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Seizing the Momentum

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Preface

The April 2018 *Regional Economic Outlook: Western Hemisphere* was prepared by a team led by Hamid Faruqee and S. Pelin Berkmen under the overall direction and guidance of Alejandro Werner and Krishna Srinivasan. The team included Pablo Bejar, Carlos Caceres, Yan Carrière-Swallow, Antonio David, Carlos Gonçalves, Yurani Granada, Kotaro Ishi, Etibar Jafarov, Genevieve Lindow, Prachi Mishra, Jorge Restrepo, Galen Sher, Suchanan Tambunlertchai, Bert van Selm, Peter Williams, and Juan Yépez. In addition, Chapter 1 included guidance and review from Nigel Chalk and Cheng Hoon Lim; Kimberly Beaton, Javier Kapsoli, Gerardo Peraza, Uma Ramakrishnan, and Joyce Wong contributed to Chapter 2, and Cristhian Vera and Lulu Shui provided research assistance for the Central America and Caribbean sections; Henrique Barbosa, Adrián Robles, and a Banco de España team comprising Alberto Fuertes, Ricardo Gimeno, and Jose Manuel Marques contributed to Chapter 3; Takuji Komatsuzaki contributed to Chapter 4, and Daniel Leigh provided guidance in its preparation; Chapter 5 was prepared by a team led by Ravi Balakrishnan and composed of Frederik Toscani and Mauricio Vargas. Production assistance in the Western Hemisphere Department was led by Ravi Sundararajan. Linda Long of the Communications Department coordinated editing and production. Carlos Viel and Virginia Masoller, with the administrative support of María Fraile de Manterola, led the translation and editing team in the production of the Spanish edition. This report reflects developments and staff projections through early March 2018.

Executive Summary

The broad-based acceleration of global growth in 2017 is reflected in the solid gains posted by the economies of the United States and Canada, both of which are expected to grow above potential in the near term. More broadly, growth in both advanced and emerging market and developing economies is expected to gain further momentum in 2018 and 2019, reflecting the effects of expansionary US fiscal policy, favorable global financial conditions, and improved prospects for external demand. Risks to the outlook are broadly balanced in the near term. Over the medium term, however, global growth is expected to soften, and risks are tilted to the downside, owing to the possibility of a sharp tightening of financial conditions, escalating trade tensions and risks of a further shift toward protectionist policies, and geopolitical strains.

In this global setting, economic recovery in Latin America and the Caribbean is gaining strength. Following a contraction in 2016, growth moved solidly into positive territory in 2017 and is expected to accelerate further in the near term, underpinned by the pickup in global demand and trade, accommodative global financial conditions, an uptick in commodity prices, and a cyclical recovery of domestic private investment.

Despite the improved near-term outlook, significant risks remain. In addition to the risks of tightening global financial conditions and populist changes in key economic partners, domestic elections and rising populist sentiment at home, as well as corruption scandals, could generate economic and policy uncertainty and derail the implementation of much-needed reforms.

Moreover, medium-term growth prospects for the region remain weak, with potential growth reverting to its subdued long-run average. With projected GDP per capita growth rates substantially below most other emerging market regions and just modestly above advanced economies, prospects for income convergence look dismal.

The sharp fall in commodity revenues following the end of the commodity super-cycle and widening fiscal deficits led to a deterioration in debt dynamics. With commodity prices expected to remain low for long and the need for countries in the region to build fiscal buffers and restore sustainability, fiscal adjustment remains an imperative, but the pace and composition of such adjustment should be tuned to support and protect inclusive growth and productivity-enhancing spending. Inflation has continued to decline in most countries, because of which monetary policy can remain accommodative, provided inflation expectations remain anchored. Exchange rate flexibility should remain the first line of defense against external shocks. The need to boost potential growth and productivity calls for a deep and comprehensive structural reform agenda.

In South America, growth resumed in 2017, supported by a favorable external environment, a cyclical recovery in domestic demand, and the end of recession in larger economies, notably Argentina and Brazil. Activity is expected to accelerate further in both 2018 and 2019. Policymakers should strive to place public debt on a sustainable footing, while minimizing the adverse impact on short- and medium-term growth. Where fiscal sustainability or credibility might be at risk, policymakers should address these concerns by front-loading the adjustment and pushing through fiscal reform.

The outlook for Mexico, Central America, and the Caribbean is shaped in large part by developments in the United States, owing to important trade, financial, and migration linkages. In the near term, the region will benefit from higher growth in the United States, but in the longer term uncertainties

stemming from US policies will cast a shadow on prospects. Policies should be geared toward preserving macroeconomic stability in the context of a complex external environment—and domestic policy uncertainty because of coming elections in Costa Rica and Mexico—while setting the stage for stronger, sustainable, and inclusive growth. Tackling corruption and improving law enforcement and security to address high levels of crime in some countries remain imperative for a durable rise in investment and private sector participation.

This issue of the *Regional Economic Outlook* features three analytical chapters, assessing the role of central bank communication and transparency, the impact on growth from fiscal adjustment, and strategies for maintaining past gains in poverty and inequality reduction. Key findings include the following:

- Procyclical monetary policy tightening by Latin America's central banks in the wake of external supply shocks has prompted some reexamination of policy and the public communication of decisions. This chapter argues that central bank credibility—reflected in the degree of anchoring in inflation expectations—has bearing on policy decisions in response to these shocks and is positively related to central bank transparency. Stronger transparency frameworks and communication strategies are associated with higher policy predictability and a better anchoring of inflation expectations, thus providing greater room to maneuver in the face of transitory shocks.

- Rising public debt in many countries in Latin America and the Caribbean has underscored the need for fiscal consolidation. But will this policy hinder the region's nascent recovery? Using a new database of fiscal policy actions, estimated fiscal multipliers suggest that consolidation in the region will be more contractionary than previously thought. Nevertheless, multipliers are small enough to suggest that consolidations will improve the region's debt dynamics, even in the short run. Since expenditure multipliers vary by type of instrument, consolidation plans should preserve public investment to support growth and employment.

- Latin America has made impressive progress in reducing inequality and poverty since the turn of the century, but remains the most unequal region in the world. The gains were particularly pronounced for commodity exporters during the commodity boom. Much of the progress reflected real labor income gains for lower-skilled workers, especially in services, with a smaller but positive role for government transfers. With the end of the commodity boom, a tighter fiscal envelope, and poverty rates already edging up in some countries, policies will have to be carefully calibrated to sustain social progress. Increasing personal income tax revenues while rebalancing spending can help maintain key social transfers and infrastructure spending.

1. A Synchronized Global Upturn and the Outlook for the United States and Canada

The world economy and global trade are experiencing a broad-based cyclical upswing. Since October 2017, global growth outcomes and the outlook for 2018–19 have improved across all regions, reinforced by the expected positive near-term spillovers from tax policy changes in the United States. Favorable global financial conditions, despite some tightening and market volatility in February and March, have been providing support to economic recovery. Higher commodity prices are contributing to an improved outlook for commodity exporters. The US and Canadian economies posted solid gains in 2017 and are expected to grow above potential in the near term. Despite the improved near-term outlook, however, medium-term prospects are tilted downward. Growth prospects for advanced economies are subdued, and many emerging market and developing economies are projected to grow in per capita terms more slowly than advanced economies, raising concerns about income convergence. While risks appear broadly balanced in the near term, they skew to the downside over the medium term, including a possible sharp tightening of financial conditions, waning popular support for global economic integration, growing trade tensions and a shift toward protectionist policies, and geopolitical strains. In this context, policies should focus on building buffers, improving financial resilience, and strengthening the potential for higher and more inclusive growth.

Broad-Based Acceleration

The global economy is seeing stronger economic momentum across regions. A cyclical global upswing strengthened in 2017, driven by an investment recovery in advanced economies, an acceleration of private consumption in emerging markets, and improving economic conditions of commodity exporters. Global growth for 2017 is now estimated at 3.8 percent, 0.2 of a percentage point higher than projected last fall. Upward surprises to growth were broad-based, originating from both advanced economies (such as the euro area, Japan, and the United States) and emerging market economies (such as China) (see Chapter 1 of the April 2018 *World Economic Outlook*).

The stronger growth performance is accompanied by robust trade flows and higher commodity prices (Figure 1.1). World trade has been growing robustly, supported by the investment recovery in advanced economies and commodity-exporting countries, while commodity prices, particularly energy prices, are being lifted by the improved global growth outlook and supply events.

Price pressures are gradually rising alongside stronger global activity and commodity prices. Headline inflation has picked up with the increase in oil prices, and core inflation (excluding fuel and food prices), while still relatively soft, has recently started to edge up, particularly in advanced economies. In emerging market and developing economies, inflation has bottomed out, reflecting recent currency stability or appreciations.

Global financial conditions continue to support economic activity (see Chapter 1 of the April 2018 *Global Financial Stability Report*). While the turbulence in equity markets in early February, followed by a further selloff in March, as well as increases in bond yields in response to firmer growth and inflation, have led to some tightening of financial conditions, overall market sentiment remains favorable (Figure 1.2). Capital flows to emerging markets remain robust, with portfolio flows recovering from the recent bouts of market turbulence.

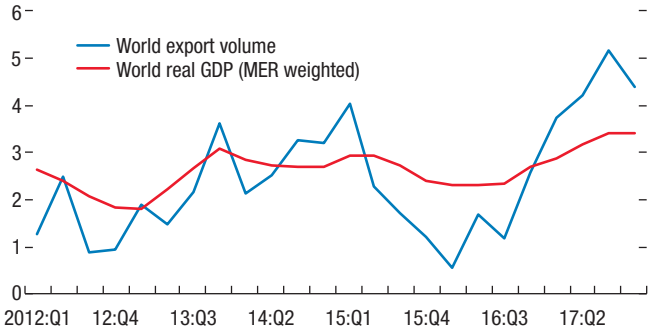
This chapter was prepared by Pelin Berkmen with Kotaro Ishi and Suchanan Tambunlertchai. Pablo Bejar, Yurani Granada (Canada section), and Peter Williams (US section) provided excellent research assistance.

Figure 1.1. Global Growth, Exports, and Commodity Prices

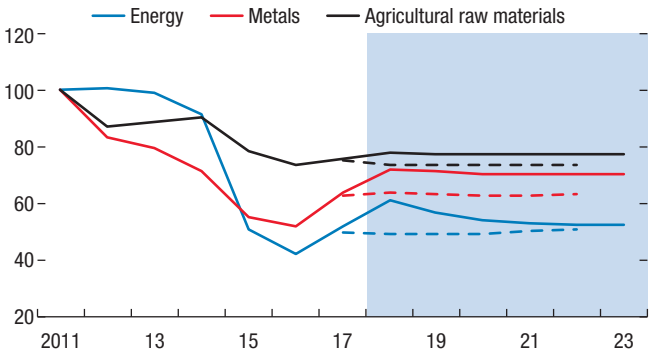
1. Real GDP Growth
(Percent; annual rate)

	2016	2017	Projections 2018	Projections 2019
World	**3.2**	**3.8**	**3.9**	**3.9**
Advanced Economies	1.7	2.3	2.5	2.2
United States	1.5	2.3	2.9	2.7
Euro Area	1.8	2.5	2.4	2.0
Japan	0.9	1.7	1.2	0.9
Emerging Market and Developing Economies	4.4	4.8	4.9	5.1
China	6.7	6.9	6.6	6.4
Russia	–0.2	1.5	1.7	1.5

2. World Real Exports and Real GDP Growth
(Year-over-year percent change)



3. Global Commodity Prices[1]
(Index: 2011 = 100)



Sources: Haver Analytics; IMF, Global Data Source database; IMF, World Economic Outlook database; and IMF staff calculations.
Note: MER = market exchange rate.
[1]Dashed lines refer to the October 2017 *World Economic Outlook* global assumptions.

Medium-Term Prospects Tilted to the Downside

The near-term global outlook has firmed up. The stronger momentum experienced in 2017 is expected to carry over into 2018 and 2019, reinforced by the spillover effects of the fiscal policy stimulus in the United States (accounting for half of the global growth upgrade for 2018–19). Global growth is revised up to 3.9 percent for both years (0.2 of a percentage point higher than the previous forecast in October 2017), also reflecting accommodative financial conditions.

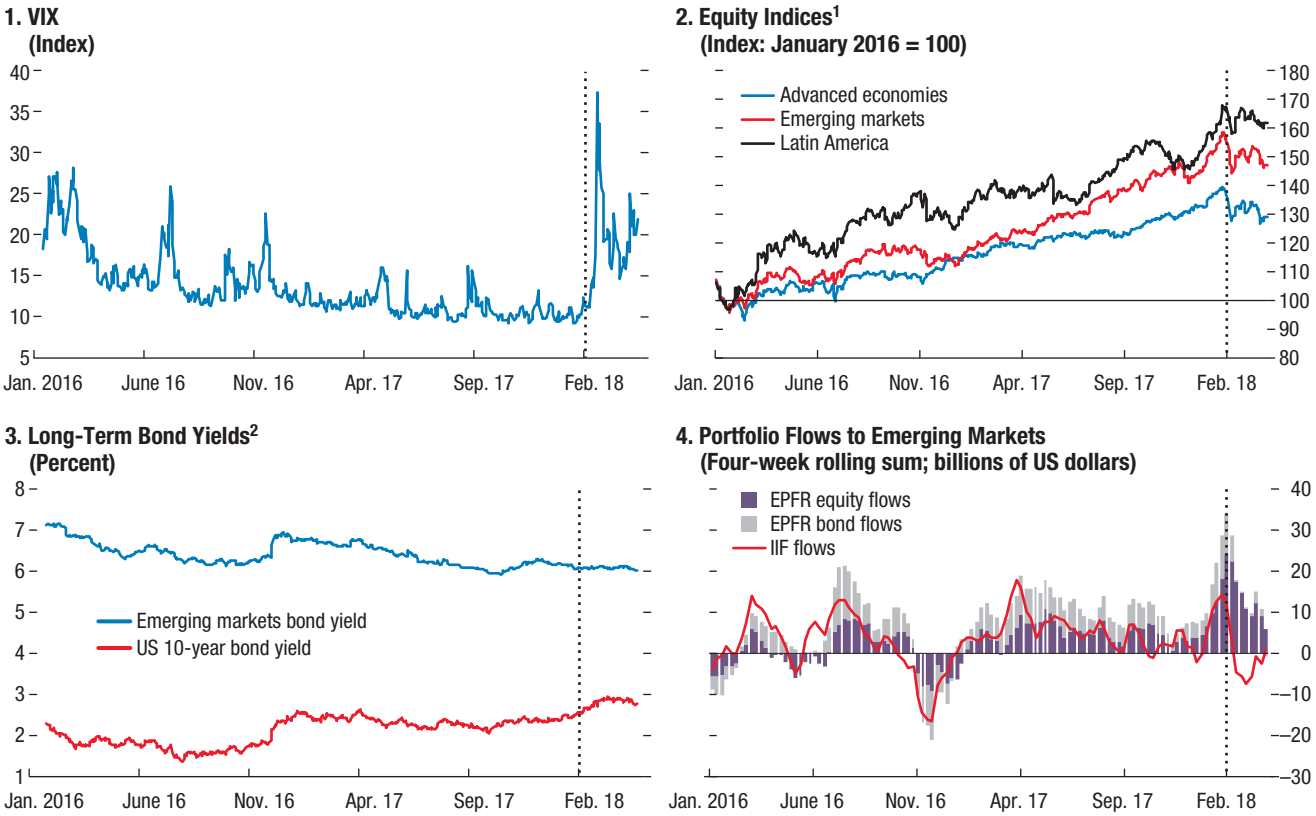
In advanced economies, growth is revised up considerably to 2.5 percent in 2018 and 2.2 percent in 2019 (about half a percentage point higher than previous forecasts for both years). Growth revisions are broad-based, reflecting effects of expansionary fiscal policy in the United States, stronger-than-expected domestic demand, supportive monetary policy, and improved external demand prospects.

The aggregate growth forecast for the emerging market and developing economy group for 2018 is unchanged (4.9 percent) and revised up for 2019 by 0.1 of a percentage point (5.1 percent). This reflects the continued strong performance of emerging Asia and improved prospects for commodity exporters. In *China*, strong growth in 2017 was supported by net exports, despite the slowdown in investment growth. Going forward, growth is projected to decline gradually from 6.9 percent in 2017 to 6.4 percent in 2019 (higher by 0.1 percentage point relative to the October 2017 projections), as policy support gradually declines and the economy continues rebalancing the composition of demand from investment to consumption.

With these revisions, the output gaps in advanced economies are expected to close in 2018. Advanced economies are projected to grow faster than potential this year and next. Headline inflation across the world is expected to pick up in 2018, reflecting closing output gaps and higher commodity prices (Figure 1.3).

However, medium-term prospects are tilted to the downside, with global growth projected to decline to around 3.7 percent over the medium term. This slowdown reflects the decline in advanced economy growth toward subdued potential after the cyclical upswing and US fiscal stimulus

Figure 1.2. Stock Market Volatility, Equity and Bond Markets, and Capital Flows



Sources: Bloomberg Finance L.P.; Haver Analytics; Institute of International Finance (IIF) database; and IMF staff calculations.
Note: Dotted, vertical lines refer to recent market volatility episode in February 2018. EPFR = Emerging Portfolio Fund Research; VIX = Chicago Board Options Exchange Volatility Index.
[1]Refers to Morgan Stanley Capital International local currency indices.
[2]Refers to local currency J.P. Morgan Government Bond Index-Emerging Markets Global Diversified, which is a uniquely weighted index that limits the weights of index countries with larger debt stocks by including only specified portions of these countries' eligible current face amounts of debt outstanding. The index includes countries that are directly accesible by most of the international investor base without explicit capital controls: Brazil, Chile, Colombia, Hungary, Indonesia, Malaysia, Mexico, Nigeria, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, and Turkey.

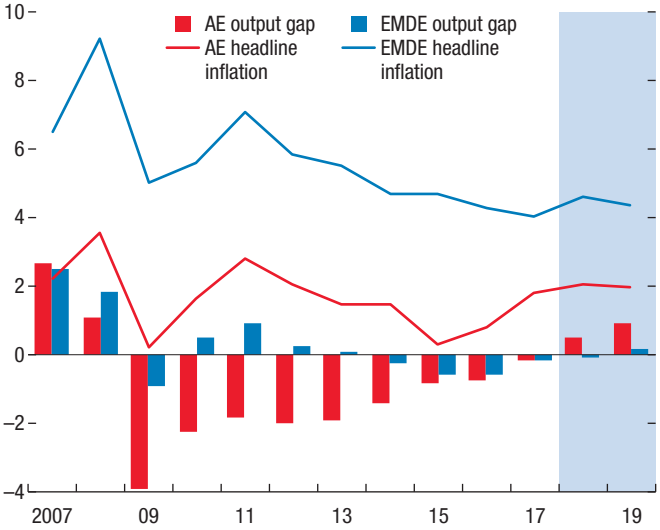
have run their course. Growth in emerging market and developing economies is expected to stabilize around current levels. In per capita terms, however, a portion of emerging market and developing economies, including Latin America and the Caribbean, is projected to grow more slowly than advanced economies, failing to narrow income gaps with advanced economies.

Rising Risks

Risks to the outlook are broadly balanced in the near term, but skewed to the downside over the medium term. Upside risks include stronger-than-expected growth in advanced economies and a potential rebound in productivity led by an ongoing recovery in investment.

While financial conditions have remained supportive, the sudden bout of volatility in global equity markets in early February illustrates risks around the current trend of gradual monetary policy normalization. Financial markets remain particularly vulnerable to an inflation surprise. As output gaps turn positive, inflation could pick up faster than currently priced in by markets. Central banks may then have to tighten monetary policy more aggressively, leading to a sharper decompression of term premiums, a rise in market

Figure 1.3. Advanced and Emerging Market and Developing Economies: Output Gap and Inflation
(Percent)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: AE = advanced economies; EMDE = emerging market and developing economies.

volatility, and tighter global financial conditions than expected in the baseline (see Chapter 1 of the April 2018 *World Economic Outlook* and *Global Financial Stability Report*).

At the same time, continued easy financial conditions, despite the onset of monetary policy normalization, could lead to a further reach for yield and a buildup of financial vulnerabilities, leaving markets exposed to a sharp tightening of financial conditions.

Additional risks stem from a shift toward inward-looking policies, with weakened support for globalization in advanced economies as the North American Free Trade Agreement (NAFTA) and the economic arrangements between the United Kingdom and the rest of the European Union are being renegotiated. NAFTA-related uncertainty is already weighing on investment in Canada and Mexico (see below and Chapter 2). An increase in tariff and nontariff barriers (as seen recently, for example, with the recent import restrictions announced by the United States, announced retaliatory actions by China, and potential retaliation by other countries) would disrupt global supply chains, slow the spread of new technologies, lower consumer welfare, and make international cooperation (to deal with global shocks) more difficult. Illustrative scenarios (see Scenario Box 1 of the October 2016 *World Economic Outlook*) indicate that rising protectionism in all countries—leading to a 10 percent increase in import prices everywhere—could lower global output and consumption by about 1¾ percent after five years.

Similarly, changes in US tax policies are expected to exacerbate income polarization, which could affect the political climate for policy choices in the future. More limited migration flows could exacerbate the effects of declining labor force growth rates in aging societies.

Noneconomic risks include geopolitical tensions, notably in East Asia and the Middle East, political uncertainty in the context of upcoming elections in several countries (including in Latin America), and, more broadly, weak governance and systemic corruption practices. Finally, more frequent occurrence of extreme weather events could impose large humanitarian and economic losses.

Policies: Shifting the Focus to Medium-Term Priorities

Against the global setting with subdued medium-term prospects, low productivity growth has been an issue for advanced and emerging market economies alike. Therefore, there is a need to raise growth potential and enhance inclusiveness, including through measures to lift labor productivity, increase labor force participation, and support the young and those displaced by global structural change in their search for job opportunities.

At the same time, downside risks highlight the need to rebuild global countercyclical buffers to better manage the next downturn, contain financial market risks to increase financial resilience, and improve available fiscal space to help finance growth-friendly policies and put debt

ratios on a downward trend (see the April 2018 *World Economic Outlook* and *Fiscal Monitor*).

Fiscal policy in both advanced and emerging market economies should focus on medium-term objectives—including improving infrastructure to boost potential output—while ensuring that public debt dynamics are sustainable and buffers are rebuilt. Where fiscal consolidation is needed, its pace should be calibrated to avoid sharp drags on growth.

In emerging market and developing economies, improved monetary policy frameworks have helped lower core inflation, which provides scope for using monetary policy to support demand should activity weaken. Over the longer term, governance reforms and economic diversification, particularly in commodity-exporting countries, would help lift private investment, create jobs, and expand the range of activity beyond primary, resource-based sectors.

US Outlook: Above-Potential Growth but with Higher Risks

Economic momentum in the United States is rising as domestic-demand-led growth receives further policy stimulus. The US economy posted solid gains in 2017, thanks to robust private consumption and investment and to favorable global economic and financial conditions. Seasonally adjusted annual real GDP grew by slightly over 3 percent in the second and third quarters of 2017, with 2017:Q4 numbers coming in at 2.5 percent. For the whole year, growth was 2.3 percent, up from 1.5 percent in 2016.

Headline inflation was weak in 2017 due to idiosyncratic factors, such as the fall in telephone services prices and subdued growth in health care prices. Since September 2017, core personal consumption expenditure inflation has gradually risen, although at 1.5 percent it remains below the US Federal Reserve's target of 2 percent. With unchanged labor force participation, the economy has been operating slightly above full employment, pushing average hourly earnings up 2.5 percent over the past 12 months.

Policy stimulus reinforces this economic momentum. The recently enacted tax reform, as well as the 2018 two-year bipartisan budget agreement, will add stimulus to the growth momentum, further boosting private sector activity while raising employment and wages. These changes will boost the level of GDP over the next two years, with economic activity in 2018 and 2019 projected to expand by 2.9 and 2.7 percent, respectively (up by 0.6 and 0.8 of a percentage point, respectively, compared to the October 2017 *World Economic Outlook* forecasts). Beyond the near-term effects, growth is expected to be lower than in previous forecasts for a few years from 2022 onward—given the increased fiscal deficit, which will require adjustment down the road, and the temporary nature of some provisions—offsetting some of the earlier growth gains. With the economy at full employment, inflation is expected to rise to 1.9 percent by the end of 2018 and modestly overshoot the Federal Reserve's target in 2019.

Reflecting domestic-demand-led growth and policy stimulus, the current account deficit is projected to deteriorate to 2.9 percent of GDP in 2018, peaking at 3.6 percent of GDP in 2020. The reaction of the US dollar, which has depreciated since November, to the change in tax policy has thus far been muted. General government debt is projected to rise to 110 percent of GDP by 2020 due to aging-related expenditure pressures, the revenue loss from the tax reform, and the latest budget.

Policy Mix

The US policy mix has changed relative to the October 2017 *Regional Economic Outlook Update*. Since congressional passage of the Tax Cuts and Jobs Act (TCJA) in December 2017 and the budget agreement in February 2018, fiscal policy has become expansionary and procyclical, necessitating a faster pace of monetary policy tightening.

- *Fiscal policy:* The key fiscal measures included in the TCJA feature temporary cuts in the personal income tax and significant and permanent cuts in the corporate income tax (see Box 1.1). The recent two-year budget bill increases spending authority by $300 billion over the next two years. The primary structural general government balance is estimated to weaken from –2.5 percent in 2017 to –3.9 percent of potential GDP by 2019. While temporarily lifting growth, the tax reform will lead to revenue losses and increase federal debt by about 5 percentage points of GDP in the next five years, further adding to unsustainable debt dynamics. After 2021, the fiscal stimulus is expected to move into reverse, acting as a drag on the economy and resulting in growth falling below potential.
- *Monetary policy:* The US economy is operating above potential output and could require faster-than-expected tightening of US monetary policy, which could lead to a rise in term premiums and debt service costs. In March 2018, the Federal Open Market Committee raised the federal funds rate target range by 25 basis points to 1½ to 1¾ percent in response to the strengthening job market and inflation. The Federal Reserve's gradual balance sheet normalization, announced in September 2017, has proceeded as planned with muted effects on US and global monetary conditions. The gradual approach means that the Federal Reserve will continue to be an active player in the Treasury and mortgage-backed securities markets in the years to come, even as it steps up the pace of balance sheet reduction toward the end of this year and into 2019.

Increased Upside and Downside Risks

The current policy mix has widened risks around the baseline. There is a wide range of estimates on the effects of the fiscal stimulus, but there is general agreement that such a stimulus, coming at a time when the economy is at full employment, will push US economic activity well above potential. As such, this heightens the risk of an inflation surprise as the economy performs above the full employment level, with an attendant risk of a tightening of US and global financial conditions. Higher inflation pressures, together with faster Federal Reserve policy rate tightening than anticipated in the baseline, could contribute to a larger decompression of term premiums, a stronger US dollar, and lower equity prices. Over the medium term, the eventual withdrawal of the fiscal stimulus, when policy rates are likely to be above neutral, could trigger a sharper-than-expected slowdown that could have global spillovers.

Uncertainty remains in other areas of US policies:

- *Financial deregulation:* Both chambers of Congress have put forward proposals that aim, albeit to different degrees, to roll back some provisions of the Dodd-Frank Act. There is broad support for simplifying the regulatory frameworks, particularly those governing small and medium-sized banks that do not individually pose systemic risks. More contentious are the wide-ranging proposals to roll back prudential standards or reduce the powers of regulatory agencies. A material weakening of such oversight, particularly vis-à-vis large systemic banks, could lead to a fresh buildup of financial stability risks.
- *Trade policy:* Renegotiations of NAFTA are ongoing. While the agreement can benefit from an update (for example, strengthening the provisions on labor and the environment), a renegotiation that leads to increased restrictions on free trade would have a negative impact on all parties. With Canada and Mexico being the largest US export markets, a disorderly withdrawal from NAFTA would weaken the US economy, leading to job losses and lower potential growth. Further, there have been steps to introduce trade restrictions—for example, the recent safeguards linked to imports of washing machines and solar panels, the proposed tariffs on steel and aluminum, and the announced

trade actions over China's intellectual property practices. In this context, a worsening of trade tensions and the imposition of broader barriers to cross-border trade would not only take a direct toll on economic activity (as shown in Scenario Box 1 of the October 2016 *World Economic Outlook*) but also weaken confidence, with further adverse repercussions.

- *Immigration policy:* Immigrants make up around 14 percent of the US population, and 17 percent of the US workforce, according to the US Census Bureau. An interruption to the steady inflow of immigrants would reduce the growth in the US workforce and weigh on growth (particularly given that the economy is expected to expand well through full employment).

US Policy Priorities

The 2017 tax reform saw the biggest overhaul of the tax code over the last 30 years. It features important positive changes, including a reduction in rates, the expensing of new investment, and a modest simplification to the system. However, the revenue losses from the reform increase the urgency of implementing policies—including steps to raise indirect taxes and gradually curb expenditure to create financing for much-needed spending on infrastructure, education and skill development, and family-friendly benefits—that will ensure a steady decline in the general government deficit and public debt-to-GDP ratio over the medium term. According to the Congressional Joint Committee on Taxation, the tax overhaul is projected to reduce the average tax rate on upper-income US households relative to those in the middle and lower segments, especially over the medium term (when some provisions benefiting lower- and middle-income taxpayers expire), thus increasing income polarization.[1]

In the financial markets, there is scope to strengthen the regulatory system, including in areas related to housing finance and the supervision of insurance companies. However, the thrust of the current risk-based approach to regulation, supervision, and resolution should be preserved, and care should be taken not to reverse the important gains that have been made since the global financial crisis in strengthening the financial oversight structure.

