exchange rate.

markets.<sup>11</sup> In contrast, employing the traditional REER measure results in a greater impact (of some 2.5 percent) for Chile. While 25 percent of Chile's exports head to China, China is less important as a competitor against Chilean exports in third countries.

For the case of a 10 percent depreciation of the Brazilian real, the effects are even more heterogeneous across countries. Only three countries, Bolivia, Uruguay and Argentina, suffer a strong real appreciation (of 2 percent to 3.5 percent), while the impact on others is more moderate.

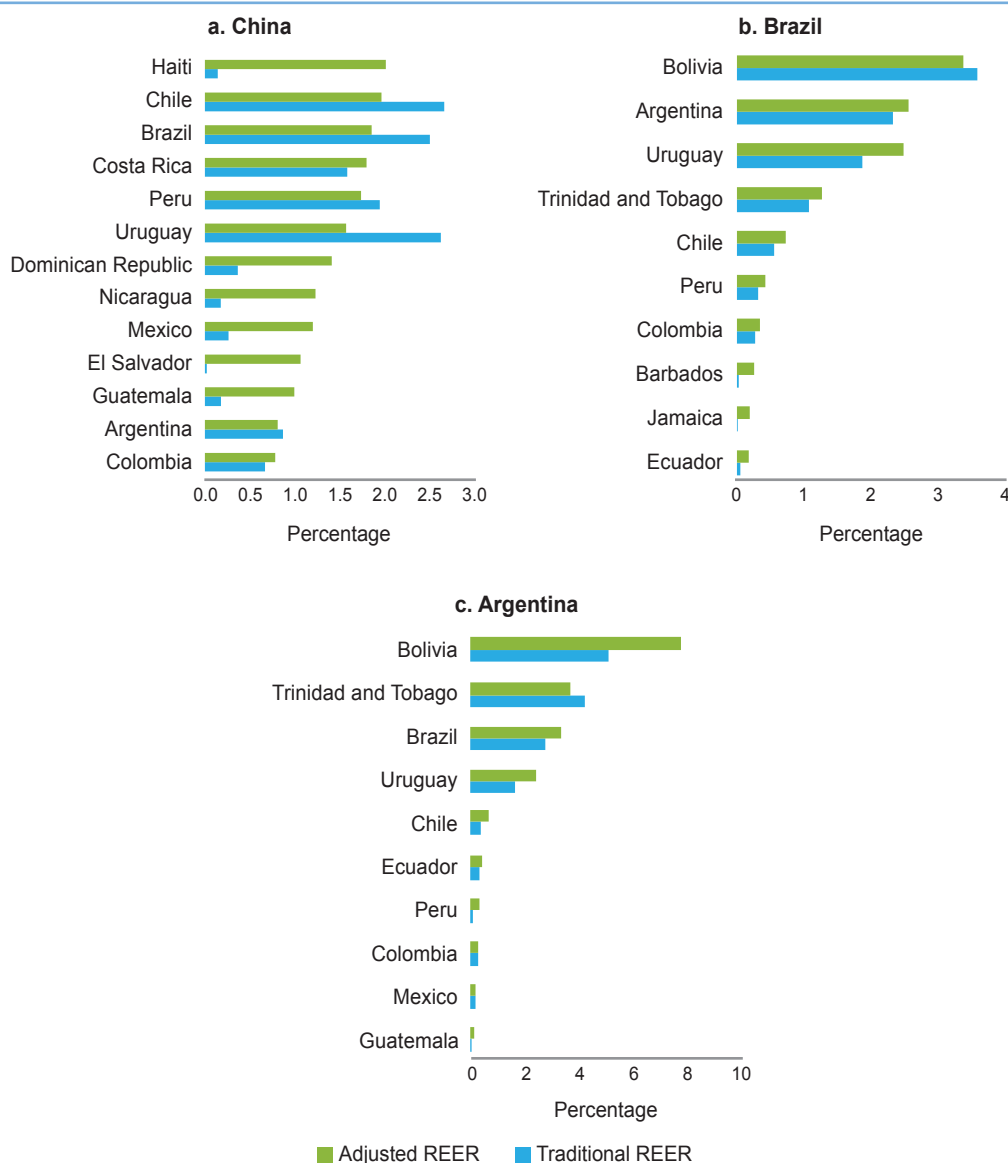
The third case considers the effects of the observed 35 percent depreciation of Argentina's peso in December 2015. Bolivia is by far the most affected country, with an appreciation of close to 8 percent, while Brazil, Trinidad and Tobago and Uruguay also experience substantial appreciations of between 2.5 and 4 percent when the AREER measure is used. In Bolivia, Brazil and Uruguay, the impact using the AREER is greater than that under the traditional measure, suggesting that competition in third markets is important.

### Sector and Product-Specific REERs

The methodology used to calculate AREER at the country level can also be used to calculate sector and product-specific AREERs. Producers of different products within a

<sup>11</sup> To illustrate with a concrete example, Haiti's main exports are knitted t-shirts and sweaters, and the main destination is the United States. China is the world leader in exports of knitted t-shirts and sweaters, and its main destination is also the United States. In fact, Haiti imports fabric from other countries and exports apparel, taking advantage of privileged access to the U.S. market through a bilateral agreement.

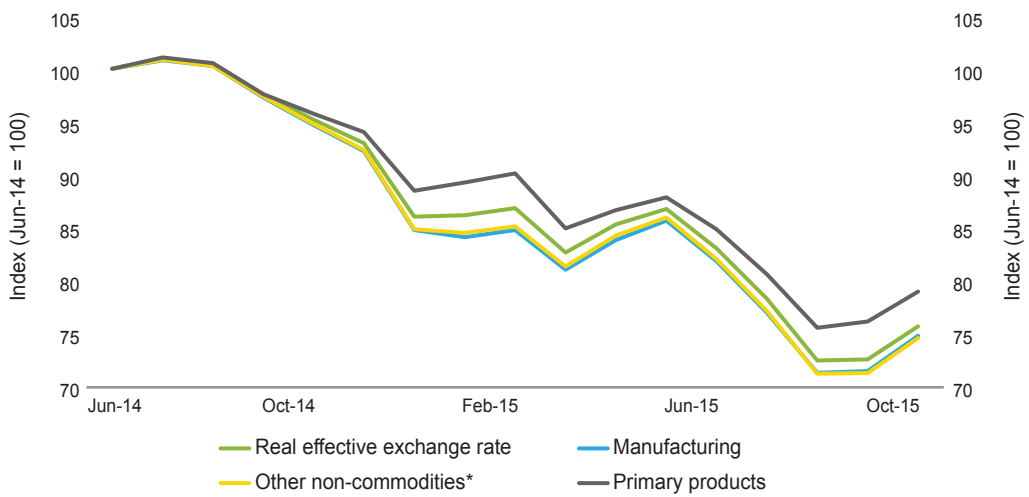
**FIGURE 4.9 ■ Unilateral Depreciations by China, Brazil and Argentina**



Source: Authors' calculations based on: IMF's International Financial Statistics; Thompson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

Note: Graph shows the impact of a hypothetical 10 percent depreciation of the Brazilian real and the Chinese yuan on the adjusted REER and the actual impact of the December 2015 Argentine devaluation on other countries of the region. REER = real effective exchange rate.

country export to different destinations, where they compete with exporters of different origins. Thus, the evolution of export competitiveness in a country can vary significantly across products.

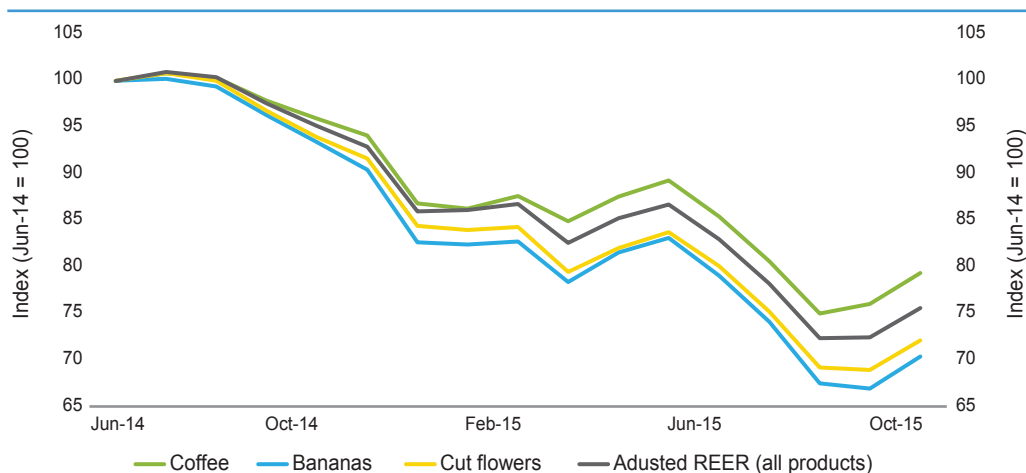
**FIGURE 4.10 ■ Changes in Colombian Sector Competitiveness**

Source: Authors' calculations based on: IMF's International Financial Statistics; Thompson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

Notes: Graph shows evolution of sector specific adjusted real effective exchange rates for Colombia from June 2014 to October 2015. \* Does not include manufacturing.

Consider Colombia as a case study. Colombia's commodity sectors have become significantly more competitive (in other words Colombia has depreciated by more than others that export similar commodities to the same destinations), and non-commodity sectors have experienced an additional 4 percent increase in competitiveness (see Figure 4.10). Considering more specific products, bananas, cut flowers, and coffee illustrate how different products may experience different changes in competitiveness. The AREER for bananas depreciated by 29 percent, and cut flowers was not far behind—with a 27 percent depreciation. Coffee also experienced a significant real depreciation but considerably less than that of bananas (see Figure 4.11). These differences have two notable explanations. In exporting flowers to the United States, Colombia competes mostly with Ecuador, which experienced a substantial REER appreciation. In contrast, in coffee Colombia competes with Brazil, which enjoyed a significant depreciation.

More generally, there is considerable variation in the five top exports for a set of countries in the region. For example in Peru, polypropylene suffered an appreciation of some 10 percent, while the adjusted REER for jerseys depreciated by 6.7 percent. So, even for countries that experienced an overall appreciation, some products became more competitive. In Ecuador, passenger motor cars experienced a large appreciation, while chemical products appreciated much less implying considerable variation in the change in competitiveness across different products even though there was a general real appreciation. Table A.2 in Appendix A lists the top five non-commodity products for a selection of countries and details how the AREER has changed for each one.

**FIGURE 4.11 ■ Increased Competitiveness for Colombian Bananas, Cut Flowers and Coffee**

Source: Authors' calculations based on: IMF's International Financial Statistics; Thompson Reuters DataStream; Bank of England's Continuous Exchange Rates for the Euro Zone; IDB; INDEC–Argentina; Harvard's CID Economic Complexity and Bilateral Trade Flows; and University of Michigan's World Development Indicators.

Note: The figure illustrates the change in the real adjusted effective exchange rate for bananas, cut flowers and coffee exports for Colombia for dates June 2014 to October 2015. REER = real effective exchange rate.

## Conclusions

Several countries in the region have experienced large bilateral depreciations since the middle of 2014. This has fueled a mistaken perception that most countries have gained export competitiveness. Accounting for trade with different countries and competition in similar products in third markets, the majority of countries have actually experienced significant real appreciations. Employing an adjusted measure, only three countries—Brazil, Colombia, and Mexico—have had sizeable real depreciations. Indeed, the Brazilian real depreciation was significant in limiting real depreciations in some of its trading partners, and now the sharp depreciation in Argentina has arrested some of the real depreciation in Brazil and provoked a real appreciation in Bolivia. China is an important trading partner for many countries in the region, but even for others such as El Salvador, Guatemala, and Mexico it competes in selling similar products to the U.S. market. Hence, a yuan depreciation reduces competitiveness throughout the region.

Not all exporters within a country are affected equally by changes in exchange rates. Depending on the evolution of exchange rates in trading partners and competitors in third markets, the export competitiveness of some products may increase while that of other products may decline. In fact, there is substantial variability in export competitiveness across products in several countries in the region.

Given that most countries experienced real appreciations, and the dollar appreciated, it is not surprising that dollar export values have plummeted. However, when exports are



measured in real local currency units they have risen in half the countries in the region. Moreover, there is a relation between export performance employing that numeraire and the adjusted real exchange rate measure.

Further increases in exports in depreciating countries may be forthcoming, since depreciations are recent and responses to them may take time. In those cases where exports have become less competitive, firms may cease to export to those destinations.<sup>12</sup> Where new opportunities arise, exporters need to invest in developing new markets for their products, and international buyers may face frictions in switching suppliers to more competitive source countries. Firms may additionally take time to hire more employees and make the investments needed to boost exports. Moreover, particularly in countries that experienced a real bilateral depreciation vis-à-vis the U.S. dollar, firm balance sheets (the topic of the next chapter) may have been impaired, which would explain why relative price changes are slow to feed into greater investment and output. For these reasons, there may be a “J curve” type of effect, where exports decline on the impact of a depreciation but recover and increase as firms adjust to the new prices. Thus, it would not be surprising to see both higher export volumes and higher values in the future.

What policy conclusions can be drawn? First, even at this early stage there is evidence of a link between real exchange rate depreciation and export performance. Thus, countries may want to avoid sizable appreciations if they have concerns about export competitiveness. Second, it is not enough for countries seeking to maintain export competitiveness to focus on exchange rate developments with trading partners. Countries should look beyond, focusing on countries with which they compete in third markets as well. Third, information on real exchange rates at the product level may be a useful tool in helping to guide export promotion policies. Such policies may help firms maintain markets where competitiveness has declined and help to open markets where products have gained competitiveness. In some specific cases, financial incentives might be appropriate.<sup>13</sup> More generally, countries may wish to revise current trade policies and give a greater impulse towards true regional integration. This topic is discussed in more depth in Chapter 7.

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<sup>12</sup> Indeed, given the sharp changes in relative prices, withdrawals from export destinations in products that are now less competitive may also explain the decline in export values, as it takes time to develop new markets.

<sup>13</sup> A financial incentive may only be justified when positive spillovers (externalities) are very significant and should always be carefully monitored and evaluated (see Crespi, Fernández-Arias, and Stein 2014).





## CHAPTER 5

# Firm Financial Positions and Firm Performance

**F**irms across emerging markets have taken advantage of low global interest rates by tapping international debt markets, more than doubling their international debt outstanding, issued mostly at longer maturities and at fixed rates. However, lower commodity prices, lower growth and sharp currency depreciation in some countries have renewed attention on the health of firms, particularly non-financial firms, in emerging economies. Moreover, exchange rate depreciations appear to have affected investment, and a measure of firm solvency has deteriorated for firms in emerging economies and specifically in Latin America and the Caribbean. It is hoped that, as exchange rates stabilize, firm earnings and investment will rise. In any event, careful monitoring of firms' balance sheets and their ties to financial systems are recommended. If firms have profitable opportunities—but debt overhang on their balance sheets limits investment—then actions to facilitate some type of financial re-engineering of liabilities may be warranted.

### How Have Firm Balance Sheets Evolved?

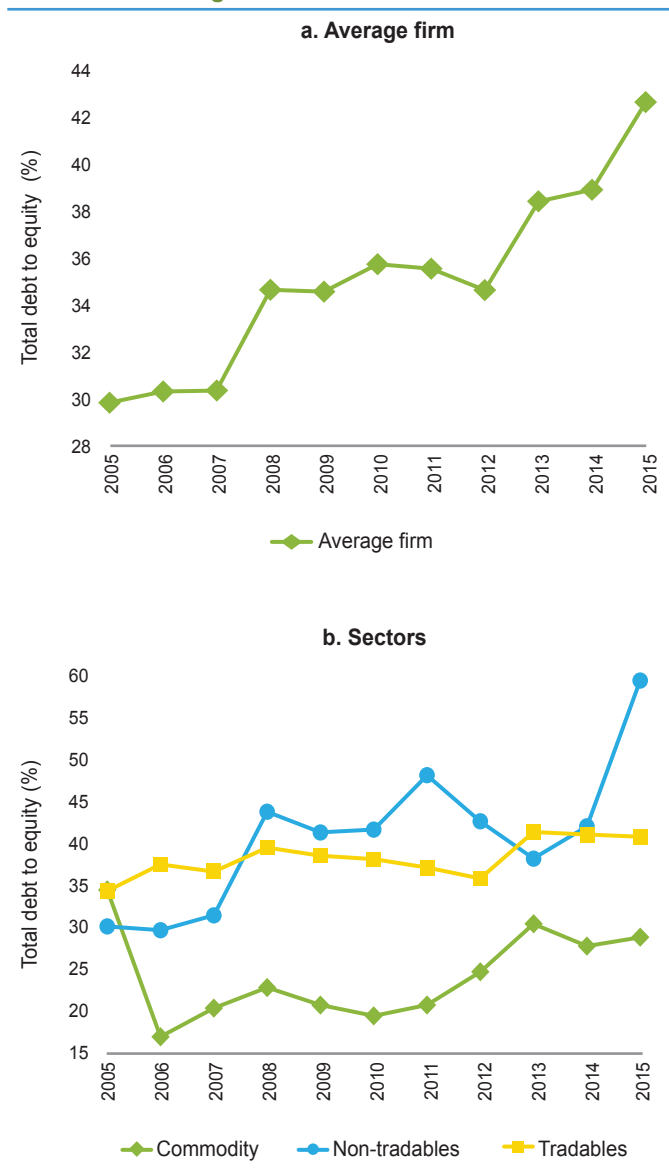
The leverage of non-financial firms has risen in the last decade, particularly in the years following the global financial crisis of 2008–09. In fact, leverage has increased across all sectors in the region. Perhaps surprisingly, the leverage of firms in the commodity sector has been lower than that of firms in other sectors, but it has increased very strongly, as shown in Figure 5.1. The upward trend in leverage was not only a feature of firms in the region but also across emerging markets in general.<sup>1</sup>

As discussed in the 2014 and 2015 Latin American and Caribbean Macroeconomic Reports, domestic credit grew at double-digit rates in many countries in the region, while at the same time firms took advantage of easier global monetary conditions and tapped international capital markets. The stock of outstanding bonds issued by non-financial corporations in five countries with deeper capital markets almost tripled between 2008 and 2014,

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<sup>1</sup> On leverage of firms in the region, see Powell (2015) and Rodrigues Bastos, Kamil, and Sutton (2015). For other emerging economies see Chui, Fender, and Sushko (2014) and IMF (2015b). All these studies find that leverage across emerging markets has increased in recent years.

**FIGURE 5.1** ■ **Leverage of Non-Financial Firms in the Region**



Source: Authors' calculations based on Thomson-Reuters Worldscope.  
 Note: The trend is computed as the simple average of the median firm in each country. The data are described further in Appendix B.

reaching a peak in the second quarter of 2014 of US\$ 579 billion (see panel (a) of Figure 5.2).<sup>2</sup> Firms issued bonds largely in international markets denominated in foreign currency, particularly U.S. dollars. Indeed, as of the end of the second quarter of 2015, 84 percent of the outstanding stock of international debt securities issued was denominated in U.S. dollars.<sup>3</sup> After the peak in mid-2014, gross issuance decelerated sharply from an annual total of US\$ 146 billion in the second quarter of 2014 to only US\$ 54 billion in the last quarter of 2015, as shown in panel (b) of Figure 5.2. As in the boom, the decline was led by a collapse in issuance in foreign currencies.

The leverage of firms that issued in international markets is significantly higher than the leverage of firms that did not<sup>4</sup> and, more importantly,

<sup>2</sup> Brazil, Chile, Colombia, Mexico and Peru. Refer to Powell (2014) for a description of corporate bond issuance in the region. See BIS (2014), Lo Duca, Nicoletti, and Vidal (2014), Ayala, Nedeljkovic, and Saborowski (2015), and Feyen et al. (2015) for a description of patterns of bond issuance in emerging economies and their determinants.

<sup>3</sup> At the time of writing, stock data for countries in the sample were only available up to the second quarter of 2015.

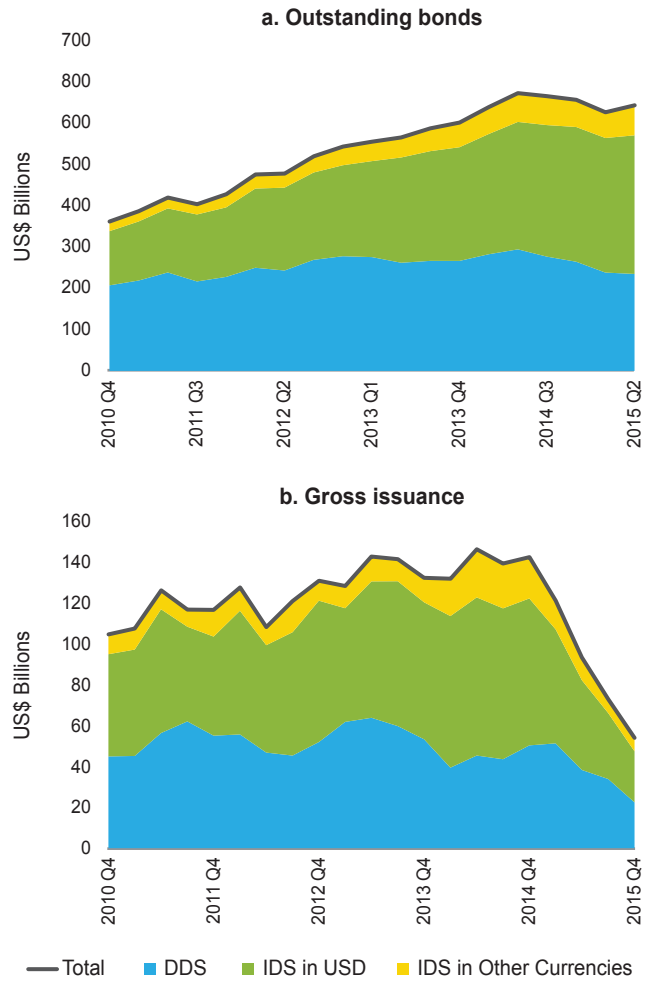
<sup>4</sup> Throughout this chapter, a firm is classified as an issuer if between 2000 and 2015 it issued bonds, by itself or through a subsidiary, denominated in any of the following five currencies: USD, EUR, GBP, JPY or CHF.

their leverage ratios increased more, as shown in Figure 5.3.<sup>5</sup>

Moreover, firms' capacity to service those debts (measured as the ratio of earnings to interest expenses) has diminished, as have their profits, as shown in panels (a) and (b) of Figure 5.4. These two trends are evident for the average firm in the region, but they are more pronounced among firms in the commodity sector, which have been affected by falling international prices, and in some cases are compounded by depreciating local currencies. For the firms in the commodity sector that levered up during the boom years by issuing bonds in hard currencies, the current environment is an extremely challenging one, particularly if currency and commodity price risks were not hedged.

Firms took advantage of low international interest rates to issue at fixed rates at long maturities to restructure debts and to finance real investment projects. However, increasing foreign-currency liabilities may also entail higher risks, especially if those exposures are not appropriately hedged through

**FIGURE 5.2 ■ Outstanding Bonds and Gross Issuance**

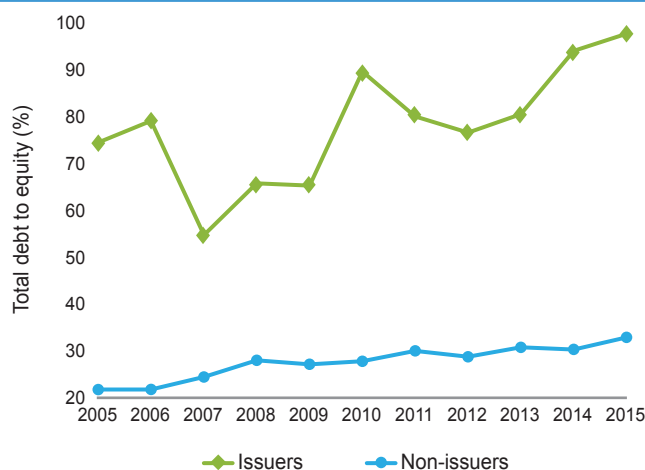


Source: Authors' calculations based on BIS securities statistics (panel A) and Thomson-Reuters (panel B).

Note: Outstanding bonds is the stock of outstanding debt securities. Panel b shows the last 4 quarters of gross issuance for non-financial firms. Data are on a nationality basis covering Brazil, Chile, Colombia, Mexico, and Peru. DDS is domestic debt securities, and IDS is international debt securities.

\* The figure in panel (a) shows the stock of outstanding debt securities, and the figure in panel (b) shows annual gross issuance by non-financial firms. Both figures report data on a nationality basis and in billions of U.S. dollars (the annual figure in Panel (b) is the sum of the last four quarters). DDS stands for domestic debt securities. IDS stands for international debt securities. Countries included are Brazil, Chile, Colombia, Mexico and Peru.

<sup>5</sup> This pattern is more marked in the region compared to other emerging markets (Figure B.1 in Appendix B). Fuertes and Serena (2014) did not find that leverage ratios of emerging economy firms issuing in all foreign increased, but the data here are extended to the third quarter of 2015.

**FIGURE 5.3 ■ Leverage of Non-Financial Firms**

Source: Authors' calculations based on Thomson-Reuters Worldscope.

Note: The figure illustrates the ratio of debt to equity of non-financial firms that have issued foreign-currency bonds in certain foreign currencies and those that have not, defined further in Appendix B. Trends are computed as the simple average of the median firm in each country.

assets or cash flows in dollars or through financial contracts. Unfortunately, there are no systematic data that allow an analysis of unhedged exposures in the region. Moreover, where carry trade opportunities were favorable some firms appeared to have leveraged up to boost financial assets, thus acting more like a financial firm. Recent studies by Bruno and Shin (2015) and Caballero, Panizza, and Powell (2015) suggest that firms across emerging markets (especially in countries

with capital controls) used the proceeds of new issuance in hard currencies to increase their cash balances in ways that include investments in local financial systems—a type of carry trade strategy.<sup>6</sup>

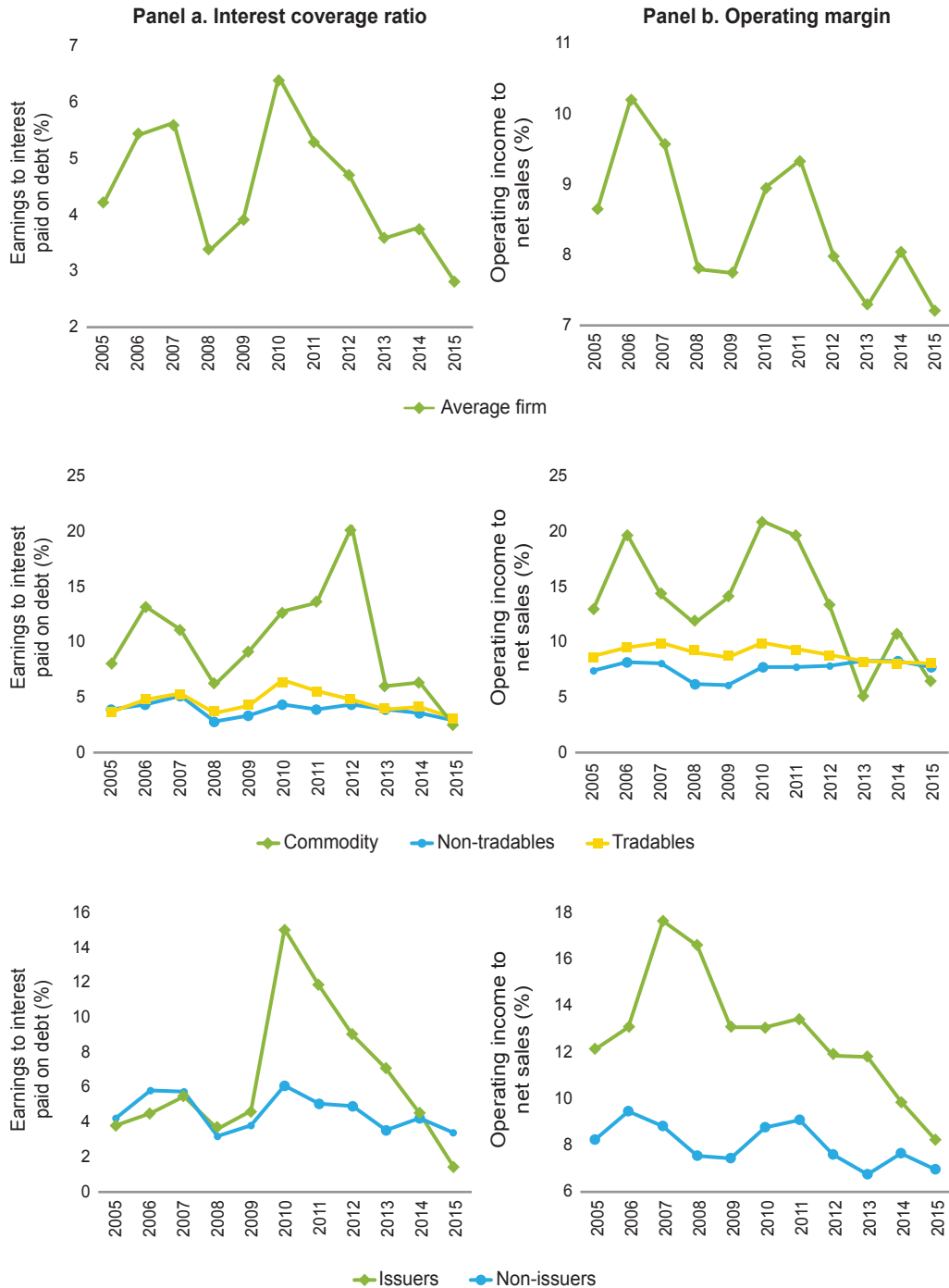
As Figure 5.5 illustrates, firm investment has fallen steadily and across all sectors since 2012. Interestingly, the decline in capital expenditures has been across all sectors, but it is more pronounced among firms that issued bonds in a set of foreign currencies, largely in dollars. This fall is sharper in the recent period, of lower commodity prices and depreciating local currencies.<sup>7</sup> Econometric evidence detailed below indicates a statistical association between these two phenomena: capital expenditures by firms with larger exposures to international bond issuances in specific currencies are more negatively affected during larger nominal depreciations.

The auspicious external conditions that favored emerging markets have changed dramatically in the last two years. Not only did commodity prices start to fall in mid-2011 (see Powell, 2012), but currencies across the region have also been under pressure since early 2013, and particularly after the U.S. Federal Reserve signaled its willingness to increase

<sup>6</sup> Caballero, Panizza, and Powell (2015) corroborate the findings of Bruno and Shin (2015), but also show that issuers in hard currencies increased their cash balances more in countries with more stringent capital controls, exactly the places where non-financial firms would be able to profit from carry trades. Powell 2014 finds that the provision of credit in four Latin American countries was associated with the level of international bond issuance by non-financial firms, precisely the pattern expected if non-financial firms were keeping the proceeds of their international issuance as cash-like instruments in the local financial sector.

<sup>7</sup> This evidence based on firm-level data is consistent with the aggregate figures shown in IMF (2015a), which shows aggregate private investment in the region picked up in 2012 and has since decelerated across all sectors.

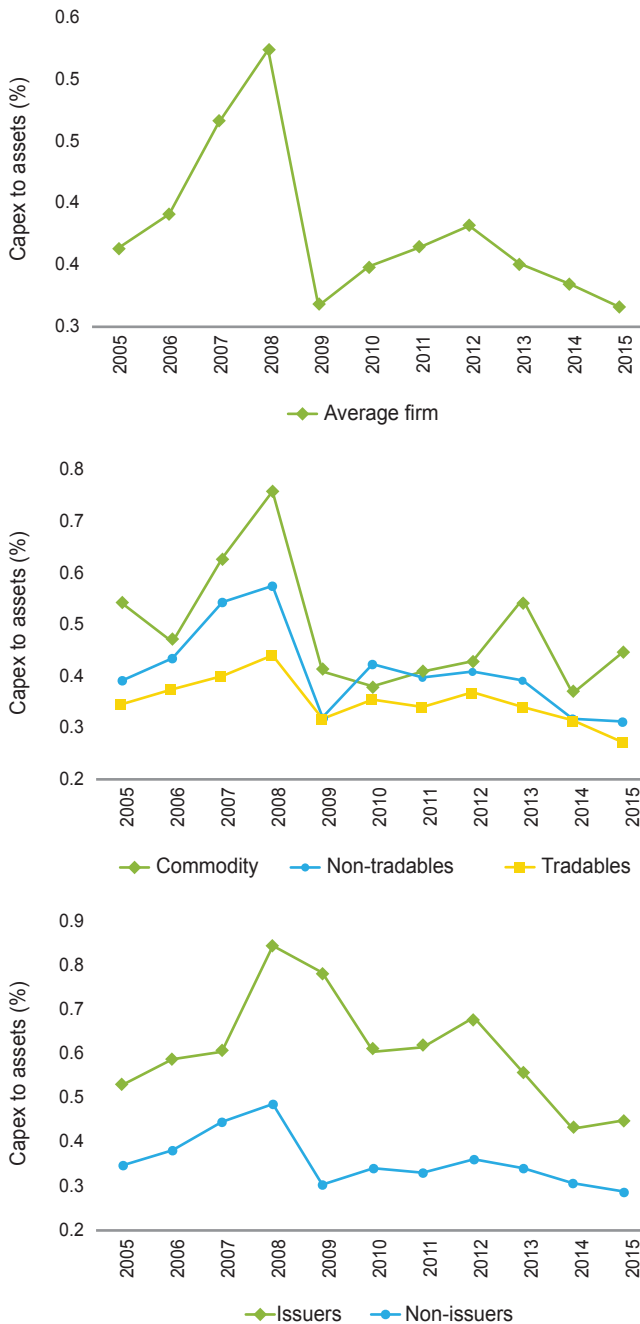
**FIGURE 5.4 ■ Firm Solvency and Profitability**



Source: Authors' calculations based on Thomson-Reuters Worldscope.

Note: The trend is computed as the simple average of the median firm in each country. The data are described further in Appendix B.

**FIGURE 5.5 ■ Firm Capital Expenditures**



Source: Authors' calculations based on Thomson-Reuters Worldscope.  
 Note: The trend is computed as the simple average of the median firm in each country. The data are described further in Appendix B.

interest rates in a speech by its chairman on May 22, 2013. If not matched by dollar assets, debt in foreign currency and sharp nominal depreciation imply greater leverage.<sup>8</sup>

### Measures of Firm Solvency

A measure of financial soundness shows a marked deterioration among non-financial firms in emerging markets since mid-2014, including Latin America and the Caribbean, as shown in panel (a) of Figure 5.6. This proxy for financial soundness proposed by Atkeson et al. (2013), dubbed Distance to Insolvency (DI), is a measure of the volatility of a firm's equity and is equivalent to the volatility of a firm's assets adjusted for leverage. It captures the adequacy of the firm's equity cushion relative to the business risks it faces and is computed as the reciprocal of the volatility of daily stock returns. Atkeson, Eisfeldt, and Weill (2013) show that sharp

<sup>8</sup> See Acharya et al. (2015) for a discussion of the risks arising from increased bond issuance by EM corporates.

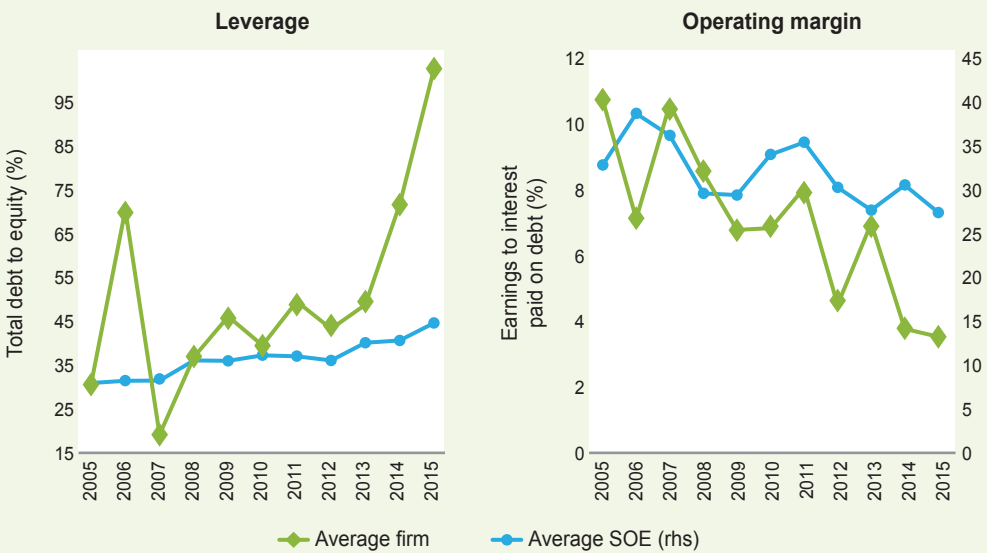


**Box 5.1 State-Owned Enterprises in Extractive Industries**

The trends of increased leverage and falling profitability described in this chapter are also affecting state-owned enterprises (SOEs), particularly those operating in the extractive industries of oil/gas and mining. Leverage in state-owned enterprises increased more than for the average firm in the region (see Figure B5.1). As with many other firms in the region, the increased indebtedness often took the form of foreign-currency debt. The fall in commodity prices has resulted in sharp drops in earnings and profits (see Figure B5.1), despite the offsetting effect of the currency depreciations vis-à-vis the U.S. dollar. Looking forward, the amortization schedule and likely commodity prices imply continued pressure on balance sheets.

SOEs are adjusting to a world of lower commodity prices and reduced world demand by deleveraging, reducing costs, and cutting dividends. The financial position of SOEs may impact aggregate investment (in some SOEs capital expenditures are being cut by 25 percent for the medium term) and may even pose a risk to governments' balance sheets. Asset divestures may become more common to restore balance-sheet health in the short term.