Structural policies should focus on maintaining a productive and flexible workforce and reducing income inequality. Priority measures should include improving educational opportunities and outcomes, protecting recent gains in health care coverage, maintaining a free, fair, and mutually beneficial trade and investment regime, and containing health care cost inflation. Other complementary policies—such as childcare support for low- and middle-income families, paid family leave, an expanded earned income tax credit, an increased federal minimum wage, and better social assistance programs for the poor—could further alleviate long-term structural issues. Last, skills-based immigration reform that addresses the demand for skilled labor would enhance labor productivity, lift potential growth, and ameliorate medium-term fiscal imbalances due to population aging.

Canada: Back on a Steady Growth Path

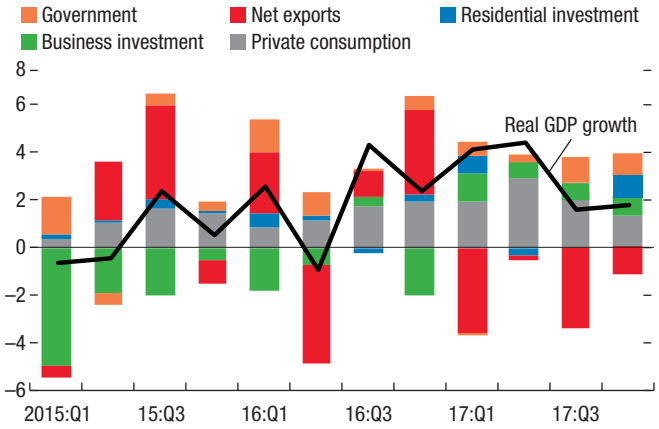
Canada recorded the highest growth rate among Group of Seven (G7) economies in 2017. The economy grew by 3 percent in 2017, notwithstanding some moderation in the second half, supported by accommodative fiscal and monetary policies, a strong US economy, and higher oil prices.

Private consumption has been strong, particularly for the first three quarters, supported by gains in disposable income (Figure 1.4). Fiscal transfers contributed to the initial boost in incomes, but more recent increases have been the result of a strengthening labor market. The employment rate has increased steadily, and the unemployment rate has fallen to its lowest level in 40 years.

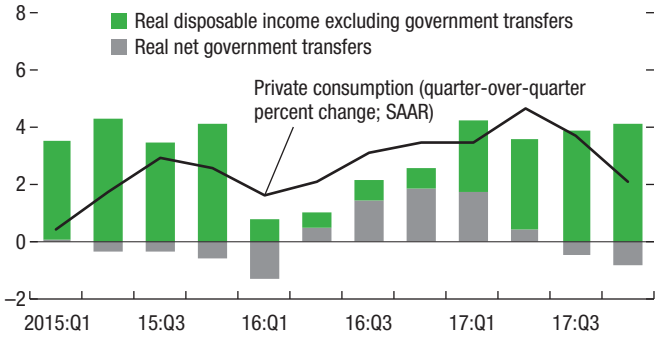
[1]Box 1.2 of the April 2018 *Fiscal Monitor* discusses the distributional implications of the US tax overhaul.

Figure 1.4. Canada: Growth, Consumption, Business Activity, and Export Conditions

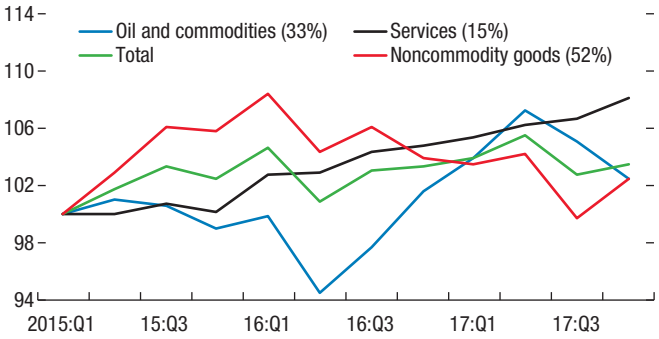
1. Canada: Contributions to GDP Growth[1]
(Percent change from previous quarter; SA; annual rate)



2. Canada: Private Consumption and Disposable Income
(Year-over-year percent change)

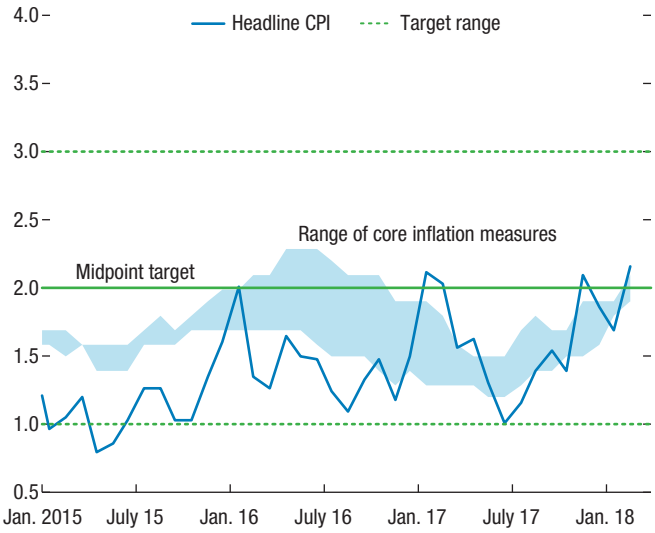


3. Canada: Real Exports[2]
(Index: 2015:Q1 = 100)



Sources: Statistics Canada; and IMF staff calculations.
Note: SAAR = seasonally adjusted annual rate.
[1]Includes statistical discrepancies.
[2]Numbers in parentheses are the percentage share in total exports.

Figure 1.5. Canada: Inflation Developments
(Year-over-year percent change)



Sources: Statistics Canada; IMF, World Economic Outlook database; and IMF staff calculations.
Note: The shaded area corresponds to Bank of Canada's monthly minimum and maximum value for CPI-trim, CPI-median, and CPI-common year-over-year inflation. CPI = consumer price index.

Other demand components of GDP have remained sluggish. Business investment grew for the first time since 2014, but recovery has been moderate, with investment in the oil sector hampered by relatively low oil prices. Export growth picked up in the first half of 2017 but has since stopped growing. While residential investment accelerated in the fourth quarter of 2017 ahead of the tightening of residential mortgage underwriting guidelines (in January 2018), the underlying trend has slowed, reflecting higher mortgage interest rates, tighter macroprudential policies, and new tax measures.

Inflation has been rising, consistent with a closing output gap (Figure 1.5). After decelerating toward the lower bound of the Bank of Canada's target range (1–3 percent) in mid-2017, all three core consumer price index (CPI) inflation measures (CPI-trim, CPI-median, and CPI-common) and headline inflation have recovered and currently hover around 2 percent, the midpoint of the target range.

Robust Near-Term Outlook but Looming Concerns over US Policy

GDP growth is expected to moderate to 2.1 percent in 2018 and 2 percent in 2019, above the economy's medium-term potential. Higher interest rates are expected to slow private consumption as debt service costs rise and, combined with tighter macroprudential policies, continue to dampen residential investment. Meanwhile, a stronger US economy will provide support to demand for Canada's exports and investment in the export sector.

The medium-term outlook is less upbeat. Canada's long-standing problems of weak external competitiveness, sluggish labor productivity growth, and population aging limit growth to about 1¾ percent, significantly lower than the recent average of 2.6 percent (over 2000–08). In addition, Canada's medium-term prospects are clouded by changes in US tax and trade policies.

Significant Implications of the US Tax Reform and NAFTA Negotiations

US tax reform is expected to temporarily boost Canada's near-term growth by around 0.2 to 0.3 percentage point. Over the medium term, however, a lower tax burden on business investment could make the United States a more attractive investment location, negatively affecting investment and growth in Canada (Box 1.1).

NAFTA negotiations are ongoing. Preliminary indications are that there has been progress in modernizing NAFTA by incorporating the evolution of digital and e-commerce trade. However, several proposals put forward by the United States—notably, minimum US content requirements, eliminating the dispute resolution framework, a cap on government procurement, and a five-year sunset clause—represent major points of contention for the negotiations. In early March, the United States indicated its intentions to impose tariffs on steel and aluminum, which intensified trade tensions between the United States and Canada. It was subsequently announced that Canada would be exempt conditional on a deal on NAFTA. NAFTA uncertainty is already weighing on investment in Canada, and failure to forge a new agreement could impact investment for a much more prolonged period.

Housing Markets Remain Highly Vulnerable

Housing market vulnerabilities and imbalances continue to pose risks to macro-financial stability. Household debt as a percentage of disposable income reached a historic high of 173 percent at the end of 2017 (Figure 1.6). While the banking system is sound, with high profitability, banks' exposures to households remain substantial (accounting for about one-third of bank assets). Thus, financial stability risks could emerge were a sharp correction in the housing market to occur, together with a sharp and persistent rise in unemployment.

Macroprudential policy and tax measures have cooled the housing markets, but it is not yet clear whether this will prove durable.

- In Vancouver, tighter macroprudential policies at the federal level and a new tax on nonresident home buyers that the provincial government introduced in August 2016 contributed to a softening in the housing market, with house prices falling about 3½ percent between August and December 2016. However, price pressures have since reemerged, and house prices grew by about 16 percent in 2017.
- In Toronto, house prices have fallen since the middle of 2017. Ontario's Fair Housing Plan, announced in April 2017, which included a 15 percent tax on nonresident home buyers, together with changes in mortgage insurance rules at the federal level, contributed to a dampening in market sentiment and a decline in house prices.

There has been a notable change in the risk characteristics of mortgage loans. Following the introduction of a stress test for insured mortgages

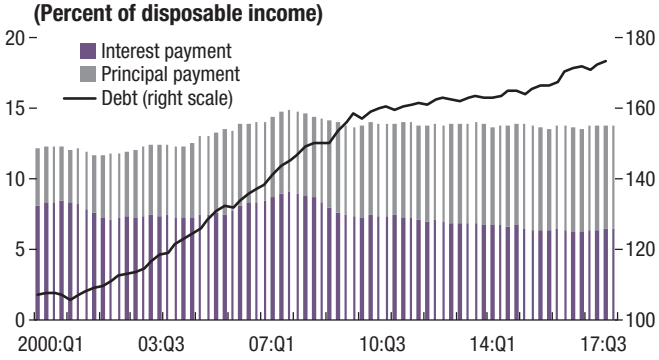
in late 2016, high loan-to-value-ratio mortgages dropped by about 5½ percent in 2017, whereas growth of low loan-to-value-ratio mortgages accelerated to about 17 percent.[2] There is some concern that low loan-to-value ratio mortgages have increasingly been taken by households with higher levels of risk (Figure 1.6).[3] Against this backdrop, policymakers have shifted their attention to low loan-to-value-ratio mortgages by tightening residential mortgage underwriting procedures (effective in January 2018). Key revisions to guidelines include (1) restrictions on borrowing from multiple sources; (2) stringent requirements for the measurement of loan-to-value ratios by taking account of housing market risks (for example, price risks); and (3) introduction of a stress test for noninsured mortgages as was introduced for insured mortgages in late 2016.[4]

Policy Priorities in Canada

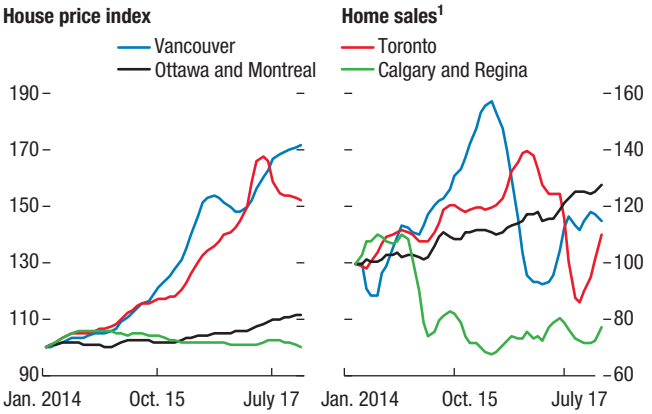
Given the elevated level of uncertainty emanating from US tax and trade policies, macroeconomic policies in Canada should be tightened only gradually. The Bank of Canada has raised the policy rate three times since July 2017 (by 75 basis points to 1.25 percent). Looking ahead, the balance of risks to the outlook warrants a gradual approach to monetary policy normalization. The IMF staff projects a gradual increase of the policy rate toward its neutral level (around 3 percent) over the projection horizon. On the fiscal front, no additional fiscal stimulus would be warranted, and the federal government should start rebuilding fiscal buffers now, at a gradual pace, as envisaged in the 2018 budget. At the provincial level, Quebec and British Columbia are expected to broadly maintain balanced operational budget positions, while Alberta is expected to step up its

Figure 1.6. Canada: Housing Market Developments

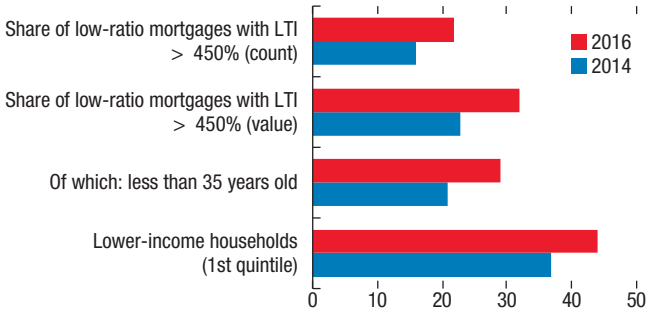
1. Canada: Household Debt and Debt Service Ratios (Percent of disposable income)



2. Canada: Regional Housing Markets (Index: January 2014 = 100)



3. Canada: Characteristics of Low-Ratio Mortgages with Loan-to-Income Ratio (LTI) Over 450 Percent (Percent)



Sources: Bank of Canada, November 2017 Financial System Review; Canadian Real Estate Association; Office of the Superintendent of Financial Institutions; Statistics Canada; and IMF staff calculations.
[1]Three-month moving average.

[2]Canada's mortgage products can be divided into two segments: high-ratio mortgages with loan-to-value ratios greater than 80 percent, which are required to have insurance; and low-ratio mortgages with loan-to-value ratios of 80 percent or less.

[3]For example, the share of low-ratio mortgages with loan-to-income ratios greater than 450 percent rose to 32 percent in 2016 (most recent data available), up from 23 percent in 2014. About 30 percent of these loans are to younger households (under 35 years old) that could have less job security, and 44 percent are loans to the lowest-income households. See Bilyk, Ueberfeldt, and Xu (2017).

[4]Federally regulated financial institutions must set the qualifying rate for noninsured mortgages at the greater of the contractual mortgage rate plus 2 percentage points or the five-year benchmark rate published by the Bank of Canada.

efforts to reduce deficits. Ontario is on course for achieving an operating budget surplus in fiscal year 2017/18 but announced, in its 2018 budget, its intention to run a deficit of about ¾ percent of Ontario's GDP over the next three fiscal years.

In the financial sector, the authorities should hold off on additional macroprudential measures for now, until the effects of the recent measures are known. Meanwhile, more efforts may be warranted to address supply-side constraints in the housing market, including a review of zoning and density policies, the approval process for new developments, and the enhancement of urban transit systems.

Structural reforms are vital to boost Canada's competitiveness and growth over the medium term. The authorities are implementing an ambitious structural reform agenda covering internal and external trade, innovation, immigration, and female labor participation. As an immediate priority, a holistic review of the overall tax system would be critical to help assess the scope for improving the efficiency of the tax system, while maintaining Canada's tax competitiveness, before a decision on a major tax reform.[5] The implementation of the long-term infrastructure investment plan has been delayed, and further efforts are needed to make infrastructure investment more timely and efficient. In this regard, it would be useful to consolidate existing information on project plans from all levels of government and to expand the use of common standards of project evaluation. The implementation of the Canadian Free Trade Agreement (which entered into force in July 2017) should also be accelerated to reduce barriers to internal trade, investment, and labor mobility. More can also be done to reduce foreign direct investment restrictions and regulatory barriers to entry in key sectors of the economy. Finally, Canada needs to continue diversifying its trade patterns. The Comprehensive Economic Trade Agreement with the European Union, which entered into force in September 2017, is expected to boost Canada's trade with Europe, while a new Comprehensive and Progressive Agreement for Trans-Pacific Partnership would enhance Canada's economic ties with Asian economies.

[5]In December 2017, the Finance Minister's Advisory Council on Economic Growth put forward the third report, focusing on recommendations to boost business investment and innovation. The report also stressed the merits of a targeted tax review to create incentives for investment. Other major recommendations by the council included (1) a review of business regulations by establishing a new Expert Panel on Regulatory Agility and Innovation to ensure that the regulatory regime fosters business investment and innovation; and (2) the establishment of a new Canada Lifelong Learning Fund to boost support for retooling and training of working adults.

Box 1.1. The US Tax Cuts and Jobs Act

The passage of the Tax Cuts and Jobs Act (TCJA) in December 2017 marked the most sweeping tax reform in the United States since 1986. For corporations, the TCJA includes significant rate cuts, expensing of capital investment, and a move toward a territorial system. Personal income tax reform includes temporarily lower marginal tax rates and higher standard deductions.

Business Tax Changes

In addition to lowering the statutory corporate income tax rate from 35 to 21 percent, the tax bill introduced several other changes:

- *Temporary capital expensing:* Businesses will be able to fully deduct certain capital investments (for example, tangible property with an economic life of under 20 years, software, and some structures) until 2023, with a gradual phaseout to the previous system of depreciation schedule by 2027.
- *Interest deductions:* The interest deduction is capped at 30 percent of earnings before interest, taxes, depreciation, and amortization (EBITDA) until 2022, and 30 percent of EBIT thereafter (unused deductions can be carried forward).
- *Pass-through exemptions:* The roughly 95 percent of US businesses organized as pass-through entities (for which business income distributed to owners is taxed at the individual tax rates) will receive a 20 percent exemption on their incomes before the individual rates apply.
- *International provisions:* Foreign-sourced earnings, with the exceptions discussed below, will now be exempt from taxes, moving the United States away from a worldwide tax system and closer to a territorial tax system. This change is accompanied by a number of guardrail provisions:
    - A one-time repatriation tax will be levied on profits of US multinationals currently held offshore, on which taxes were deferred under the old rules. Cash and cash equivalents will be taxed at 15.5 percent and other assets at 8 percent, payable over eight years.
    - To encourage the return of US intellectual property currently held offshore in low-tax jurisdictions, foreign-derived intangible income (FDII) of US corporations will be granted a reduced effective tax rate of 13.125 percent (16.4 percent after 2025).
    - The global intangible low-taxed income (GILTI) rule imposes a minimum tax on a US multinational's global foreign earnings that exceed a 10 percent standard rate of return on tangible assets. The effective tax rate on the GILTI is 10.5 percent (rising to 13.125 percent after 2025).
    - To discourage profit shifting to jurisdictions with tax rates lower than 21 percent, large multinationals with significant tax deductions from payments to foreign affiliates will be subject to the base erosion anti-abuse tax, which serves as a minimum 10 percent tax (12.5 percent after 2025) on such payments.

Personal Income Tax Changes

Lower marginal tax rates across the various tax brackets, with the top rate falling from 39.6 to 37 percent, are accompanied by a number of other changes. All personal income tax measures sunset after 2025.

- *Deductions and exemptions:* To simplify the system by reducing the number of filers who choose to itemize deductions, the standard deduction is roughly doubled (from $13,000 to $24,000 for joint filers) while individual exemptions and a range of allowable itemized deductions are eliminated.

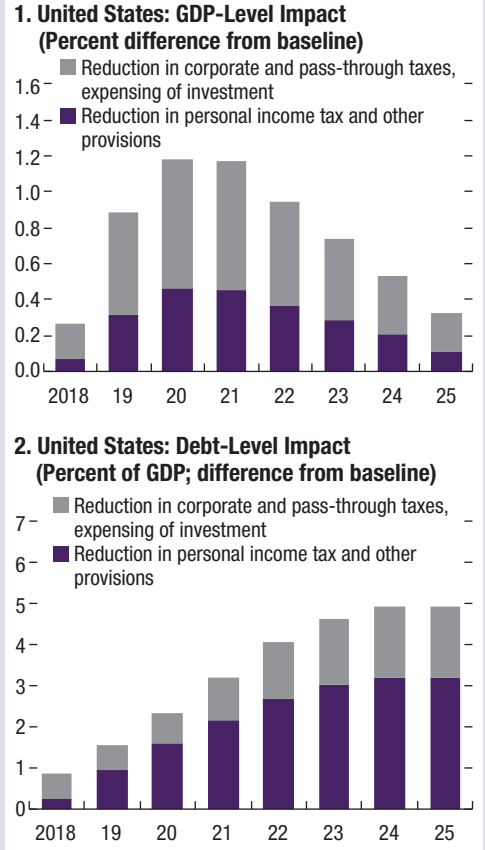
This box was prepared by Suchanan Tambunlertchai.

Box 1.1 *(continued)*

- *Tax credits:* The child tax credit is increased from $1,000 to $2,000 and is available for a broader range of household income. There is no change to the earned income tax credit.
- *Alternative minimum tax:* This tax, which largely applies to wealthy households, has been scaled back, with the number of individuals affected by it reduced from 5 million to 200,000.
- *Estate tax:* The exemption for the estate tax is doubled to $11.2 million a person.
- *Carried interest:* Carried interest is a share of profits distributed to investment managers to encourage improved performance. Such interest is taxed as long-term capital gains rather than the higher-rate ordinary income. The tax reform preserved the carried interest break, but limited it to gains on assets held for at least three years.

The corporate tax reform is expected to reduce many of the existing distortions. A lower tax rate and the shift toward a territorial system will make US corporations more competitive, reduce the dispersion in effective rates across industries, and lessen incentives to shift profits offshore. More could be done to further simplify the system and enhance efficiency. Some provisions add fresh layers of complexity. The temporary capital expensing creates a timing distortion that will accelerate investments. The mechanisms to discourage base erosion and offshore holdings of intellectual property could be more directly achieved via a uniform minimum tax applied to low-tax jurisdictions.

Figure 1.1.1. Macroeconomic Impacts of the US Tax Legislation



Source: IMF staff calculations.
Note: Only the effects of the tax reform are shown in the charts.

Changes to the personal income tax system will increase disposable income in the short run, both from the tax cuts and spillovers to wages and employment from increased economic activity. Certain elements of the reform may increase income inequality (see discussion under policy priority in the main text).

The US tax policy changes are expected to stimulate activity, with the short-term impact in the United States largely driven by the investment response to the corporate income tax cuts (Figure 1.1.1). The effect on US economic activity is estimated to be positive through 2020, cumulating to a level effect on real GDP of 1.2 percent through that year, with uncertainty surrounding this central scenario. Due to the temporary nature of a number of provisions, the tax policy package is projected to lower growth in the outer years.

Direct international spillovers from the tax reforms are expected to be limited, and contained to low-tax jurisdictions with large investments from US multinationals. Demand spillovers from higher US growth and larger trade deficits are likely to be more important for closer trading partners, such as Canada and Mexico. The effects of the package on output in the United States and its trading partners contribute about

Box 1.1 *(continued)*

half of the cumulative revision to global growth over 2018–19. At the same time, emerging markets with dollar-denominated debt could face the risk of a stronger US dollar.

The reduced corporate tax rate will make it more attractive for multinational companies to invest in the United States and less attractive to shift profits out of the United States (see Box 1.3 of the April 2018 *Fiscal Monitor*). This could place downward pressure on corporate tax rates in other jurisdictions as countries compete to protect their tax bases and attract tangible investments by US multinationals. At the same time the territorial system makes it more attractive to invest in other countries offering lower tax rates. While the GILTI may in some respects mitigate the increased pressure for tax competition, the FDII is likely to further intensify it.

Reference

Bilyk, Olga, Alexander Ueberfeldt, and Yang Xu. 2017. "Analysis of Household Vulnerabilities Using Loan-Level Mortgage Data." *Financial Stability Review* (November). Bank of Canada.

2. Outlook for Latin America and the Caribbean: The Right Policy Mix for Sustaining the Recovery

Following a contraction in 2016, growth in Latin America and the Caribbean turned positive in 2017, owing to both a favorable external environment and improving domestic conditions. Growth is expected to gain further momentum in 2018 and 2019. The recovery is broad-based across the region. In the near term, Mexico, Central America, and parts of the Caribbean are benefiting from stronger growth in the United States, while potential implications of the US tax reform and ongoing renegotiations of the North American Free Trade Agreement (NAFTA) are creating uncertainties. Growth in South America is being led by the end of recessions in Argentina, Brazil, and Ecuador; higher commodity prices; and a moderation of inflation that has provided space for monetary easing. But economic adjustment remains unfinished business. In particular, further fiscal consolidation is needed in many countries to restore sustainability, notably by calibrating the quality, speed, and composition of fiscal adjustment. Elections this year across the region might lead to heightened economic and policy uncertainty. Looking beyond the near term, the region faces serious medium-term structural challenges. Despite the faster-than-expected recovery, Latin America's output growth is returning to an underwhelming mean, with downside risks to prospects over the medium term. This calls for a comprehensive structural reform agenda, aimed at strengthening institutional and policy frameworks, boosting productivity, and increasing trade and financial liberalization to help secure strong, durable, and inclusive growth.

This chapter was prepared by Carlos Caceres, with excellent research assistance provided by Genevieve Lindow. The section on Central America was coordinated by Prachi Mishra, Kimberly Beaton, Javier Kapsoli, and Gerardo Peraza, with excellent research assistance provided by Cristhian Vera. The section on the Caribbean was coordinated by Bert van Selm, with excellent research assistance provided by Lulu Shui.

Recovery Gaining Momentum

Following a contraction of –0.6 percent in 2016, growth in Latin America and the Caribbean (LAC) is projected to strengthen further from an estimated 1.3 percent in 2017 to 2 percent and 2.8 percent in 2018 and 2019, respectively (Figure 2.1). This is attributed to both a favorable external environment and improving domestic conditions, particularly in countries that experienced a recession in 2016.

Favorable External Tailwinds

Latin American economies are benefiting from supportive external conditions that are providing significant tailwinds to the region's financial markets and real economy.

- *Strong global demand and world trade:* The global economy accelerated in 2017, driven by stronger growth in both advanced and emerging market economies. This momentum is expected to continue in the current year. World trade has been growing strongly, alongside buoyant external demand (Figure 2.2), and is providing support to the region's exports, contributing to growth and, in some cases, helping the external adjustment. That said, despite their recent acceleration, exports from the region are not fully reaping the benefits of the global trade boost, with real export growth in several countries not keeping pace with the growth of external demand. Moreover, Latin American exports are less responsive to favorable changes in relative prices compared to other emerging market regions, most notably Asia (see Chapter 3 of the April 2017 *Regional Economic Outlook: Western Hemisphere*).
- *Accommodative financial conditions*: Spillovers to the region from the global equity market

Figure 2.1. Growth Outlook

1. Growth, 2018[1]

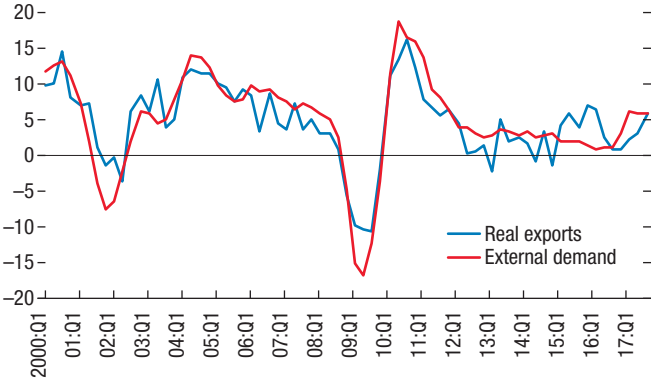
2. Real GDP Growth[2]
(Percent)

			Projections	
	2016	2017	2018	2019
LAC	**–0.6**	**1.3**	**2.0**	**2.8**
LAC excluding Venezuela	0.1	1.9	2.6	3.0
South America	–2.4	0.7	1.7	2.5
CAPDR	4.6	4.0	4.3	4.3
Caribbean				
Tourism dependent	1.6	1.3	1.7	2.1
Commodity exporters	–4.6	–1.5	0.8	0.9
Memorandum items:				
LA6	0.0	1.5	2.5	2.9
Brazil	–3.5	1.0	2.3	2.5
Mexico	2.9	2.0	2.3	3.0

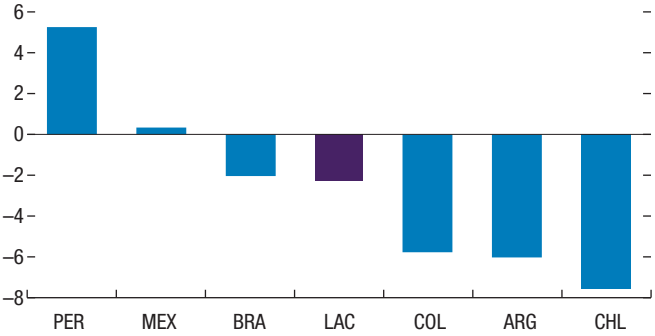
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For country group information, see page 115. CAPDR = Central America, Panama, and the Dominican Republic; LAC = Latin America and the Caribbean.
[1]Historical average refers to the average growth during 2000–15.
[2]Purchasing-power-parity GDP-weighted average.

Figure 2.2. External Demand

1. LAC: External Demand and Real Exports Growth[1]
(Year-over-year percent change)



2. Export Performance Gap, 2017:Q3[2]
(Percentage points)

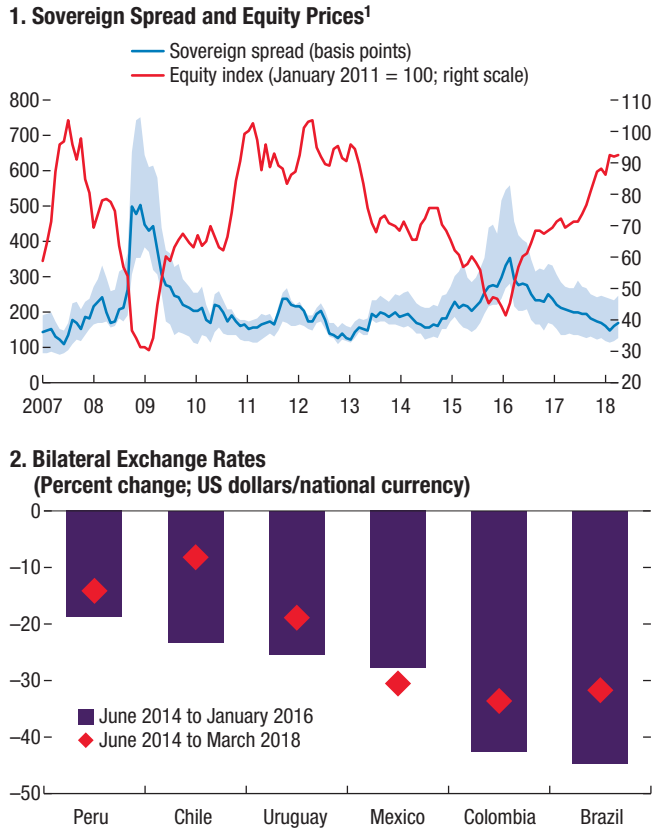


Sources: IMF, Direction of Trade Statistics database; IMF, Global Data Source database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. LAC = Latin America and the Caribbean.
[1]External demand is the country-specific component of import growth of trading partners, weighted by the share of exports to each trading partner. US dollar nominal GDP-weighted average of Argentina, Brazil, Chile, Colombia, Mexico, and Peru.
[2]"Export performance gap" is the difference between real export growth and its corresponding external demand component.

sell-off in early February 2018 were generally limited and short-lived, with asset prices across most countries returning to their preshock levels by the end of the month. Market views on Latin America were mixed—upbeat about near-term economic momentum but worried about medium-term growth prospects (Box 2.1). With a heavy election calendar in the region, this includes concerns about political risks and rising populism, as well as external risks for countries with higher dollar financing needs. Despite increased volatility, global financial conditions remain accommodative, with global equity prices near all-time highs and long-term interest rates remaining subdued. This is providing easy financing to the region. Sovereign and corporate spreads remain low, and equity prices are elevated. Capital inflows to the region stabilized and started to increase moderately in 2017, after falling sharply in the previous two years. Similarly, the region's freely floating currencies have broadly stabilized, and over the past 24 months some have partially regained some of the previously lost ground (Figure 2.3).

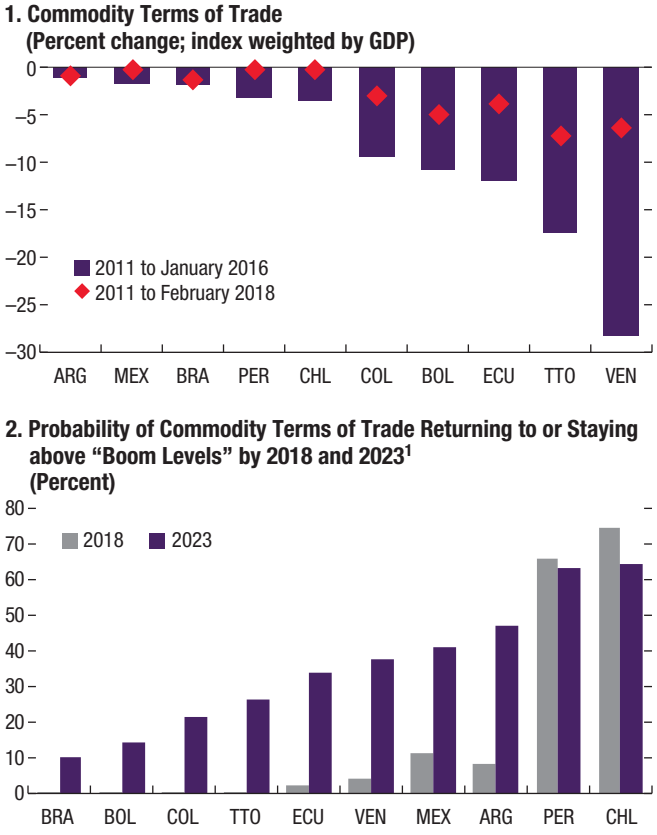
- *Partial rebound in commodity prices*: Commodity prices worldwide fell sharply following the end of the commodity super-cycle. Energy and metal prices essentially halved between their peak in

Figure 2.3. Financial Indicators



Sources: Bloomberg Finance L.P.; Haver Analytics; national authorities; and IMF staff calculations.
[1]Sovereign spread refers to the median of LA6 J.P. Morgan Emerging Market Bond Index Global spread; US-dollar-denominated sovereign bonds. Shaded area refers to the min-max range. LA6 is Brazil, Chile, Colombia, Mexico, Peru, and Uruguay.

Figure 2.4. Commodity Terms of Trade



Sources: Caceres and Medina 2015; Gruss 2014; UN Comtrade; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. CTOT = commodity terms of trade.
[1]The bars denote the probability of each country's CTOT reaching or exceeding by the end of a given year the average level observed during 2011:Q1–14:Q1, based on stochastic simulations (1 million iterations) using the Geometric Brownian Motion model of Caceres and Medina 2015.

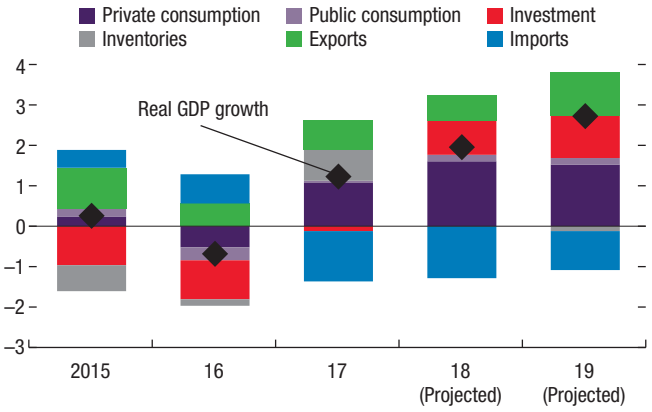
2011–12 and early 2016. This represented a significant terms-of-trade shock for Latin America's commodity exporters (Figure 2.4). Commodity prices have, however, partly rebounded since early 2016. In some cases, net commodity terms of trade have essentially reverted to their boom levels—reflecting relative price developments of commodity imports and exports—notably in metal commodity exporters that, at the same time, are net oil importers (Chile, Peru). Moreover, the likelihood that commodity terms of trade will return to—or stay above—their boom levels both in 2018 and over the medium term has increased for most countries in the region.

Domestic Investment Boosting Growth

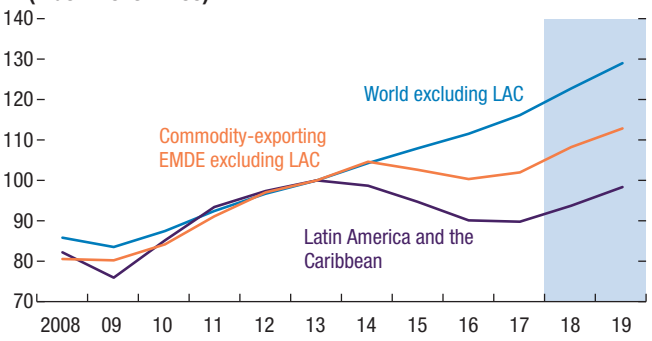
The favorable external tailwinds are complementing an improvement in domestic conditions. A significant contributing factor to the region's growth rebound in 2017 is the end of recessions and subsequent recovery in some of the major economies, most notably Argentina and Brazil. A notable exception is Venezuela, where the economic crisis continues to weigh heavily on growth, and the economy is estimated to have contracted by a further 14 percent in 2017. Excluding Venezuela, the average growth estimate for the region in 2017 is 1.9 percent.

Figure 2.5. Growth and Investment

1. Latin America and the Caribbean: Contributions to Real GDP Growth[1]
(Year-over-year percent change)

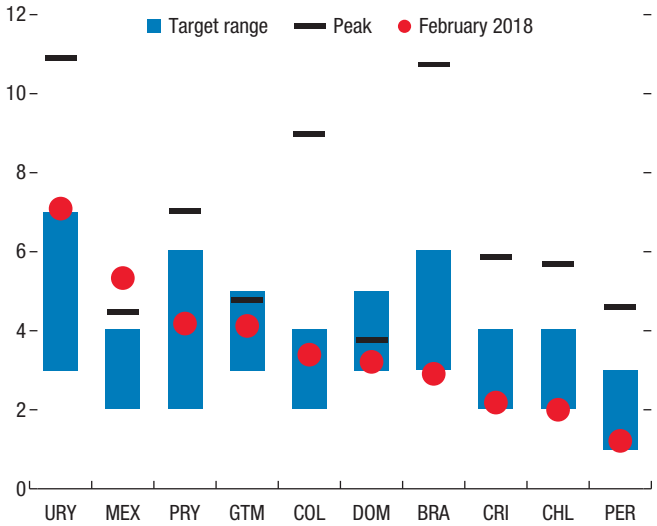


2. Real Investment Levels
(Index: 2013 = 100)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Purchasing-power-parity GDP-weighted average. EMDE = emerging market and developing economies; LAC = Latin America and the Caribbean.
[1]Excludes Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines due to data limitations. Inventories include statistical discrepancies.

Figure 2.6. Inflation
(12-month percent change)



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: Includes countries with an inflation-targeting framework. Peak over December 2013 to December 2016. Peak dates are Brazil, Peru (January 2016); Chile (October 2014); Colombia (July 2016); Costa Rica (November 2014); Dominican Republic (December 2013); Guatemala (October 2016); Mexico (January 2014); Paraguay (May 2014); and Uruguay (May 2016).
For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

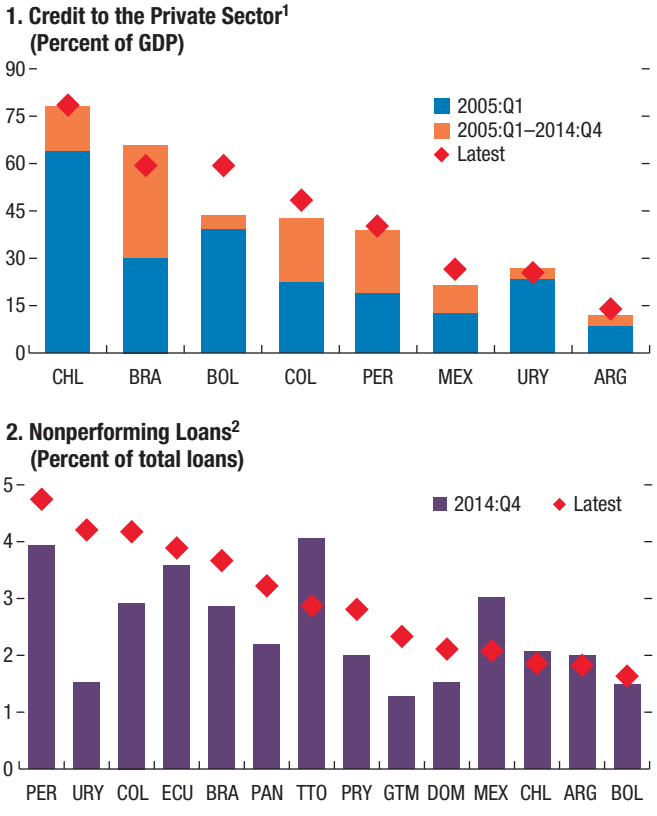
Going forward, growth heterogeneity in the region is expected to decline, and a broad-based acceleration in economic activity is expected. Relative to 2016, when seven Latin American and the Caribbean economies, representing roughly half of the region's total GDP, experienced an output contraction, real GDP growth in 2019 is projected to be positive in all but one country (Venezuela).

Following the recovery in private consumption in 2017, the highly anticipated investment recovery is now beginning to materialize. Having contracted for three years in a row, private investment at the regional level is estimated to have stopped being a major drag in 2017. Private investment is expected to move solidly into positive territory in 2018–19, and to be the main driver of the projected economic acceleration this year and the next (Figure 2.5). Despite this recovery, however, investment levels are expected to remain below the levels observed in other regions.

Consumer price inflation has come down sharply at the regional level. Across most of the inflation-targeting countries in the region, inflation is back within the official target range (Figure 2.6). In countries where inflation still exceeds the target range, it is expected to moderate in 2018–19, as the impact from transitory supply-side factors recedes. Unemployment rates have already peaked in most countries, and labor markets are showing signs of improvement.

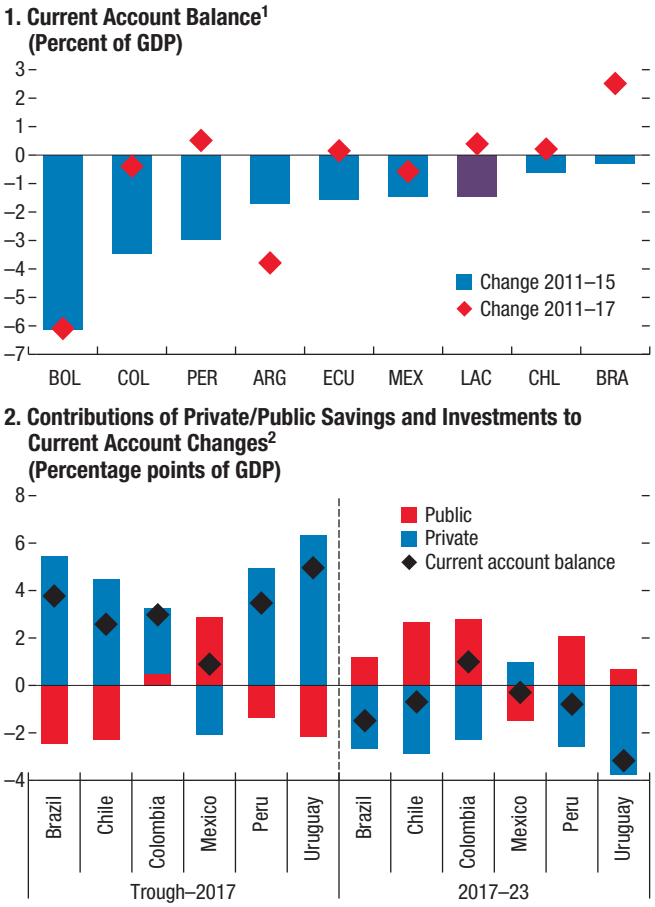
Financial sectors in the region remain stable, with strong bank capital ratios and high rates of return. However, bank profits are largely driven by high interest margins, as bank concentration and operating costs remain high, affecting the

Figure 2.7. Financial Soundness Indicators



Sources: Haver Analytics; IMF, International Financial Statistics database; national authorities; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.
[1]Latest data are Argentina, Bolivia, Brazil, Chile, Mexico, Peru (2017:Q4); and Colombia, Uruguay (2017:Q3).
[2]Latest data are Argentina, Brazil, Chile, Dominican Republic, Ecuador, Peru (2017:Q3); Bolivia, Colombia, Guatemala, Mexico, Paraguay, Trinidad and Tobago, Uruguay (2017:Q4); and Panama (2017:Q2).

Figure 2.8. Balance of Payments



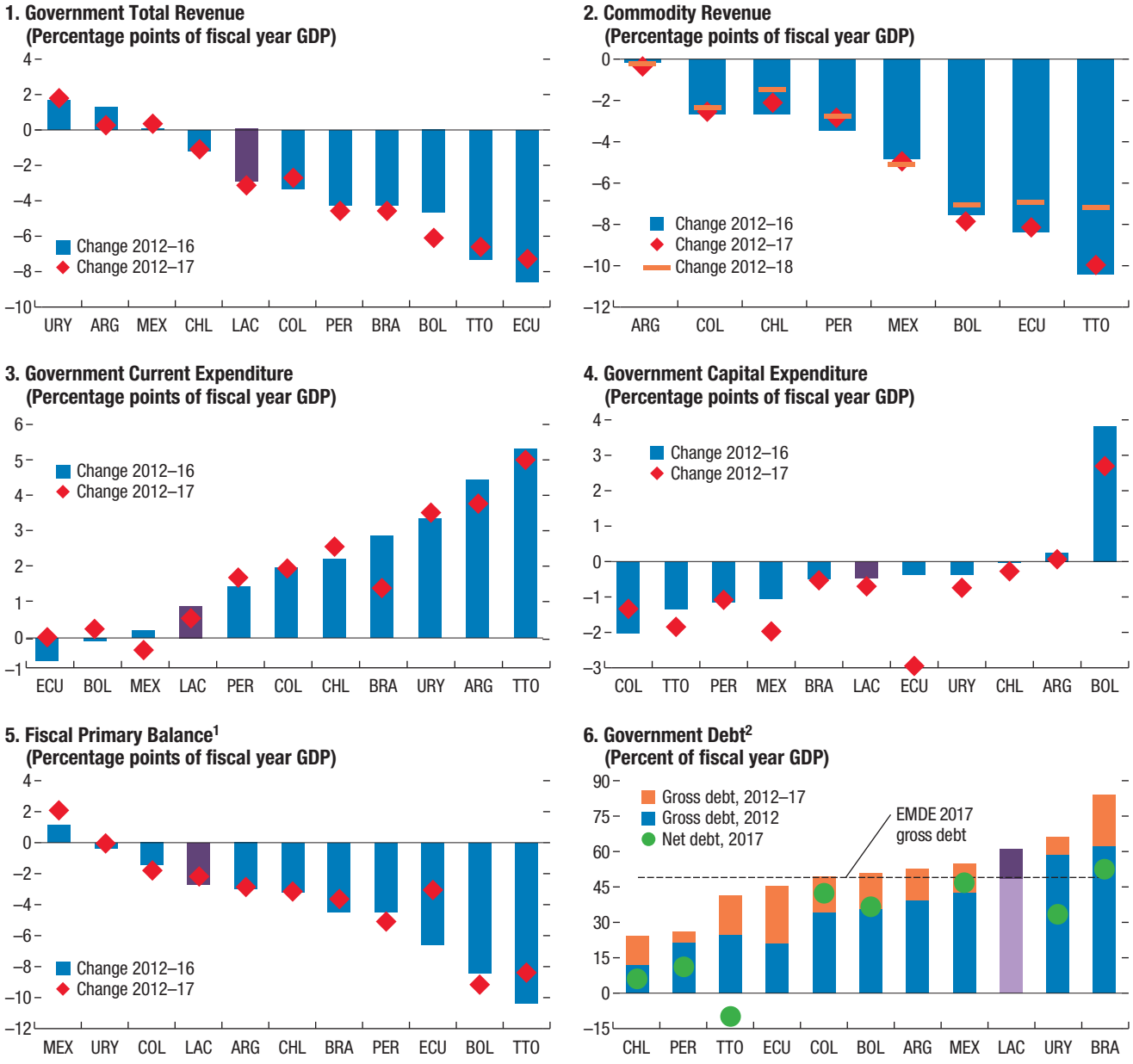
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. LAC = Latin America and the Caribbean.
[1]LAC aggregate is US dollar nominal GDP-weighted average.
[2]Current account balance trough over the period 2013–15 (Brazil: 2014; Chile and Uruguay: 2013; Colombia, Mexico, and Peru: 2015).

sector's efficiency and competitiveness (Enoch and others 2017). Private credit increased sharply during the commodity boom, with a doubling of the region's credit-to-GDP ratio between 2005 and 2015, but has since broadly stabilized in several countries (Figure 2.7). Despite the recent recovery, the economic slowdown over the past few years has led to an increase in nonperforming loans in the region, but these are well provisioned, and their levels remain manageable in most countries. Strengthening of nonfinancial corporate balance sheets continues, as corporate profitability increases in line with the economic recovery, and indebtedness levels have fallen relative to recent peaks.

Twin Deficits and Subdued Long-Run Projections

Current account deficits in most countries in the region have narrowed over the past couple of years from their recent peaks (Figure 2.8). In many cases, external adjustment in response to lower commodity prices following the end of the commodity super-cycle is now almost complete. Most of the current account adjustment to date has been led by improvements in the private sector savings-investment balance, reflected in the compression of imports attributable to income effects (see Chapter 3 of the April 2017

Figure 2.9. Fiscal Indicators



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For definitions of government coverage, see Annex Table 2.2. LAC aggregate is fiscal year US dollar nominal GDP-weighted average. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. EMDE = emerging market and developing economies; LAC = Latin America and the Caribbean.
[1]Mexico excludes one-off revenues for 2017.
[2]Definition of government debt varies across countries. For Uruguay, public debt includes the debt of the central bank. Net debt data are not available for Argentina, Ecuador, and Latin America and the Caribbean (aggregate).

Regional Economic Outlook: Western Hemisphere). Mexico was a notable exception, where the reduction in the current account deficit was led by improvements in public sector savings. Going forward, current account deficits are expected to widen again as growth accelerates in both domestic consumption and, importantly, investment. This time, however, the expansion in private sector

investment is expected to offset the impact of fiscal consolidation on the current account.

Following the end of the commodity super-cycle, fiscal revenues in most of the commodity-exporting countries in the region fell noticeably relative to the boom years (Figure 2.9). The loss in commodity revenue was particularly strong among the hydrocarbon-exporting countries (Bolivia, Ecuador, Mexico, Trinidad and Tobago, Venezuela). At the same time, the upward trend in current spending, which began during the commodity price boom, continued in several countries, even following the bust. This led to a significant deterioration in fiscal balances and debt ratios in most countries in the region. In response to worsening fiscal fundamentals, some countries have embarked on adjustment, either by raising noncommodity revenues (Argentina, Chile, Mexico, Trinidad and Tobago) or through cuts in public investment.

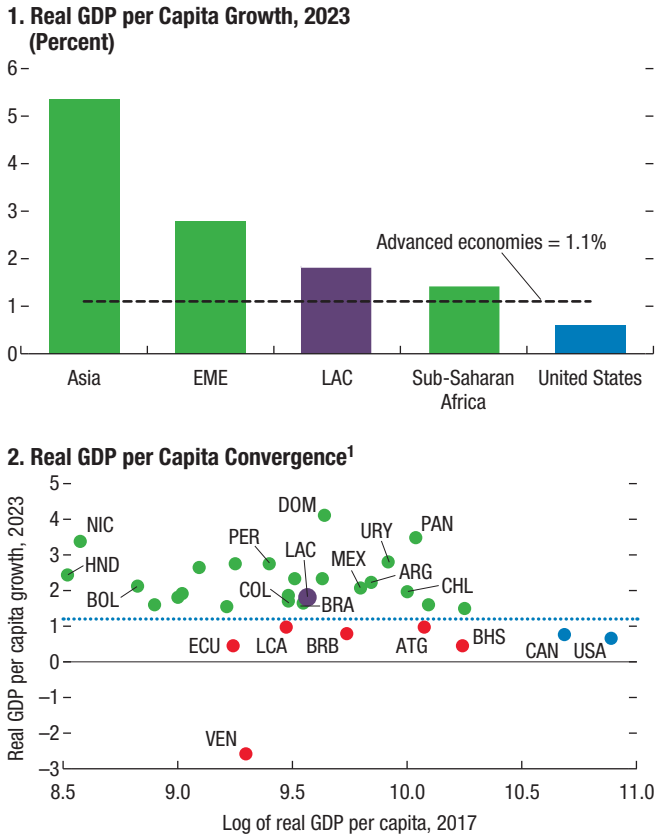
Over the longer term, growth prospects for the region remain weak. Current potential growth estimates in the region are similar to their modest long-term averages. Moreover, the region's GDP per capita growth is substantially below that of most other emerging market regions and just slightly above advanced economies (Figure 2.10). This is hampering income convergence toward advanced economy levels. There is also a considerable amount of heterogeneity within the region, with a few countries losing significant ground in terms of development prospects (notably, Venezuela). Combined with relatively low levels of investment, low productivity continues to be a drag on overall growth in the region (see the October 2017 *Regional Economic Outlook Update: Western Hemisphere*), while misallocation of capital and labor resources appears to be an important element in the region's long-term growth conundrum (Box 2.2).

Risks to the Outlook

Despite the improved near-term outlook, a wide range of risks remain. On the external side, a sudden tightening of the currently benign global financial conditions, compounded by populist changes in main economic partners—including through trade and migration flows—could derail the nascent recovery in the region. Closer to home, elections, rising populist sentiment, and corruption scandals could have an important bearing on economic prospects.

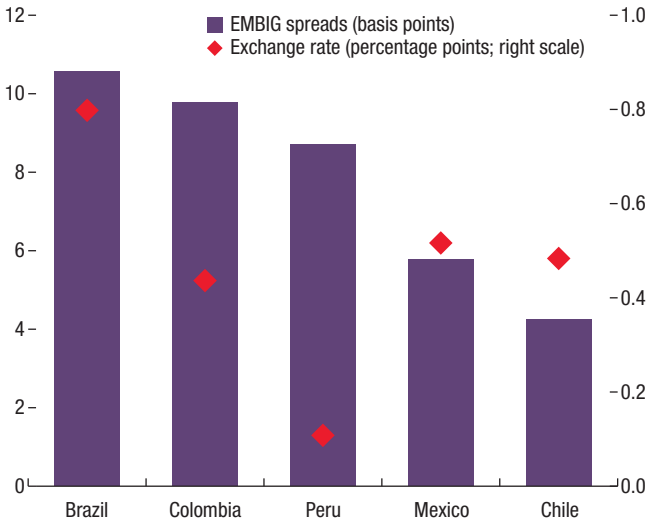
- *Correction in global financial markets*: A sudden tightening of global financial market conditions—including stemming from higher-than-expected inflation pressures in the United States with the overheating of the economy and the associated faster-than-expected tightening of US monetary policy and a rise in

Figure 2.10. Real GDP per Capita



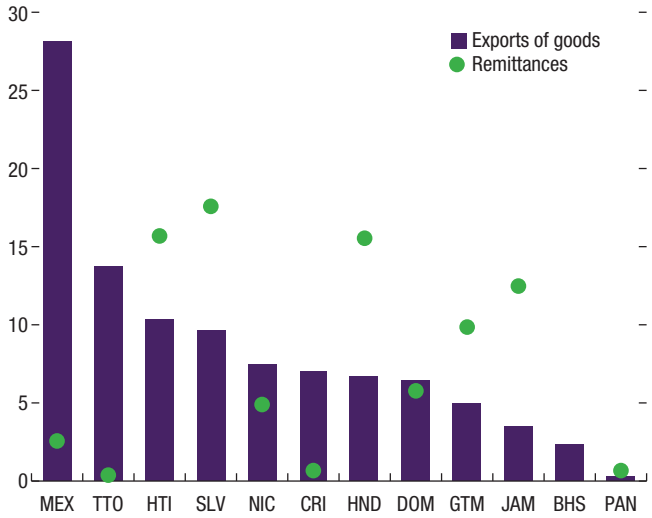
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. Asia = emerging and developing Asia; EME = emerging and developing Europe; LAC = Latin America and the Caribbean.
[1]Dotted line refers to real GDP per capita growth for 2023 for advanced economies.

Figure 2.11. Sensitivity to Changes in the VIX
(Response to a 1 point increase in the VIX)



Sources: Thomson Reuters Datastream; and IMF staff calculations.
Note: Cumulative impulse response functions after three months to a 1 point increase in the VIX. For exchange rates, positive values indicate depreciations. EMBIG = J.P. Morgan Emerging Market Bond Index Global (US-dollar-denominated sovereign bonds); VIX = Chicago Board Options Exchange Volatility Index.

Figure 2.12. Exports to and Remittances from the United States
(Percent of GDP)



Sources: IMF, Direction of Trade Statistics database; IMF, World Economic Outlook database; World Bank, Migration and Remittances database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

term premium—might have significant consequences for long-term interest rates, capital flows, and overall financing conditions for the region. Spillovers from US interest rates on domestic interest rates, particularly those due to a decompression in US term premiums, can be significant for many countries in the region (see Chapter 3 of the October 2015 *Regional Economic Outlook: Western Hemisphere*). This is true for both short-term interest rates (Mexico, Peru) and long-term interest rates (Brazil, Colombia). More generally, the most financially integrated economies in the region—Brazil, Chile, Colombia, Mexico, and Peru—remain at risk for adverse developments in global financial markets (Figure 2.11). Financial asset prices in these countries exhibit a high degree of synchronicity, and capital flows to the region are highly responsive to global shocks (see Chapter 4 of the April 2017 *Regional Economic Outlook: Western Hemisphere*). Overall, potentially tighter financial conditions pose downside risks to capital flows to the region, but the improved outlook for commodity exporters owing to the partial rebound in commodity prices provides some support to these flows. In addition to historical patterns, the recent bouts of market volatility also highlight the vulnerability of countries that are reliant on large external financing, such as Argentina, to changes in foreign investor sentiment.

- *Waning popular support for global economic integration and risks of a shift toward protectionist policies*: An increase in tariff and nontariff barriers could derail the ongoing upswing in world trade, with serious attendant effects on recovery in the region. Negotiations on NAFTA are ongoing. Recent proposals by the United States to impose import restrictions have cast a shadow over the negotiations and contributed to further uncertainty. Mexico, Central America, and the Caribbean, in particular, remain vulnerable to macroeconomic and policy developments in the United States through

trade and remittance channels (Figure 2.12; see also Chapter 5 of the April 2017 *Regional Economic Outlook: Western Hemisphere*).