**Figure B5.1 ■ Leverage and Profitability of State-Owned Enterprises in Extractive Industries**



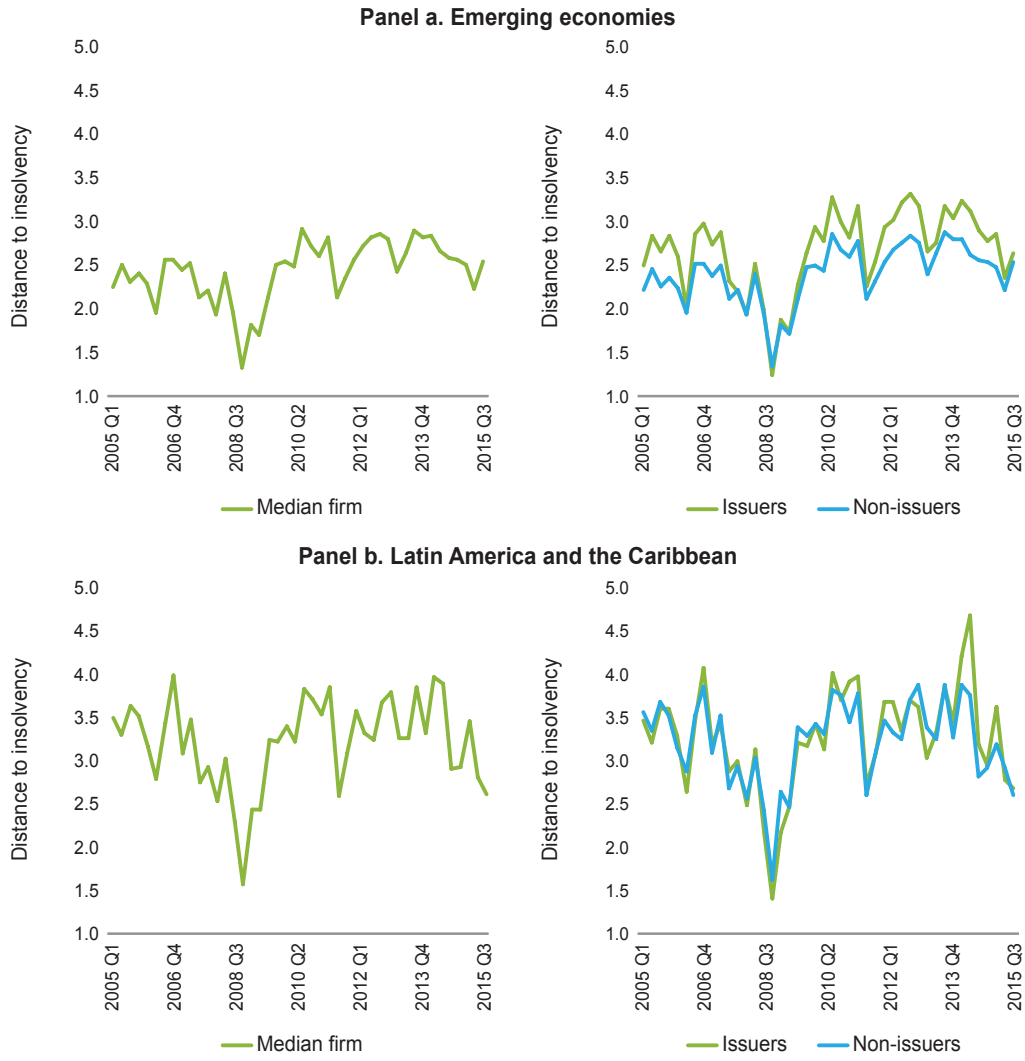
Source: Authors' calculations based on Thomson-Reuters Worldscope. The trend for the average SOE is computed as the median value among seven SOEs in the region operating in oil/gas and mining. The data are described further in Appendix B.

drops in this measure of Distance to Insolvency (DI) have been associated with financial distress in the corporate sector.<sup>9</sup>

Firms that issued abroad typically have a higher Distance to Insolvency (DI), as they tend to be the firms with the highest credit rating, but DI has deteriorated faster for this group than others. This is true for all emerging economies and for the region, as shown in Figure 5.6.

<sup>9</sup> A mapping of DI to credit ratings is discussed in Appendix B. See Caballero and Powell (2016) for more details.

**FIGURE 5.6 ■ Financial Soundness of Non-Financial Firms**



Source: Authors' calculations, Thomson-Reuters Datastream.  
 Note: The figure shows the median measured Distance to Insolvency. Appendix B describes the data and methodology in more detail.

Based on the mapping of DI to credit ratings described in Appendix B and in Caballero and Powell (2016), the deterioration in DI for the median firm in emerging markets roughly corresponds to a change in credit rating for U.S. firms from BBB to B.<sup>10</sup> However, despite the recent deterioration, the DI for emerging economies and for the region remains well above the levels reached during the depths of the 2008–09 global financial crisis.

<sup>10</sup> In the case of Latin America and the Caribbean the fall is somewhat greater. A caveat, however, is that Atkeson, Eisfeldt, and Weill (2013) exclusively analyzes U.S. corporates and, while rating agencies consider long-term foreign currency bond ratings to be comparable across countries, there may be differences in the ratings of U.S. firms.

The combination of issuers' higher leverage and greater DI suggests that asset volatility for issuers has in general been lower. It is likely that such firms are larger and more diversified than their non-issuer counterparts. However, DI for issuers then fell more than for non-issuers as currencies depreciated. This suggests that asset volatility rose more—or leverage increased more rapidly. This in turn indicates that firms may not have hedged cash flows completely or that their asset-liability positions may not be 100 percent currency-matched, which is also indicated by the fact that their leverage rose more quickly.

### Real Effects of Foreign Currency Debt and Currency Depreciations

Nominal depreciations can have real effects. On the one hand, as discussed in the previous chapter, nominal depreciations may lead to real ones and enhance firm competitiveness. On the other hand, a nominal currency depreciation may provoke a deterioration in firm balance sheets through a mechanical effect by inflating dollar liabilities and by increasing the cost of servicing them.<sup>11</sup> Depreciations may then either increase or decrease firm investment. The results of an econometric analysis suggest that the balance sheet effect dominates the competitiveness effect for a range of emerging economies (see Table 5.1).<sup>12</sup>

**Table 5.1 Estimated Balance Sheet Effects of Depreciations**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	Tobit	Tobit
$\Delta$ ER $\times$ FC bonds	−0.095 (0.041)**	−0.117 (0.041)**	−0.130 (0.045)**	−0.067 (0.035)*	−0.067 (0.035)*	−0.123 (0.040)***	−0.136 (0.044)***
FC bonds	0.043 (0.026)	0.036 (0.023)	0.033 (0.023)	0.003 (0.013)	0.003 (0.013)	0.038 (0.023)	0.034 (0.024)
Firm FE	No	No	No	Yes	Yes	No	No
Country-Industry FE	No	No	Yes	No	No	No	Yes
Country-Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	No	No	Yes	No
Industry FE	Yes	Yes	Yes	No	No	Yes	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	70,749	70,749	70,749	70,699	70,699	70,749	70,749
R2 or pseudo-R2	0.053	0.072	0.087	0.061	0.446	−0.028	−0.034
Clustering	Country	Country	Country	Country	2-Way	Country	Country

Source: Authors' calculations based on Thomson-Reuters Worldscope.

Note: Standard errors are presented in parentheses. Clustering refers to errors estimated by adjusting for correlation of the error terms at the country level, or by allowing two-way correlation at the country and firm levels. \* indicates significance at 10 percent level, \*\* indicates significance at 5 percent level, and \*\*\* indicates significance at 1 percent level.

<sup>11</sup> See, for example, the discussion in Bleakley and Cowan (2008).

<sup>12</sup> The econometric methodology follows Bleakley and Cowan (2008). See Appendix B for details on the models estimated in Table 5.1. The results are robust to controlling for firm leverage and lagged capital levels and to using

## Conclusion and Policy Implications

Corporate balance sheets have deteriorated and overall financial soundness has weakened in the current downturn. After many years of easy credit access, firms in the region have levered up and accumulated debt, with a significant proportion denominated in foreign currency. The magnitude and types of risks posed vary widely. A further challenge is that, in virtually all countries, good information on corporate currency mismatches is hard to obtain.

Corporate balance sheet reporting standards should embrace the currency dimension, and there should be greater public disclosure of derivative positions (currently this information is reported to central banks in some countries but kept confidential). Even if firms are hedging currency risks, it is hard to know who is bearing the ultimate risks. Countries may wish to explore the central reporting and publication of derivative transactions and possibly central clearing. In countries where corporates have deposited the proceeds of international issuance in their domestic financial systems, central banks should be ready to take action if the liquidity of financial systems is stressed by corporates facing amortizations of those external liabilities. Each individual corporate may have a balanced liquidity position, but the corporate sector as a whole may still pose a liquidity threat to banks.

In some cases, new debt was issued to substitute more expensive borrowing and/or to finance real investment. However, the data do not indicate that the increased leverage resulted in increased capital expenditures, particularly towards the latter part of the boom. However, there is evidence that recent large depreciations have provoked negative balance sheet effects resulting in lower investment rates. Boosting corporate investment remains a crucial policy priority for the region.

Assuming commodity prices and exchange rates stabilize, balance sheet effects may dissipate and investment in more competitive sectors may rise. If existing firms have profitable opportunities to expand but are constrained by balance sheets, then there may be an argument for facilitating some type of financial engineering. This comment may be particularly pertinent for State-Owned Enterprises in extractive industries where debt positions have grown and earnings fallen. For example, in the 1990s debt-to-equity swaps were employed to resolve debt overhangs in some cases. Where firms have opportunities to expand exports, promotion activities may help. These and other ideas are developed further in Chapter 7 below.

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capital expenditures one year ahead as the dependent variable. The negative balance sheet effect appears to have been more pronounced in recent years, perhaps given the larger nominal depreciations after 2013. However, there is heterogeneity across regions, with the negative effect being larger for countries in Latin America and the Caribbean and in Asian economies. Appendix B provides further details on these additional results.

## CHAPTER 6

# Output, Unemployment and Informality: What's to Come?

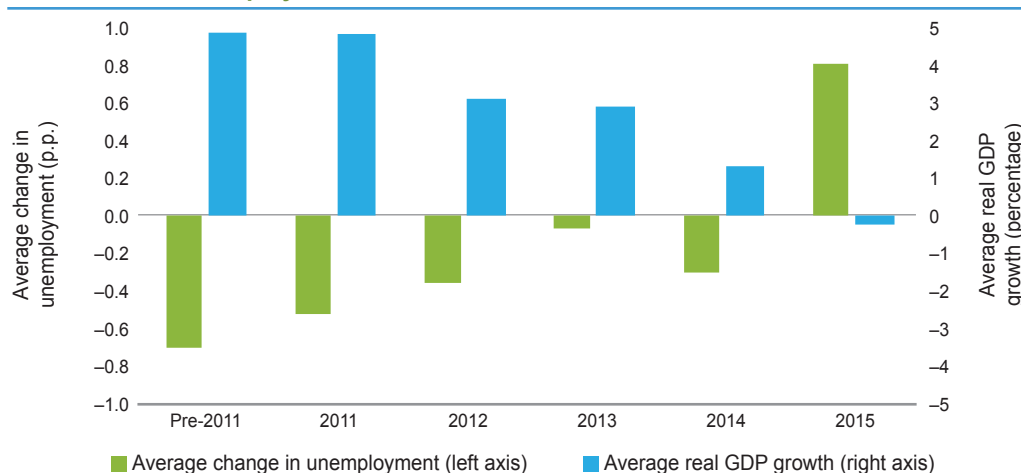
**B**etween 2000 and 2010 more than 50 million people in the region left poverty, and a similar number entered the ranks of the middle class (Ferreira et al., 2013). Inequality declined strongly, by 5 Gini points (a 9 percent reduction) over the same period. While fiscal redistribution and demographics played a role in several countries, wages were the most important explanatory factor. Earnings growth favored low-skilled workers, reducing poverty and inequality (Azevedo, Inchauste, and Sanfelire, 2013). Unemployment and informality also fell. Led by the large reductions in Argentina (-9.5 percentage points) and Brazil (-5.6 percentage points), the average unemployment rate across the region fell by 0.6 percentage points per year, from 10.3 percent in 2003 to 7.8 percent in 2010. Moreover, the share of informal employees declined by 7 percentage points (from 46 percent to 39 percent) between 2003 and 2011.<sup>1</sup> How will the current growth slowdown affect labor markets and social indicators? Will the unemployment rate rise? If so, by how much? And what will happen to informality? To what extent were recent social gains only a reflection of previous high growth rates? Or were they more structural in nature?

Labor markets did not adjust immediately to the current slowdown. The unemployment rate continued to fall between 2011 and 2014, albeit at a slower pace, as shown in Figure 6.1. The projections for 2015 are of a small increase in unemployment considering the simple average (0.2 percentage points) and a 0.8 percentage point increase considering a weighted average. The welcome news of an apparent disconnect between output and unemployment was rapidly noted by policymakers and practitioners alike, though many labeled the behavior of the labor markets as puzzling.

Behind the puzzle is a view that unemployment and output fluctuations are closely linked. This regularity was most famously established by Arthur Okun in 1964. He posited that when output was above potential, the unemployment rate tended to decline, and vice versa. In its original formulation, the so-called Okun's Law established that when GDP in the United States was 3 percent above its trend, unemployment declined by 1 percentage

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<sup>1</sup> A worker is considered informal if (s)he does not have the right to a pension when retired. The Latin American and Caribbean average is obtained from Argentina, Brazil, Chile, Ecuador, Mexico, Peru, El Salvador and Uruguay. Weighted and unweighted series provide very similar results.

**FIGURE 6.1 ■ Unemployment and Growth in Latin America and the Caribbean**

Source: IMF (2015c, 2016).

Notes: Averages are population weighted (unemployment) and GDP weighted (real GDP). The pre-2011 period refers to 2003–2010.

point. Since then, many studies have confirmed the relationship, although with different numerical estimations across countries (see IMF, 2010; Ball, Leigh, and Loungani, 2012; Grosh, Bussolo, and Freije, 2014).

This chapter revisits Okun's Law, assesses its stability and compares Latin America and the Caribbean with other regions, seeking answers to the following questions. Is the relationship between unemployment and output different in the region than in developed countries? If so, why? Has Okun's Law broken down during the last growth deceleration? If so, what lies behind the recent changes in the relationship? What are the potential policy implications of the results?

### The Relationship between Output and Unemployment Fluctuations

Okun's Law posits a relationship between output and unemployment fluctuations. The underlying intuition is that a shift in aggregate demand pushes output away from its potential, inducing firms to hire (or fire) workers and hence employment and unemployment fluctuate. However, if wages were fully flexible, then with a fall in demand wages might fall as well, maintaining full employment. If there is, on the other hand, some degree of wage rigidity that prevents the full absorption of such negative shocks, then Okun's relationship is generally expected to appear. By the same token, it is often argued that this relationship may govern shorter-term fluctuations in unemployment yet not determine its longer-term or structural level.

In his original article, Okun estimated the relationship in two ways: i) considering changes in both unemployment and the growth rate, the implicit assumption being that

long-run levels of unemployment and output growth are constant; and ii) considering deviations from trend, assuming the trend is well estimated but abstracting from the previous assumption and so potentially more attractive for a cross-country analysis. See Box 6.1 for a description of the methods.

Considering deviations from trend across countries confirms a negative relationship between unemployment and output growth. As shown in panel (a) Figure 6.2, the relationship between unemployment and output fluctuations appears stronger in developed countries.

This is confirmed by the econometric analysis. The estimates in developed countries suggest an Okun coefficient of  $-0.34$ , implying that for every 1 percent output growth is below potential the unemployment rate rises by 0.34 percentage points—close to the original estimation for the United States. In the case of countries in the region, the coefficient is halved, at  $-0.16$ , but there is substantial heterogeneity across countries, ranging from

### BOX 6.1 Estimating Okun's Coefficients across Countries and over Time

Following Okun's Law, the relationship between unemployment and output can be modeled as follows:

$$u_{it} - u_{it}^* = \alpha + \beta(y_{it} - y_{it}^*) + \mu_i + \varepsilon_{it}, \quad (1)$$

where  $u_{it}$  is the unemployment rate in country  $i$  and period  $t$ , and  $y$  is the logarithm of GDP. The relationship can be estimated country by country, or in a panel data framework. In the latter case,  $\mu_i$  represents a constant (across time), but one that is allowed to vary across countries—normally labelled a country fixed effect. The asterisks for unemployment and output denote their trends or potential levels, and they are unobservable. In order to assess this relationship, estimates of the long-run levels of output and unemployment ( $y^*$ ,  $u^*$ ) are required. While not uncontroversial, this can be accomplished by using a simple Hodrick-Prescott (HP) filter of (log) output and unemployment; see Ball, Leigh, and Loungani (2012).

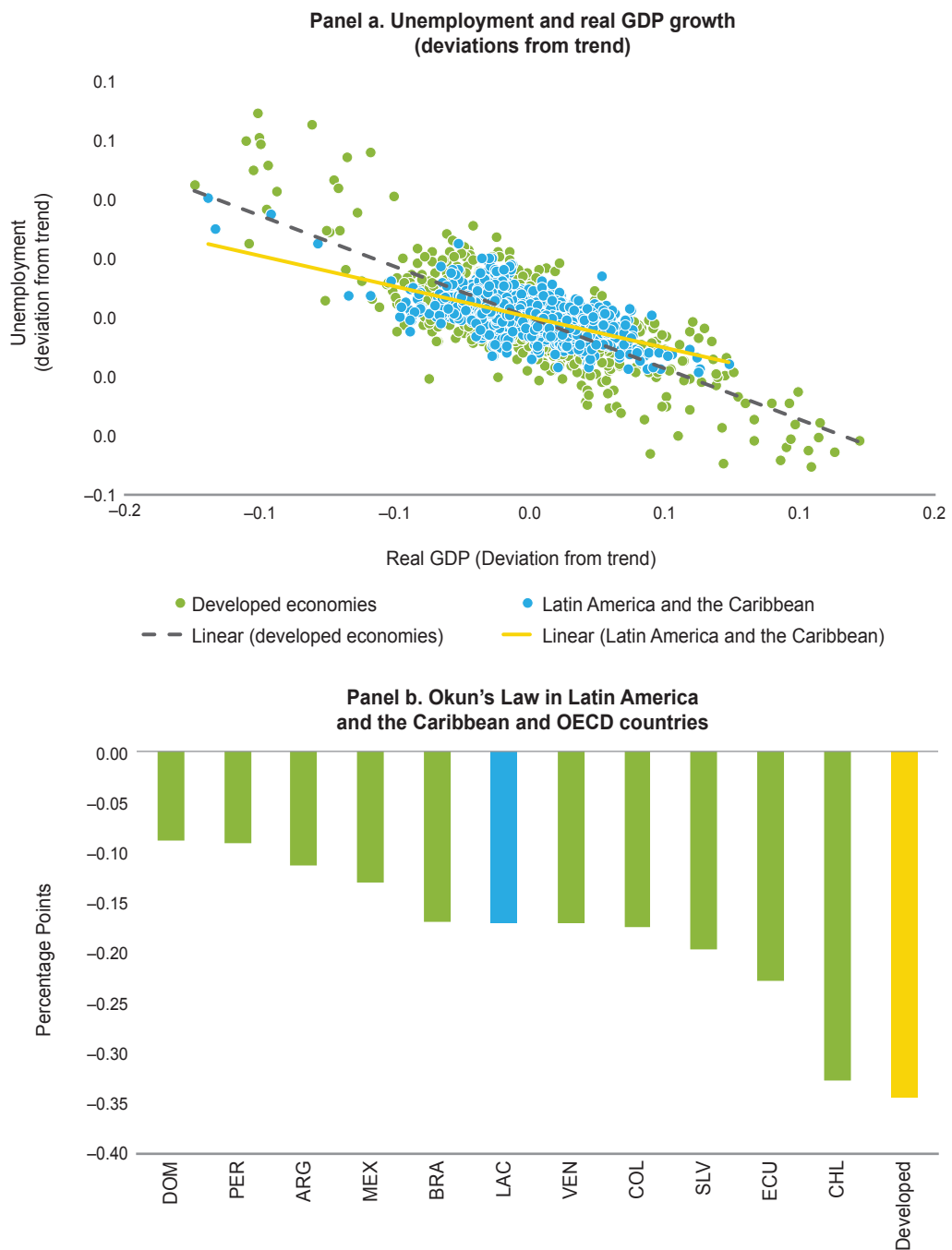
Differences across countries and over time in Okun's Law coefficients can be evaluated within this framework by extending the model considered in equation (1). For example, in order to examine the role of informality as a possible damper of unemployment fluctuations in Latin America and the Caribbean the following country panel regression is performed:

$$u_{it} - u_{it}^* = \alpha + \beta(y_{it} - y_{it}^*) + \gamma Inf_{it} + \delta [Inf_{it} * (y_{it} - y_{it}^*)] + \mu_i + \varepsilon_{it}, \quad (2)$$

where  $Inf$  is an indicator of the size of the informality in each country—i.e., the share of employees who do not have access to social security through their jobs.<sup>a</sup> The variable of interest is in fact the indicator of informality interacted with the output gap. If the coefficient  $\delta$  on this interaction is positive, then this implies that in countries with larger informal sectors the Okun coefficient is smaller.

<sup>a</sup> An alternative definition of informality includes salaried workers employed by small firms, non-professional self-employed and zero wage earner workers. Results with this alternative definition are qualitatively the same as those discussed in the chapter.

**FIGURE 6.2** ■ The Relationship between Output and Unemployment Fluctuations in Latin America and the Caribbean and Developed Countries



Source: Authors' estimates based on Latin Macro Watch (IDB), International Labour Office Database (ILOSTAT) and Labor Database for Latin America and the Caribbean (CEDLAS and World Bank).  
 Notes: The coefficient for Peru is not statistically different from zero. Okun's Law coefficients are estimated following equation (1) in Box 6.1.



-0.09 for the Dominican Republic to -0.33 for Chile,<sup>2</sup> as shown in panel (b) of Figure 6.2. So, unemployment increases by 1 percentage point when growth is 3 percent below potential in OECD countries, while growth has to be 6 percent below trend to produce a similar rise in unemployment in the region.

### Informality, the Suspect in Smaller Unemployment Fluctuations

Large informal sectors are likely to interact with unemployment fluctuations through two, possibly counterbalancing, channels. On the one hand, firing restrictions do not apply to informal sectors. Other things being equal, larger informal sectors should facilitate firing and hiring, possibly amplifying unemployment fluctuations. On the other hand, wage flexibility, in particular downward wage flexibility, is greater in the informal sector (Goñi, 2011). This may facilitate adjustments via prices rather than quantities, thus limiting unemployment fluctuations. If the latter effect dominates, this may help to explain the muted unemployment fluctuations in the region.<sup>3</sup>

Estimates of the relationship of Okun coefficients and informality (see Box 6.1 for a description of the method) suggest that the second effect dominates: in countries with the largest informal sectors unemployment fluctuates less. This is consistent with the fact that the highest Okun coefficient obtained in the previous exercises belongs to Chile, the country with the lowest informality rate in the sample of Latin American and Caribbean countries.<sup>4</sup>

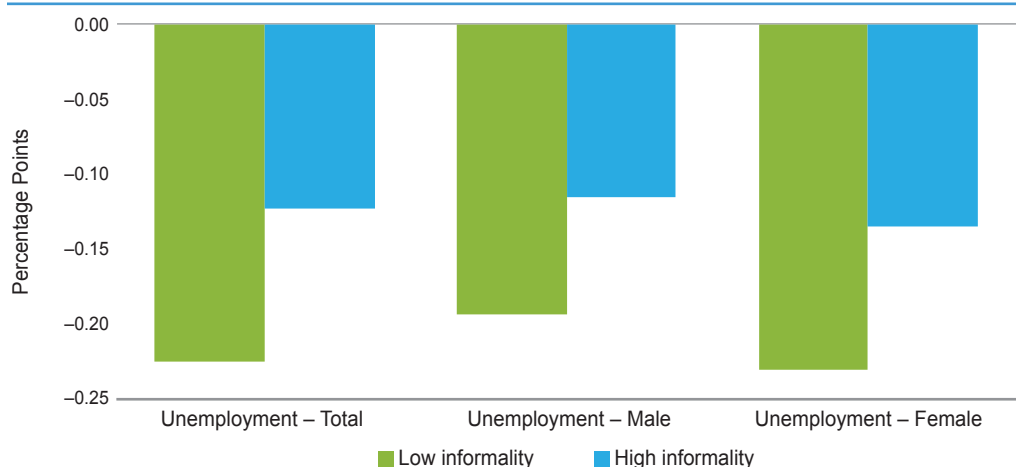
Figure 6.3 shows the simulated Okun coefficient for two hypothetical countries, one with an informality rate of 25 percent of the workforce (corresponding to the 25<sup>th</sup> percentile in the distribution of country year observations in the data) and another with an informality rate of 55 percent (corresponding to the 75<sup>th</sup> percentile). The Okun coefficient for the low informality country is -0.22, compared to -0.12 in the high informality case—a large quantitative difference. The results are similar for male and female workers.

The previous results also have implications for employment fluctuations. The lower Okun coefficients in the region suggest that employment should fluctuate less than in

<sup>2</sup> The regressions are performed with quarterly data covering a period that spans from 2000q1 to 2015q1, depending on the country. Country fixed effects are included in the regressions. Regressions with annual data give similar results.

<sup>3</sup> Stricter employment protection is generally associated with a lower Okun coefficient, while higher wage flexibility reduces unemployment fluctuations for similar changes in output, as discussed in the IMF's *World Economic Outlook* (2011). De jure regulations that prevent firings are high in Latin American and the Caribbean (as discussed in Heckman and Pagés, 2004), but low enforcement may undermine their effectiveness.

<sup>4</sup> When the sample is split to consider male and female unemployment separately, the results are very similar.

**FIGURE 6.3 ■ Predicted Okun's Law in Countries with High and Low Levels of Informality**

Source: Authors' estimates based on Latin Macro Watch (IDB), International Labour Office Database (ILOSTAT) and Labor Database for Latin America and the Caribbean (CEDLAS and World Bank).

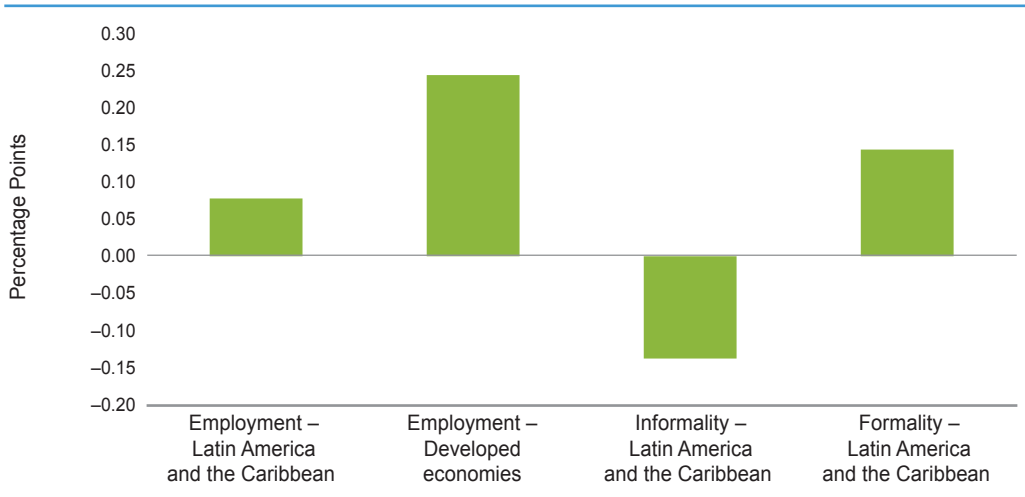
Notes: A worker is considered informal if (s)he does not have the right to a pension when retired (legal definition). High informality and low informality correspond to the 75<sup>th</sup> percentile and 25<sup>th</sup> percentile, respectively, of the distribution of informality in our sample (i.e., informality of 55 percent and 25 percent, respectively). Differential effects are estimated following the specification of equation (2).

the developed world, unless dynamics in labor market participation rates differ substantially. Moreover, employment in the formal sector may behave quite differently from that in the informal sector, as the latter may absorb workers when output is below potential. Formal employment may then be pro-cyclical while informal employment may move counter-cyclically.

As Figure 6.4 illustrates, these predictions are confirmed by the data.<sup>5</sup> The aggregate employment rate moves much less with the cycle in the region than in OECD countries. When output is one percent above potential the employment rate is 0.08 percent above its long-run trend in a typical country in the region, while it is 0.24 percent—three times larger—in a typical OECD nation. When formal employment is considered, the difference between a typical country in the region and in the OECD is diminished as the coefficient rises to 0.14. In contrast, informal employment in the typical country of the region is counter-cyclical.

Worker mobility, especially from the formal to the informal sector, generates employment resilience, arguably mitigating the impact of a negative shock. However, three caveats should be kept in mind. First, even if employment falls less during a downturn, labor productivity is likely to decline sharply, as productivity in the informal sector is

<sup>5</sup> To test these propositions the same types of regressions that determine the Okun coefficient can be run for employment, simply replacing the unemployment rate with the employment rate (employment/working age population) and the rates of informal and formal employment.

**FIGURE 6.4 ■ The Co-Movement of Cyclical Employment and Output: Developed Countries versus the Region**

*Source:* Authors' estimates based on Latin Macro Watch (IDB), International Labour Office Database (ILOSTAT), and Labor Database for Latin America and the Caribbean (CEDLAS and World Bank).

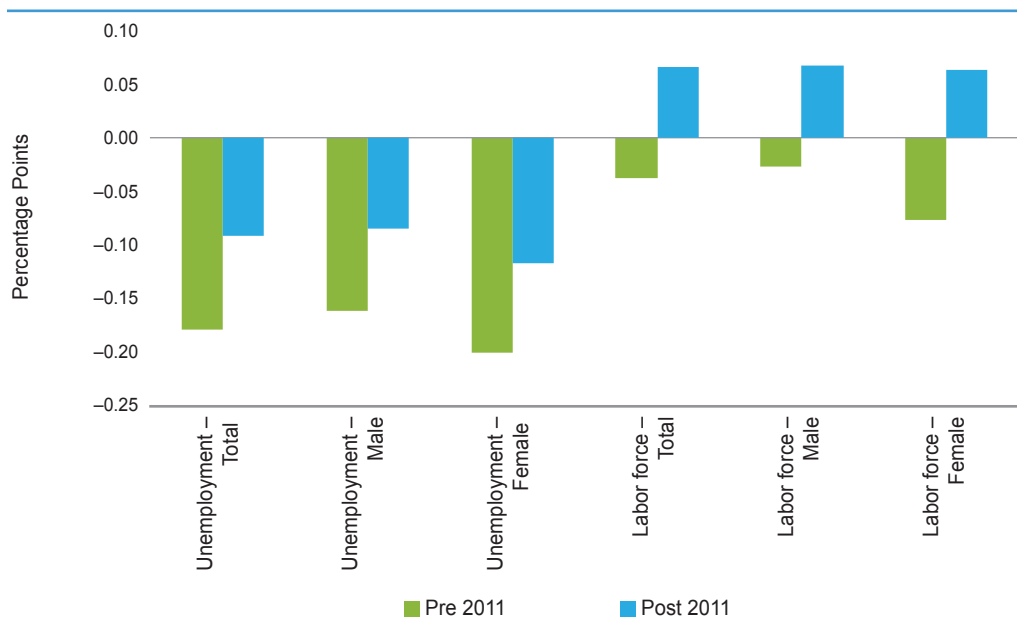
*Note:* Estimates are obtained with a specification similar to equation (1) in Box 6.1, where employment and informality replace unemployment as the dependent variable.

much lower than in the formal sector (Busso, Fazio, and Levy, 2012). Second, transitions from formal to informal employment are not smooth, and they are often intermediated by short-term unemployment spells (Bosch and Maloney, 2010), negatively affecting worker well-being. Finally, the substantial downward wage flexibility of the informal sector that facilitates the labor market adjustment implies that recessions are painful for workers entering the ranks of the informal sector, limiting their ability to smooth consumption across the cycle.

### Is There Anything Special about the Last Growth Deceleration?

While these results help in understanding why employment and unemployment reacts less to output fluctuations in Latin America and the Caribbean than in developed countries, they say little about the recent period.

It appears that, if anything, there has been a decline in unemployment fluctuations for the region since 2011; see Figure 6.5, which compares the Okun coefficient before 2011 (-0.17) and after 2011 (-0.08). The differences between the two sub-periods are statistically significant. Moreover, the differences in the coefficients are somewhat larger for females than for males. As noted, informality has fallen somewhat during the last decade, which all things being equal should have accentuated the rise in unemployment given a fall in growth. However, it seems that changes in labor force participation rates are behind the current sluggish unemployment response to lower output.

**FIGURE 6.5 ■ Co-Movement of Cyclical Unemployment, Employment and Output, Pre-2011 and Post-2011**

Source: Authors' estimates based on Latin Macro Watch of the Inter-American Development Bank (IDB), International Labour Office Database (ILOSTAT) and Labor Database for Latin America and the Caribbean (CEDLAS and World Bank).

Note: Estimates are obtained from an extension of equation (1) in Box 6.1 that allows for a differential effect before and after 2011.

As shown in Figure 6.6, there is also a significant change in the cyclical behavior of participation after 2011. Female labor force participation tended to behave in a counter-cyclical fashion before 2011. Arguably, low wages and limited formal employment prospects for all would tend to force more women to enter the labor market during slowdowns, possibly in the informal sector. This may be related to the limited saving capacity of Latin American households (see Cavallo and Serebrisky, 2016) and the lack of safety nets that mitigate labor market risk (Alaimo et al., 2015). However, the last growth deceleration to date has been different. After 2011, deviations from trend in labor force participation moved together (i.e., in a positive relationship) with the output gap. This is the case for both males and females. Thus, even if in most countries output is below potential, labor force participation remains below its long-run trend, limiting the increase in unemployment.

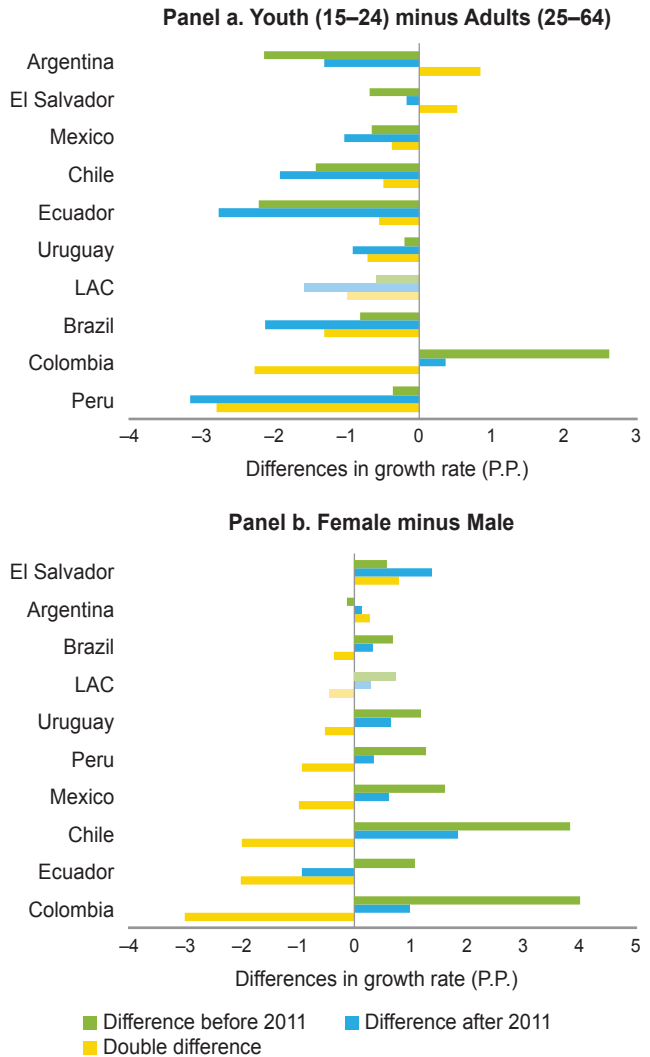
The causes of this changing pattern of labor force participation remain to be fully understood. One hypothesis is that the relatively long expansion of the 2000s allowed households to increase savings, which they are now using to weather the present deceleration. Similarly, safety nets introduced or expanded during the 2000s, most notably Conditional Cash Transfers (CCTs), may also be protecting some of the vulnerable population from lackluster employment prospects. This, in turn, would allow workers who are marginally

attached to the labor market to remain inactive, presumably devoting more time to home production or to school.

The labor force participation of young workers has indeed declined much more rapidly than the participation of older workers since 2011, as shown in panel (a) of Figure 6.6. This is especially striking in Peru, with an average annual contraction of youth labor force participation of -3 percent after 2011, while the labor force participation of adults remained basically constant. In contrast, differences in the evolution of young and adult labor force participation rates were very small before 2011. Colombia, Brazil, and to a lesser extent Uruguay, Chile and Mexico are also countries where the deceleration in participation has been stronger for young than for adult workers.

Similarly, female labor force participation after 2011 is growing well below its long-term trend, and the growth deceleration has been greater than for males (see panel (b) of Figure 6.6). In Colombia, Peru and Chile there are large differences between males and females in the slowdown of growth in participation, while in Mexico, Peru, Uruguay and Brazil the differences are more modest.

**FIGURE 6.6** ■ Differences in Growth Rate of Labor Force Participation before and after 2011



Source: Authors' estimates based on Latin Macro Watch (IDB), International Labour Office Database (ILOSTAT) and Labor Database for Latin America and the Caribbean (CEDLAS and World Bank).

Notes: Values for Latin America and the Caribbean are a weighted average by share of population.

## Concluding Remarks and Policy Implications

Unemployment in the region appears to be more stable as output fluctuates compared to OECD countries. The large informal sector in most economies absorbs employment during recessions, limiting unemployment fluctuations. Thus, informal sectors shrink in good times and grow when output is below potential. Why? The lack of unemployment benefits or other insurance mechanisms may push workers to accept low-quality jobs during bad times. Frictions in the formal sector, most notably downward wage rigidity (Messina and Sanz de Galdeano, 2014), imply that those jobs are much more likely to be found in the informal sector.

This suggests that a large share of the burden of labor market adjustment during downturns is borne by workers rather than governments. While adjusting through informal employment may limit short-term fiscal costs, it has negative implications as well. In the short term, movement into the informal sector is likely to be associated with substantial wage losses, limiting the capacity of households to smooth consumption. In the longer term, informal work is associated with lower productivity and lower wages and limits the prospects of those workers in returning to the formal sector.

Yet this time around, there appears to have been a delayed unemployment response to falling growth, as part of the adjustment is taking place via participation rates. Depending on the country, young and/or female workers are entering the labor market at a lower rate after 2011. Whether the changes in labor force participation of young and female workers are good or bad news will largely depend on the alternative activities that are undertaken. If lower youth participation is associated with an extension of schooling this change may bear fruit in the future. Another implication of adjusting through participation rates is that there is little evidence of rising informality to date, even if informal employment tends to be counter-cyclical. Still, it seems unlikely that participation rates will fall much further, and in this case informality is likely to rise once again, with negative impacts on efficiency and productivity.

The appropriate policy response to mitigate the labor market costs of the deceleration may vary from country to country. If frictions in the formal sector are at the root of insufficient good jobs, those frictions need to be tackled. For instance, labor market reforms that increase the flexibility of firms offering formal jobs may be needed. Efforts should also be made to smooth the transition into a formal job for the unemployed. Well-designed unemployment benefit systems that protect workers while unemployed may be preferable to the status quo, which emphasizes protecting formal jobs (e.g., through severance payments). However, high levels of informality imply that a large share of the population would still remain without coverage. Greater emphasis should be placed on policies that provide better assistance for job seekers, striking the right mix of placement services, training courses and targeted subsidies to facilitate rapid re-insertion into the formal sector. As younger people stay in school longer, placement services should also be extended to those in school to provide advice on future job prospects.