- *Trade links with China*: These links remain an important driver of external demand for South America. As such, and combined with the ongoing rebalancing of the domestic economy taking place in China, the accumulation of financial vulnerabilities there as a consequence of rising nonfinancial sector debt could have potential spillovers to the region through trade linkages and commodity prices.
- *Noneconomic factors, including geopolitical tensions and extreme weather events*: Geopolitical tensions in other regions could adversely affect global financial markets, commodity prices, global economic activity, and external demand, with spillovers to the region. The impact of climate change and the recurrence of extreme weather events and natural disasters represent an important source of risk for parts of the region, most notably the Caribbean (Box 2.3).
- *Election cycle in Latin America*: The year 2018 is an important one on the region's political calendar. Although these elections are an important part of the region's democratic process, they could also generate economic and policy uncertainty. In this context, rising populism poses risks to the implementation of much-needed reforms across many countries in the region.
- *Regional spillovers from Venezuela*: Social conditions in Venezuela have deteriorated sharply owing to plummeting purchasing power, increasing scarcity of basic goods (for example, food, personal hygiene items, medicine), a collapse of the health system, and high crime rates. The humanitarian crisis has led to a sharp increase in emigration to Colombia, Brazil, and, to a lesser extent, Argentina, Chile, Ecuador, and Peru, putting pressure on social services in these countries. Other transmission channels of Venezuela's crisis are less important. Spillovers through trade and PetroCaribe agreements, while important for some countries, have already materialized. Investors already see Venezuelan debt as a distressed asset, with no contagion to other emerging market assets.

Policy Priorities

In the context of an economic recovery gathering momentum, moderating inflation, and a widening set of risks, designing and implementing the right policy mix remain crucial. In particular, where fiscal consolidation is warranted, efforts should be made to improve the quality of the adjustment, while monetary policy could be geared toward providing support to growth, provided inflation expectations remain well anchored. A comprehensive and well-designed set of structural policies fostering investment and private sector participation would contribute to boosting potential growth in an inclusive and sustainable manner.

Improving the Quality of the Fiscal Adjustment

The end of the commodity super-cycle brought about a sharp fall in commodity revenues and a noticeable deterioration in fiscal balances. In some countries, this situation is exacerbated by a slowdown in domestic demand and economic crises. The deterioration in debt dynamics, compounded by low expected commodity prices and an accompanying reduction in fiscal buffers, calls for appropriate fiscal adjustment.

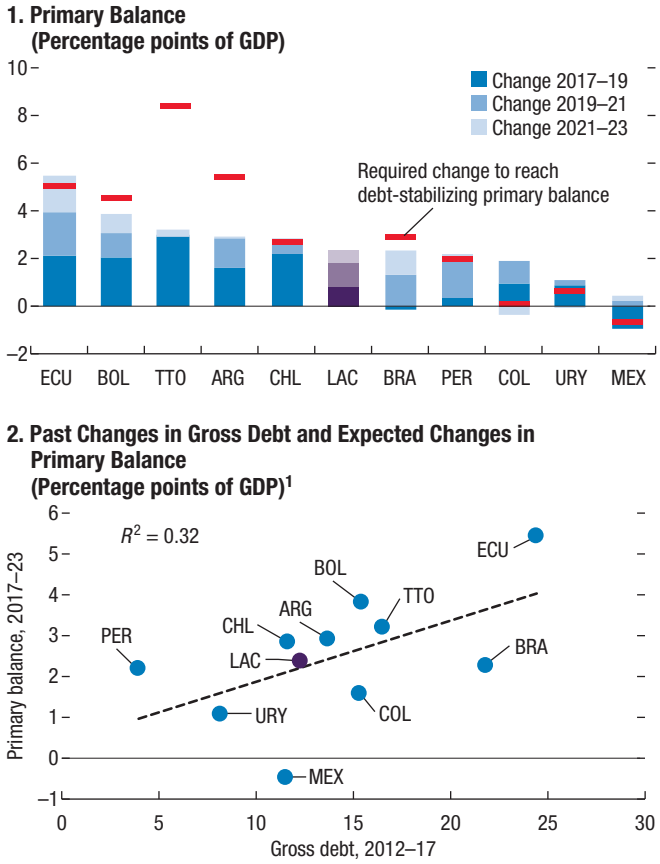
Most countries in the region have started to adjust or are planning to adjust on the fiscal front in the coming years. Given partial recovery in commodity prices and favorable financing conditions, the crucial question remains, how much do countries still need to adjust going forward? In several cases, the required fiscal adjustment—in terms of changes in the primary fiscal balance to reach the debt-stabilizing level—is relatively small. For most countries, however, primary balances are still noticeably

below debt-stabilizing levels, most notably in Argentina, Bolivia, Brazil, and Trinidad and Tobago. This suggests that substantial and sustained fiscal effort will be needed. In general, and as expected, countries that experienced a larger increase in debt ratios following the end of the commodity super-cycle have more ambitious fiscal consolidation plans over the coming years (Figure 2.13). Some countries' adjustment plans are front-loaded, with the bulk of the fiscal consolidation taking place this year and the next (Chile, Trinidad and Tobago), while other countries have opted for a more gradual and back-loaded fiscal adjustment (Brazil, Peru).

Overall, the fiscal adjustment should aim at placing debt ratios on a sustainable path. With this objective in mind, the pace and composition of fiscal adjustment should be tuned to supporting and protecting growth and productivity-enhancing spending. However, this crucially depends on understanding the growth impact of fiscal consolidation—that is, the "fiscal multipliers." Analysis of fiscal consolidation episodes in the region suggests that their impact on growth is somewhat larger than previously thought (Chapter 4). In addition, since multipliers for public investment are larger than those for public consumption, consolidation packages should aim to preserve the former where possible. In cases where fiscal sustainability or credibility might be at risk, policymakers should address these concerns by front-loading the adjustment. Moreover, a well-designed and transparent fiscal adjustment plan would enhance policy credibility and investor confidence, which is also conducive to more favorable funding conditions, particularly for countries that pay higher average spreads relative to other countries with comparable credit ratings (Figure 2.14), and could engender stronger public support.

Fiscal adjustment could be supplemented with broader fiscal reform. In this context, entitlement reform aimed at containing future fiscal pressures derived from demographic changes—particularly those related to public pension and health expenditure (see the October 2017 *Regional Economic Outlook Update: Western Hemisphere*)—would contribute greatly to improving prospects for long-term fiscal sustainability, while having relatively small effects on short-term growth.

Figure 2.13. Primary Balance

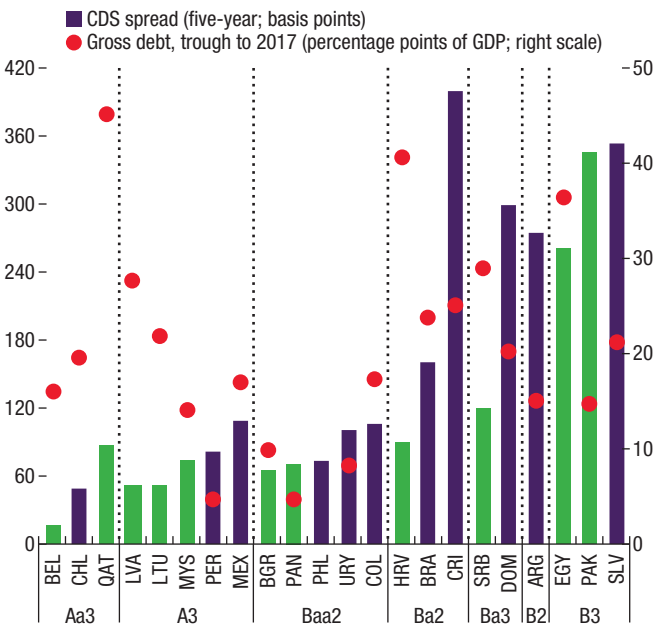


Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: LAC aggregate is fiscal year US dollar nominal GDP-weighted average. Argentina's primary balance and debt refer to the federal government. Mexico excludes one-off revenues for 2017. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. LAC = Latin America and the Caribbean.
[1]Definition of government debt varies across countries. For Uruguay, public debt includes the debt of the central bank.

Enhancing Monetary Policy Effectiveness While Supporting Growth

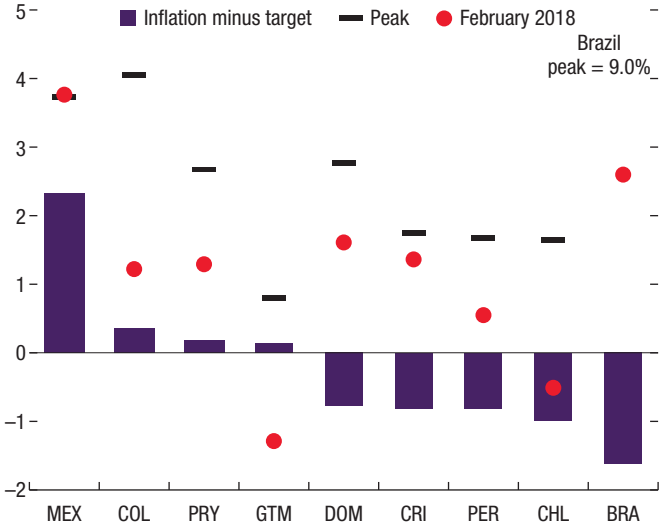
The recent decline in inflation in several countries in the region has provided space for easing monetary policy. Indeed, with inflation within (or close to) the target bands and

Figure 2.14. Sovereign Credit Ratings, CDS Spreads, and Gross Debt



Sources: Bloomberg Finance L.P.; Thomson Reuters Datastream; and IMF staff calculations.
Note: Sovereign credit ratings are based on Moody's rating scale as of March 30, 2018. Five-year CDS (credit default swap) spreads refer to the 2018 average to date. Gross debt trough is over the period 2007–16. Philippines' gross debt level for 2017 is less than the trough. Definition of government debt varies across countries. For Uruguay, public debt includes the debt of the central bank. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

Figure 2.15. Real Policy Rates and Inflation Gap
(Percent)



Sources: Haver Analytics; national authorities; and IMF staff calculations.
Note: Real (ex ante) policy rates calculated as the difference between the policy rate and the one-year-ahead inflation expectations. Target is taken as the midpoint of the inflation target range. Peak real policy rate is since December 2013. Peak dates are Brazil (August 2016); Chile (December 2013); Colombia (January 2017); Costa Rica (November 2017); Dominican Republic (December 2014); Guatemala (February 2014); Mexico (February 2018); Paraguay (January 2015); and Peru (April 2017). For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

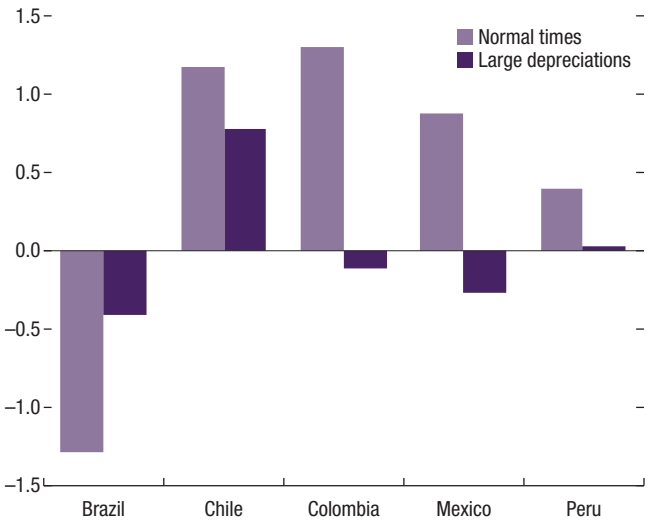
inflation expectations currently anchored, most inflation-targeting central banks have cut their policy rates (Figure 2.15).

Going forward, in an environment characterized by fiscal consolidation in large parts of the region, monetary policy could provide support to the ongoing economic recovery, while keeping inflation expectations well anchored. To achieve this, and to enhance the credibility and effectiveness of monetary policy, central banks should work toward strengthening their institutional and operational frameworks.

More effective central bank communication and greater transparency—for instance, through press releases and by releasing the minutes of monetary policy meetings—can play an important role in improving policy predictability and traction (Chapter 3). This, in turn, would increase the room to maneuver for central banks when dealing with transitory supply-side shocks, and help them maintain or strengthen their credibility. In this context, laudable progress has been made in the implementation of inflation-targeting regimes, which is in part reflected in lower exchange rate pass-through into domestic inflation across several countries in the region (see Chapter 4 of the April 2016 *Regional Economic Outlook Update: Western Hemisphere*). Nevertheless, central banks in the region are still challenged when facing bouts of exchange rate volatility and large depreciations. In this context, episodes of large currency depreciations have led to procyclical monetary policy stances, even when inflation expectations remained well anchored (Figure 2.16).

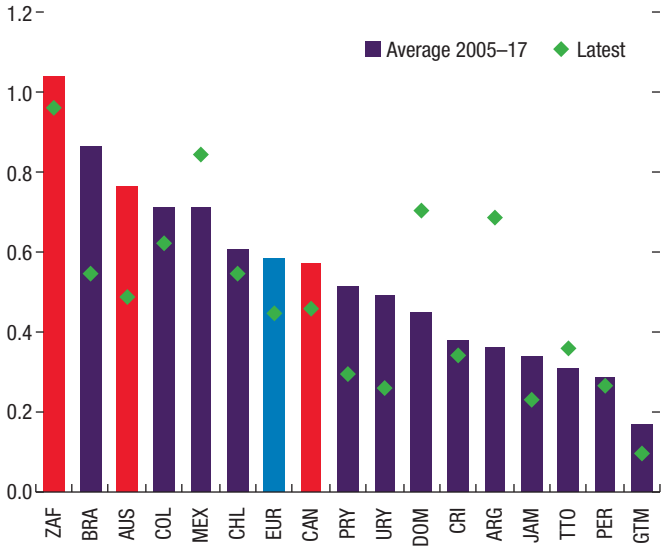
Exchange rate flexibility has served the region well, facilitating the external adjustment (see Chapter 3 of the April 2017 *Regional Economic Outlook: Western Hemisphere*). The degree of exchange rate

Figure 2.16. Elasticity of Central Bank Rates to Changes in Output Gap
(Percentage points; average 2000–17)



Sources: Bloomberg Finance L.P.; Consensus Economics; Haver Analytics; and IMF staff calculations.
Note: Elasticities of real (ex ante) policy rates to changes in output gaps, controlling for deviations of inflation expectations from target. Inflation expectations are two-year-ahead inflation expectations from Consensus Economics. Large depreciations are periods characterized by an average depreciation of the exchange rate against the US dollar exceeding 5 percent over the past 12 months.

Figure 2.17. Exchange Rate Variability
(Six-month rolling standard deviations of daily changes)



Sources: Thomson Reuters Datastream; and IMF staff calculations.
Note: Latest data up to March 30, 2018. Bilateral exchange rates are against the US dollar. EUR denotes the euro-dollar exchange rate. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

flexibility, however, has varied across countries in the region, even among economies facing similar shocks (Figure 2.17). Maintaining a flexible exchange rate would enhance resilience to external shocks, including to sudden changes in global financial conditions, minimizing the potential for disruptive capital flow reversals.

Subdued Growth Prospects Call for Deep Structural Reforms

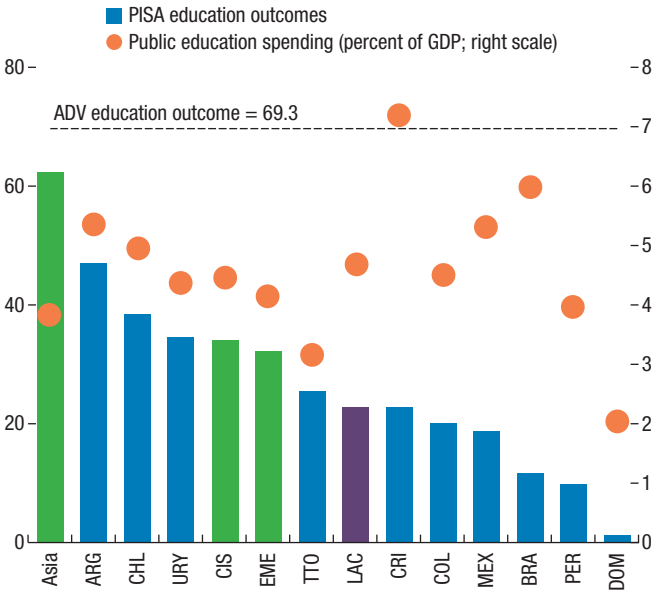
The strengthening of the ongoing cyclical recovery in the region is certainly a welcome development. However, long-term prospects for the region remain dim. The need to boost potential growth and productivity calls for a deep and comprehensive structural reform agenda.

Raising the region's growth potential requires a sustained policy effort on many fronts, including education, health, business and the regulatory environment, and gender equity and female participation, among others. In particular, securing strong, durable, and inclusive growth will also require addressing inequality in Latin America and the Caribbean. Despite recent gains in poverty and inequality reduction, particularly in commodity-exporting countries, LAC remains the most unequal region in the world. With a tighter fiscal envelope going forward, and poverty rates already edging up, policies need to be geared toward protecting gains made in social areas (Chapter 5). Improving security and crime prevention is also crucial in parts of the region where chronically high crime rates are weighing heavily on growth (Box 2.4).

In this context, policy priorities include

- *Human capital development* through more efficient education spending to boost productivity as well as generate more inclusive and equitable growth. In LAC, educational attainment and learning outcomes remain low relative to other emerging market regions, even though the region spends more on education than other regions (Figure 2.18).

Figure 2.18. Education Outcomes and Spending
(Percentile rank)



Sources: Organisation for Economic Co-operation and Development, 2015 Programme for International Student Assessment (PISA); World Bank, World Development Indicators database; and IMF staff calculations.
Note: Latest data available. Simple average. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. ADV = advanced economies; Asia = emerging and developing Asia; CIS = Commonwealth of Independent States; EME = emerging and developing Europe; LAC = Latin America and the Caribbean.

- *Tackling infrastructure bottlenecks* (see Chapter 5 of the April 2016 *Regional Economic Outlook: Western Hemisphere*), which would also boost investment levels in the region. Those levels remain lower than in other emerging market regions, including sub-Saharan Africa (Figure 2.19).
- *Improving the governance and the business climate*, focusing in particular on reducing corruption. Corruption is an important issue in the region, adversely affecting confidence, private investment, and development (IMF 2017a). Corruption perceptions at the regional level are broadly in line with other emerging markets and the region's level of development. However, there are significant differences across countries in the region, even after accounting for differences in per capita income (Figure 2.20).
- *Pursuing trade and financial liberalization*: Trade openness levels in LAC are low compared to other regions, and this is particularly acute in some of the region's large economies, notably Argentina and Brazil (Figure 2.21). Regional integration could be an effective medium for promoting openness and a step forward toward further global integration (IMF 2017b; Enoch and others 2017). In this context, the Comprehensive and Progressive Agreement for a Trans-Pacific Partnership, signed in early March by 11 countries in the region, including Chile, Mexico, and Peru, would boost trade with Asia.

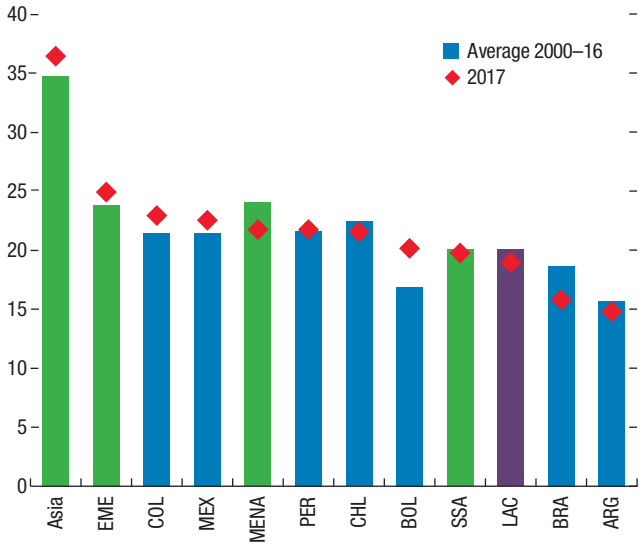
South America

Developments and Outlook

Following a sharp contraction in 2015–16, growth in South America resumed in 2017, averaging 0.7 percent (in purchasing-power-parity terms). Supported by a positive external environment and relatively higher commodity prices, and boosted by a cyclical recovery in domestic demand, South America's growth is expected to accelerate further in both 2018 and 2019. Regional aggregates are dominated by recovery in the larger economies, notably Argentina and Brazil.

In *Argentina*, the economy continued to expand in the fourth quarter. High-frequency indicators suggest that economic activity remained robust in early 2018, but the severe drought that hit the country will have a negative impact on agricultural production and exports. Hence, the current forecast is for real GDP growth of 2.0 percent in 2018, below the January *World Economic Outlook Update* forecast. Growth is still expected to pick up to 3.2 percent in 2019, as the negative impact of the drought will be reversed, higher real wages and pensions will sustain private consumption, and private investment will continue its gradual rebound. The primary fiscal deficit is expected to decline in line with targets set by the authorities at the federal level, mainly reflecting the announced

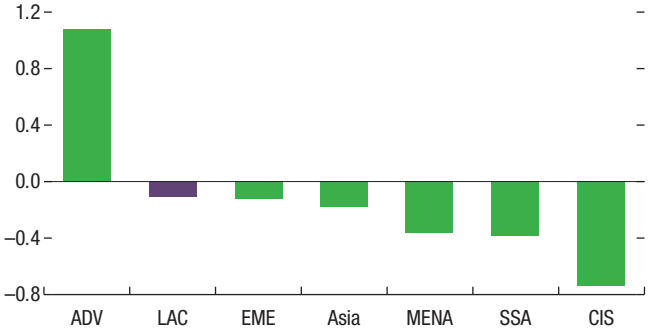
Figure 2.19. Gross Fixed Capital Formation
(Percent of GDP)



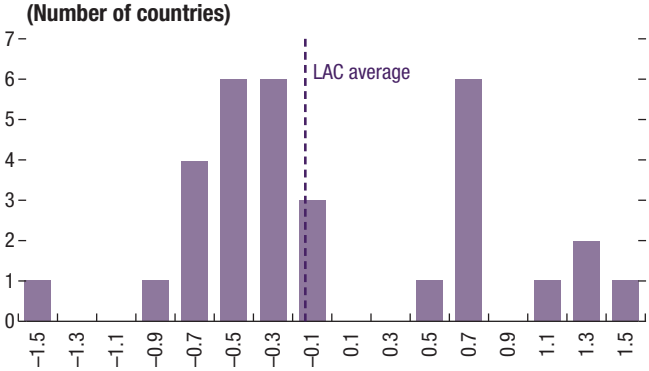
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Purchasing-power-parity GDP-weighted average. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. Asia = emerging and developing Asia; EME = emerging and developing Europe; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

Figure 2.20. Income-Adjusted Corruption Perception Levels, 2016
(Higher values = lower perceived levels of corruption)

1. Regional Comparison



2. Distribution within Latin America and the Caribbean (Number of countries)

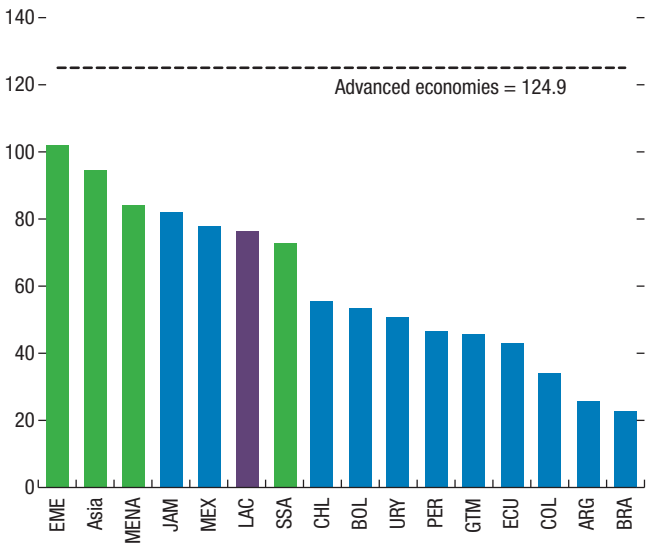


Sources: World Bank, World Development Indicators database; Worldwide Governance Indicators by Daniel Kaufmann (Natural Resource Governance Institute and Brookings Institution) and Aart Kraay (World Bank); and IMF staff calculations.
Note: Simple average. Income-adjusted perceived corruption denotes the residual coming from regressions of control of corruption point scores on real GDP per capita. Using other indicators of corruption perceptions produces similar results. The charts show results based on control of corruption given its wide country coverage. As with any perception indicators, point estimates are subject to uncertainty. More details of the results will be a part of a forthcoming book chapter. ADV = advanced economies; Asia = emerging and developing Asia; CIS = Commonwealth of Independent States; EME = emerging and developing Europe; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

reduction of subsidies, and consistent with the new Fiscal Responsibility Law at the provincial level. The overall fiscal deficit will fall at a slower pace, however, reflecting the larger interest bill. Inflation is expected to continue to fall, but at a slower pace than targeted by the central bank, reflecting the headwinds from further increases in utility tariffs but also the pickup of inflation expectations after the increase of inflation targets and the easing of the monetary policy stance in late 2017 and early 2018. Continued reduction of the primary fiscal deficit (through a more front-loaded reduction in primary current spending) would help better anchor inflation expectations in the context of lower interest rates, reduce the vulnerability from high gross fiscal financing needs, and put the public debt ratio on a more sustainable path. Achieving stronger, sustainable, and more inclusive growth will require further progress in the structural reform agenda to remove remaining distortions and bottlenecks.

Growth in *Bolivia* remains among the highest in the region, but the country faces important medium-term challenges. Since the 2014 terms-of-trade shock, the government has pursued expansionary fiscal and monetary policies financed by a drawdown of savings and increased borrowing. Real GDP grew by 4.2 percent in 2017 and is projected to grow by 4 percent in 2018. The sizable fiscal and current account deficits that emerged in 2014 are expected to persist absent any material change in policy direction, albeit at lower

Figure 2.21. Trade Openness, 2017
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note Simple average. Trade openess is measured as the sum of exports and imports of goods and services as a share of GDP. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.
Asia = emerging and developing Asia; EME = emerging and developing Europe; LAC = Latin America and the Caribbean; MENA = Middle East and North Africa; SSA = sub-Saharan Africa.

levels, reflecting in part the rebound in commodity prices. To contain risks and boost potential growth in the context of the stabilized exchange rate, the authorities should gradually tighten fiscal policy, improve the effectiveness of social spending, phase out credit targets and interest rate ceilings, and implement key structural reforms, including in product and labor markets. Efforts to improve the regulatory and supervisory framework for financial institutions should continue.

In *Brazil,* following a sharp contraction in activity in 2015 and 2016, recovery gained momentum in 2017, driven by domestic demand. Real GDP is expected to grow at 2.3 percent in 2018, thanks to favorable external conditions and a rebound in private consumption and investment. The uptick in activity will lead to a moderate deterioration of the current account. Inflation is expected to accelerate gradually from 3 percent toward the midpoint of the inflation target in 2019, owing to an accommodative monetary policy stance and an increase in food price inflation. Fiscal consolidation continued in 2017, with improved revenue collection and postponement of discretionary expenditures. The current budget implies an expansionary fiscal stance in 2018 and fiscal consolidation starting in 2019, with yearly reductions in federal government expenditure of 0.5 percent of GDP over the next 10 years. Social security reform, which has been postponed because of political developments, is key to ensuring both the viability of the pension system and sustainability of public finances. Reforming other mandatory outlays, including the wage bill, is also important to meet the constitutional expenditure rule and ensure fiscal sustainability. The positive economic cycle provides scope to front-load fiscal adjustment and to implement structural reforms to improve credit allocation, opening up the economy, boost the quality of infrastructure, simplify the tax system, and reduce red tape. A key risk, however, is that the policy agenda could change following the October presidential election, giving rise to market volatility and greater uncertainty about the medium-term outlook.

In *Chile*, economic activity is gaining momentum after a prolonged slowdown, benefiting from improved external conditions and domestic sentiment. Both mining and nonmining exports, as well as business investment, are leading the recovery, supported by solid household spending and slightly looser financial conditions. The economic rebound will likely improve the composition of job growth, relying less on self-employment. Growth for 2018 has been revised up to 3.4 percent—noticeably higher than in 2017 (1.5 percent). Monetary policy is appropriately accommodative, and the central bank should wait until inflation shows a clear sign of convergence toward its target and growth momentum becomes self-sustaining before beginning to normalize monetary policy. The new administration has not detailed its fiscal plans yet, but fiscal policy should stay on a gradual consolidation course and balance out social and development objectives.

In *Colombia*, policy easing and a favorable global environment will lift growth to 2.7 percent in 2018. A mildly expansionary fiscal policy, driven by stronger subnational government expenditure, along with the lagged effects of monetary policy easing in 2017, will support domestic demand. Investment is projected to increase strongly on the back of infrastructure projects under the Fourth Generation Program, oil sector projects, and the 2016 tax reform. Inflation will return to and remain within the target band as the effects of past shocks—such as the value-added tax hike—dissipate. This may allow for further cuts in the policy rate. The current account deficit will narrow on the back of relatively higher oil prices and increasing nontraditional exports.