## CHAPTER 7

# Conclusions and Policy Suggestions: The Limits of Counter-Cyclical Policies and Boosting Sustainable Growth

**G**iven low world growth and lower commodity prices, as reviewed in Chapter 1, growth in the region is likely to be low in the coming years relative to growth rates during the exceptional commodity super-boom, and even compared to the longer term average from 1980 to date. There is considerable heterogeneity in the region, however, with some countries—particularly in Central America and the Caribbean—growing more strongly thanks to lower oil prices and their ties to the United States, which is recovering more strongly than other advanced economies. In most countries output is lower than potential, but there is little space for any counter-cyclical monetary or fiscal policy. Several countries appear to be adjusting fiscally by cutting capital expenditures, but more fundamental measures will likely be required to ensure a smooth adjustment to lower net income from abroad. Moreover, commodity exporters need to find ways to boost exports to relieve external constraints, and the region as a whole would benefit from increasing potential growth.

In the first part of this final chapter, the role of counter-cyclical policy is reviewed and suggestions on how to adjust successfully are proposed. If there is little space for traditional counter-cyclical policies, and many countries must adjust, how can countries attempt to boost growth? Without attempting to be comprehensive, the second part of the chapter considers specific ideas to improve growth potential, focusing on the allocation of public spending, trade and investment.

### The Limits of Counter-Cyclical Macroeconomic Policy

In those countries with active monetary policies and exchange rate flexibility, inflation has been on the rise, and in several with inflation targets it has been exceeding those objectives. Indeed, estimates reported in Chapter 2 indicate that, given the preferences they have revealed in the past, most central banks may tighten rather than relax monetary

policy. The value of ensuring that inflation expectations are well-anchored, and that the inflation target is credible, is that a well-set nominal anchor permits flexibility in exchange rates. This flexibility is extremely valuable in the face of severe external shocks, to allow for real exchange rate adjustment with lower costs. However, maintaining a credible nominal anchor limits the use of counter-cyclical monetary policy at this juncture, even as output has fallen below potential.

Fiscal positions have deteriorated significantly, and debt levels have risen such that most countries are now being forced to adjust pro-cyclically and cannot consider the use of traditional, discretionary counter-cyclical policy.<sup>1</sup> The deterioration of fiscal positions, as reported in previous Latin American and Caribbean Macroeconomic Reports and in Chapter 3, can be attributed in large part to a significant expansion of fiscal spending, especially as a response to the 2008–09 recession, which focused on inflexible items and that then proved hard to reverse. Thus counter-cyclical expansion was replaced with pro-cyclical expansion (structural fiscal deficits as output gaps became positive again), which has now turned in many cases to pro-cyclical adjustment.

In countries with positive output gaps, theory suggests that countries should not pursue expansionary fiscal policy but rather use the relatively good times to save and build fiscal space. Running a structural fiscal deficit when output gaps are positive (pro-cyclical expansion) is by definition unsustainable. It is only in those countries with negative output gaps and where debt and interest rates are relatively low that counter-cyclical fiscal policy should be considered. As this policy may come with increasing debt,<sup>2</sup> appropriate fiscal institutions to ensure a credible return to fiscal balance as the output gap closes would help limit increases in interest rates. If interest rates did rise, expansionary fiscal policy would be less effective.

Figure 7.1 illustrates recommended policy combinations. Even in those limited cases where counter-cyclical fiscal policy may be appropriate, great care should be taken to choose actions that would have significant positive effects on growth and that could be only temporary.

Many countries in the region now have a negative output gap and a structural fiscal surplus, implying there is procyclical fiscal adjustment.

## How to Adjust, When Adjustment is Required

A review of fiscal consolidation programs around the region suggests that many countries appear to be adjusting by cutting capital expenditures; for 15 countries around 1 percent

<sup>1</sup> As discussed in previous Latin American and Caribbean Macroeconomic Reports and in Corbacho, Fretes Cibils, and Lora (2013), automatic fiscal stabilizers remain relatively weak and counter-cyclical fiscal policy has tended to be implemented through the use of discretionary measures in the region.

<sup>2</sup> Or equivalently, a substantial required fiscal adjustment to maintain a constant debt ratio.



**FIGURE 7.1 ■ The Limits to Counter-Cyclical Fiscal Policy**

		Structural Fiscal Deficit	Structural Fiscal Surplus
<b>Positive Output Gap</b>		Pro-cyclical expansion	Counter-cyclical adjustment
	<b>Negative Output Gap</b>		Pro-cyclical adjustment
High debt			
Low debt	High interest rate		
	Low interest rate	Counter-cyclical expansion	

Source: Authors' compilation.

of GDP of an average planned adjustment of 1.7 percent is taking place through capital expenditure reductions. However, public investment is already low (see below), and when output is below potential, cutting investment expenditures may have larger multiplier effects, as discussed in Box 3.1. Indeed, this form of adjustment may be inefficient—i.e., more actual adjustment (greater cuts) will be required to improve the fiscal balance or the debt ratio as a percent of GDP.

The combination of high debt levels, the fiscal adjustment required to keep debt ratios constant and the region's limited growth prospects necessitates a more fundamental review of fiscal policies. While this may call for legislative and in some cases even constitutional changes, such reforms may need to be considered. If more fundamental adjustments in fiscal positions are not forthcoming in the months ahead, such reforms may eventually be required when fiscal situations have deteriorated further, credit ratings are lower and risk premia are higher. Moreover, more fundamental fiscal reforms could have other meaningful benefits such as boosting growth.

Several countries should thus review the allocation and efficiency of spending, including social and pension-related expenditures. As discussed in last year's Latin American and Caribbean Macroeconomic Report, Chapter 3 and Cavallo and Serebrisky (2016), there is significant potential for savings by ensuring that social spending is directed at the needy and that leakage to other groups is minimized and from pro-equity reforms of pension systems. Chapter 3 also suggests other areas where fiscal adjustment may be focused in order to minimize potential impacts on growth.

These actions are now urgently required for several countries to ensure that there is a smooth transition to lower net external income from abroad given lower commodity prices and modest prospects for global growth. The normal argument for delaying adjustment is that output may come back to potential and hence fiscal multipliers may

diminish. However, that delay also means rising levels of debt and interest payments, making it likely that more adjustment will eventually be required. Considering the low global growth baseline and the downside risks to that baseline, delaying under such circumstances may be too risky.

## Boosting Potential Growth: Deciding on Policy Priorities

As considered in last year's Latin American and Caribbean Macroeconomic report, in the decade of the 2000s (2001-10), the region benefited from a substantial demographic dividend. Indeed, estimates suggest average real per capita growth of just over 3 percent could be disaggregated into 2 percent due to the change in the employment share (a measure of the change in employment over total output) and just over 1 percent due to the increase in productivity, and the change in capital intensity actually resulted in a slightly negative contribution.<sup>3</sup> However, considering estimates for changes in demographics, changes in the employment share may only account for about 0.6 percent of growth in the decade of 2011-2020, a loss of about 1.4 percent in terms of explained growth. Assuming demographics is a given, the region must find ways to boost investment and to raise productivity to boost growth. As reviewed in this report, though, budgets are tight. How, then, should governments best allocate their scarce resources for maximum impact?

The question is closely related to whether there are binding constraints to growth and, if so, what they may be. One popular approach, developed by Hausmann, Rodrik, and Velasco (2005) and known as growth diagnostics,<sup>4</sup> is essentially a detective story, using quantities and prices to uncover a single binding constraint. It facilitates well-structured reasoning on how to discard or keep potential constraints in the analysis, thus providing an instrument for identifying hurdles to investment and growth. The technique is very useful for identify one area or problem whose resolution may facilitate growth. However, if only one constraint binds it is difficult to know what the next constraint will be, and whether growth will shift by a small amount or a greater degree.<sup>5</sup>

At the other extreme, the OECD has developed a methodology employed in its Going for Growth publications (see OECD, 2015b).<sup>6</sup> Here, a large set of both outcome and policy variables are compared to benchmarks developed by considering the distribution of each variable across comparator countries. If a country then finds it scores well on most variables but poorly on a few, the idea is that effort should be focused on the latter areas, as

<sup>3</sup> For further details and caveats regarding the analysis, see Powell (2015).

<sup>4</sup> Available at <http://www6.iadb.org/WMSFiles/products/research/files/pubS-852.pdf>.

<sup>5</sup> As the framework is developed using linear programming techniques, the relevant Lagrange multiplier on the binding constraint gives only an indication of the value of relaxing the constraint for small changes.

<sup>6</sup> Available at <http://www.oecd.org/eco/growth/goingforgrowth.htm>.

this will likely have the greatest impact. This approach arguably works well for a set of countries that have a reasonably similar economic structure and are comparable in terms of their level for development. Mixing developing and advanced economies is challenging, however, as developing countries tend to score badly on many indicators and hence give little indication of what the priority areas would be. An adaptation of the “gaps” approach has been used in the IDB,<sup>7</sup> which has introduced the novelty of constructing gaps relative to predicted values consistent with a country’s per capita income. The largest gaps are then chosen to determine priorities.<sup>8</sup>

An alternative approach is to consider countries in groups in terms of their level of development and then ask how countries have been able to jump from one group to the next. Indicators in eight sectors are considered (capital markets, education, infrastructure, integration, innovation, health, labor markets, and telecommunications), and the value of improving indicators in each sector can be evaluated in terms of the impact on increasing the probability of moving to the next income group.<sup>9</sup> Moreover, the methodology captures the idea that growth constraints may interact, as improving performance in two complementary sectors may increase the likelihood of moving to a higher level of development. Indeed, one criticism of the so-called Washington Consensus developed in the 1990s was that reform efforts were not always focused on areas with the greatest payoffs, and that interactions and appropriate sequencing of reforms were not always duly considered, and the enterprise then led to “reform-fatigue.”<sup>10</sup> Box 7.1 provides further details on this alternative methodology.

An overall result of this new approach is that countries in different income groups should focus on different priority sectors. Lower income countries should focus on basic priorities such as education and health, whereas lower-middle income countries may wish to focus more on labor markets and integration, while middle income countries should concentrate on strengthening access to credit and infrastructure.

All the methodologies described above yield different perspectives on how to boost growth given broad country characteristics. Naturally, each is subject to its own underlying assumptions and the limitations of the particular methodological approach adopted. None is a substitute for a careful, in-depth analysis of each country, including its own context, particular set of institutions and challenges. Nevertheless, given present conditions and current limitations on the use of counter-cyclical macroeconomic tools, policymakers may wish to focus on the results of these and other micro analyses on how to boost potential growth to improve living standards in the region.

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<sup>7</sup> See Borensztein et al. (2014).

<sup>8</sup> Still, the largest gaps may or may not coincide with the greatest value of relaxing the relevant constraint.

<sup>9</sup> See Izquierdo et al. (2016).

<sup>10</sup> See Lora, Panizza, and Quispe-Agnoli (2004).

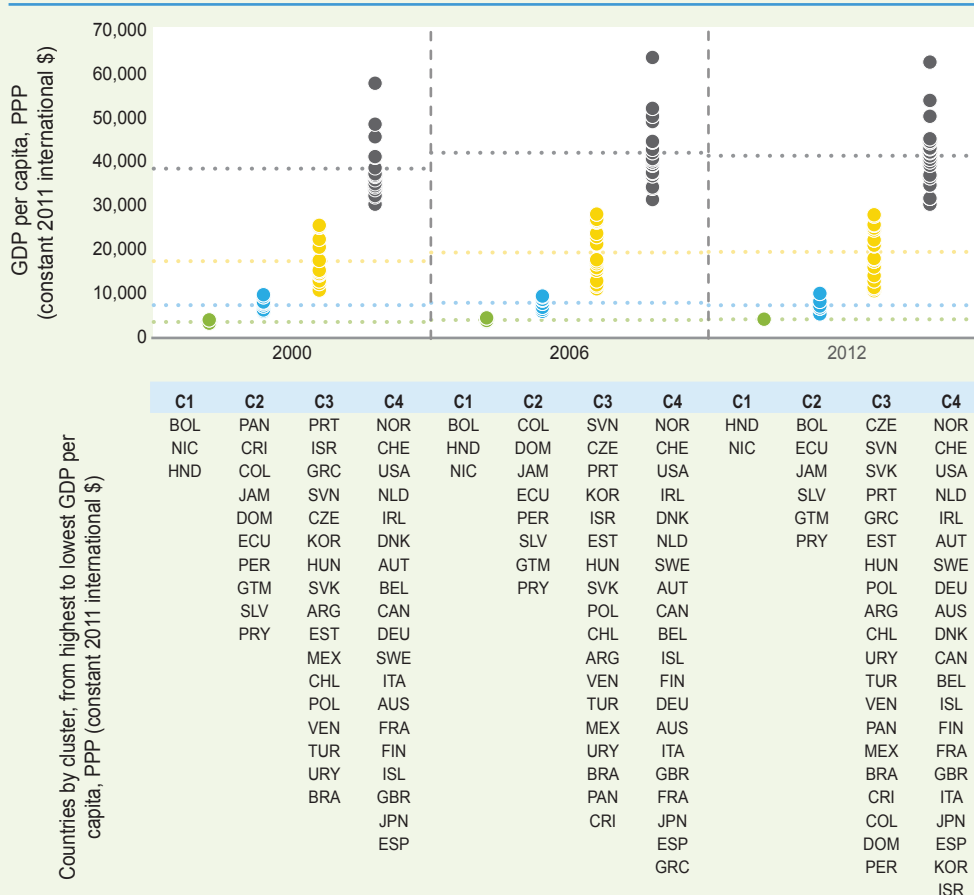
### Box 7.1 Priorities for Productivity and Income: Methodology and Results

#### On the methodology

Employing a clustering methodology, 49 OECD and Latin America and the Caribbean economies were optimally assigned to four groups (as shown in Figure B7.1), ranging from cluster 1 containing lower income per capita countries (such as Honduras and Nicaragua) to cluster 4, composed of developed countries with higher per capita income. Eight countries in the region are included in cluster 2 and another eight in cluster 3; the full list is detailed below in Figure B7.1.

Using a generalized ordered probit regression technique, the impact of changing specific indicators of development across eight sectors on the probability of a country moving from one group to another was estimated for each cluster.<sup>a</sup> The impact of advances in different sectors may then depend on which income per capita cluster the country is in.<sup>b</sup> Moreover, the effect of indicators in each sector is conditional on the level of the indicators in other sectors, capturing the concept of interactions. So, for example, the impact of additional expenditure to improve education may depend on the health sector’s level of development.

Figure B7.1 ■ Optimally Chosen Number Clusters



Source: Izquierdo et al. (2016).  
 Notes: Clusters refer to Purchasing Parity-adjusted income per capita and are illustrated for three years only. Based on residual sum of squares analysis, and the approach known as the “elbow” method, the optimal number of clusters is four. Horizontal dotted lines represent the average income per capita level for all clusters and each year.

**Interpreting the results**

What do the results mean for a specific country? Take for example the case of Argentina, which belongs to Group 3. In this case (see Table 7.1) the identified priorities are infrastructure, capital markets and health (in that order). How can indicators in these sectors affect the probability of jumping to the next income per capita group? Although Argentina initially has a very low probability of jumping to industrial-country cluster 4, if it were able to invest one standard deviation in infrastructure, one standard deviation in capital markets and almost one standard deviation in health, it would increase to 75 percent its chances of jumping to cluster 4.<sup>c</sup>

An important element to highlight is that isolated investments in any of the identified priorities do not have the same effect as joint investments. In the case of Argentina, investment in infrastructure is important, but its effect on the probability of jumping to a larger income per capita group becomes much higher when this priority is accompanied by the development of capital markets, which facilitates the financing of infrastructure activities. This interaction is visible in Figure B7.2., which indicates that it is the joint development of these sectors that yields the greatest payoff in terms of raising the probability of reaching higher income per capita groups. The implication is that such interaction effects should be considered when deciding on policy priorities and public expenditure allocation.

**Figure B7.2 ■ Argentina: Impact of Infrastructure and Capital Markets on the Probability of Jumping to a Higher Income per Capita Group**



Source: Izquierdo et al. (2016).

<sup>a</sup> A total of 34 indicators (on average four per sector) were employed in the analysis.

<sup>b</sup> Full estimation details, including robustness checks, can be found in Izquierdo et al. (2016).

<sup>c</sup> Standard deviations are those of the full sample of countries.

**Table 7.1 Priorities for Productivity and Income**

	Low Income	Lower-Middle Income	Middle Income
1 <sup>st</sup> Priority	Education	Integration	Infrastructure
2 <sup>nd</sup> Priority	Health	Labor Markets	Capital Markets
3 <sup>rd</sup> Priority		Health	Health

Source: Izquierdo et al. (2016).

## Infrastructure Investment

Most studies suggest that developing regions should invest at least 5 percent of their GDP in infrastructure to boost growth,<sup>11</sup> yet in the last 35 years the five largest economies in the region have been investing an annual average of just 2.7 percent of GDP, consisting of 1.8 percent public investment and 0.9 percent private investment. Over the period 2008–2013, the average for 16 countries in the region is 3.7 percent of GDP (2.6 percent public investment and 1.1 percent private investment), still well below the 5 percent threshold.<sup>12</sup>

On the other hand, China has been investing some 8.5 percent of GDP in infrastructure, while the figure is 5 percent in Japan and India and around 4 percent for a selection of other industrialized countries.<sup>13</sup> Even the United States and the European Union, with a more developed capital stock, invest more than Latin America and the Caribbean as a percentage of GDP.<sup>14</sup>

Moreover, the problem is not just quantity but also quality. According to the Global Competitiveness Report, infrastructure quality remains well below the quality of the Advanced Economies or Asian Economies and is on a par only with that of Sub-Saharan Africa (SSA). On a scale from 1 to 7, infrastructure in Latin America and the Caribbean received a score of 3.5, just above SSA (3.2), and significantly lower than Advanced Economies (5.5) and Asian Countries (4.9).<sup>15</sup>

Looking forward, given low infrastructure investment and declining aggregate investment, well-chosen infrastructure projects that crowd in private investment and increase productivity would be welcome.<sup>16</sup> While the most suitable choice of projects is likely to differ from one country to the next, in general countries may wish to find new ways to

<sup>11</sup> Powell (2013, 2014); Bhattacharya, Romani, and Stern (2012); Kohli and Basil (2010); Fay and Yepes (2003); Calderón and Servén (2003); and Perrotti and Sánchez (2011).

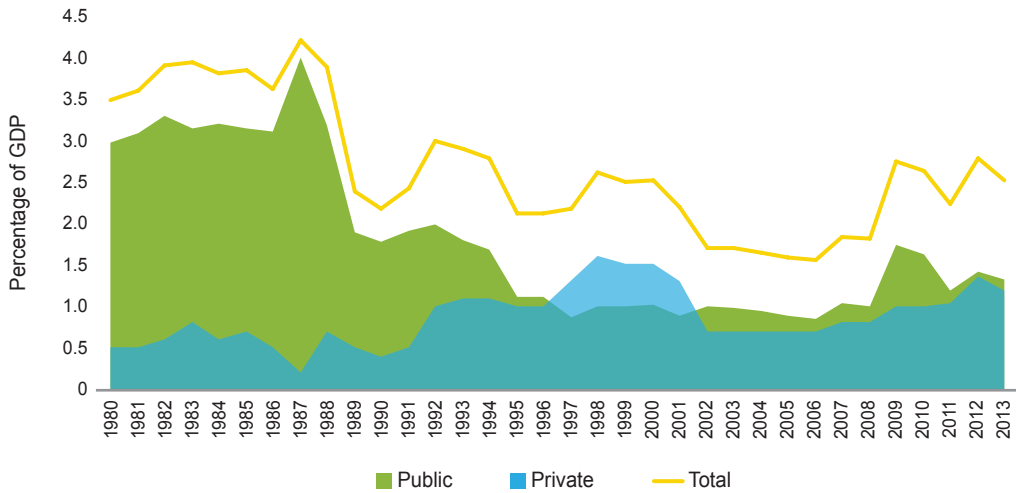
<sup>12</sup> High-quality long-term data are available for only for a selection of countries in the region.