Ecuador's ongoing economic recovery is supported by the partial rebound in oil prices, favorable external financial conditions, and continued public sector spending. However, the weak fiscal position, real effective exchange rate overvaluation, and low foreign reserves make the economy vulnerable to sudden shifts in investor sentiment, tighter financing conditions, a fall in oil prices, or an appreciation of the US dollar. Domestic political and policy uncertainty may also suppress growth. A clear, front-loaded, balanced, and well-communicated fiscal reform path could help bolster market confidence, lower financing costs, and propel growth. Structural reforms are also needed to address lingering competitiveness problems.

Paraguay's economy is expected to expand by 4½ percent in 2018, led by strong domestic demand. Bank credit is recovering after a sharp deceleration following a credit boom. The Central Bank of Paraguay further eased its accommodative monetary policy stance in August 2017, citing regional economic uncertainty. With domestic demand strengthening and credit growth now resuming, inflationary pressures have begun to rise, pointing to a need to gradually remove monetary accommodation. While the fiscal anchor is operating well, additional restraint on the growth of current primary spending relative to budget plans will be needed in 2018 to avoid a modest, but unwarranted, fiscal stimulus during the ongoing economic swing.

Peru's economy grew at a slower pace in 2017 (2.5 percent), reflecting the adverse impact of El Niño and spillovers from the Odebrecht corruption investigation, which offset a strong export expansion. Weather conditions also affected food prices, causing inflation to spike in early 2017. However, softer growth and an appreciation of the sol led inflation to close the year at 1.4 percent—the lowest since 2009. In this context, the central bank has reduced the policy rate six times since May and also lowered reserve requirements. Meanwhile, the government has responded with countercyclical fiscal policy, increasing the 2017–19 deficit targets to finance reconstruction and rehabilitation projects, with consolidation planned thereafter to bring the deficit in line with the fiscal rule. These policies are expected to help economic growth rebound to around 3¾ percent in 2018, but downside risks associated with the Odebrecht investigation persist. Over the medium term, the authorities remain focused on implementing structural reforms to improve tax system efficiency, expand economic and financial inclusion, and close the infrastructure gap.

In *Uruguay*, a combination of prudent policies and favorable external conditions led to good macroeconomic outcomes, with growth expected to exceed 3 percent in 2018. A relatively tight monetary policy stance and an appreciating exchange rate contributed to a notable decline in inflation, bringing it within the central bank's target range (3 to 7 percent) in 2017 for the first time in seven years. Looking forward, some monetary tightening would be appropriate, as inflation edged up early this year and as demand pressures related to upcoming large investment projects materialize. The fiscal deficit in 2017 was slightly larger than projected, reinforcing the case for saving possible growth-related revenue windfalls in 2018 in order to safeguard the 2019 fiscal deficit target of 2.5 percent of GDP. In view of existing infrastructure gaps, it would be

important to reorient budget spending from the public wage bill toward investment.

Venezuela's economic crisis is worsening, with the economy contracting sharply for the fifth year in a row. The economy is expected to contract by 15 percent in 2018, following a cumulative 35 percent contraction over 2014–17. Since November, the country has been suffering from hyperinflation due to large fiscal deficits financed by monetary creation, coupled with the loss of confidence in the currency. Consumer price inflation was estimated at about 2,800 percent in 2017 and is projected to rise to about 13,000 percent in 2018. International reserves dropped to about $9.3 billion by the end of January 2018, and liquid net international reserves appear to be exhausted. Bonds for the Republic and for the public oil company (PDVSA) are in selected default since the last quarter of 2017. The government unified and depreciated the official exchange rate in early February 2018, but this measure does not address the severe underlying economic imbalances.

Policy Priorities

Characterized by a relatively high dependence on commodity sector developments, South America's external and fiscal positions deteriorated noticeably following the end of the commodity super-cycle, with debt ratios increasing sharply in several countries, particularly in recession economies. To stabilize debt ratios and rebuild buffers to cope with potential future shocks, countries in the region are embarking on sizable fiscal adjustment plans.

In this context, policymakers should aim at placing the debt-ratio path on a sustainable footing while minimizing any adverse impact on short- and medium-term growth. Higher commodity revenues are creating some additional policy space, providing the opportunity to adjust the pace and composition of the fiscal adjustment and to push through needed fiscal reform (including pension system reform).

Monetary policy should support the economic recovery, and could provide some accommodation to accompany the fiscal adjustment, provided inflation convergence toward the target band and inflation expectations remain anchored. Exchange rate flexibility should remain the first line of defense against external shocks.

Mexico, Central America, Panama, and the Dominican Republic

Developments and Outlook

The economic outlook for Mexico, Central America, Panama, and the Dominican Republic is shaped in large part by developments in the United States, with important trade, financial, and migration linkages among these countries.

Mexico's outlook is projected to benefit from higher growth in the United States as well as stronger domestic demand once uncertainty subsides about the outcome of the NAFTA renegotiation, the potential implications of the US tax reform, and Mexico's July presidential election. Output growth is expected to accelerate from 2 percent in 2017 to 2.3 percent in 2018, supported by net exports and remittances. Inflation is projected to continue falling in 2018 and converge toward the central bank's 3 percent target around the middle of 2019 as the effects fade from last year's increase in administered domestic fuel prices (as part of the liberalization of these prices), as food price inflation declines, and as monetary policy remains tight. Downside risks remain elevated. While a successful NAFTA renegotiation would boost trade, output, and employment growth, a disorderly breakup of the agreement would severely disrupt regional supply chains and adversely affect growth.

Growth in *Central America*, *Panama*, and the *Dominican Republic* (CAPDR) remained robust at about 4 percent in 2017, supported by solid domestic demand and the upswing in global trade (Figure 2.22). Consumption continued

to be the main driver of growth, as strong remittances in the Northern Triangle countries and the *Dominican Republic*—resulting from the upswing in US growth and developments in US migration policies and associated uncertainties—supported spending.[1] Robust remittance inflows, combined with the recovery in the production and international prices of some agricultural commodities (Honduras, Nicaragua) also led to a further reduction in current account deficits in 2017, despite rising oil bills. Declining current account deficits contributed to a strengthening of reserve buffers in some countries (Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua).

Inflation accelerated in 2017 in most countries. Recovering oil and food prices, the pickup in domestic demand, and to some extent the pass-through from exchange rate depreciations (Costa Rica) contributed to the acceleration. Despite the pickup, inflation remains within target ranges in countries with inflation-targeting frameworks.

After three years of reductions in fiscal deficits, the regional trend reversed in 2017. While fiscal balances did improve in some countries as a result of steps taken to implement fiscal responsibility laws (Honduras) and restrain spending (El Salvador), broader spending pressures across the region contributed to wider deficits in most countries. As a result, the average public-debt-to-GDP ratio in CAPDR continued to increase in the context of still favorable external financing conditions. In the absence of additional consolidation measures, some countries (Costa Rica, Dominican Republic, El Salvador, Honduras) will continue to face fiscal vulnerabilities, particularly over the medium term.

The outlook for the region remains favorable. Growth is expected to remain above potential in the near term, reflecting increased US and global growth momentum. However, risks are tilted to the downside and include tighter US immigration policy (especially following the cancellation of the temporary protection status for several countries) that could increase deportations and reduce remittance flows, particularly for Northern Triangle countries; tighter global financial conditions, which could limit access to or raise the cost of external financing given weak budgetary situations (Costa Rica, Dominican Republic, El Salvador); and weaker-than-expected global growth and a retreat from cross-border integration. Political dissonance at home (El Salvador, Honduras) could also be detrimental to CAPDR's medium-term growth prospects.

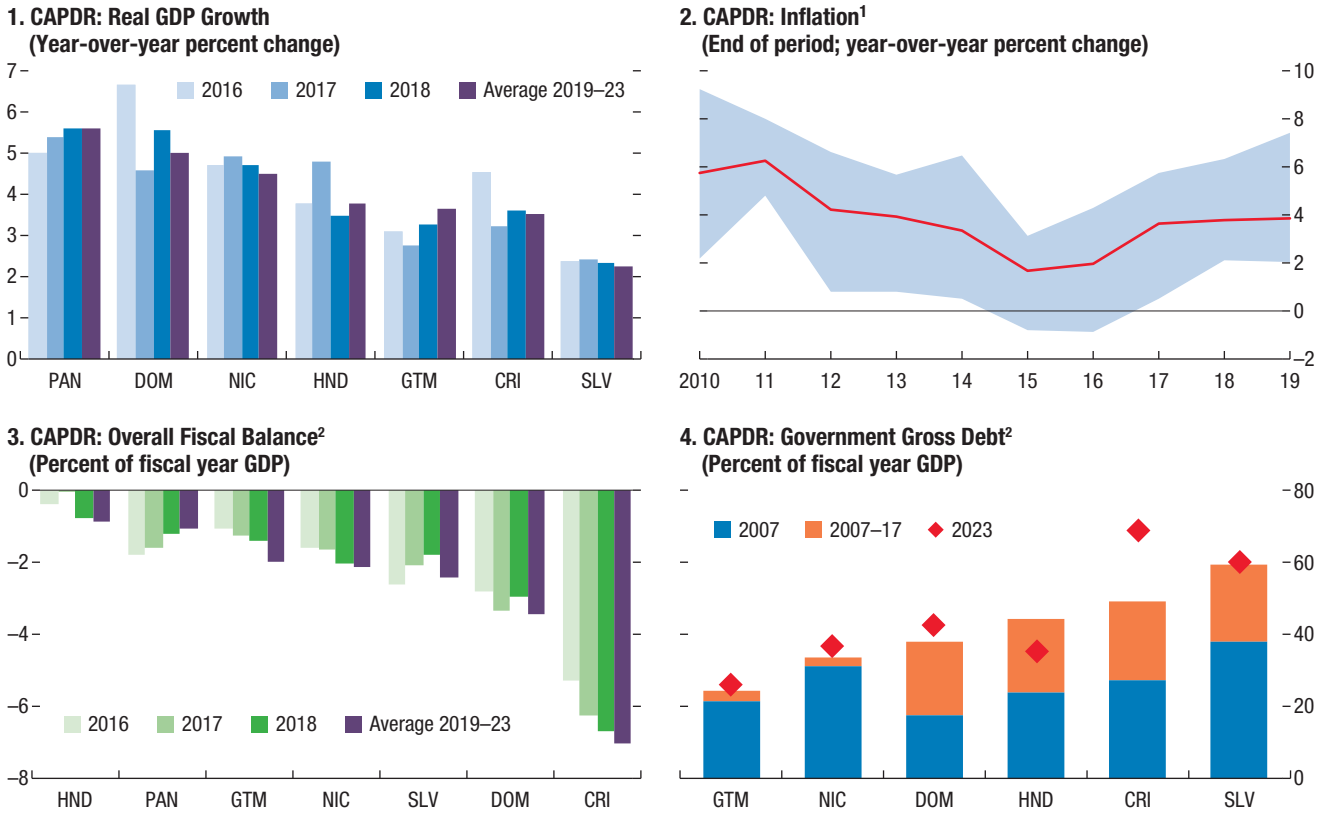
Policy Priorities

In *Mexico*, policies should be geared toward preserving macroeconomic stability in the context of a complex external environment and domestic policy uncertainty, while setting the stage for stronger, sustainable, and inclusive growth. To this end, a continuation of prudent fiscal policy aimed at reducing the public-debt-to-GDP ratio and strengthening the fiscal responsibility framework are essential for medium-term fiscal sustainability. Increases in the efficiency of public expenditure and in tax collection would help address growing spending pressures from infrastructure needs and entitlements. Conditional on inflation expectations remaining well anchored, there is scope to ease monetary policy as soon as inflation is firmly on a downward path. Steadfast implementation of structural reforms, including anti-corruption measures, is needed to boost potential growth and to make it more inclusive over the medium term.

In CAPDR, fiscal consolidation is needed in most countries to rebuild fiscal buffers and enhance resilience to external developments. Fiscal consolidation will need to be supported through revenue mobilization (Costa Rica, Dominican Republic, El Salvador, Nicaragua, Panama) and current spending containment (Costa Rica, El Salvador, Honduras). In *Nicaragua*, pension

[1]Remittances are now the most important external flow to the region, dwarfing foreign direct investment and official aid, and they have helped the region cushion the impact of shocks by increasing fiscal revenues and supporting financial sector stability, with little evidence of "Dutch disease" (Beaton and others 2017).

Figure 2.22. Central America, Panama, and the Dominican Republic



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. CAPDR = Central America, Panama, and the Dominican Republic.
[1]Simple average. Shaded area refers to the max-min range.
[2]For definitions of government coverage, see Annex Table 2.2.

reform is needed to address the imminent cash balance constraint and secure the long-term viability of the system. Revenue mobilization should be achieved through a combination of broadening tax bases (streamlining tax exemptions), strengthening tax administration, and, in some cases, aligning tax rates with regional averages. Fiscal consolidation should be calibrated to avoid sharp drags on growth, and to protect the most vulnerable people, including by improving the efficiency and quality of education and health spending and increasing targeted social spending. In *Guatemala* there is scope for more expansionary fiscal policy to increase social, security, and infrastructure spending. A strengthening of fiscal policy frameworks, with credible medium-term fiscal anchors, will help institutionalize fiscal discipline and support fiscal consolidation efforts where required. In *Costa Rica*, the election provides a fresh opportunity to embark on an ambitious fiscal adjustment to address the unsustainable fiscal situation.

In countries with flexible exchange rates, maintaining exchange rate flexibility would improve resilience to external shocks. Greater exchange rate flexibility and transparency regarding foreign exchange intervention, together with improved central bank communication and monetary policy frameworks, would also strengthen confidence in the subordination of exchange rate management to inflation objectives and strengthen the credibility of inflation-targeting regimes.

The financial sector appears sound, and the region continues to make progress in anti–money laundering/combating the financing of terrorism (AML/CFT) compliance, reinforcing their frameworks through legislative measures and strengthening effective implementation, and thus helping to maintain access to correspondent banking relationships. Integration of systemic risk into supervisory and regulatory frameworks, including through the development of macroprudential policy frameworks, would support financial stability and provide more flexibility to manage macro-financial risks, including foreign-exchange-related risks in a highly dollarized region (Costa Rica, Dominican Republic, Honduras, Nicaragua). Continuation of efforts to transition toward Basel III, together with ongoing efforts to strengthen consolidated and risk-based supervision, including through enhanced supervisory cooperation and cross-border coordination, would improve the resilience of the financial system. Building on the region's recent progress, efforts should also continue to strengthen tax transparency and financial integrity.

Tackling corruption and improving law enforcement and security to address high levels of crime (El Salvador, Guatemala, Honduras) remain imperative to attracting foreign direct investment and durably increasing investment and potential growth. More broadly, structural reforms are required to raise productivity and potential growth.

The Caribbean

Developments and Outlook

Prospects for the Caribbean region are generally improving, with growth in both tourism-dependent economies and commodity exporters projected in the 1–2 percent range for 2018 and 2019 (Figure 2.23).

Several countries in the region registered strong growth in tourism in 2017, including *Barbados*, *Belize*, *Jamaica*, and *St. Lucia*—all destinations that saw increased arrivals in both the stopover and the cruise segments. This trend is expected to continue in 2018, supported by higher economic growth in the United States, which is the main market for most destinations in the region, with a few exceptions (for example, *Barbados* is heavily dependent on tourism from the United Kingdom).

However, some of the islands that were hit hard during the 2017 hurricane season face a protracted recovery. In *Dominica*, GDP is projected to decline by 16.3 percent in 2018, before rebounding in 2019 as reconstruction gathers pace.

Low commodity prices over the last few years contributed to recessions in *Trinidad and Tobago* (2015–17) and *Suriname* (2015–16). They are expected to return to modest growth in 2018 and 2019, benefiting from somewhat higher commodity prices. Growth has been stronger in *Guyana*, supported by two new large gold mines and positive sentiment ahead of the beginning of oil production in 2020.

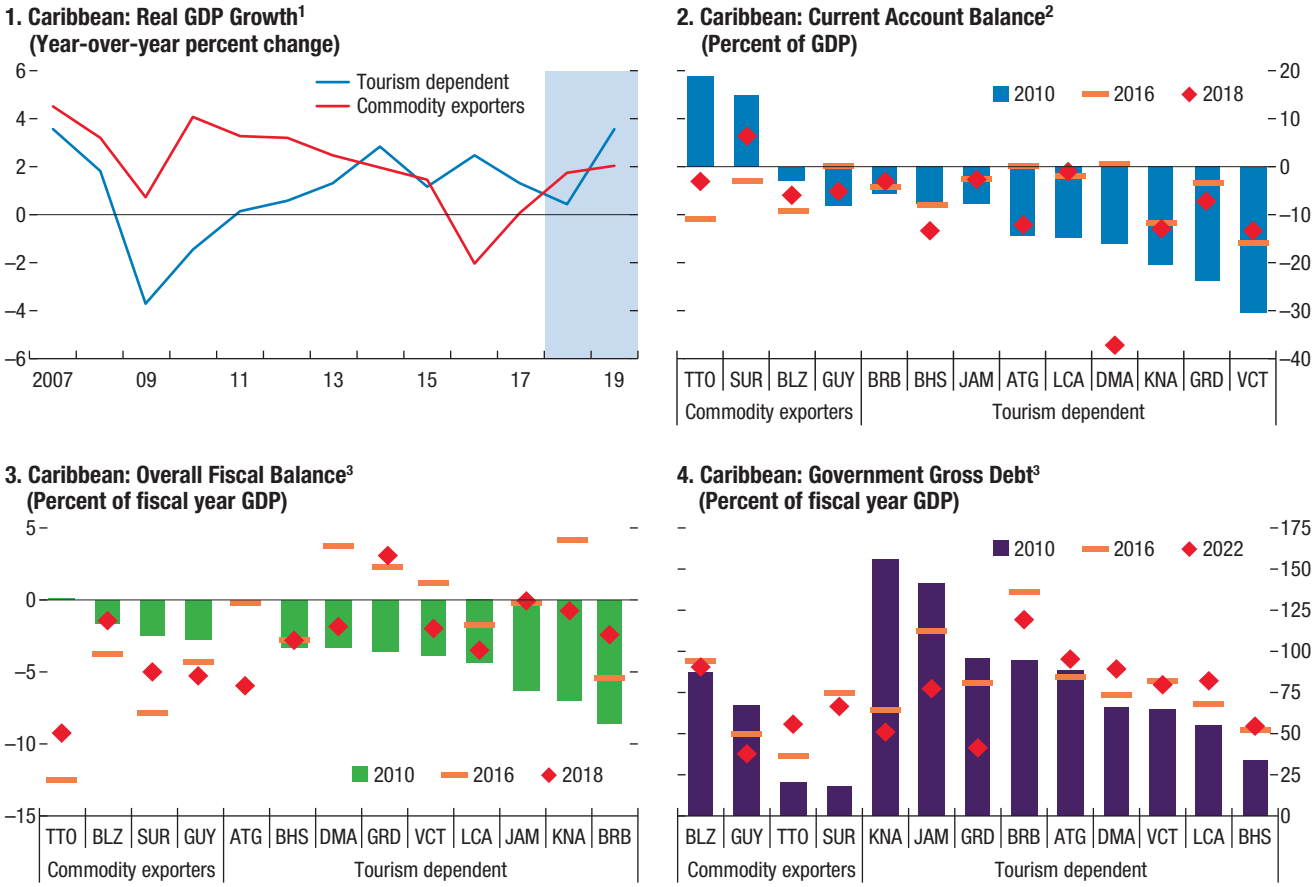
Downside risks to the outlook for the Caribbean include the impact of natural disasters and climate change (Box 2.3), potential further loss of correspondent banking relationships, and risks associated with citizenship-by-investment programs (Box 2.5).

Policy Priorities

Public sector debt remains a major vulnerability for the region. In a number of tourism-dependent economies, debt ratios are now retreating from very high levels, with several countries engaged in multiyear fiscal consolidation efforts, including *Grenada*, *Jamaica*, and *St. Kitts and Nevis*.[2] In these cases, continued fiscal prudence will be necessary to gradually reduce debt-to-GDP ratios to a sustainable level and to build and preserve buffers against adverse shocks. In other cases, including *Antigua and Barbuda*, *Barbados*, and *Belize*, there is a clear need to tighten the fiscal stance, in

[2]In these three cases, efforts to reduce public debt were supported by debt restructuring (Alleyne and others 2017).

Figure 2.23. Caribbean



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115. For country group information, see page 115.
[1]Simple average. Shaded area refers to projections.
[2]Current account balance data for Eastern Caribbean Currency Union members (Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines) prior to 2014 are based on the IMF's *Balance of Payments Manual*, revision 5, methodology.
[3]For definitions of government coverage, see Annex Table 2.2.

combination with structural reforms to bolster growth, to reduce public debt. A well-designed fiscal rule can help guide the consolidation effort and broaden support for it.

In commodity-exporting countries such as *Trinidad and Tobago* and *Suriname*, the sudden decline in commodity prices in 2014–15 contributed to large fiscal deficits and a rapid increase in public debt. In these cases, tighter fiscal policies in the context of medium-term macroeconomic adjustment are needed to reestablish a sustainable fiscal path and ensure debt sustainability.

Despite progress on financial sector reform, numerous banks in the region continue to have high levels of nonperforming loans, which constrains credit availability and economic activity and increases banks' vulnerability to shocks. In the *Eastern Caribbean Currency Union*, the authorities have made progress on reforms to strengthen bank resilience, including through regulatory enforcement of capital requirements and efforts to clean up banks' balance sheets. Reforms to strengthen the financial sector are also underway in other countries in the region. Further steps are required, however, including strengthening oversight of nonbank financial institutions

and further enhancing the capital adequacy of indigenous banks. An additional priority for strengthening financial sector resilience is securing correspondent banking relationships through more effective implementation of AML/CFT frameworks, bank consolidation, and improved communication and information exchange with correspondent banks.

Stronger implementation of structural reforms is also necessary to enhance competitiveness, private investment, and growth. In several countries, policy priorities include reducing high electricity costs by conserving energy and diversifying the energy mix, deepening financial systems and enhancing access to credit, tackling violent crime, and reducing high unemployment and brain drain by improving the business climate and strengthening institutions. Sector-specific policies to support structural transformation could help boost the region's key industry, tourism, including through advertising activities, training, nature conservation efforts, and the provision of transportation infrastructure.

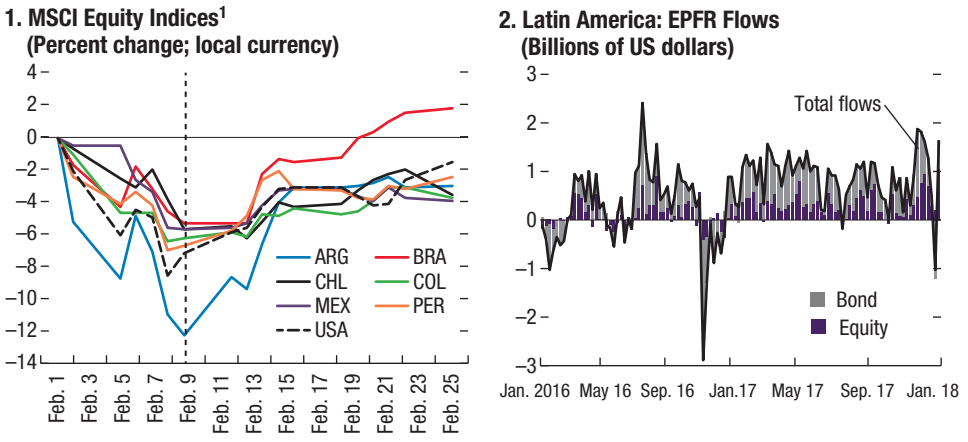
Box 2.1. Market Views on Latin American Prospects and Risks

In March, market views on Latin America were mixed—decidedly upbeat about near-term growth momentum, but worried about medium-term prospects. A broad-based cyclical rebound in Latin America is underway, but it might diminish appetite for policy adjustment and structural reform according to market participants. Specifically, a long-awaited recovery after several years of subpar growth reflected a synchronized global upturn, as well as some domestic policy adjustment. However, some were concerned that an ongoing recovery would generate policy complacency regarding much-needed reforms.

Markets were also concerned about exposures to external risks, particularly for economies with high dollar financing needs. In the wake of recent financial market turbulence in early February, Latin America was not particularly affected, but within the region some felt more intense pressures (Figure 2.1.1). Global liquidity remained ample, being tightened only at the margin, and capital flows to the region remained resilient. However, sharper-than-expected US Federal Reserve tightening posed regional risks through a stronger dollar and higher dollar interest rates. Markets did not anticipate a new deal on the North American Free Trade Agreement before the end of the year, but reversion to World Trade Organization tariff levels limited the downside risk. Spillover implications of US tax reform were not well understood yet, but preliminary views expected the impact on international competitiveness and investment flows to be offset by currency depreciation at home.

According to markets, the main domestic risks center around political risks with upcoming national elections throughout the region and the ongoing crisis in Venezuela. The possibility of anti-establishment candidates and populist agendas is particularly worrisome in those economies that could ill afford policy mistakes given limited room for higher fiscal spending and the need to advance (not reverse) past structural reform efforts.

Figure 2.1.1. Financial Indicators



Sources: Emerging Portfolio Fund Research (EPFR); Haver Analytics; Thomson Reuters Datastream; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.
MSCI = Morgan Stanley Capital International.
[1]Refers to the change from February 1, 2018.

This box was prepared by the Regional Studies Division based on IMF staff discussions in New York with market participants during March 1–2, 2018.

Box 2.2. Resource Allocation in Latin American Manufacturing

Long-term growth in Latin America and the Caribbean is projected at 1.8 percent in per capita terms, only marginally better than projected long-term growth in advanced economies. Low productivity continues to be a drag on overall growth (Daude and Fernández-Arias 2010; see also Box 1 of the October 2017 *Regional Economic Outlook Update: Western Hemisphere*).

While weak productivity reflects a variety of underlying causes, misallocation of capital and labor resources appears to play an important role (Adler and others 2017; Chapter 2 of the April 2017 *Fiscal Monitor*). Research has shown substantial inefficiencies in the allocation of resources across manufacturing firms in Latin America (Busso, Madrigal, and Pagés 2013), using census data from earlier periods.[1] These studies have focused on measuring misallocation across firms within very narrowly defined (four-digit) sectors of economic activity. This box shows that such inefficiencies extend to more recent data for Brazil, Colombia, and Mexico using Orbis data, and suggests that misallocation is significant even between these narrowly defined sectors.

Whereas total factor productivity (TFP) depends on the quantity of produced goods and services, revenue productivity (TFPR) depends on the nominal value of those goods and services. Therefore, revenue productivity has the advantage of being directly observable in firms' financial reports. The general idea is that the spread of revenue productivity across firms is a measure of the inefficiency with which capital and labor resources are allocated across firms.

Revenue productivity in Latin America is substantially more spread out than in the United Kingdom, hinting at meaningful inefficiencies in the allocation of resources in the region (Table 2.2.1).[2,3] The spread of revenue productivity is measured by the ratio of the 75th percentile to the 25th percentile of the distribution of revenue productivity across firms, where each firm's revenue productivity is measured relative to the average of the sector in which it is classified.[4]

Table 2.2.1. Spread of Revenue Productivity across Firms within All Manufacturing Sectors

Country	Ratio of 75th Percentile to 25th Percentile of Relative TFPR
United Kingdom	6.8
Mexico	11.3
Brazil	12.4
Colombia	15.7

Sources: Bureau van Dijk Orbis; and IMF staff calculations.
Note: The numbers in the table summarize the distribution, across firms within every 2-digit manufacturing sector, of revenue productivity. For each country, the distribution pools all firms within all 2-digit manufacturing sectors by expressing revenue productivity relative to within-sector means. Data apply to the year 2015. TFPR = total factor revenue productivity.

By comparing the productivity of each manufacturing sector to the hypothetical productivity of a manufacturing sector in which revenue productivity is equal across firms, one can estimate gains from elimination of misallocation of resources (Table 2.2.2). These estimates are indicative and can be read as an upper bound, because even advanced economies demonstrate some degree of misallocation. These estimates suggest that Latin American economies could reap important gains from improving the allocation of capital

This box was prepared by Carlos Goncalves, Galen Sher, and Pablo Bejar.

[1]The most recent data for Brazil, Colombia, and Mexico in Busso, Madrigal, and Pagés (2013) are for 1998, 2005, and 2004.

[2]The Orbis data are considered the most comprehensive firm-level data for more developed economies, but rely on information that companies report publicly and may therefore not be representative of informal firms.

[3]Some studies use the United States as a benchmark country for comparisons of the spread of revenue productivity. The Orbis data are scarce for the United States and plentiful for the United Kingdom.

[4]Sectors are defined according to the two-digit level of statistical classification of economic activities in the European Community (NACE).

Box 2.2 *(continued)*

and labor resources across firms. The TFP gains for Brazil and Colombia of 51 and 61 percent, respectively, are higher than those obtained in Busso, Madrigal, and Pagés (2013), which may reflect differences in the aggregation of firms into sectors.[5] Mexico's TFP gain of 48 percent is modest relative to other estimates (IMF 2017d), underscoring greater homogeneity in the sample relative to firms in the census.

Table 2.2.2. Gain in Manufacturing Total Factor Productivity from Equalizing Revenue Productivity across Firms within Each Sector

Country	TFP Gain
Brazil	51
Colombia	61
Mexico	48

Sources: Bureau van Dijk Orbis; and IMF staff calculations.
Note: Calculations follow the formula in equation (20) of Hsieh and Klenow (2009). TFP = total factor productivity.

While further research is needed to link the existing distortions to resource misallocation estimates for the region, earlier studies provide some guidance. Tax incentives for small enterprises enable unproductive small firms to survive, which could occur at the expense of creating productive new firms or achieving economies of scale (see Chapter 2 of the April 2017 *Fiscal Monitor*). In Brazil, higher tax rates on machinery than on buildings have been found to reduce allocative efficiency, reducing firms' incentives to invest relative to the incentives from production alone (IMF 2017c).

Size distortions sometimes take the form of state subsidies to certain firms, which encourage them to grow beyond their efficient size, at the expense of growth in more productive competitor firms. Even after the removal of such subsidies, the market power of the previously advantaged firm perpetuates the inefficiency in resource allocation. A lack of competition in a product market incentivizes firms in that market to restrict their production and hence to underutilize capital and labor resources.

Inflexibility could also bar new innovative firms from entering the market and competing for factors of production. Governments need to avoid regulatory burdens that unnecessarily slow the creation of new firms, and should ensure that new ideas have access to early-stage financing and are competitively screened. In Mexico, states where firms have better access to financial services have been found to exhibit lower measures of misallocation (IMF 2017d). In some cases, a lack of competition in the wage-setting process has been associated with inefficiencies in the allocation of labor resources (IMF 2018). Formal wage bargaining should ensure the representation of all stakeholders, including all firms in the agreement and the unemployed, to limit the possibility of creating wedges between labor productivity and wages.

Allocative inefficiency has been found to be higher for informal firms, for example in Mexico (IMF 2017d). Informal firms are often thought to have lower productivity than formal firms and survive by avoiding obligations. Policies aimed at reducing informality are therefore appropriate for improving resource allocation and productivity.

[5]Other differences between the results in Busso and others (2013) and those found here are likely to be driven by the data sources. That work uses earlier census data and this box uses recent publicly available data.

Box 2.3. Resilience to Natural Disasters and Climate Change

The Caribbean is one of the most vulnerable regions in the world to natural disasters, as underlined by Hurricane Matthew in 2016 and Hurricanes Irma and Maria in 2017. This vulnerability is typical for small states, which are proportionally more exposed. Preliminary results from a rapid damage and loss assessment by a group of international organizations estimated recovery costs after Hurricane Maria in Dominica at more than 200 percent of GDP. Larger Caribbean states, such as Haiti and Jamaica, have also repeatedly experienced extensive damage and loss of life from natural disasters (both hurricanes and earthquakes). Climate change is expected to worsen the situation, as most small states are islands exposed to rising sea levels and to the increasing intensity of weather-related events.

The IMF has a long history of assistance to the Caribbean in the aftermath of natural disasters. Over the last few years the IMF has provided assistance to Dominica, St. Lucia, and St. Vincent and the Grenadines through the use of the Rapid Credit Facility (RCF) after natural disasters. The IMF also provided extensive debt relief to Haiti following the 2010 earthquake. As part of its contribution to the post-2015 Development Agenda, the IMF has strengthened its toolkit for disaster relief. To recognize the circumstances of small states vulnerable to natural disasters, in May 2017 the IMF increased annual access limits under the RCF and the Rapid Financing Instrument (RFI) to 60 percent of quota for countries experiencing large natural disasters (exceeding 20 percent of GDP in damages). The interest rate on RCF loans is set at zero percent.[1]

The IMF is also trying to help countries better prepare for natural disasters, including via pilot *Climate Change Policy Assessments* prepared in collaboration with the World Bank. A pilot for St. Lucia is near completion. Countries can build disaster and climate change risks explicitly into policy frameworks, including in the design of budgets, fiscal rules, and public investment plans. Fiscal buffers or contingency funds can be established to reduce fiscal exposure to disasters, with the appropriate size based on an assessment of disaster risks and their frequency and costs. Insurance and financial hedging tools can also help protect governments from the burden of disasters and increase their capacity to respond appropriately. Regional coordination could facilitate the pooling of insurance coverage at the Caribbean level, while the international community could support countries by providing capacity building, tools for risk management, and financing.

The *Caribbean Catastrophe Risk Insurance Facility* (CCRIF) is a good example of the potential of risk pooling and global cooperation to contribute to disaster financing. Established in 2007 in collaboration with the region's governments and key development partners, the CCRIF provides parametric insurance: payouts based on a predetermined trigger, such as wind speed, rather than on actual and verified damage incurred (as under traditional insurance). This allows for quick settlement of claims (usually within 14 days) following a natural disaster, providing financing at a time when it is most needed. But it also implies that there may be events that cause significant financial loss but are not covered because trigger levels were not reached. The CCRIF made payments totaling $55 million following Hurricanes Irma and Maria in 2017. While the CCRIF allows countries to get insurance at a much lower cost than they would face individually, countries underinsure because premiums are still high.

Another risk transfer mechanism that has potential to contribute to disaster financing is the inclusion of state-contingent clauses in sovereign debt, as pioneered by Grenada in the context of its 2015 debt restructuring. Improved debt design can help governments manage cash flow and smooth consumption and investment following natural disasters, thereby minimizing output losses.

This box was prepared by Bert van Selm.

[1]The RCF is the IMF's concessional facility to provide rapid assistance to countries with urgent balance of payments needs, including from natural disasters. The RFI is a similar tool that is available to all IMF members.

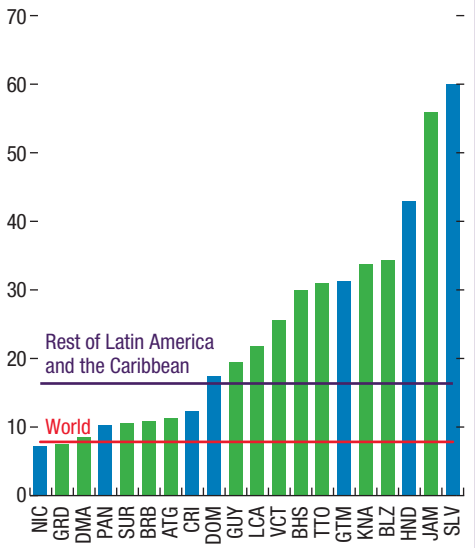
Box 2.4. Crime and Growth in the Caribbean, Central America, Panama, and the Dominican Republic

Chronically high crime is one of the biggest challenges in the Caribbean and the Central America, Panama, and Dominican Republic (CAPDR) regions. The Northern Triangle countries—El Salvador, Guatemala, and Honduras—plus the Caribbean account for only half a percent of the world's population but for 5 percent of nonwar homicides. Crime saps economic growth by imposing large public and private costs, distorting economic incentives, and disproportionately affecting the poor and the young.

Selected Crime Facts

Homicide rates in CAPDR and the Caribbean are among the highest in the world, with El Salvador and Jamaica having the top two rates worldwide (Figure 2.4.1).[1] Third is Honduras, which at its peak in 2011 had a homicide rate of 87 per 100,000 people but saw this rate halve to 43 per 100,000 people by 2017. Belize, St. Kitts and Nevis, and Guatemala are ranked at fourth to sixth, putting them still significantly above averages for the rest of Latin America and the world. At the same time, according to the United Nations Office on Drugs and Crime, conviction rates for homicides over 2007–15 in both CAPDR and the Caribbean averaged only about 20 percent (versus 40 percent globally).

Figure 2.4.1. Homicide Rates
(Per 100,000 people; 2015 or latest)



Sources: United Nations Office on Drugs and Crime; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

Victimization surveys find that over a quarter of the population in CAPDR and the Caribbean cites crime as the biggest problem, significantly higher than the Latin America and Caribbean average of 11 percent. Gang presence is an issue among CAPDR countries, while assault is more prominent in the Caribbean (Figure 2.4.2). The incidence of victimization tends to be higher for men, youth, and those with lower levels of education.

Crime's Effect on Overall Growth

Assessing the economic impact of crime is hindered by measurement and analytical issues. First, definitions of crime differ across countries, hampering comparisons. Second, data on nonfatal crime are often underreported, especially if citizens see little return to reporting. Last, crime's effect on economic growth is difficult to isolate because the vicious cycle between low growth and crime muddles causality. Specifically, reverse causation complicates determining the effect of crime on economic growth—that is, growth also lowers the relative payoff of criminal activity by generating more legal opportunity.

To get around the reverse causality and following Blake (2017), criminal deportations from the United States are used to capture the causation effect of homicides on growth, since deportations likely affect crime in home countries but are not large enough to impinge on growth directly (Demirci and Wong forthcoming).[2]

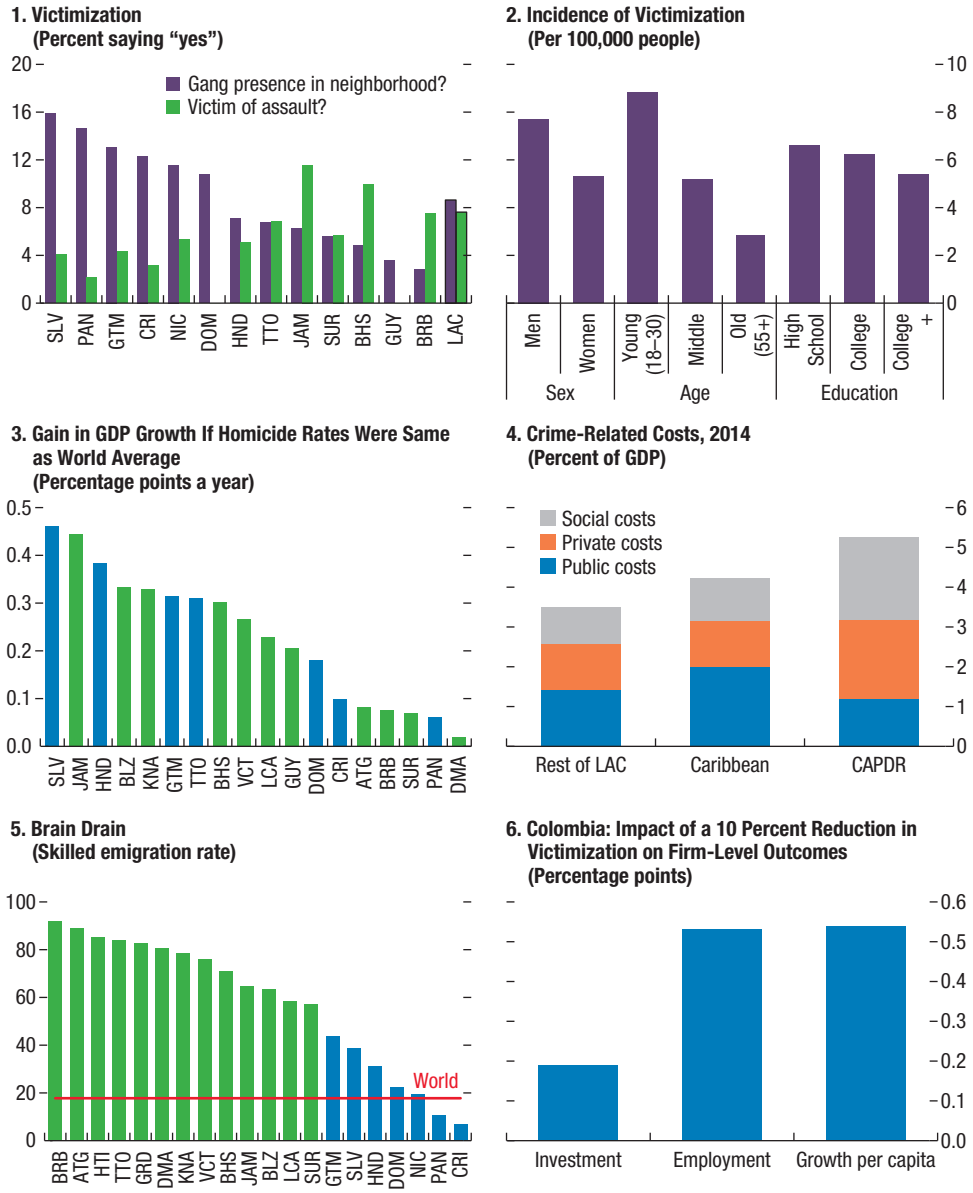
This box was prepared by Uma Ramakrishnan and Joyce Wong.

[1]The focus is mostly on homicide rates because of better reporting and less mismeasurement relative to other forms of crime. Robberies were also examined, but their effect on growth was not significant.

[2]For the top four countries, the cumulative number of deportees from 1998–2014 was only about 2.5 percent, 2.4 percent, 1.5 percent, and 1.4 percent of the labor force for El Salvador, Honduras, Jamaica, and Guatemala, respectively.

Box 2.4 *(continued)*

Figure 2.4.2. Crime and Growth in CAPDR and the Caribbean



Sources: Colombia Firm Surveys; Institute for Employment Research (Brücker, Capuano, and Marfouk 2013) brain-drain dataset; Inter-American Development Bank; Latin American Public Opinion Project; United Nations Office on Drugs and Crime; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.
CAPDR = Central America, Panama, and the Dominican Republic; LAC = Latin America and the Caribbean.

Box 2.4 *(continued)*

Results suggest that if CAPDR and Caribbean countries were to reduce their crime rates to the world average, GDP growth could be higher by around 0.4 percentage point a year in El Salvador, Jamaica, and Honduras. These growth effects are more conservative than estimates that do not control for reverse causation, but they are still substantial. On a cumulative basis, El Salvador, Honduras, and Jamaica lost about 9½, 7½, and 7 percentage points of GDP, respectively, due to their high crime rates during the period 1999–2015.

Channels and Costs of Crime

Through what channels does crime generate the impact on growth estimated above? The channels include (1) the cost of goods lost; (2) public and private costs for prevention, deterrence, and imprisonment; and (3) lost productivity from the prison population and victims. According to IDB (2017), all these can add up to about 4 to 5 percent of GDP a year for CAPDR and the Caribbean countries, although private versus public spending ratios are diverging.

Other nonmonetary costs may also result. For example, criminal activity and shorter life spans discourage investment in human and physical capital by directly lowering expected returns and eroding job creation. Firm-level data from Colombia show that lowering victimization rates improves both investment and employment outcomes. Crime also fosters brain drain,[3] which is especially pertinent for the Caribbean, where growth has been chronically low. Last, since the young are often both victims and perpetrators, crime can also generate a cycle of negative labor market outcomes—further fostering criminality and lowering growth.

What Can Be Done?

From an economic perspective, criminals weigh the expected net benefit of committing crimes against the expected net benefit of legal activities. Thus, given the high levels of poverty and low growth in Central America and the Caribbean, tackling crime will require a combination of (1) implementing policies to spur growth and promote economic opportunities, (2) improving deterrence and crime prevention, and (3) strengthening the criminal justice system.

Given the region's fiscal constraints, interventions should be targeted and evidence based. Thus, interventions directed towards at-risk youth and investment in data collection and monitoring are critical. Security budgets should go beyond just deterrence, and include skill development and vocational and social programs for youth.

Strengthening the credibility and efficiency of the criminal justice system will enable swift judgments. Governments should also provide basic skills training to convicts to bolster their reintegration into the productive sector. Less overcrowding and better-quality prison facilities will also help prevent criminal activity within prisons.

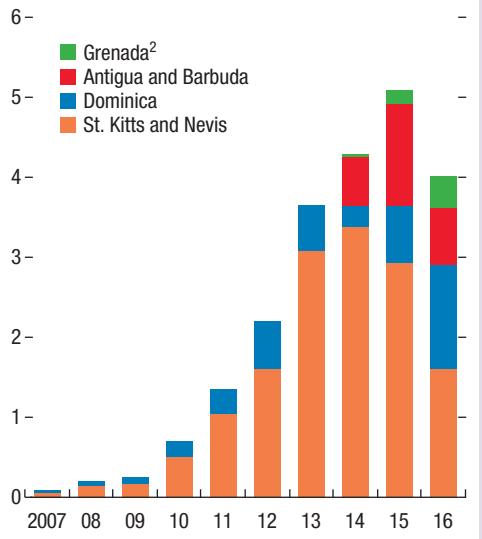
[3]Probit results using victimization surveys suggest that being a victim of a crime can increase a person's probability of wanting to emigrate by as much as 10 percentage points.

Box 2.5. Economic Citizenship Programs in the Caribbean

The number of Economic Citizenship Programs (ECPs) in the Caribbean has surged in recent years. Following recent large inflows to St. Kitts and Nevis and Dominica under these programs, three other Eastern Caribbean Currency Union (ECCU) countries—Antigua and Barbuda, Grenada, and St. Lucia—launched their own ECPs during 2013–15. Also referred to as Citizenship by Investment Programs, these arrangements are particularly attractive to small states, for which inflows can be so large as to have a significant economic and fiscal impact. An increasing number of advanced economies are also offering economic residency programs.

The launch of new citizenship programs in the Caribbean has intensified competition, creating pressure to ease conditions. After peaking in 2014, inflows to St. Kitts and Nevis weakened in 2015 and declined further in 2016. Inflows to Antigua and Barbuda, after the initial surge following introduction of the program, also fell in 2016. Inflows to Dominica surged on account of very competitive conditions and extensive marketing activities, which cost the equivalent of 1.1 percent of GDP in fiscal year 2015/16. Demand growth in Grenada has remained steady but relatively modest, while the newly established program in St. Lucia met with only limited success in its first year of operation.

Figure 2.5.1. Economic Citizenship Program Fiscal Revenue
(Percent of regional GDP)



Sources: National authorities; and IMF staff calculations.
[1]Economic Citizenship Program fiscal revenues as a share of the total nominal GDP of Antigua and Barbuda, Dominica, Grenada, and St. Kitts and Nevis. May include projected figures for 2016 as fiscal year duration varies. Excludes estimates for St. Lucia due to small size.
[2]Data for Grenada include National Transformation Fund.

Given the shared advantages for interested individuals and host jurisdictions, ECPs are likely to continue to grow, but with important spillovers and downside risks for small states and the international community. In small states, the inflows to the private sector can have a sizable impact on economic activity, while the fiscal revenues, like other large windfall revenues from abroad, can be quite substantial (Figure 2.5.1). However, poor management of the revenue upsurge could exacerbate vulnerabilities. If large and persistent, investment and fiscal flows may lead to adverse macroeconomic consequences associated with "Dutch disease," including higher inflation and loss of competitiveness, and the crowding out of other private sector activity. Moreover, program inflows may be subject to sudden-stop risk related to rapid changes in advanced economies' immigration policies. Finally, if not administered with due diligence, ECPs can lead to security breaches and possibly facilitate illicit activities such as tax evasion and money laundering, raising concerns for the international community and exposing the host jurisdiction to reputational risks.

To contain risks, ECPs and their associated revenues should be managed prudently, with priority given to saving, including through the establishment of a sovereign wealth fund, infrastructure investment, and debt reduction. Priority should also be given to accumulating the funds to respond to external shocks, such as natural disasters. A regional approach to ECPs within the ECCU would also help foster program integrity, promote best practices, achieve economies of scale, and safeguard against a race to the bottom.

This box was prepared by Bert van Selm.

Annex 2.1. Disclaimer

The consumer price data for *Argentina* before December 2013 reflect the Consumer Price Index (CPI) for the Greater Buenos Aires area (CPI-GBA), while from December 2013 to October 2015 the data reflect the national CPI (IPCNu). The new government, which took office in December 2015, discontinued the IPCNu, stating that it was flawed, and released a new CPI for the Greater Buenos Aires area on June 15, 2016 (a new national CPI has been disseminated starting in June 2017). At its November 9, 2016, meeting, the IMF Executive Board considered the new CPI series to be in line with international standards and lifted the declaration of censure issued in 2013. Given the differences in geographic coverage, weights, sampling, and methodology of these series, the average CPI inflation for 2014, 2015, and 2016 and end-of-period inflation for 2015 and 2016 are not reported in the April 2018 *World Economic Outlook.*

Argentina's authorities discontinued the publication of labor market data in December 2015 and released new series starting in the second quarter of 2016.

Projecting the economic outlook in *Venezuela,* including assessing past and current economic developments as the basis for the projections, is complicated by the lack of discussions with the authorities (the last Article IV consultation took place in 2004), long intervals in receiving data with information gaps, incomplete provision of information, and difficulties in interpreting certain reported economic indicators given economic developments. The fiscal accounts include the budgetary central government and Petróleos de Venezuela, S.A. (PDVSA), and data for 2016–23 are IMF staff estimates. Revenue includes the IMF staff's estimate of foreign exchange profits transferred from the central bank to the government (buying US dollars at the most appreciated rate and selling at more depreciated rates in a multitier exchange rate system) and excludes IMF staff's estimate of revenue from PDVSA's sale of PetroCaribe assets to the central bank. The effects of hyperinflation and the noted data gaps mean that IMF staff's projected macroeconomic indicators need to be interpreted with caution. For example, nominal GDP is estimated assuming the GDP deflator rises in line with IMF staff's projection of average inflation. Public external debt in relation to GDP is projected using IMF staff's estimate of the average exchange rate for the year. Fiscal accounts for 2010–23 correspond to the budgetary central government and PDVSA. Fiscal accounts before 2010 correspond to the budgetary central government, public enterprises (including PDVSA), Instituto Venezolano de los Seguros Sociales (IVSS—social security), and Fondo de Garantía de Depósitos y Protección Bancaria (FOGADE—deposit insurance).

Argentina's and *Venezuela's* consumer prices are excluded from all *World Economic Outlook* group aggregates.

Annex Table 2.1. Western Hemisphere: Main Economic Indicators[1]

	Output Growth (Percent)					Inflation[2] (End of period, percent)					External Current Account Balance (Percent of GDP)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
			Est.	Projections				Est.	Projections				Est.	Projections	
North America															
Canada	1.0	1.4	3.0	2.1	2.0	1.3	1.4	1.8	2.2	2.1	−3.6	−3.2	−3.0	−3.2	−2.5
Mexico	3.3	2.9	2.0	2.3	3.0	2.1	3.4	6.8	3.6	3.0	−2.5	−2.1	−1.6	−1.9	−2.2
United States	2.9	1.5	2.3	2.9	2.7	0.7	2.2	2.1	2.6	2.3	−2.4	−2.4	−2.4	−3.0	−3.4
Puerto Rico[3]	−1.1	−2.6	−7.7	−3.6	−1.2	−0.2	0.5	3.1	2.2	0.8	. . .	. . .	. . .	. . .	. . .
South America															
Argentina[4]	2.7	−1.8	2.9	2.0	3.2	. . .	. . .	24.8	19.2	13.6	−2.7	−2.7	−4.8	−5.1	−5.5
Bolivia	4.9	4.3	4.2	4.0	3.8	3.0	4.0	2.7	4.5	4.5	−5.8	−5.7	−5.8	−5.4	−5.2
Brazil	−3.5	−3.5	1.0	2.3	2.5	10.7	6.3	2.9	3.9	4.3	−3.3	−1.3	−0.5	−1.6	−1.8
Chile	2.3	1.3	1.5	3.4	3.3	4.4	2.8	2.3	2.6	3.0	−2.3	−1.4	−1.5	−1.8	−1.9
Colombia	3.1	2.0	1.8	2.7	3.3	6.9	5.8	4.1	3.4	3.0	−6.4	−4.3	−3.4	−2.6	−2.6
Ecuador	0.1	−1.6	2.7	2.5	2.2	3.4	1.1	−0.2	2.5	1.4	−2.1	1.5	−0.4	−0.1	0.3
Guyana	3.1	3.3	2.1	3.5	3.7	−1.8	1.5	2.3	2.8	3.0	−5.1	0.3	−4.2	−5.2	−4.7
Paraguay	3.0	4.0	4.3	4.5	4.1	3.1	3.9	4.5	4.0	4.0	−1.1	1.5	−1.8	−2.0	−1.2
Peru	3.3	4.1	2.5	3.7	4.0	4.4	3.2	1.4	2.3	2.0	−4.8	−2.7	−1.3	−0.7	−1.1
Suriname	−2.6	−5.1	0.0	1.4	2.0	25.1	52.4	9.3	11.2	7.8	−16.5	−3.1	8.9	6.3	5.2
Uruguay	0.4	1.5	3.1	3.4	3.1	9.4	8.1	6.6	6.6	6.5	−0.7	1.6	1.6	0.6	−0.1
Venezuela[5]	−6.2	−16.5	−14.0	−15.0	−6.0	159.7	302.6	2,818	12,875	12,875	−6.6	−1.6	2.0	2.4	3.6
Central America															
Belize	3.8	−0.5	0.8	1.8	2.0	−0.6	1.1	1.1	1.6	2.1	−9.8	−9.0	−7.7	−6.0	−5.8
Costa Rica	3.6	4.5	3.2	3.6	3.6	−0.8	0.8	2.6	3.0	3.0	−3.6	−2.6	−3.1	−3.1	−3.0
El Salvador	2.3	2.4	2.4	2.3	2.3	1.0	−0.9	2.0	2.1	2.0	−3.6	−2.0	−2.2	−3.2	−3.1
Guatemala	4.1	3.1	2.8	3.2	3.6	3.1	4.2	5.7	4.2	3.5	−0.2	1.5	1.4	1.1	0.6
Honduras	3.8	3.8	4.8	3.5	3.7	2.4	3.3	4.7	5.0	4.5	−4.7	−2.7	−1.7	−3.9	−4.0
Nicaragua	4.9	4.7	4.9	4.7	4.5	3.1	3.1	5.7	6.3	7.4	−9.0	−8.6	−6.2	−7.8	−7.7
Panama[6]	5.8	5.0	5.4	5.6	5.8	0.3	1.5	0.5	2.2	2.5	−7.9	−5.5	−6.1	−6.0	−4.3
Caribbean															
Antigua and Barbuda	4.1	5.3	2.8	3.5	3.0	0.9	−1.1	2.8	2.0	2.0	6.8	0.2	−7.0	−12.1	−2.3
The Bahamas	−3.1	0.2	1.3	2.5	2.2	2.0	0.8	2.0	2.4	2.6	−14.3	−7.7	−16.4	−13.6	−8.8
Barbados	1.0	1.6	0.9	0.5	0.8	−2.5	3.8	6.6	2.2	3.5	−6.1	−4.4	−3.7	−3.0	−2.9
Dominica	−3.7	2.6	−4.2	−16.3	12.2	−0.5	−0.2	1.4	1.4	1.8	−1.9	0.8	−17.8	−37.1	−21.5
Dominican Republic	7.0	6.6	4.6	5.5	5.0	2.3	1.7	4.2	3.7	3.8	−1.9	−1.1	−0.2	−1.0	−1.4
Grenada	6.4	3.7	3.5	3.6	3.6	1.1	0.9	0.5	1.8	1.9	−3.8	−3.2	−6.6	−7.1	−6.4
Haiti[7]	1.2	1.5	1.2	2.0	3.0	11.3	12.5	15.4	8.0	5.0	−3.1	−1.0	−2.9	−4.1	−3.0
Jamaica	0.8	1.5	1.0	1.5	1.8	3.7	1.7	5.2	5.1	5.0	−3.2	−2.7	−2.8	−2.9	−2.9
St. Kitts and Nevis	4.9	3.1	2.6	3.5	3.2	−2.4	0.0	0.2	2.0	2.0	−9.7	−11.4	−12.6	−13.1	−12.1
St. Lucia	−0.9	3.4	3.0	2.5	2.3	−2.6	−3.0	2.2	1.4	1.5	6.9	−1.9	0.3	−1.0	−0.6
St. Vincent and the Grenadines	0.9	0.8	1.0	2.1	2.5	−2.1	1.0	2.2	1.5	1.5	−14.9	−15.8	−14.4	−13.5	−13.1
Trinidad and Tobago	1.5	−6.0	−2.6	0.2	0.2	1.6	3.1	1.3	2.7	2.1	3.8	−10.7	−5.6	−3.0	−4.0
Memorandum															
Latin America and the Caribbean	**0.3**	**−0.6**	**1.3**	**2.0**	**2.8**	**6.2**	**4.6**	**4.1**	**3.6**	**3.5**	**−3.4**	**−1.9**	**−1.6**	**−2.1**	**−2.3**
South America[8]	−1.1	−2.4	0.7	1.7	2.5	8.7	5.4	2.9	3.6	3.8	−3.6	−1.8	−1.4	−2.0	−2.2
Simple average	*1.0*	*−0.6*	*1.0*	*1.3*	*2.3*	*5.7*	*4.4*	*3.0*	*3.7*	*3.6*	*−3.6*	*−1.5*	*−1.6*	*−1.6*	*−1.5*
CAPDR[9]	4.9	4.6	4.0	4.3	4.3	1.7	2.0	3.6	3.5	3.5	−3.5	−2.1	−2.0	−2.5	−2.3
Simple average	*4.5*	*4.3*	*4.0*	*4.1*	*4.1*	*1.6*	*2.0*	*3.6*	*3.8*	*3.8*	*−4.4*	*−3.0*	*−2.6*	*−3.4*	*−3.3*
Caribbean															
Tourism dependent[10]	0.2	1.6	1.3	1.7	2.1	1.8	1.2	4.0	3.5	3.7	−6.6	−4.8	−8.0	−7.5	−5.4
Simple average	*1.2*	*2.5*	*1.3*	*0.4*	*3.5*	*−0.3*	*0.4*	*2.6*	*2.2*	*2.4*	*−4.5*	*−5.1*	*−9.0*	*−11.5*	*−7.8*
Commodity exporters[11]	1.2	−4.6	−1.5	0.8	0.9	4.1	8.5	2.5	3.8	3.0	−0.6	−8.6	−4.0	−2.3	−3.0
Simple average	*1.5*	*−2.1*	*0.1*	*1.7*	*2.0*	*6.1*	*14.5*	*3.5*	*4.6*	*3.7*	*−6.9*	*−5.6*	*−2.1*	*−2.0*	*−2.3*
Eastern Caribbean Currency Union[12]	1.9	3.2	1.8	1.8	3.6	−1.0	−0.7	1.4	1.7	1.8	−1.4	−5.5	−9.2	−12.0	−8.5

Sources: IMF, World Economic Outlook database; and IMF staff calculations and projections.