<sup>13</sup> These figures refer to 1992–2012 averages; the group of other industrialized countries includes Australia, Canada, Croatia, Iceland, Lichtenstein, New Zealand, Norway, Singapore, South Korea, Switzerland and Taiwan.

<sup>14</sup> Typically, the more developed the capital stock the lower the maintenance bill should be. Infrastructure investment in the region is 0.8 percent of GDP lower than in the United States and the European Union (McKinsey Global Institute, 2013).

<sup>15</sup> See World Economic Forum (2014).

<sup>16</sup> A 1 percent of GDP increase in infrastructure investment is associated with a rise of almost 1.2 percent of GDP in private investment. These results are based on an analysis of six countries in the region from 1980 to 2013.

**FIGURE 7.2 ■ Infrastructure Investment in Latin America and the Caribbean**

Source: Authors' calculations based on Calderón and Servén (2010), CAF (2013) and ECLAC (2014). Data for Brazil, Chile, Colombia, Mexico and Peru, the countries for which data are available from the 1980s.

develop, pre-evaluate and ultimately choose the most worthwhile projects. The region is already developing instruments to finance infrastructure projects such as Public-Private Partnerships (PPPs), and more of these could be undertaken. PPPs are not an answer to the region's fiscal constraints but, if designed correctly, they may provide a useful framework for crowding in private investment while ensuring that quality standards are met and that risks are shared appropriately.<sup>17</sup>

The ideal framework for investment will be country-specific, but it is possible to agree on common characteristics that should always be present. For example, transparency at all stages of the project life cycle and a stable regulatory framework with clear rules are generally advantageous. Efficient public institutions will also boost the payoff from projects, reduce risks and minimize delays. Effective coordination among different departments or ministries is particularly important.

Countries in the region have already undertaken some initiatives in this area. Colombia's institutional arrangements, for example, allow for the possibility of unsolicited proposals (i.e., privately initiated proposals for infrastructure projects) in which the private sector may identify a project opportunity and propose carrying out the project on behalf of the government. Chile has also adopted a model for the attraction of private sector participation in infrastructure projects.<sup>18</sup> In both Colombia and Peru, new laws were passed to

<sup>17</sup> Engel, Fischer, and Galetovic (2014) provide a valuable discussion of several issues raised by PPPs.

<sup>18</sup> For Colombia, see the regulatory framework in Departamento Nacional de Planeación (DNP), available at [www.dnp.gov.co](http://www.dnp.gov.co). For Peru, see the regulatory framework in Ministerio de Economía y Finanzas (MEF), [www.mef.gob.pe](http://www.mef.gob.pe) and Proinversión, [www.proinversion.gob.pe](http://www.proinversion.gob.pe). For Chile, see the regulatory framework at [www.ppi.worldbank.org](http://www.ppi.worldbank.org).

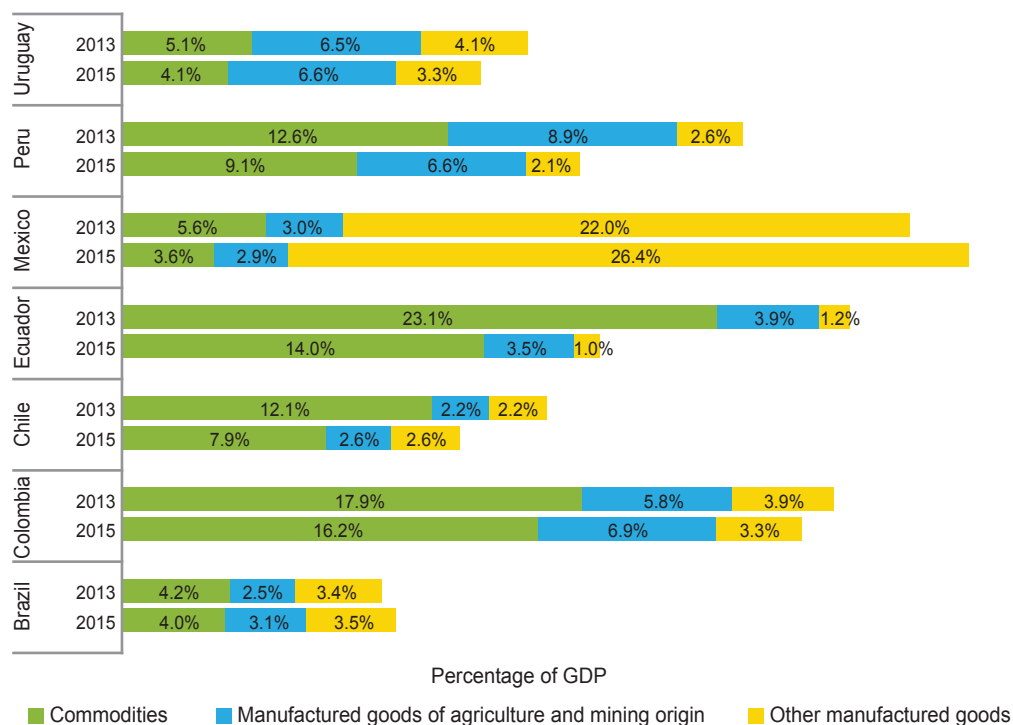
govern PPPs. It is hoped that these types of advances will boost the quantity and the quality of investment, particularly in infrastructure, going forward.

### Trade and Integration

The fall in commodity prices and its consequent effect on trade for a group of commodity exporters has been a very significant development. Figure 7.3 considers i) exports from commodities (mining and energy), ii) exports of manufactured goods originating from agricultural and mining and iii) exports of other manufactured goods, all as a percentage of GDP for 2013 and 2015. The loss in exports measured in this fashion varies considerably across countries, with Ecuador and Peru being the most affected among the countries considered. Given the initial composition of exports in these cases, it will be difficult for an increase in other exports (such as manufactured goods) to completely replace foregone commodity revenues.

At the other extreme, Mexican manufactured exports have risen, and despite the recent fall in oil prices the total of all three types of exports has actually risen as a percentage of GDP. Note that, while commodity exports have fallen in Brazil, manufactured goods exports have roughly taken their place as a percentage of GDP. Colombia and Uruguay

**FIGURE 7.3 ■ Commodity and Manufactured Goods Exports**



Source: Authors' calculations based on data from IDB InTrade and IMF (2015c).



represent intermediate cases where commodity exports have fallen and manufactured goods have not risen sufficiently to take their place.<sup>19</sup> An important caveat regarding these figures is that nominal GDP in dollars has fallen for most countries, in part due to the appreciation of the U.S. dollar, but in some countries also due to a real recession and the fall in exports, particularly in commodities, which may itself then provoke a largely automatic change in export composition.<sup>20</sup>

The analysis in Chapter 4 suggests that, while Brazil, Colombia and Mexico have enjoyed real exchange rate depreciations, most countries have suffered real appreciations; it is not clear that nominal exchange rate flexibility can be relied on as the key to boosting export performance. Moreover, shifts in competitiveness may have real effects. A danger is that firms will lose markets where their products have become less competitive and it may take considerable time before they can exploit demand in destinations that have become more profitable. Policies can help in this regard. Export promotion activities can help firms survive in adverse times and help firms find new trading partners,<sup>21</sup> and actions that improve infrastructure for export activities, including logistics and transportation, may prove valuable as well.<sup>22</sup> Under certain circumstances, governments may even consider providing other incentives.<sup>23</sup>

In addition to traditional export activities, firms in the region are participating in global chains of production, often referred to as global value chains (GVCs). However, to date Latin America and the Caribbean lags other regions in terms of its share of exports within those chains. The region is likely losing out, as participation in GVCs is associated with higher firm-level productivity. One reason for the region's low participation may be its low level of integration. Box 7.2 reviews the experience with GVCs.

More generally, despite the considerable progress made during the “Great Liberalization,” when the average Most Favored Nation (MFN) tariff dropped from 40 percent in the mid-1980s to the current 10 percent, and 63 Free Trade Agreements (FTAs) were signed covering approximately 50 percent of the region's trade, Latin America and the Caribbean still has unfinished business on its trade agenda.

But why, then, has the region not enjoyed the explosive trade-related growth observed in East Asia—even during the recent commodity super-boom?<sup>24</sup> Perhaps the most likely

<sup>19</sup> It should be noted, however, that the fall in commodity prices may also affect nominal GDP and hence provoke an increase in the ratio of manufactured exports to GDP.

<sup>20</sup> On the other hand, considering changes in the dollar value of exports (analyzed in Chapter 4)—which provides a much more troubling picture—is affected by the strong appreciation of the U.S. currency.

<sup>21</sup> See Van Biesebroeck, Konings, and Volpe Martincus (forthcoming).

<sup>22</sup> See Mesquita Moreira (2013) for a discussion of domestic transport costs and their impact on trade.

<sup>23</sup> See Crespi, Fernández-Arias, and Stein (2014) for a discussion of productive development policies and more specifically on how countries may promote export activities.

<sup>24</sup> The academic literature establishes several channels as to how trade may boost growth, see for example Helpman (2004) and Anderson, Larch, and Yotov (2015). On Latin America and the Caribbean, see Chapter 5 of Pagés (2010) and Estevadeordal and Taylor (2013).

### Box 7.2 Global Value Chains, Regional Integration and Productivity

Some firms in the region have been long-time participants in international production networks, mainly as suppliers of raw materials and basic inputs, but the region has not been able to capitalize on the recent global surge in production fragmentation, in which goods previously produced in one country are sliced up and co-produced in many parts of the world. For instance, the foreign value added in exports (a typical measure of GVC participation) of the average country in Latin America and the Caribbean is 22 percent, much lower than that of 27 countries in the European Union, which stands at 39 percent (see Blyde, Molina, and Volpe Martincus, 2014).<sup>a</sup>

As participation in GVCs allows technical and managerial knowledge to be transferred along the chain it tends to boost productivity in the less efficient links. Causality could go both ways, as only firms that increase their productivity may be invited to participate (Javorcik, 2008). But once they join an international production network they may continue to acquire knowledge and experience. Many case studies describe such processes within chains in sectors as diverse as apparel (Gereffi, 1999), motorcycles (Fujita, 2011), agroindustry (Cafaggi et al., 2012) and computing (Kawakami, 2011). In some cases, knowledge and skills that first-tier suppliers absorb from global players also diffuse to other firms in the chain (Poon, 2004).

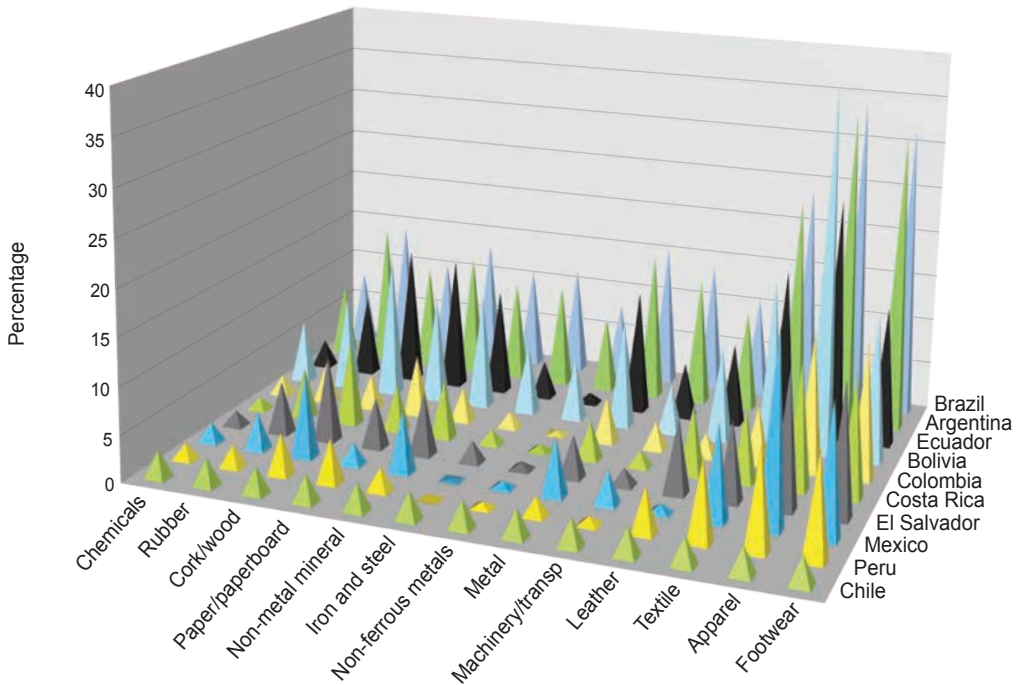
More rigorous econometric analyses that attempt to control for reverse causality provide insights regarding the size of the productivity effects for suppliers. For example, Iacovone et al. (2015) compare Walmart and non-Walmart suppliers over time and show that suppliers to Walmart gain 51 percent in TFP compared to non-Walmart suppliers. Baldwin and Yan (2014) (using a difference in difference technique) estimate that labor productivity grows 5 percent per annum faster in those firms that join GVCs.

If individual firms gain from GVC participation then this should happen as a natural process. Policy intervention is only justified if there is a market failure or externality. Still, the likelihood of firms participating in GVCs may depend on the quality of transport infrastructure (Blyde and Molina, 2015), an environment that promotes contract enforcement (Antràs, 2015) or the quality of other public goods. Public intervention can also be justified on the basis of externalities. For example, in a similar vein to the argument regarding export pioneers the discovery by a buyer of a first well-qualified local supplier may also benefit other potential suppliers, again potentially justifying well-designed policy intervention.

Regional integration may have a yet more important role to play. Tightly integrated countries, with no tariff or other border costs, fostering trade in intermediate goods, are more likely to share international production networks. But the spaghetti bowl of bilateral and sub-group agreements with its complex structure of tariff rates and rules of origin in the region has resulted more in a set of silos (with higher costs to use inputs from outside each particular one) rather than promoting efficient production networks.

Europe has just two trade agreements (the European Union and the Economic Free Trade Area—EFTA) rather than the myriad in Latin America and the Caribbean. For any sub-group of countries in the region sharing a trade agreement there is always a large group of other countries that are not part of the club. No wonder that the average country in the region sells 35 percent of total exports to countries in a trade agreement in which other countries in the region do not participate. The comparative statistic for Asia is 15 percent, and 0 percent (yes, zero percent) for countries in the European Union. In other words, the typical country in the region exports a substantial share of goods under preferential conditions, but these preferential conditions do not apply to many other potential sourcing partners from the region, creating significant disincentives for the use of inputs from those potential partners. An initiative to *disentangle* the spaghetti bowl in favor of a more ambitious and truly regional agreement would be highly conducive to the emergence of supply chains within the region, provide a substantial boost for firms to participate in global GVCs and thus likely result in a sharp rise in productivity.

<sup>a</sup> Calculations are for the year 2007.

**FIGURE 7.4 ■ MFN Tariffs for Manufacturing Goods**

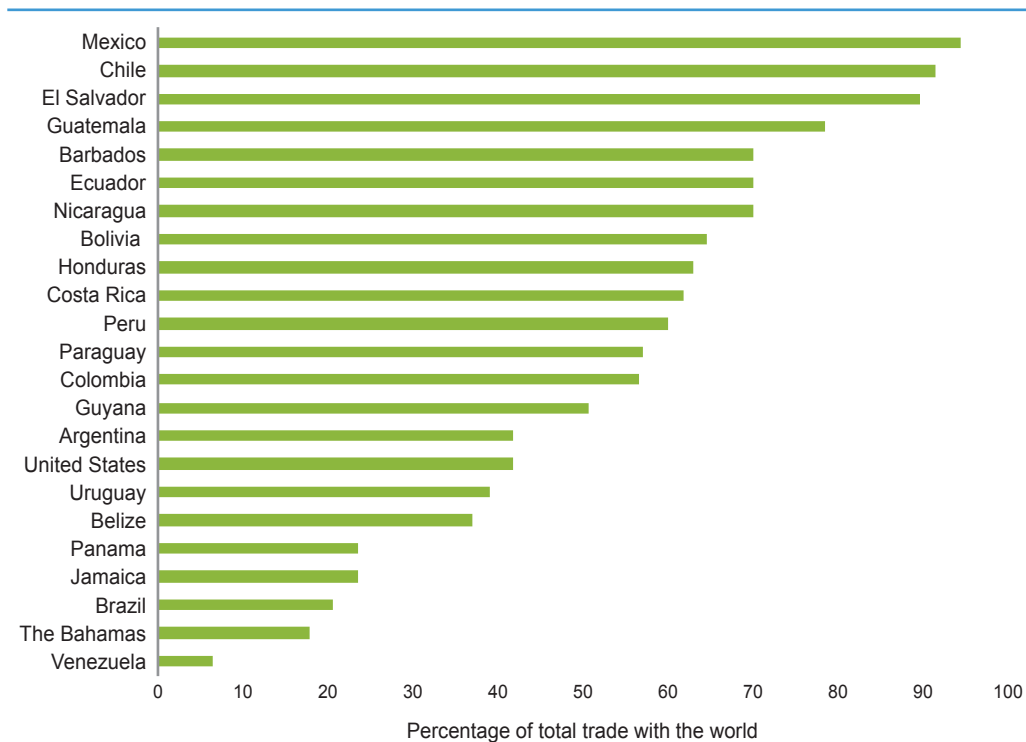
Source: IDB-INT with WITS-Trains data.

Note: The figure illustrates simple average of MFN tariffs across goods in each category based on SITC Rev 3, 5 to 8, for the year 2014, except for Mexico, which is for 2013. MFN is most favored nation.

explanation is that trade policy is only one aspect of growth, and the growth impacts of trade reform depend on other key factors. As argued above, and illustrated in Figure 7.1, the interaction effects among reforms in different sectors are frequently crucial.<sup>25</sup>

Moreover, for eight countries in the low to middle income group, Figure 7.1 suggests that integration is the key sector in which reform efforts should be focused. Indeed, while the region has advanced in this area, countries have moved at very different speeds, implying significant variation in the level and composition of protection (see Figure 7.4). Several countries have significantly higher MFN tariffs than the OECD average of 3.6 percent, limiting the gains from trade for the whole region. These levels of protection, particularly in intermediate and capital goods (coupled with the constraints in other sectors), likely explain the region's limited participation in global value chains, which have become a leading driver of trade growth in the last two decades and a powerful source of opportunities for diversifying exports and boosting productivity (see Box 7.2). For example, intra-industry

<sup>25</sup> Indeed, Figure 7.2 suggests that integration may be relevant for middle to low income countries that have already developed other basic inputs.

**FIGURE 7.5** ■ Trade with Preferential Partners

Source: Authors' calculations based on data from IDB INTrade.

Note: 2011–2013 averages.

trade, a proxy of GVC participation, increased by 94 percent in Asia during the period 1985–2010 and by only 35 percent in Latin America and the Caribbean.<sup>26</sup>

This great heterogeneity in advancing the trade agenda is also evident at the preferential level, with only a few countries using FTAs effectively to expand market access both within and outside the region, as shown in Figure 7.5. For example, Mexico, Chile, Peru and Colombia have built a wide net of trade agreements with partners including the largest and more dynamic Asian markets.

The share of intra-regional trade has jumped from 13 percent at the beginning of the Great Liberalization to a peak of 20 percent before the financial crisis. Despite this increase, 20 percent remains low compared to Asia and Europe, which have intraregional trade shares of 47 percent and 60 percent, respectively. The region may not necessarily reach these levels given its geography and the trade pattern resulting from its commodity-related natural endowments, but there is surely room for further progress.

<sup>26</sup> See Blyde, Molina, and Volpe Martincus (2014). Apart from the interaction between trade and other sectors as illustrated in Figure 7.1, domestic transport and logistics may be particularly important; see Mesquita Moreira (2013).

Harmonizing the current mosaic of bilateral agreements, and agreements with relatively small sub-groups of countries, would surely provide a boost to this end. The “spaghetti bowl” of agreements imposes significant costs in terms of complexity, limits trade and, more importantly, restricts real integration such that the required scale to compete against the world’s major economic powers and deep trade alliances cannot be realized. To truly harness the benefits of integration, a more ambitious agenda is needed; more specifically, the region needs to move further towards a regional common market.<sup>27</sup>

In fact, considering the myriad of current agreements, the region is not very far from free intra-regional trade, as approximately 70 percent of trade flows occur under preferences, which in most cases are close to 100 percent; see Figure 7.6. If a common framework of eliminating remaining tariffs and harmonizing rules of origin is put in place, the costs of remaining outside will be high, providing incentives for countries to accede. A flexible framework could be designed, however, to which countries would accede at a time of their choosing.

Regional integration offers the prospect of a US\$ 5 trillion-plus market opportunity to boost scale and productivity, and hence to strengthen competitiveness. It could be particularly helpful in reducing the region’s current heavy reliance on commodities.

## Conclusion

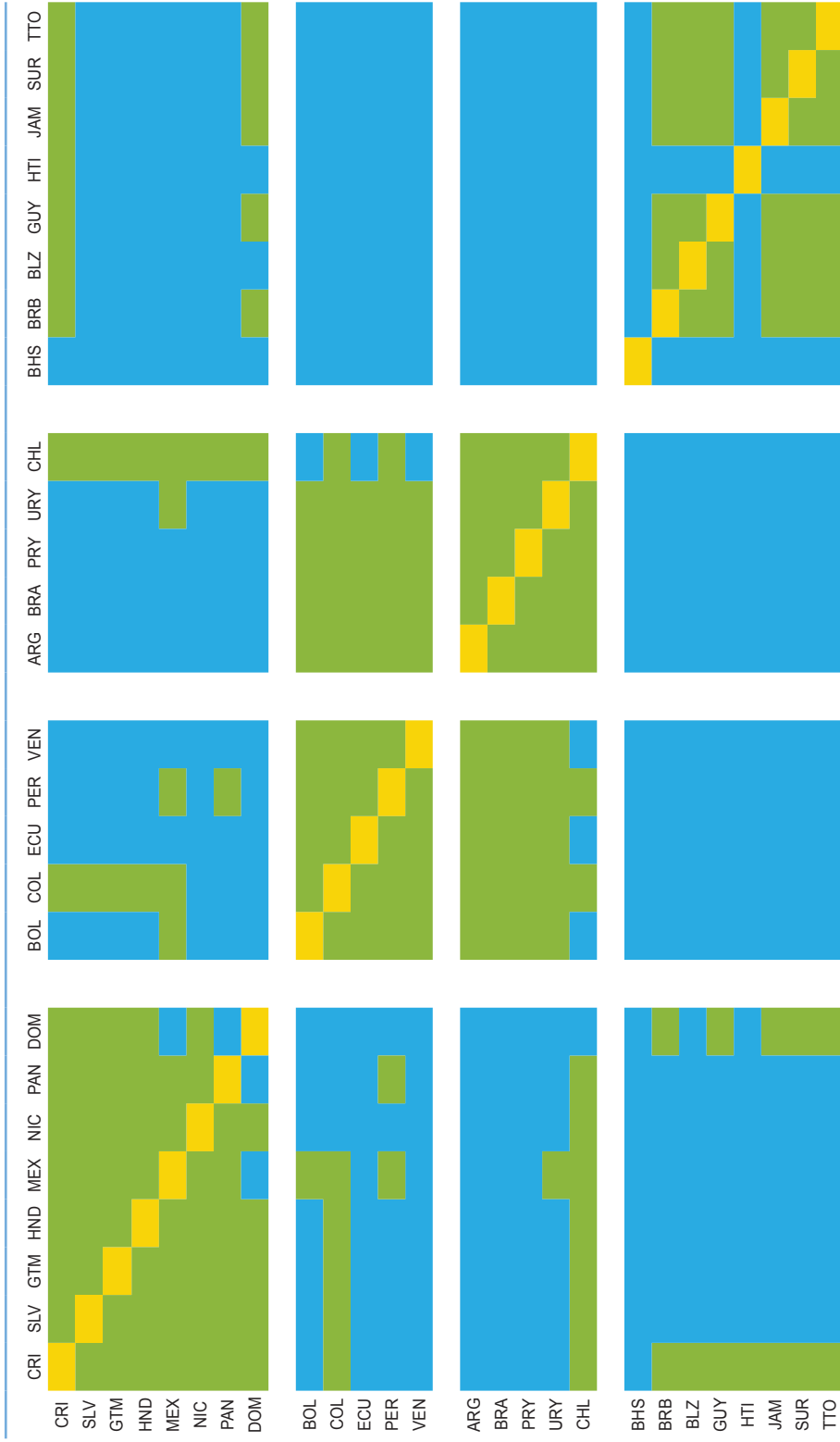
This report has argued that despite negative output gaps for most countries, there are limitations to the use of counter-cyclical monetary and fiscal policies in the majority of countries in the region. Countries with flexibility in their exchange rates have seen increasing inflation. In the case of fiscal positions, most countries will likely need to implement adjustment programs, and several are already doing so. Reducing capital expenditures is frequently part of those programs, but investment in the region is already low. Undertaking such measures when output gaps are negative may have multiplier effects, with impacts on growth.

A more fundamental review of fiscal policies is required that considers wider actions on both spending and taxation. A comprehensive analysis is beyond the scope of this report, but countries may wish to review various spending categories. Improved targeting of social spending, particularly related to subsidies, transfers and pensions may bring considerable savings. Moreover, reducing subsidies in the energy sector given low oil prices, or introducing taxes that would also have environmental benefits, could provide additional savings. Reforms of tax systems may also substantially increase revenues and

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<sup>27</sup> A regional common market is not a new idea and can be traced at least as far back as the 1950s. The first formal tangible attempts towards such a goal were in the 1960s, but it was only in the 1990s that more comprehensive and more open integration initiatives were consolidated, consisting of five sub-regional trade blocks (the Andean Community, the Central American Common Market-CACM, CARICOM, MERCOSUR and NAFTA).

Figure 7.6 ■ FTA Coverage in 2015



Source: Authors' calculation based on data from IDB INTrade.

Note: Green squares indicate a free trade agreement. Blue squares indicate no free trade agreement.

improve efficiency and hence may also come at a low cost in terms of growth. There is additionally considerable scope for improving tax administration and deepening automatic stabilizers, which would in turn reduce demand for counter-cyclical discretionary policies, which in the past have been poorly designed.<sup>28</sup>

The region has made considerable advances in social indicators, especially commodity-exporting nations, during the commodity boom. As the boom has subsided, a fall in labor participation rates has so far limited the rise in informality and unemployment. It seems likely that participation rates will stabilize, however, and then unemployment and underemployment would likely rise. Further measures will be needed to boost growth and consolidate the advances that the region has enjoyed in poverty reduction and other social indicators.

Countries thus face a strong challenge in boosting potential growth, particularly in regard to improving export performance. Policies can help in this regard, including export promotion activities and actions to reduce domestic transport costs and improve logistics. More generally, countries may wish to focus scarce resources on sectors likely to have the greatest growth impacts.

More fundamentally, the region may wish to deepen the integration process. The current mosaic of trade agreements has increased the percentage of goods that are exported under preferred treatment, but it has done little to truly deepen regional integration to increase scale and hence allow firms to compete in global markets against large countries and deeper and larger free trade areas. Moreover, trade in intermediate goods is limited, restricting the development of production chains within the region and participation by the region's firms in global value chains. Commodity-exporting countries particularly need to diversify their production and export base as well as replace foregone commodity revenues, the creation of a regional free trade area could represent a key focus of policy efforts.

While the baseline of this report is for relatively low growth in the years to come, there are several risks to these projections. The recovery in advanced economies remains incomplete and may be delayed once again, Chinese growth may fall more than anticipated and global financial markets may react to these or more specific developments in global credit markets. Moreover, there are internal risks including the fiscal situation in some countries and the domestic credit boom, coupled with the buildup of dollar-denominated debt by non-financial firms, including those of state-owned enterprises in extractive sectors that should be monitored carefully. The fact that risks to the modest central projections appear primarily on the downside underscores the urgency of taking action as soon as possible. As the title of this report suggests, timely action would reduce risks and boost growth potential, and it may then allow the region to consolidate the many advances made in recent years.

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<sup>28</sup> See Corbacho, Fretes Cibils, and Lora (2013) for further details on tax reform in Latin America and the Caribbean.





## APPENDIX A

# Traditional and Adjusted Real Effective Exchange Rates (REERs and AREERs)

### Traditional REERs

Real effective exchange rates (REERs) are traditionally calculated as the geometric weighted average of bilateral real exchange rate pairs between countries using trade shares as weights. Formally,

$$REER_{it}^{Tr} = \prod_{j=1}^n (REER_{ijt})^{w_{ij}^{tr}},$$

where

$$w_{it}^{tr} = \frac{X_{ij}}{X_i}.$$

In this equation,  $REER_{ijt}$  is an index of the real bilateral exchange rate of country  $i$  in terms of country  $j$ 's currency at time  $t$  (using consumer price indices to measure inflation);  $X_{ij}$  is exports from  $i$  to  $j$ , and  $X_i$  is total exports from country  $i$ .<sup>1</sup> Thus, the traditional real effective exchange rate of country  $i$  at time  $t$ ,  $REER_{it}^{Tr}$ , is the geometric weighted average of the bilateral real exchange rates between country  $i$  and all other countries, with countries weighted according to their importance as a destination of country  $i$ 's exports.<sup>2</sup> REERs are defined such that an increase in the REER of a country is associated with a real appreciation. Trade weights in the calculations in Chapter 4 are fixed in 2013 in order to avoid problems of endogeneity, i.e., changes in REERs due to changes in the geographical composition of trade potentially caused by a change in the REER. For convenience, the index is normalized to be 100 in June 2014, when nominal exchange rates began to depreciate in several countries in the region.

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<sup>1</sup> CPI data on exchange rates come from Datastream. In some cases, data were complemented by national sources. Export data come from Hausmann et al. (2014).

<sup>2</sup> Some measures of REER consider share in both imports and exports. Given the focus on export competitiveness, this chapter will use export shares only.

As discussed in Chapter 4, this traditional measure of the real effective exchange rate has a serious shortcoming. When a country exports a product to a destination, exporters are not just competing with producers of that product in that destination. They also compete with other countries' exporting to the same destination. For example, Mexican exporters of flat-screen televisions to the United States have to compete with Chinese and Korean exporters, not just with U.S. manufacturers. In order to address this problem, and following Stein, Fernández, and Rosenow (2016), a measure of REERs that takes into account competition with other exporters in third markets is developed below and employed in Chapter 4.

### Accounting for Competition in Third Markets

The adjustment made for competition in third markets can be described using the case of Colombia as an example. The United States accounts for approximately 40 percent of Colombian exports. Rather than assigning a 40 percent weight to the United States in the calculation of Colombian REER, as in the traditional measure, the share corresponding to the U.S. market is divided into two portions. One part ( $\alpha_{US}$ ), representing the share of domestic U.S. demand for tradables satisfied by domestic producers, is still assigned to the United States. The rest, corresponding to the share of imports in the U.S. demand for tradables ( $1-\alpha_{US}$ ), is assigned to countries (other than Colombia) that export to the United States, in proportion to their exports share. More formally,

$$\alpha_k = \left( \frac{GDP_k^{tradable} - X_k^{VA}}{GDP_k^{tradable} - X_k + M_k} \right)$$

where the denominator,  $GDP_k^{tradable} - X_k + M_k$ , is the domestic absorption of tradable goods of a country  $k$ , the numerator is the portion of this absorption that is sourced domestically, and  $X_k^{VA}$  is the domestic value added of country  $k$ 's exports.<sup>3</sup>

A new measure of Competition-Adjusted REER is then obtained as,

$$REER_{it}^c = \prod_{j=1}^n (RER_{ijt})^{W_{ij}^c}$$

where the weight of country  $j$  in country  $i$ 's REER is now:

$$W_{it}^c = \alpha_j \frac{X_{ij}}{X_i} + \sum_{k=1, k \neq j}^n (1 - \alpha_k) \frac{m_{kj}}{m_k} * \frac{X_{ik}}{X_i} \tag{1}$$

<sup>3</sup> We use 2013 industrial and agricultural GDP from WDI for GDP tradable. The share of value added in exports comes from Purdue University's Global Trade Analysis Project (GTAP), which has ample country coverage. The data corresponds to 2007, the last year available. More recent data for OECD countries suggest that the share of value added in exports changes slowly over time, so using 2007 data should not be a major concern.

Thus, the weight of country  $j$  in country  $i$ 's adjusted REER is composed of two parts: the first term represents the weight of country  $j$  due to its share  $\alpha_j$  in its own market, multiplied by the share of this market as a destination of country  $i$ 's exports. The second term is the sum of country  $j$ 's weights in all other markets  $k$ , which comes from multiplying the share of country  $k$ 's tradable absorption that is not sourced domestically ( $1-\alpha_{US}$ ) by the share of country  $j$  as an origin of country  $k$ 's imports not originating in country  $i$ , by market  $k$ 's share of country  $i$ 's exports.

Table A.1 illustrates how this works. Countries ( $k$ ) in the top row are the most important destinations for Colombia's exports. The percentage below each country's name in this first row of Table 1 represents the weight in the traditional index.

The first cell corresponds to  $\alpha_{US} = 50.8$  percent, the share of U.S.-produced goods in U.S. tradable demand. In the rest of the column, each cell represents  $(1-\alpha_{US})$  multiplied by the share of each country  $j$  in U.S. non-Colombian imports. For example, the figure for China (11.33 percent) is 49.2 percent \* 23 percent, the latter percentage being the share of China in U.S. imports that do not originate in Colombia. The second cell in the second row represents the share of China in India's demand for tradables, 6.06 percent. The third cell in the row corresponds to  $\alpha_{CHN}$ , equal to 73.83 percent, and so on. The total weight corresponding to China in the calculation of the competition adjusted REER of Colombia is obtained by multiplying each of the cells of China's row by the importance of that market in Colombia's exports, and adding these horizontally. Thus, China's weight would be 11.33% \* 40.15% + 6.06% \* 8.27% + 73.83% \* 7% + ...and so on, for a total weight of 14.10 percent, as indicated in the last column. The third term of this summation (73.83% \* 7% = 5.16%) corresponds to the first term in equation (1), that is, the weight of Chinese producers as competitors of Colombian exporters in the Chinese market alone. The rest (8.94 percent) corresponds to the role of China as a competitor to Colombian exporters in third markets.

**Table A.1 Calculating Competition-Adjusted Weights for Colombia**

		USA	IND	CHN	SPA	...	Competition-Adjusted Weights
		(40.15%)	(8.27%)	(7.00%)	(5.18%)	...	
Country $j$ 's share in country $k$ 's demand for tradables	USA	50.80%	2.50%	3.23%	1.64%	...	25.30%
	CHN	11.33%	6.06%	73.83%	5.89%	...	14.10%
	IND	1.01%	63.19%	0.38%	0.79%	...	6.10%
	DEU	2.91%	1.68%	2.07%	9.46%	...	4.70%
	MEX	6.92%	0.54%	0.22%	1.92%	...	4.18%
	CAN	7.95%	0.25%	0.54%	0.33%	...	3.92%
	:	:	:	:	:	:	:
	OTHER	19.09%	25.79%	19.73%	79.97%	...	41.71%

Source: Authors' calculations.

### Accounting for Export Similarity

Two countries may export to the same destination market but have very different export baskets. If this is the case, they are not really competing. For example, Colombia and India may both export to the United States, but their export baskets may have very few products in common. A similarity adjustment is then made using the Finger and Kreinin (1979) index, which varies from 0 to 1 and reflects the degree of overlap of market shares for different products in countries' export baskets and is given by:

$$SIM_{ij} = \sum_{p=1}^P \min\left(\frac{X_{ip}}{X_i}, \frac{X_{jp}}{X_j}\right),$$

where

$$\frac{X_{ip}}{X_i}$$

is the share of good  $p$  in country  $i$ 's total exports and  $P$  is the total number of products. Figure A.1 shows an example of the similarity index in a two-country, two-product case. Similarity in this case is the sum of both the red and the blue overlap sections.

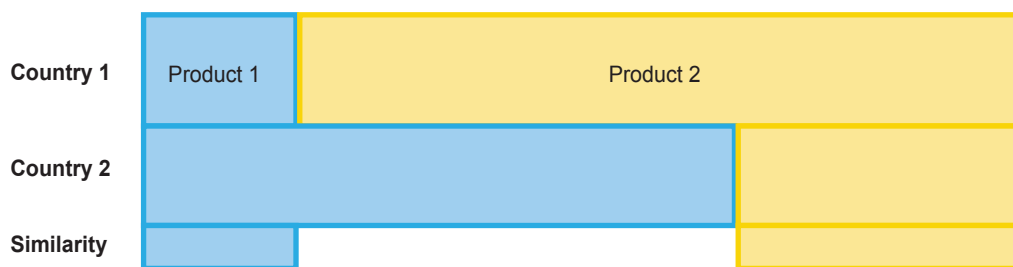
To obtain the final weights for each country for the REER, adjusting for both competition and similarity, the competition-adjusted weights are multiplied by the similarity index. Since the similarity index varies between 0 and 1, as a result of the multiplication the sum of the weights would no longer be 1. For this reason, the weights are renormalized so that they add up to 1.

$$w_{ij}^{cs} = \frac{SIM_{ij} * w_{ij}^c}{\sum_j SIM_{ij} * w_{ij}^c}.$$

The competition and similarity-Adjusted REER (AREER) is thus:

$$AREER_{it}^{cs} = \prod_{j=1}^n (RER_{ijt})^{w_{ij}^{cs}}$$

**FIGURE A.1 ■ Illustrative Example of Constructing the Similarity Index**



Source: Authors' compilation.

## Product AREERs

As detailed in Chapter 4, while an overall AREER can be calculated at the country level, an AREER can also be calculated at the product level. For countries that suffered an overall appreciation some products may have lost more or even gained in competitiveness, and for those that enjoyed a real depreciation some products may not have seen their specific AREER depreciate. Table A.2 lists the top five non-commodity exports for a selection of countries and details how product-level AREERs have moved in each case.

**Table A2. Change in Adjusted Real Effective Exchange Rate**

Country	Export Share (%)	Product Name	Change in the AREER (%)
Bolivia	0.78	Acyclic alcohols	26.2
Bolivia	0.40	Leather of other bovine cattle and equine leather	27.9
Bolivia	0.07	Chairs and other seats and parts	15.9
Bolivia	0.10	Under garments	10.8
Bolivia	0.53	Jewellery of gold	9.6
Brazil	1.11	Semifinished iron products	-26.4
Brazil	2.13	Passenger motor cars	-37.3
Brazil	1.35	Other parts of motors cars	-34.8
Brazil	1.36	Aircraft exceeding an unladen weight of 15000 kg	-28.1
Brazil	3.04	Tugs	-28.5
Colombia	0.86	Coke and semi-coke of coal of lignite or of peat	-14.1
Colombia	0.89	Medicaments	-23.8
Colombia	0.93	Perfumery	-22.4
Colombia	1.18	Ferro-alloys	-22.3
Colombia	0.81	Passenger motor cars	-26.0
Costa Rica	11.32	Parts of and accessories suitable for office machines	13.8
Costa Rica	0.79	Elect app such as switches	12.9
Costa Rica	54.70	Electronic Microcircuits	13.3
Costa Rica	4.13	Medical instruments and appliances	12.8
Costa Rica	1.10	Orthopaedic appliances	13.5
Ecuador	0.21	Polypropylene	31.1
Ecuador	0.21	Chemical products and preparations	11.8
Ecuador	0.41	Machinery	21.7
Ecuador	0.20	Passenger motor cars	41.6
Ecuador	0.27	Motor vehicles for transport of goods/materials	38.7
Peru	0.39	Polypropylene	10.1
Peru	0.55	Jerseys	-6.7
Peru	0.71	Other outer garments	-3.4
Peru	1.33	Under garments	-3.1
Peru	0.37	Art. for the conveyance or packing of goods	5.5

Source: Authors' calculations.