[1]Regional aggregates for output growth are purchasing-power-parity GDP-weighted averages unless noted otherwise. Consumer price index (CPI) inflation aggregates exclude Argentina and Venezuela and are geometric averages unless noted otherwise. Current account aggregates are US dollar nominal GDP-weighted averages unless noted otherwise. Consistent with the IMF *World Economic Outlook*, the cutoff date for the data and projections in this table is April 2, 2018.

[2]End-of-period (December) rates. These will generally differ from period average inflation rates reported in the IMF *World Economic Outlook*, although both are based on identical underlying projections.

[3]The Commonwealth of Puerto Rico is classified as an advanced economy. It is a territory of the United States but its statistical data are maintained on a separate and independent basis.

[4]See Annex 2.1 for details on Argentina's data.

[5]See Annex 2.1 for details on Venezuela's data.

[6]Ratios to GDP are based on the "2007-base" GDP series.

[7]Fiscal year data.

[8]Includes Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela. CPI series exclude Argentina and Venezuela.

[9]Includes Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

[10]Includes The Bahamas, Barbados, Jamaica, and Eastern Caribbean Currency Union (ECCU) members.

[11]Includes Belize, Guyana, Suriname, and Trinidad and Tobago.

[12]ECCU members are Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines, as well as Anguilla and Montserrat, which are not IMF members.

Annex Table 2.2. Western Hemisphere: Main Fiscal Indicators[1]

	Public Sector Primary Expenditure (Percent of GDP)					Public Sector Primary Balance (Percent of GDP)					Public Sector Gross Debt (Percent of GDP)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
			Est.	Projections				Est.	Projections				Est.	Projections	
North America															
Canada	36.8	37.7	37.5	37.4	37.3	0.5	−0.4	−0.6	−0.5	−0.4	90.5	91.1	89.7	86.6	83.8
Mexico[2]	24.5	24.1	21.8	21.1	21.6	−1.0	0.6	3.0	1.0	0.6	52.9	56.8	54.2	53.5	53.4
United States[3]	32.8	33.0	33.1	33.2	33.2	−1.6	−2.2	−2.5	−3.0	−3.4	105.3	107.2	107.8	108.0	109.4
Puerto Rico[4]	19.7	18.6	20.6	22.0	22.4	−0.2	0.4	0.1	−4.5	−3.6	52.9	49.5	54.6	61.0	66.0
South America															
Argentina[5]	39.8	39.8	38.6	37.5	35.9	−4.4	−4.7	−4.5	−3.5	−2.4	55.1	53.3	52.6	54.1	52.7
Bolivia[6]	43.6	38.8	38.0	37.3	36.7	−5.9	−5.6	−6.3	−5.1	−4.3	40.6	46.2	50.9	51.4	52.3
Brazil[7]	30.2	30.8	30.2	30.6	29.7	−2.0	−2.5	−1.7	−2.3	−1.8	72.6	78.4	84.0	87.3	90.2
Chile	24.2	24.5	24.5	23.8	23.6	−1.9	−2.4	−2.4	−0.5	−0.1	17.3	21.0	23.6	23.8	24.6
Colombia[8]	26.6	24.4	25.3	25.2	24.7	−0.7	0.2	−0.2	0.1	0.8	50.6	50.7	49.4	49.3	48.2
Ecuador[9]	37.7	37.5	35.2	36.5	33.8	−3.9	−6.8	−3.2	−2.9	−1.0	33.8	42.9	45.0	48.0	50.1
Guyana[10]	28.4	31.5	33.0	33.3	33.8	−0.2	−3.3	−3.3	−4.2	−3.9	50.3	50.7	50.7	53.9	56.1
Paraguay	26.1	24.4	25.5	25.8	25.1	−1.3	0.6	0.6	0.7	1.2	24.0	24.9	25.6	26.5	26.1
Peru	21.2	19.9	20.1	20.3	20.0	−1.3	−1.4	−2.0	−2.2	−1.6	24.0	24.4	25.5	27.0	28.0
Suriname[11]	30.2	23.6	22.3	21.7	21.2	−7.9	−6.0	−5.0	−2.7	−1.5	43.0	75.8	72.1	68.5	67.7
Uruguay[12]	28.8	30.0	29.8	29.6	29.5	−0.0	−0.5	−0.2	0.1	0.6	64.6	61.9	66.2	66.2	65.2
Venezuela[13]	34.8	33.9	40.6	37.4	36.6	−15.9	−16.8	−31.5	−24.2	−24.7	31.9	31.3	34.9	162.0	172.1
Central America															
Belize[10,14]	33.0	29.9	30.5	27.7	27.8	−5.0	−1.1	−1.2	2.0	2.0	80.7	95.9	99.0	97.5	95.5
Costa Rica[10]	16.6	16.5	17.0	17.1	17.2	−3.0	−2.4	−3.1	−2.8	−2.1	40.9	44.9	49.1	52.8	55.9
El Salvador[15]	18.8	18.8	18.8	18.3	18.4	−0.7	−0.0	0.7	1.3	1.1	57.9	59.3	59.3	58.9	58.8
Guatemala[10]	10.7	10.6	10.5	10.7	11.0	0.1	0.4	0.1	0.0	−0.2	24.2	24.5	24.4	24.4	24.6
Honduras	24.0	25.0	24.8	24.4	25.0	0.0	0.2	0.7	0.3	0.0	39.8	41.2	43.9	43.8	44.1
Nicaragua[15]	24.6	25.9	26.1	26.4	26.4	−0.9	−0.9	−0.8	−1.3	−1.3	28.9	31.0	33.6	34.1	34.6
Panama[16]	20.1	20.5	21.0	20.5	20.5	−0.6	−0.2	−0.3	0.1	0.2	37.2	37.1	38.2	37.7	37.0
Caribbean															
Antigua and Barbuda[17]	23.7	21.8	20.7	21.0	20.2	−0.1	2.4	−0.9	−2.7	−2.5	98.2	86.2	86.8	88.2	90.2
The Bahamas[10]	17.2	17.5	21.5	17.9	17.5	−1.8	−0.3	−3.5	−0.4	0.1	51.1	53.0	57.2	57.5	57.0
Barbados[18]	27.9	26.3	25.4	25.5	25.5	−1.8	2.2	3.7	4.4	4.4	134.7	137.0	132.9	128.7	127.3
Dominica[17]	30.5	41.6	40.6	39.7	36.9	1.0	5.4	10.5	0.4	−1.3	77.2	74.9	87.6	93.6	87.3
Dominican Republic[15]	15.1	14.7	15.4	14.7	14.6	2.4	0.1	−0.3	0.4	0.4	33.0	35.0	37.7	36.9	37.9
Grenada[17]	22.3	21.2	20.0	20.4	20.0	2.1	5.2	5.8	5.3	5.6	90.6	82.1	71.4	64.0	56.7
Haiti[10]	21.5	18.4	18.3	22.3	20.5	−2.2	0.2	−0.6	−2.0	−0.8	30.2	33.9	31.1	33.2	34.3
Jamaica[17]	19.9	20.4	22.3	22.4	22.3	7.2	7.6	7.0	7.0	7.0	121.3	113.9	104.1	98.3	94.0
St. Kitts and Nevis[17]	30.1	28.3	27.6	27.2	26.5	8.7	6.0	2.8	0.9	−0.3	70.6	65.6	62.4	60.3	57.5
St. Lucia[17]	22.3	22.6	23.2	23.5	23.5	1.3	1.8	0.7	0.2	0.2	67.8	69.2	71.3	73.1	74.9
St. Vincent and Grenadines[17]	26.5	26.6	27.9	28.6	28.7	−0.2	2.4	−0.2	0.1	0.2	79.4	82.9	80.8	81.4	81.2
Trinidad and Tobago[19]	35.2	32.7	31.3	31.6	31.5	−6.2	−10.0	−8.0	−6.1	−5.1	27.9	37.5	41.3	41.7	44.7
Memorandum															
Latin America and the Caribbean	**28.9**	**28.7**	**28.2**	**27.7**	**27.1**	**−2.7**	**−2.6**	**−2.1**	**−1.7**	**−1.3**	**54.5**	**57.8**	**60.5**	**64.7**	**65.7**
South America[20]	31.3	30.4	30.8	30.4	29.5	−3.7	−4.0	−5.1	−4.0	−3.3	41.4	43.5	45.8	59.6	60.9
CAPDR[21]	18.6	18.8	19.1	18.9	19.0	−0.4	−0.4	−0.4	−0.3	−0.3	37.4	39.0	40.9	41.2	41.8
Caribbean															
Tourism dependent[22]	24.5	25.1	25.5	25.1	24.6	2.5	4.3	3.5	2.3	2.1	87.9	85.0	83.8	82.8	80.7
Commodity exporters[23]	31.7	29.4	29.3	28.5	28.6	−4.8	−5.1	−4.4	−2.8	−2.1	50.5	65.0	65.8	65.4	66.0
Eastern Caribbean Currency Union[17,24]	25.5	27.0	24.9	25.3	24.7	2.0	1.7	2.6	0.5	0.5	77.0	74.8	73.2	73.1	71.8

Sources: IMF, World Economic Outlook database; and IMF staff calculations and projections.

[1]Definitions of public sector accounts vary by country, depending on country-specific institutional differences, including on what constitutes the appropriate coverage from a fiscal policy perspective, as defined by the IMF staff. All indicators reported on fiscal year basis. Regional aggregates are fiscal year US dollar nominal GDP-weighted averages unless noted otherwise. Consistent with the IMF *World Economic Outlook*, the cutoff date for the data and projections in this table is April 2, 2018.

[2]Includes central government, social security funds, nonfinancial public corporations, and financial public corporations.

[3]For cross-country comparability, expenditure and fiscal balances of the United States are adjusted to exclude the items related to the accrual basis accounting of government employees' defined- benefit pension plans, which are counted as expenditure under the 2008 System of National Accounts (2008 SNA) recently adopted by the United States, but not for countries that have not yet adopted the 2008 SNA. Data for the United States in this table may thus differ from data published by the US Bureau of Economic Analysis.

[4]The Commonwealth of Puerto Rico is classified as an advanced economy. It is a territory of the United States, but its statistical data are maintained on a separate and independent basis.

[5]Primary expenditure and primary balance include the federal government and provinces. Gross debt is for the federal government only.

[6]Nonfinancial public sector, excluding the operations of nationalized mixed-ownership companies in the hydrocarbon and electricity sectors.

[7]Nonfinancial public sector, excluding Petrobras and Eletrobras, and consolidated with the Sovereign Wealth Fund (SWF). The definition includes Treasury securities on the central bank's balance sheet, including those not used under repurchase agreements (repos). The national definition of general government gross debt includes the stock of Treasury securities used for monetary policy purposes by the central bank (those pledged as security in reverse repo operations). It excludes the rest of the government securities held by the central bank. According to this definition, general government gross debt amounted to 69.9 percent of GDP at end-2016.

[8]Nonfinancial public sector reported for primary balances (excluding statistical discrepancies); combined public sector including Ecopetrol and excluding Banco de la República's outstanding external debt reported for gross public debt.

[9]Public sector gross debt includes liabilities under advance oil sales, which are not treated as public debt in the authorities' definition. In late 2016, the authorities changed the definition of debt to a consolidated basis; both the historical and projection numbers are now presented on a consolidated basis.

[10]Central government only.

[11]Primary expenditures for Suriname exclude net lending.

[12]For Uruguay, public debt includes the debt of the central bank, which increases recorded public sector gross debt.

[13]See Annex 2.1 for details on Venezuela's data.

[14]Gross debt for Belize includes both public and publicly guaranteed debt. For 2017, the public sector primary balance projection includes a one-off capital transfer of 2.5 percent of GDP. Excluding this one-off capital transfer, a primary surplus of 1.3 percent of GDP is projected.

[15]General government. The outcome for the Dominican Republic in 2015 reflects the inclusion of the grant element of the debt buyback operation with Petróleos de Venezuela, S.A. amounting to 3.1 percent of GDP.

[16]Ratios to GDP are based on the "2007-base" GDP series. Fiscal data cover the nonfinancial public sector excluding the Panama Canal Authority.

[17]Central government for primary expenditure and primary balance; public sector for gross debt. For Jamaica, the public debt includes central government, guaranteed, and PetroCaribe debt.

[18]Overall and primary balances include off-budget and public-private partnership activities for Barbados central government and the nonfinancial public sector. Gross debt includes the National Insurance Scheme holdings.

[19]Central government for primary expenditure. Consolidated public sector for primary balance and gross debt.

[20]Simple average of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela.

[21]Simple average of Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

[22]Simple average of The Bahamas, Barbados, Jamaica, and Eastern Caribbean Currency Union (ECCU) members.

[23]Simple average of Belize, Guyana, Suriname, and Trinidad and Tobago.

[24]ECCU members are Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines, as well as Anguilla and Montserrat, which are not IMF members.

Annex Table 2.3. Western Hemisphere: Selected Economic and Social Indicators, 2008–17[1]

	2017				Average 2008–17					2017		Latest Available		
	GDP[2] (Billions of US dollars)	Population (Million)	GDP per Capita (PPP US dollars)	Nominal Output Share of LAC Region[2] (Percent)	Real GDP Growth (Percent)	CPI Inflation[3] (Percent)	Current Account (Percent of GDP)	Domestic Saving (Percent of GDP)	Trade Openness[4] (Percent of GDP)	Gross Reserves[5] (Percent of GDP)	Unemployment Rate (Percent)	Poverty Rate[6]	Gini Coefficient[6]	Sovereign Credit Rating[7]
North America														
Canada	1,652.4	36.7	48,265	. . .	1.7	1.6	−2.8	21.1	63.0	5.2	6.3	. . .	34.7	AAA
Mexico	1,149.2	123.5	19,903	20.9	2.1	4.2	−1.6	21.6	65.8	15.3	3.4	11.7	51.8	BBB+
United States	19,390.6	325.9	59,501	. . .	1.4	1.6	−2.7	17.1	28.6	0.6	4.4	. . .	48.1	. . .
Puerto Rico[8]	98.8	3.2	37,339	. . .	−1.7	1.4	. . .	. . .	. . .	. . .	12.5	. . .	. . .	. . .
South America														
Argentina[9]	637.7	44.1	20,876	11.6	1.7	. . .	−1.2	16.4	31.0	8.7	8.4	4.5	42.1	B
Bolivia	37.1	11.1	7,547	0.7	5.0	5.2	1.5	21.6	69.8	27.6	4.0	13.5	47.3	BB−
Brazil	2,055.0	207.7	15,603	37.4	1.6	6.1	−2.5	17.1	23.6	18.2	12.8	9.2	51.7	BB−
Chile	277.0	18.4	24,537	5.0	3.0	3.1	−1.7	22.4	65.3	14.1	6.7	2.9	48.2	A+
Colombia	309.2	49.3	14,485	5.6	3.6	4.1	−3.6	20.5	35.7	15.2	9.3	13.5	52.5	BBB
Ecuador	102.3	16.8	11,482	1.9	3.4	3.7	−0.2	26.7	55.3	2.4	4.6	10.4	47.6	B−
Guyana	3.6	0.8	8,161	0.1	3.8	2.5	−8.3	8.7	122.1	16.1	. . .	. . .	. . .	. . .
Paraguay	29.6	7.0	9,826	0.5	4.9	4.5	0.5	17.2	95.1	25.4	5.7	8.8	49.3	BB
Peru	215.2	31.8	13,334	3.9	4.9	3.1	−3.0	21.2	49.5	29.7	6.7	9.0	44.7	BBB+
Suriname	3.3	0.6	14,606	0.1	1.6	13.2	1.8	. . .	103.1	12.7	7.7	. . .	. . .	B
Uruguay	58.4	3.5	22,371	1.1	4.1	7.9	−1.3	18.6	57.8	27.3	7.4	1.9	42.6	BBB
Venezuela[10]	210.1	31.4	12,114	3.8	−2.9	353.4	1.7	22.8	47.3	4.6	27.1	33.1	38.1	SD
Central America														
Belize	1.9	0.4	8,324	0.0	2.2	1.0	−5.9	13.6	125.4	16.8	9.0	. . .	. . .	B−
Costa Rica	58.1	5.0	16,877	1.1	3.5	4.4	−4.3	15.3	68.4	12.3	8.1	4.5	50.6	BB
El Salvador	28.0	6.4	8,948	0.5	1.4	1.7	−4.0	9.9	66.5	12.7	6.9	10.0	42.6	B−
Guatemala	75.7	16.9	8,145	1.4	3.2	4.4	−1.2	12.9	57.4	15.5	. . .	36.9	50.6	BB
Honduras	23.0	8.3	5,562	0.4	3.2	5.2	−6.6	18.0	85.6	20.5	5.6	36.5	52.5	BB−
Nicaragua	13.7	6.2	5,849	0.2	4.2	6.3	−9.9	19.9	102.0	20.1	6.1	16.1	51.5	B+
Panama	61.8	4.1	25,351	1.1	6.6	3.1	−8.6	32.5	126.3	4.4	6.0	7.5	50.2	BBB
Caribbean														
The Bahamas	11.6	0.4	31,139	0.2	−0.5	1.7	−12.2	16.5	74.6	11.4	10.1	. . .	. . .	BB+
Barbados	5.0	0.3	18,664	0.1	0.1	4.2	−7.5	8.7	89.4	7.7	9.8	. . .	. . .	CCC
Dominican Republic	75.0	10.2	16,944	1.4	4.9	4.2	−4.6	19.9	54.2	9.2	5.4	9.4	47.7	BB−
Haiti	8.6	11.0	1,815	0.2	1.8	8.6	−3.9	25.3	70.3	26.2	. . .	. . .	. . .	. . .
Jamaica	14.4	2.8	9,163	0.3	−0.1	7.9	−8.5	13.4	84.6	25.5	12.2	. . .	. . .	B
Trinidad and Tobago	21.6	1.4	31,367	0.4	−0.3	6.7	11.0	24.0	102.0	41.1	4.0	. . .	. . .	BBB−
Eastern Caribbean Currency Union[11]	6.6	0.6	18,341	0.1	1.0	1.4	−4.1	16.3	113.2	24.6	. . .	. . .	. . .	. . .
Antigua and Barbuda	1.5	0.1	26,232	0.0	−0.1	1.7	0.5	24.8	139.9	20.6	. . .	. . .	. . .	. . .
Dominica	0.6	0.1	11,102	0.0	0.5	0.9	−6.5	11.5	109.1	37.9	. . .	. . .	. . .	. . .
Grenada	1.1	0.1	14,926	0.0	1.7	1.3	−4.5	14.2	113.7	17.9	. . .	. . .	. . .	. . .
St. Kitts and Nevis	0.9	0.1	26,845	0.0	2.3	1.2	−9.7	18.3	116.3	39.4	. . .	. . .	. . .	. . .
St. Lucia	1.7	0.2	14,450	0.0	1.5	1.4	2.2	19.7	118.1	19.1	. . .	. . .	. . .	. . .
St. Vincent and the Grenadines	0.8	0.1	11,491	0.0	0.2	1.5	−17.7	−3.3	91.8	22.7	. . .	. . .	. . .	. . .
Latin America and the Caribbean	**5,492.9**	**619.8**	**15,785**	**100.0**	**2.1**	**4.9**	**−2.0**	**19.3**	**42.5**	**15.7**	. . .	**12.8**	**49.5**	. . .

Sources: IMF, International Financial Statistics database; IMF, World Economic Outlook database; Inter-American Development Bank (IDB); national authorities; Socio-Economic Database for Latin America and the Caribbean (CEDLAS and World Bank); and IMF staff calculations.

Note: CPI = consumer price index; PPP = purchasing power parity.

[1]Estimates may vary from those reported by national authorities on account of differences in methodology and source. Regional aggregates are purchasing-power-parity GDP-weighted averages, except for regional GDP in US dollars and population where totals are computed. CPI series exclude Argentina and Venezuela. Consistent with the IMF, *World Economic Outlook*, the cut-off date for the data and projections in this table is April 2, 2018.

[2]At market exchange rates.

[3]End-of-period, 12-month percent change.

[4]Exports plus imports of goods and services in percent of GDP.

[5]Latest available data from IMF, International Financial Statistics database.

[6]Data from Socio-Economic Database for Latin America and the Caribbean (SEDLAC), based on the latest country-specific household surveys. In most cases, the surveys are from 2014 and 2015. Poverty rate is defined as the share of the population earning less than US$2.5 a day. For LAC, poverty is defined as share of population earning less than US$3.1 a day from the IDB. For Venezuela, SEDLAC estimates for the poverty rate ends in 2006 and the official estimate for the poverty rate for 2015 (first semester) is reported in the table. However, this series has not been publicly reported since mid-2015. Estimates of the poverty rate from ENCOVI (indicator estimated by Universidad Simón Bolívar, la Universidad Central de Venezuela, and la Universidad Católica Andrés Bello) report a sharp increase in poverty rate from 48.4 percent in 2014 to 87 percent in 2017. In the past, ENCOVI estimates tend to show higher poverty rates than the official data—for example, 73 percent in 2015 versus 33.1 according to the Instituto Nacional de Estadística (INE); and 48.4 percent in 2014 versus 32.6 percent according to INE. Gini index for aggregate is population-weighted average from the IDB. Data for the United States and Canada are from 2016 and come from the US Census Bureau and Statistics Canada, respectively. For Venezuela, Gini index is from INE.

[7]Median of long-term foreign currency ratings published by Moody's, Standard & Poor's, and Fitch.

[8]The Commonwealth of Puerto Rico is classified as an advanced economy. It is a territory of the United States but its statistical data are maintained on a separate and independent basis.

[9]See Annex 2.1 for details on Argentina's data.

[10]See Annex 2.1 for details on Venezuela's data.

[11]Due to historical data limitations, Eastern Caribbean Currency Union countries show the average from 2014 to 2017 for current account balance, domestic saving, and trade openness.

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3. Credibility, Communication, and Monetary Policy Procyclicality in Latin America

The inflationary impact of large and persistent exchange rate depreciation has prompted a reexamination of the monetary policy response of central banks in Latin America in the face of large external shocks. How monetary policy should respond to such shocks and how these decisions should be communicated publicly are key questions. This chapter argues that central bank credibility—reflected by the degree of anchoring in inflation expectations—plays a critical role in policy decisions in response to these shocks and can benefit immensely from transparency and clear communication. In this context, stronger transparency frameworks and communication strategies—that is, how openly and how well the central bank communicates in guiding markets—are found to be associated with more predictable policy decisions and a better anchoring of inflation expectations. This, in turn, can provide greater room to maneuver interest rate policy in the face of transitory inflation shocks through enhanced central bank credibility.

Following a series of terms-of-trade and other supply shocks, in the last five years the currencies of the LA5—*Brazil, Chile, Colombia, Mexico, and Peru*—were subject to some of the largest depreciations in decades.[1] This led to inflation rising above central bank targets amid weaker economic activity and wider output gaps. However, the rise in inflation was less than experienced in previous episodes, reflecting the strengthening of the monetary policy frameworks over the past two decades, which helped contain the exchange rate pass-through to consumer prices (see Chapter 3 of the April 2016 *Regional Economic Outlook: Western Hemisphere*). Nevertheless, tensions regarding monetary policy and trade-offs became evident. Central banks had to decide whether to increase policy rates to stop persistently high inflationary pressures and prevent inflation expectations from becoming unanchored, or to lower rates to offset negative income effects resulting from the reduction in purchasing power associated with weaker terms of trade (see Chapter 2 of the April 2016 *Regional Economic Outlook: Western Hemisphere*). LA5 central banks, with the notable exception of Chile, opted to increase policy interest rates (Figure 3.1). Raising rates when growth is weak amounted to some degree of procyclicality in the monetary policy response (Végh and others 2017).[2]

Several factors might have contributed to the procyclicality of monetary policy.[3] Central bank credibility—reflected by the degree of anchoring in inflation expectations—is likely at the top of the list. Specifically, this chapter argues that the strength of the anchor that held medium-term expectations to the target when these shocks hit was most influential in policy decisions. Among the LA5 economies, except for Chile, survey-based medium-term inflation expectations remained above the midpoint of the central bank targets for a prolonged period (Figure 3.2). Similar dynamics are observed when looking at inflation expectations obtained from financial instruments (Box 3.1).[4]

But even starting with well-anchored expectations does not ensure that they will stay that way once

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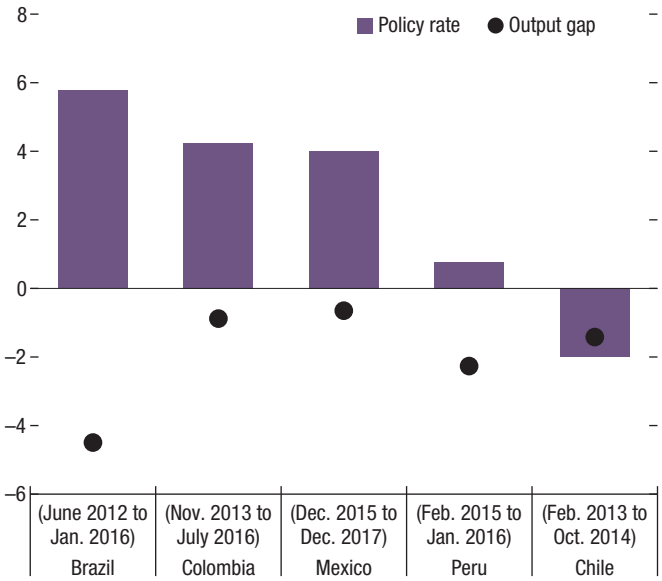
[1]The analysis focuses on these economies, which are the largest in the region, with close to two decades of implementing an inflation-targeting monetary policy framework. This in turn allows the analysis to have the largest time coverage possible and to track the evolution of LA5 central bank frameworks.

[2]For an earlier look at the cyclicality of monetary policy, see Végh and Vuletin (2013) and Cordella and others (2014).

[3]Other factors include the degree of financial dollarization, central bank independence, and/or governance and institutional quality (Végh and others 2017). Delays in fiscal consolidation amid widening external imbalances could have also contributed to the procyclicality of monetary policy in some LA5 economies.

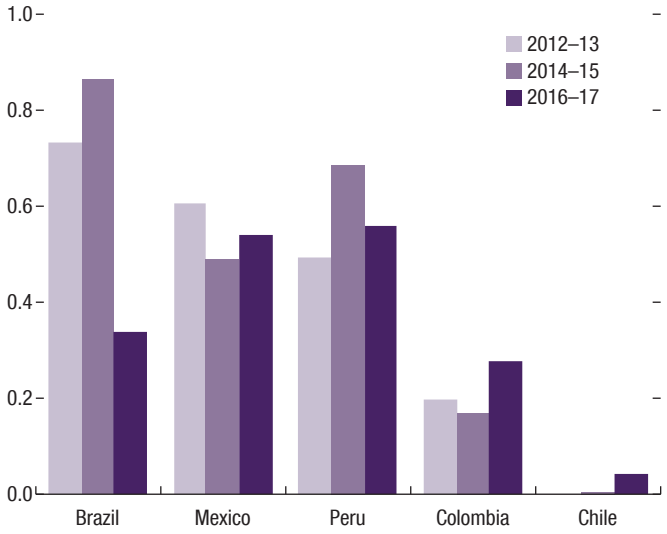
[4]Box 3.1 provides a comparison between survey-based and market-based inflation expectations.

Figure 3.1. Changes in Policy Interest Rates and Output Gap
(Percentage points; inflation trough to peak)



Sources: Haver Analytics; IMF, World Economic Outlook database; national authorities; and IMF staff calculations.

Figure 3.2. Absolute Deviation of Medium-Term Inflation Expectations from Target
(Percentage points)



Sources: Consensus Economics; Haver Analytics; and IMF staff calculations.

inflation is outside the central bank's target range for an extended period. This raises the question of whether effective communication by central banks would help offset the need for monetary policy tightening when inflation and/or inflation expectations are outside the central bank's target range. This chapter argues that instrumental to implementing a sustained countercyclical policy response is a sound communication strategy by helping anchor inflation expectations. Specifically, central banks should provide clear public guidance about the conditional future direction of monetary policy and the balance of risks to inflation reaching the target within the central bank's policy horizon.

Against this backdrop, this chapter presents evidence on the link between central bank credibility and the implementation of countercyclical monetary policy. Comparing the behavior of inflation expectations across a sample of 20 economies with an inflation-targeting framework in response to protracted terms-of-trade shocks, the chapter highlights that monetary policy is less procyclical in economies with more stable inflation expectations. It then explores the role of transparency and communication in boosting central bank credibility, and shows that there is a clear link between how openly and clearly central banks communicate and the anchoring of inflation expectations. Finally, using text-analysis tools, the chapter analyzes the content of central banks' communications—for example, what they communicate in press statements and minutes—and assesses their effect on central bank credibility and predictability.

Central Bank Credibility and the Cyclicality of Monetary Policy

The private sector's expectation formation process, including the degree of volatility in these expectations, is strongly influenced by the perceived credibility of a central bank policy action. In principle, policymakers could have "looked through" the price-level impact of recent terms-of-trade shocks and allowed these to work their way through headline inflation. However, the protracted effect of these shocks on inflation could

impact the public's expectations, depending on the degree of anchoring, giving rise to second-round effects on inflation. Central banks concerned about poorly anchored inflation expectations damaging the credibility of the inflation-targeting monetary policy regime would be compelled to take policy action.