## APPENDIX B

# Corporate Balance Sheets, Data and Empirical Methods

This appendix describes the data employed in Chapter 5 and discusses the empirical methods used to analyze the financial soundness of firms and the potential balance sheet effects of depreciations.

### Data on Firm Balance Sheets

Figures on firm balance sheets come from a sample of 6,964 listed non-financial firms in 15 major emerging countries. The sample was built from all firms, active as of December 5, 2015 and listed in the stock exchanges of the 15 countries of interest excluding firms: i) with headquarters in a country different from that where the stock is listed and that report balance sheet data in a currency other than the local currency of the listing country, and ii) operating in the Financials and Utilities sectors (based on the Thomson-Reuters Business Classification system). A few firms were also excluded as they did not have data available on the variables of interest or as inconsistencies in reported data were observed.<sup>1</sup> Table B.1 shows the number of firms in each country in the final sample.

Data on balance sheets were sourced from Thomson Reuters's Worldscope. Data for years 2005–2014 come from revised annual balance sheet reports. Data for 2015 are from interim reports and refer to the trailing 12 months ending in the third quarter. To reduce the effect of outliers and measurement error, we follow standard practice in the corporate finance literature and *winsorize* each variable by country-year with cutoffs at the 2nd and at the 98th percentiles.

The variables plotted in the Figures in Chapter 5 are defined as follows:

- **Leverage:** Total debt to total equity. Total equity is the sum of the values of outstanding common and preferred shares. The trends displayed in the figures throughout Chapter 5 are similar considering leverage defined as the ratio of total liabilities to total assets.

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<sup>1</sup> In a few cases the level of consolidation was not specified and reporting at different levels of consolidation may, for example, generate inconsistencies between balance sheet variables and information on the amount of bonds issued in foreign currency.

**Table B.1 Sample of Non-Financial Firms**

Region	Country	# Firms	# Firms with at least one bond	# Firms with no bonds	# Issuers (hard-currency bonds)	# Non-issuers (no hard-currency bonds)
ASIA	India	2,048	258	1,790	140	1,908
ASIA	Indonesia	345	88	257	38	307
ASIA	Korea	1,595	780	815	134	1,461
ASIA	Malaysia	734	169	565	13	721
ASIA	Philippines	139	16	123	15	124
ASIA	Thailand	456	70	386	21	435
EMEA	Israel	256	82	174	6	250
EMEA	Poland	384	61	323	12	372
EMEA	South Africa	220	35	185	11	209
EMEA	Turkey	246	26	220	10	236
LAC	Brazil	201	98	103	27	174
LAC	Chile	128	34	94	11	117
LAC	Colombia	38	10	28	2	36
LAC	Mexico	91	47	44	28	63
LAC	Peru	83	17	66	15	68
<b>Total EMs (15 countries)</b>		<b>6,964</b>	<b>1,791</b>	<b>5,173</b>	<b>483</b>	<b>6,481</b>

Source: Authors' calculations based on Thomson-Reuters Worldscope.

- *Interest Coverage Ratio*: Earnings before interest and taxes (EBIT) to interest expenses on debt.
- *Profitability*: Operating profit margin, which is the ratio of operating income to revenues.
- *Capital expenditures*: Additions to fixed assets. The figures in Chapter 5 show values scaled by total assets.

The classification of firms into economic sectors of Commodity, Tradables, and Non-Tradables is based on each firm's industrial classification reported in Worldscope, which in turn is based on SIC codes (Standard Industrial Classification). Worldscope assigns SIC codes based on the contribution of business sectors to revenues; the industry that provides the greatest revenue is the one selected. Correspondence tables published by the U.S. Census Bureau of industry classifications are used to classify each firm into ISIC Rev. 3.1 two-digit sectors. An economic sector was then assigned to each firm based on the ISIC industry classification.<sup>2</sup>

<sup>2</sup> Specifically, firms were classified as belonging to the Commodity sector if their ISIC Rev. 3.1 two-digit classification was in industries 01-14; as in the Tradables sector if their ISIC Rev. 3.1 industry was in industries 15-37; and as in the Non-Tradables sector if their ISIC Rev. 3.1 classification was in industries 40-99 or if it was not possible to assign an ISIC Rev. 3.1 industry based on the original SIC classification in Worldscope.



Throughout Chapter 5, a firm is classified as an *issuer* if during the period 2000–2015 the firm issued bonds itself or through a subsidiary denominated in any of the following five currencies: U.S. dollars, Euros, British pounds, Japanese yen or the Swiss franc.

Data on State-Owned Enterprises (SOEs) in the extractive sector come from a sample of seven firms: YPF (Argentina), Petrobras (Brazil), Vale (Brazil), Nuclebras Equipamentos Pesados (Brazil), Ecopetrol (Colombia), Codelco (Chile), and Pemex (Mexico). Data for these SOEs come from the Reuters Fundamentals database. For the years 2005–2014 data refer to final annual balance sheet reports; for the year 2015 the data refer to the trailing 12 months ending in September.

### Data on Outstanding Bonds

For each listed firm in the sample described above all fixed-income securities associated with the firm in the Thomson Reuters securities database (sourced using Thomson Reuters' Eikon Premium terminal) were retrieved. These bonds may have been issued by the firm itself or through a domestic or a foreign subsidiary. The data were not restricted by instrument type, issuance date, or maturity at issuance. The association of the firm with the security was double-checked based on identifiers available from Thomson Reuters, and only those securities for which a clear association was verified were kept. This bonds database contains a total of 32,810 securities associated with 1,791 firms in our sample. About 80 percent of the bonds issued were bullets.<sup>3</sup>

For each bond the outstanding value as of the end of each year in the period 2000–2014 was calculated by adjusting the bond's face value for amortizations and any other reported change in outstanding amounts. These adjustments included early repayments, call options exercised, defaults, cancellations, conversions, liquidations, repurchases, and any other reported change in bond status. Bond face values are reported in the original currency of issuance, so those values were then converted to the currency in which the firm's balance sheet is reported using exchange rates as of December 31 of each year (sourced from Thomson Reuters Datastream). Nominal exchange rates against the U.S. dollar were obtained, and based on these rates, cross-exchange rates for bonds issued in other currencies as required (the vast majority of bonds were issued in dollars or in local currencies). A more detailed description of the bond data can be found in Caballero (2016).

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<sup>3</sup> Securities classified as bonds, notes, or commercial paper make up 86 percent of the sample. About 89 percent of the securities were issued after 1999, although the earliest bond in the sample is for 1974. About 12 percent of the securities in the database have maturities of less than one year, while the average maturity at issuance is four years.

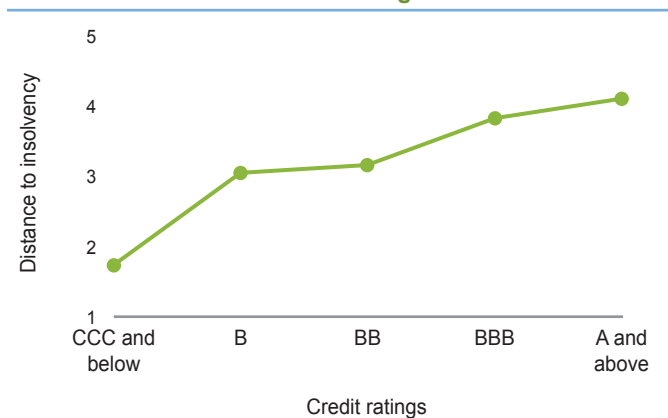
## Measuring Firm Financial Soundness

In Chapter 5 the Distance to Insolvency (DI), as discussed in Atkeson, Eisfeldt, and Weill (2013) is used as a measure of firm financial soundness. Intuitively, a firm becomes closer to insolvency as its asset volatility rises and as its leverage rises. DI is the inverse of how close a firm is to insolvency and hence is defined as the ratio of the leverage of a firm to its asset volatility at a given point in time. Atkeson, Eisfeldt, and Weill (2013) show that DI can be computed as the reciprocal of the volatility of daily stock returns.<sup>4</sup> The authors further show that movements in a monthly measure of DI for U.S. firms in the period 1926–2012 correspond to other measures of firm financial soundness and that, in periods of financial distress in the corporate sector, DI falls.

This report uses data from Caballero and Powell (2016) for each firm in the sample of 6,964 emerging market firms as defined above. Using daily stock returns data, for each firm DI was estimated on a quarterly basis as the inverse of realized equity volatility ( $DI_t = 1/\sigma_{ER}$ ). Following Atkeson, Eisfeldt, and Weill (2013), equity volatility for a firm in a given quarter is calculated as the square root of the average squared daily returns in the quarter, annualized by multiplying by  $\sqrt{252}$ , where 252 is an estimate of the number of trading days in each year. Data on daily returns are taken from Datastream. Since stocks in emerging markets may not trade every day, the analysis is restricted to firms that have trading activities

in at least 95 percent of the weeks they have been listed (a total of 5,207 firms of the 6,964 firms).

**FIGURE B.1** ■ Mapping of Distance to Insolvency to Firms' Credit Ratings



Source: Authors' calculations and Thomson-Reuters Datastream.

Following Atkeson, Eisfeldt, and Weill (2013), DI is mapped to firms' credit ratings. Standard & Poor's foreign currency long-term credit ratings were employed. These ratings were available for 220 firms in the sample. Figure B.1 plots the median of the cross-sectional

<sup>4</sup> Atkeson, Eisfeldt, and Weill (2013) show that, under general conditions, the inverse of equity volatility lies between their theoretical Distance to Insolvency (DI) measure and the Distance to Default (DD) measure derived from structural models of firm default, such as Leland (1994). Given that the empirical DI measure obtained from equity prices is an upper bound of theoretical DI, the measure may be considered a conservative measure of financial soundness.

distribution of firm DI conditional on S&P's credit ratings. The median DI for each credit rating category is obtained as the median of measured DI for each rating category after placing each firm with available rating data into corresponding credit rating categories and then computing the median measured DI for all firm-period observations by ratings category. The periods used to source credit rating data are each June of the years 2005, 2007, 2009, 2011, 2013, and 2015. Credit rating data are from Thomson Reuters.

## Empirical Analysis of Capital Expenditure and Depreciation: Balance Sheet Effects

To estimate potential balance sheet impacts of depreciations on capital expenditures the methodology of Bleakley and Cowan (2008) was employed. In this framework, firm capital expenditures are modeled as a function of the change in the exchange rate and lagged foreign currency debt. This specification is motivated by the idea that, following a depreciation, firm investment will be affected by offsetting forces, depending on the firm's financial and operational currency exposures, namely: i) there may be a negative balance sheet effect from the increased indebtedness of a firm with foreign currency debt, and ii) there may be a positive competitiveness impact from increased profits if the firm has foreign currency revenues. Variations of the following model are then estimated:

$$Y_{isct} = \alpha + \gamma(FCB_{i,s,c,t-1} \times \Delta e_{ct}) + \delta FCB_{i,s,c,t-1} + \varphi_t + \varphi_c + \varphi_s + \varphi_{ct} + \varphi_{st} + \varphi_{cs} + \varepsilon_{isct}$$

where  $Y_{isct}$  is the capital expenditure of firm  $i$  of sector  $s$  in country  $c$  at year  $t$ .  $FCB_{i,s,c,t-1}$  is the stock of foreign currency debt, which is proxied by the stock of bonds outstanding in hard currencies as described in the previous section. Capital expenditures and foreign currency bonds enter in the estimated models scaled by the firm's assets.  $\Delta e_{ct}$  is the annual change in the average nominal exchange rate against the U.S. dollar. The  $\varphi$  parameters are fixed effects, including country, sector, and year fixed effects, and combinations thereof.

The regression estimates the effect of nominal depreciations on current capital expenditures by allowing the effect of the depreciation to depend on the firm's exposure to foreign currency bonds in the previous year. The model is estimated using balance sheet data for the unbalanced panel of listed firms previously described in this appendix. The estimation is for the period 2000–2015, and a total of 6,921 listed firms with the available data are used. The model is estimated by ordinary least squares, and as a Tobit regression, because the dependent variable can only take positive values or zero. For more details on the data and the models see Caballero (2016).

Baseline results of the model are presented in Table 5.1 in the report. The table presents in columns 1–5 different regressions with alternative sets of fixed effects, including models

**Table B.2 Estimated Balance Sheet Effects of Depreciations, Results of Regressions of Current Capital Expenditures Adding Firm Leverage and Lagged Capital Expenditures**

	(5)	(5)	(3)	(3)	(7)	(7)
	OLS	OLS	OLS	OLS	Tobit	Tobit
$\Delta$ ER $\times$ FC bonds	-0.059 (0.026)**	-0.064 (0.034)*	-0.126 (0.041)***	-0.102 (0.054)*	-0.133 (0.039)***	-0.109 (0.053)**
$\Delta$ ER $\times$ Leverage	-0.027 (0.016)*	-0.025 (0.014)*	-0.014 (0.009)	-0.009 (0.008)	-0.009 (0.009)	-0.004 (0.009)
FC bonds	0.005 (0.013)	0.003 (0.010)	0.034 (0.024)	0.017 (0.011)	0.037 (0.025)	0.019 (0.012)
Leverage	-0.009 (0.005)*	-0.009 (0.005)*	-0.005 (0.002)**	-0.005 (0.002)**	-0.008 (0.002)***	-0.008 (0.002)***
Lagged Capex		0.224 (0.015)***		0.501 (0.014)***		0.508 (0.013)***
Firm FE	Yes	Yes	No	No	No	No
Country-Industry FE	No	No	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs	70,693	69,648	70,743	69,707	70,743	69,707
R2 or pseudo-R2	0.448	0.479	0.088	0.340	-0.035	-0.159
Clustering	2-way	2-way	Country	Country	Country	Country

Source: Authors' calculations based on Thomson-Reuters Worldscope.

Note: Standard errors are presented in parenthesis. Clustering refers to errors estimated by adjusting for correlation of the error terms at the country level, or by allowing two-way correlation at the country and firm levels. \* indicates significance at 10 percent level, \*\* indicates significance at 5 percent level, and \*\*\* indicates significance at 1 percent level.

with firm-level fixed effects.<sup>5</sup> Results from Tobit regressions are presented in columns 6 and 7. All the regressions indicate a negative, statistically significant balance sheet effect of outstanding foreign-currency bonds on capital expenditures.

Table B.2 presents robustness checks for various models presented in Table 5.1. More specifically, it is shown that the inclusion of firm leverage and firm lagged capital expenditures do not change the main results. Table B.3 shows results of estimating models 1 to 7 in Table 5.1 for one-year-ahead capital expenditures—in other words, all the explanatory variables are lagged.

<sup>5</sup> The indicators for industry used in the baseline models are based on firms' business classification and include eight industries (Basic Materials, Consumer Cyclical, Consumer Non-Cyclical, Energy, Healthcare, Industrial, Technology, Telecommunication Services). The results are qualitatively unchanged if we classify firms according to economic sectors of Commodity, Tradables, and Non-Tradables.

**Table B.3 Estimated Balance Sheet Effects of Depreciations: Results of Regressions of One-Year Ahead ( $t + 1$ ) Capital Expenditures on Depreciation and Stocks of Hard-Currency Bonds**

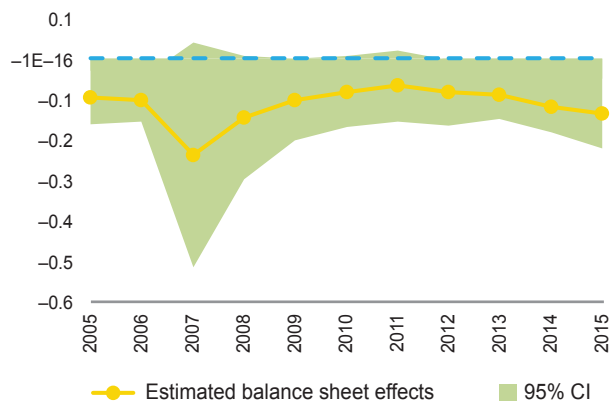
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	OLS	OLS	OLS	OLS	OLS	Tobit	Tobit
$\Delta ER \times FC$ bonds	-0.168 (0.092)*	-0.153 (0.081)*	-0.165 (0.083)*	-0.143 (0.083)	-0.143 (0.083)	-0.164 (0.079)**	-0.173 (0.082)**
FC bonds	0.035 (0.020)	0.029 (0.018)	0.027 (0.019)	-0.008 (0.007)	-0.008 (0.007)	0.031 (0.019)	0.028 (0.019)
Firm FE	No	No	No	Yes	Yes	No	No
Country-Industry FE	No	No	Yes	No	No	No	Yes
Country-Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	No	No	Yes	No
Industry FE	Yes	Yes	Yes	No	No	Yes	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs	64,130	64,130	64,130	64,130	64,130	64,130	64,130
R2 or pseudo-R2	0.051	0.070	0.085	0.056	0.460	-0.026	-0.033
Clustering	Country	Country	Country	Country	2-Way	Country	Country

Source: Authors' calculations based on Thomson-Reuters Worldscope.

Note: Standard errors are presented in parenthesis. Clustering refers to errors estimated by adjusting for correlation of the error terms at the country level, or by allowing two-way correlation at the country and firm levels. \* indicates significance at 10 percent level, \*\* indicates significance at 5 percent level, and \*\*\* indicates significance at 1 percent level.

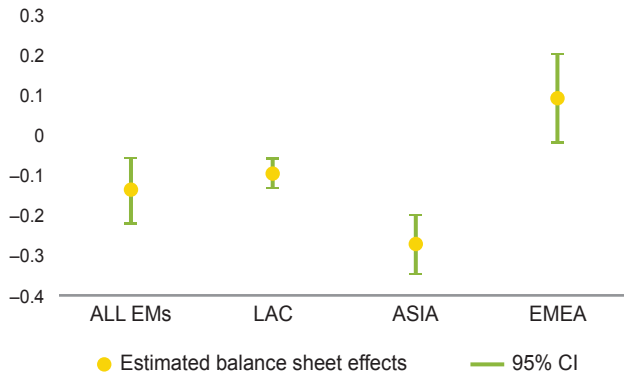
Figure B.2 shows the estimated balance sheet effects across time following model 7 in Table 5.1. Each year the model is estimated by adding one more year to the sample (starting in year 2005, which includes data for the period 2000–2005). The figure shows the estimated coefficient of interest from the model and a 95 percent confidence band around the estimate for each sample.

Figure B.3 explores the heterogeneity across emerging markets. The figure shows the estimated balance sheet effects after estimating model 7 in Table 5.1 separately for Latin America and the Caribbean, ASIA, and Europe, Middle East and African (EMEA) nations. The figure displays the estimated coefficient of

**FIGURE B.2 ■ Estimated Balance Sheet Effects**

Source: Authors' calculations based on Thomson-Reuters Worldscope.

**FIGURE B.3 ■ Estimated Balance Sheet Effects by Region**



Source: Authors' calculations based on Thomson-Reuters Worldscope.

The figure also shows as reference the estimated effect for the full sample (which is identical to the one reported in column 7 of Table 5.1).

interest from the model and a 95 percent interval around the estimate. Countries in the region include Brazil, Chile, Colombia, Mexico, and Peru. Asian countries included are India, Indonesia, Malaysia, Philippines, South Korea, and Thailand. Countries in the EMEA region include Israel, Poland, South Africa, and Turkey.

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