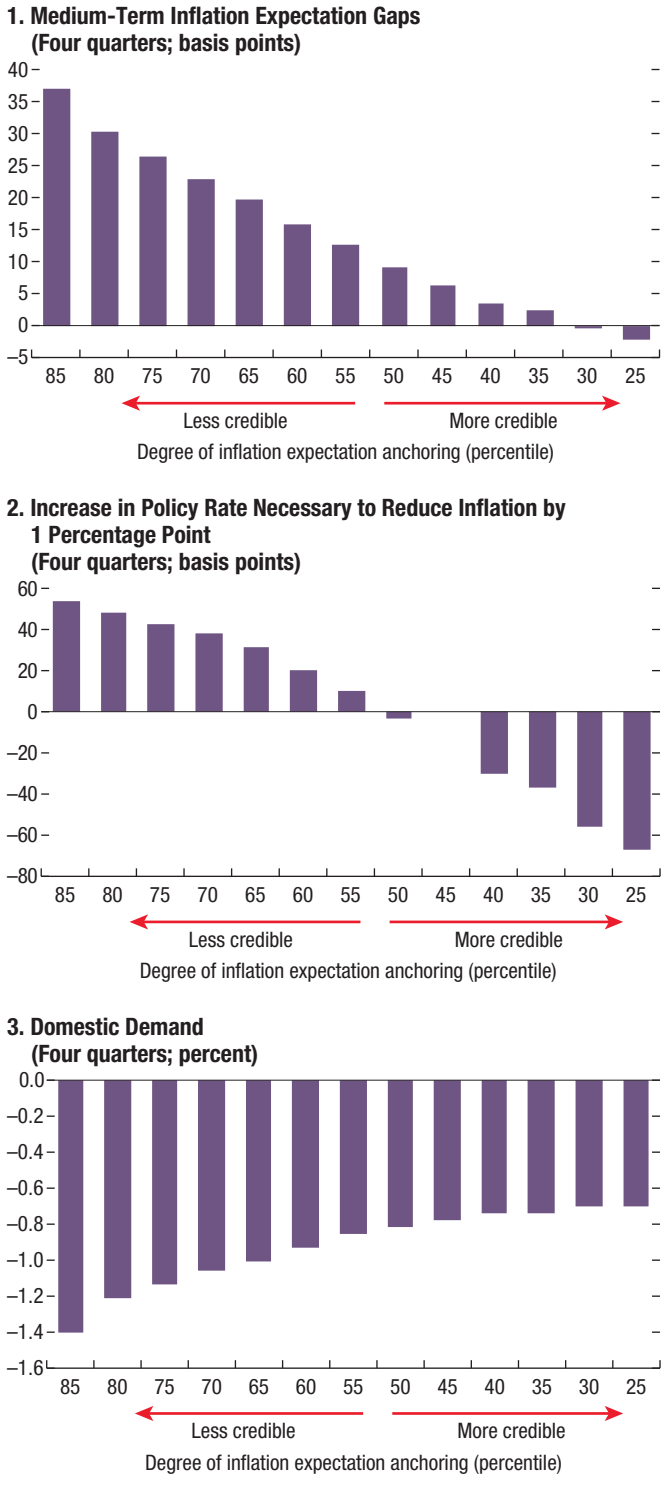
In this context, there are high costs to allowing inflation expectations to drift away from the target for a prolonged period. To illustrate the generality of this observation, the response of gaps in medium-term inflation expectations is estimated—that is, the absolute difference between inflation expectations and the central bank target—for a large and protracted inflationary shock in a sample of 20 inflation-targeting economies (Figure 3.3, panel 1). Each bar shows the average cumulative gap in inflation expectations over four quarters in response to a 20 percent decline in the terms of trade. These responses are based on the estimation of a panel vector autoregression with interaction terms (IPVAR), and vary depending on the size of the inflation expectation gap—a measure of central bank credibility (Demerzis, Marcellino, and Viegi 2012)—in the year before the shock.[5]

Results suggest that in an economy with less-anchored expectations, inflation expectation gaps widen substantially following the terms-of-trade shock. For example, an economy with an initial distance between medium-term inflation expectations and the central bank target that is above the 75th percentile of the distribution saw a widening of the expectation gap of 30 basis points following a terms-of-trade shock.[6] In contrast, economies with the most credible central banks (that is, inflation gaps below the 50th percentile) saw no significant widening of inflation expectation gaps following the same shock.

[5]As discussed in Towbin and Weber (2013), the use of interaction terms in panel vector autoregressions (PVARs) is a simple way to allow for deterministically varying coefficients across time and countries. The framework thereby provides an alternative to the stochastically time-varying coefficient frameworks often employed in single-country VARs. See Annex 3.1 for technical details.

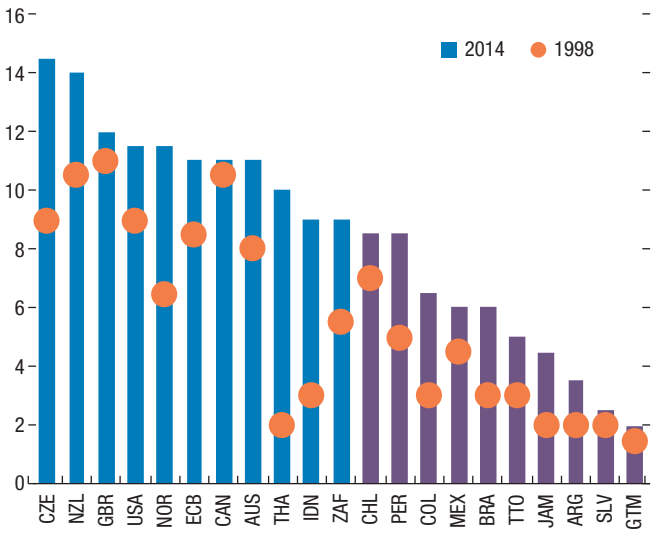
[6]This result is in line with Gelos and Ustyugova (2017), who find that when inflation is already relatively high, commodity price shocks have a substantially higher pass-through to domestic inflation.

Figure 3.3. Cumulative Response of 20 Inflation-Targeting Economies to a 20 Percent Reduction in the Terms of Trade, 2000–17



Sources: Consensus Economics; Haver Analytics; IMF, International Financial Statistics database; national authorities; and IMF staff calculations.

Figure 3.4. Central Bank Transparency Index
(Index)



Source: Dincer and Eichengreen (2014).
Note: Purple bars refer to Latin American and Caribbean countries. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

The degree of central bank credibility at the onset of the shock also appears to influence the policy response (Figure 3.3, panel 2). Where the deterioration of inflation expectations is greater, this is accompanied by a more aggressive increase in policy rates. On the other hand, economies with better initial anchoring of inflation expectations lowered their policy rates despite higher observed inflation. The response of domestic demand obtained from the IPVAR framework illustrates that the higher degree of procyclicality in countries with lower central bank credibility exacerbated the effect of the terms-of-trade shock on economic activity (Figure 3.3, panel 3).

If well-anchored expectations are crucial to determining the way central banks respond to transitory inflationary shocks, how should they go about anchoring them more solidly? A large body of literature has found that expectations get anchored gradually as central banks gain credibility by delivering price stability (Bordo and Siklos 2015). In addition, the next section presents evidence that suggests a strong relationship between central bank transparency and credibility.

Against this backdrop, the analysis will show that a credible and transparent policy framework is essential for conducting countercyclical monetary policy.

Central Bank Transparency and Credibility

In terms of policy frameworks, the move toward inflation-targeting regimes in Latin America over the past three decades has coincided with better-anchored inflation expectations, but as the previous section showed, there is still scope for improving these frameworks. Another aspect of these evolving frameworks has been the degree of central bank transparency that, despite significant improvements, falls below that of comparator countries (Figure 3.4).[7] Transparency provides the public with a better understanding of the central bank's objectives and the factors that motivate its monetary policy decisions. This in turn enables public accountability of independent central banks, and greater credibility over time (Blattner and others 2008). This section shows empirically that strong transparency frameworks have gone hand in hand with greater central bank credibility.

While there is no agreement on what constitutes a best-practice transparency framework, the following are thought to form essential elements: (1) a formal policy objective such as price stability (including an explicit quantification of the objective); (2) an assessment of the current state of the economy; (3) an explanation of policy decisions; (4) a forward-looking analysis; and (5) publication of the economic data and forecasts used in the central bank's assessment.

The transparency frameworks of LA5 central banks are characterized by policy rate decisions

[7]This chapter employs the Dincer and Eichengreen (2014) index of central bank transparency, which covers five categories, including the political, economic, procedural, policy, and operational aspects of central bank transparency. This index does not control for the quality of central bank publications, which creates some degree of uncertainty around the reported transparency scores. In this context, rankings based on this index reflect relative (and not absolute) performance, and results are presented relative to the range of transparency scores across peers.

accompanied by *press releases* that explain the decision and provide an assessment of the balance of risks for inflation. Further, the baseline scenarios and balance of risks are delineated in *monetary policy reports* published quarterly. Alongside these reports, central banks release the data used for their monetary policy decisions (output gaps, inflation, inflation expectations, wages, employment, and GDP). All the LA5 central banks, except the Central Reserve Bank of Peru, release *minutes* of their policy meetings before the subsequent meeting. Names are not assigned to transcribed comments, and votes are attributed only in the case of Chile and Brazil. As part of the accountability component of transparency frameworks, central bank governors are summoned to periodic *parliamentary hearings* (Brazil, Chile, Colombia, Mexico), and some central banks have started to publish *transcripts* of monetary policy decision meetings with a long lag (Chile).[8] Deficiencies in the frameworks arise as a result of gaps in operational transparency (due to the lack of assessments of the central bank's forecasting and operational performance).

Transparency about monetary policy objectives, outlook, past policy misses, and possible future policy responses reduces policy uncertainty and enhances the ability of central banks to manage expectations (Blinder and others 2008). This in turn implies that central bank transparency is associated with higher central bank credibility and lower monetary policy procyclicality. The responses of medium-term inflation expectation gaps (the measure of central bank credibility used here), policy rates, and domestic demand to a terms-of-trade shock can be examined within an IPVAR framework, akin to the one employed in the previous section. Conditional impulse responses are obtained by allowing the coefficients of the IPVAR to vary with the degree of central bank transparency.[9]

While admittedly this framework does not allow for establishing a causal relationship between transparency and credibility, results point toward a strong link between the two. Figure 3.5 (panel 1) displays the response of medium-term inflation expectation gaps conditional on central bank transparency. Among a sample of 20 inflation-targeting economies, lower transparency is associated with inflation expectation gaps that widen significantly in response to inflationary shocks. In line with the literature, the analysis finds that the gains from increasing central bank transparency display diminishing returns.[10] The largest benefits accrue mainly at low levels of transparency. This suggests that many of Latin America's central banks, characterized by lower levels of transparency, stand to benefit from expanding their transparency frameworks.

Do better-anchored inflation expectations tied to more transparent central banks allow central banks to implement countercyclical monetary policy? The analysis here shows that the degree of transparency is associated with the procyclicality of monetary policy following a terms-of-trade bust (Figure 3.5, panel 2). Specifically, a more sizable and protracted policy rate tightening in reaction to the shock occurs in economies with less-transparent central banks. Central banks with the current average transparency score of LA5 central banks increased the policy rate by 50 basis points for each 100 basis point increase in inflation following the decline in the terms of trade. In contrast, a country with Australia's current level of transparency kept the policy rate unchanged.[11] This monetary tightening increases macroeconomic volatility, since inflation

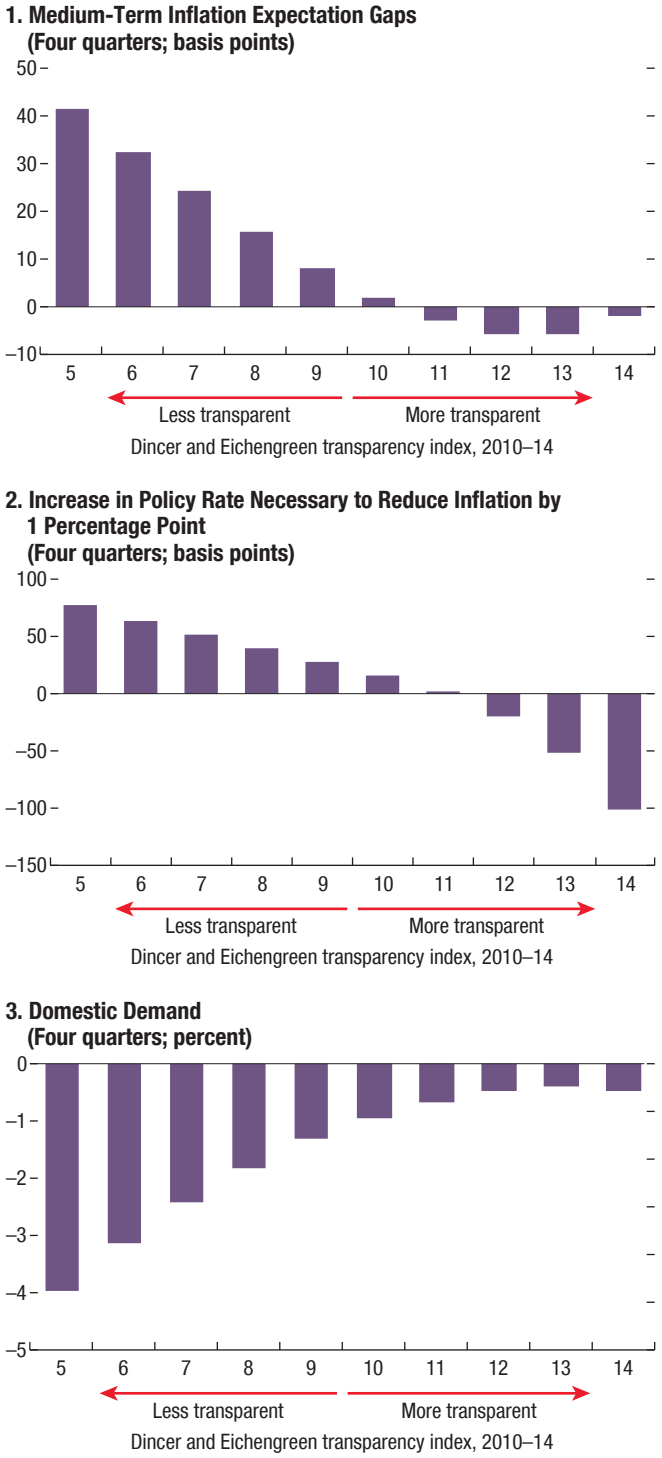
[8]Box 3.2 provides a detailed description of the transparency framework of the Central Bank of Chile, one of the most transparent central banks in the region.

[9]See Annex 3.1 for details.

[10]Looking at a different measure of credibility allows for extending this analysis to a broader sample. Brito, Carrière-Swallow, and Gruss (2018), in a sample of 44 countries, show that there is a strong relationship between central bank transparency and disagreement among professional forecasters of inflation—another common proxy for central bank credibility. Raising transparency from low levels was associated with large reductions in forecast disagreement even in countries that never adopted an inflation-targeting framework.

[11]Unless otherwise noted, transparency scores refer to 2014, the latest year for which the Dincer and Eichengreen (2014) transparency score is available. This could provide an outdated view for some central banks, and would not capture recent improvements in transparency frameworks.

Figure 3.5. Cumulative Response of 20 Inflation-Targeting Economies to a 20 Percent Reduction in the Terms of Trade, 2000–17



Sources: Consensus Economics; Dincer and Eichengreen (2014); Haver Analytics; IMF, International Financial Statistics database; national authorities; and IMF staff calculations.
Note: Dincer and Eichengreen transparency index ranges from 1 to 15, with 15 being the most transparent.

and output move in opposite directions after a terms-of-trade decline (Figure 3.5, panel 3).

While there is scope for LA5 economies to continue strengthening their transparency framework, there may be more to gain from focusing on the quality of their communication, rather than on the quantity. The next section presents an analysis that tries to identify a causal relationship between transparency and credibility by focusing on the communication components of central bank transparency and measuring their impact on market expectations about the future path of interest rates and medium-term inflation.

Central Bank Communication: From Quantity to Quality

Within a given transparency framework, a sound communication strategy by the central bank should strengthen the signal-to-noise ratio. In this regard, it is not a matter of how much information is disseminated, but of the quality of the information provided to the public. This section looks at the communication strategies pursued by LA5 central banks and their effects on central bank predictability and credibility in the last eight years, a period characterized by a series of large terms-of-trade and other supply-side shocks.[12]

What constitutes an effective communication strategy? Blinder (2009) posits that " . . . successful central bank communication efforts should make policy more predictable, and market expectations about future short-term rates more accurate." To examine this empirically, short-term central bank predictability can be measured using surveys of financial market analysts that are gathered the day before each monetary policy decision. Analysts are asked about their expectations regarding the outcome of the upcoming monetary policy decision. The difference between the expectation and the outcome could be viewed as a forecast error or monetary policy surprise. Large forecast

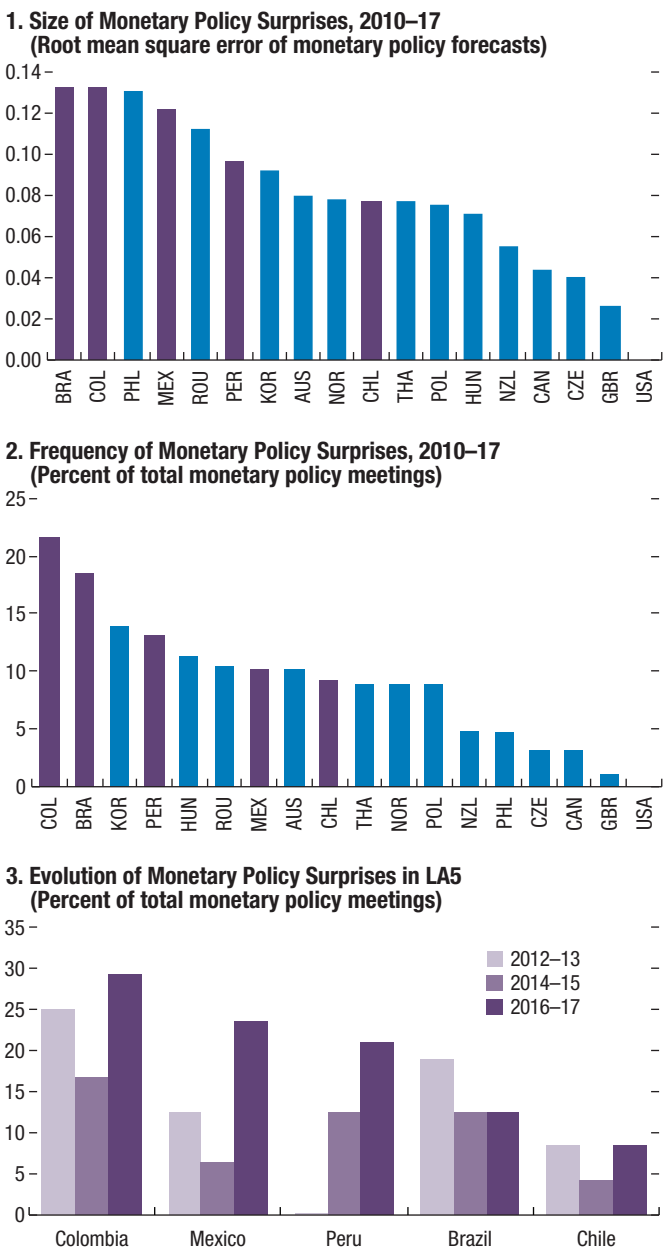
[12]More specifically, the section looks at the structure and content of press releases communicating policy decisions and the minutes of the monetary policy meeting.

errors about future short-term rates could be a sign of deficiencies in the communication framework.[13]

Short-term predictability of interest rate decisions is low in Latin America (Figure 3.6, panel 1), with the notable exception of Chile. Forecast errors for Colombia and Brazil are the largest in a sample of 18 inflation-targeting economies. Monetary policy surprises are also most frequent in Latin America. Since 2010, for example, the Central Bank of Colombia "surprised" markets once every five meetings (Figure 3.6, panel 2). Low policy predictability could reflect greater volatility of inflationary shocks affecting the region. However, the frequency of monetary policy surprises has increased in recent years for all LA5 central banks except that of Brazil, despite previous inflationary shocks having mostly dissipated (Figure 3.6, panel 3). As will be argued below, the quality of central bank communication could bear some blame for the low policy predictability of some central banks in the region.[14]

An important measure of central bank communication centers around what it publishes. The length of the central bank documents is a quantifiable characteristic that may reflect both the level of detail that they want to transmit to the public and their efforts to increase procedural transparency (Taborda 2015). Figure 3.7 depicts the trends in recent years in the length of press releases that accompany policy decisions in LA5 economies. Mexico and Brazil exhibit big changes in recent years, with both central banks devoting more text to the explanation of policy decisions and to the assessment of risks to the inflation outlook. In both cases, longer press releases came as result of a push to improve policy transparency. In the case of Brazil, statements prior to 2016 did not provide an explanation about the factors influencing the decisions of the Monetary Policy Committee.[15]

Figure 3.6. Monetary Policy Predictability



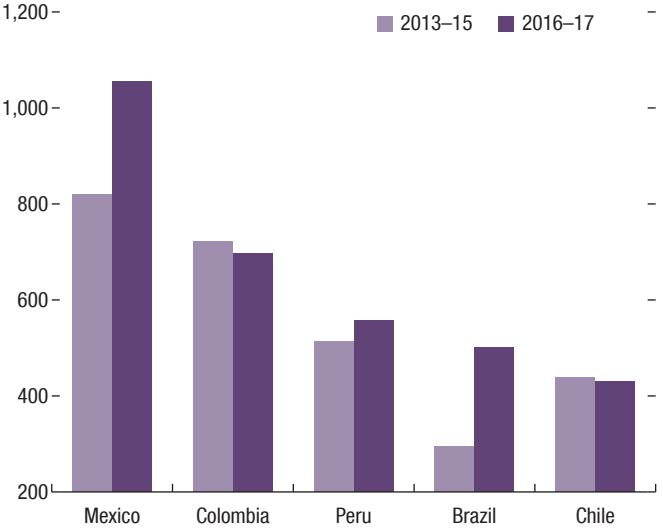
Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

[13]While short-term predictability is important and certainly forms part of a central bank's objectives, predictability of monetary policy decisions should be seen in a broader context and over extended periods.

[14]Fracasso, Genberg, and Wyplosz (2003) develop a number of indicators of the quality of inflation reports for 19 countries and find that higher-quality reports are associated with smaller policy surprises. In particular, three subjective indicators—how convincing the report is judged to be, how well it reflects the expertise of the staff, and the quality of the writing style—increase the predictability of interest rate decisions.

[15]The explanation for policy decisions was presented in the minutes of the monetary policy meetings, which are published with a two-week lag.

Figure 3.7. Text Length of Central Bank Press Releases, 2013–17
(Average word count)



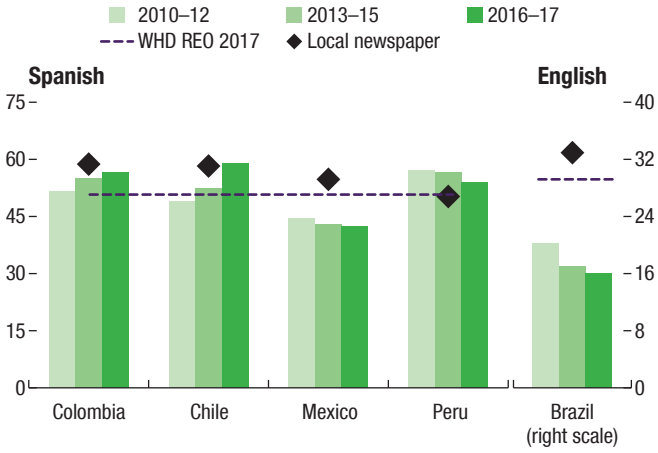
Source: IMF staff calculations.

Of course, more words does not necessarily mean clearer communication. Central banks could be verbose without providing any meaningful information. Language complexity can have significant bearing on whether or not the text is readable or comprehensible. Figure 3.8 (panel 1) reports average readability scores for LA5 central bank press releases.[16] The press statement scores are shown against benchmarks to compare clarity of communication. It is apparent that an improvement in the clarity of communication has taken place in Chile, and to a lesser extent in Colombia. These indices suggest that press statements in Chile, Colombia, and Peru use the same language complexity as the business section of local newspapers, while press statements from the central banks in Brazil and Mexico use more

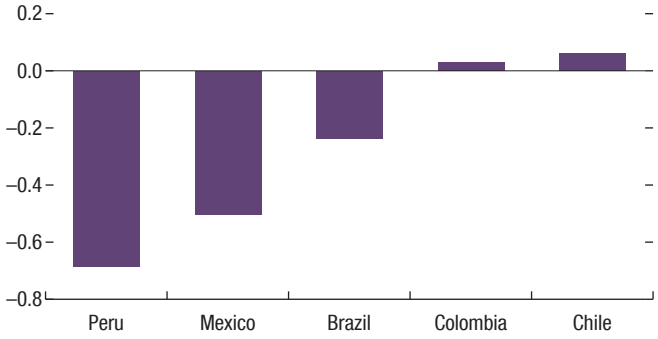
[16]The Spanish press releases for Chile, Colombia, Mexico, and Peru and the English translations for Brazil are used. The Flesch reading ease (RE) index is used for Brazil, which is defined as RE = 206.835 – (1.015 x ASL) – (84.6 x ASW), in which ASL = average sentence length, and ASW = average number of syllables per word. Following Taborda (2015), the Flesch-Szigriszt index for documents in Spanish is used for the other LA5 economies. That index is defined as RE = 206.835 – (ASL) – (84.6 x ASW).

Figure 3.8. Clarity of Central Bank Communication

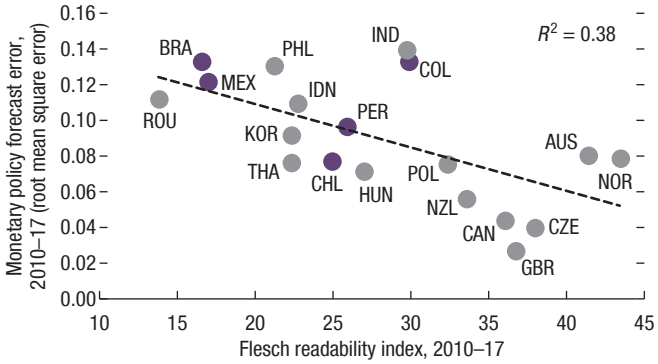
1. Readability Indices of Central Bank Press Releases[1] (Index)



2. Correlation between Text Length and Readability Scores, 2011–17 (Correlation coefficients)

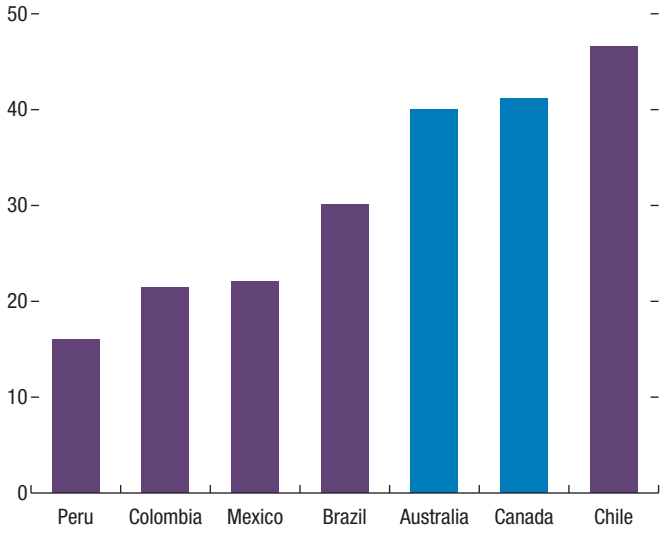


3. Clarity of Central Bank Communication and Monetary Policy Predictability[2]



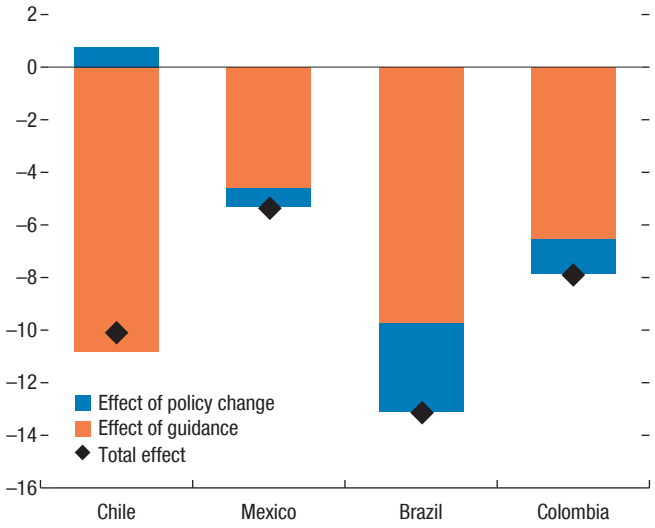
Sources: Bloomberg Finance L.P.; and IMF staff calculations.
Note: WHD REO = Western Hemisphere Department *Regional Economic Outlook*.
[1]Local newspapers correspond to the articles from the business section of *Folha International* (Brazil), *El Mercurio* (Chile), *El Espectador* (Colombia), *El Universal* (Mexico), and *El Comercio* (Peru).
[2]The chart shows the Flesch readability index for press releases in English. For Mexico, the English version of the monetary policy discussion of the inflation report was used.

Figure 3.9. Frequency of Explicit Policy Guidance in Central Bank Press Releases, 2011–17
(Percent of total press releases)



Sources: Central bank websites; and IMF staff calculations.

Figure 3.10. Effect of Unanticipated Increase in Policy Rate on Breakeven Inflation, 2011–17
(Basis points; one-day change in difference between yield on 10-year nominal and inflation-linked government bonds)



Sources: Bloomberg Finance L.P.; central bank websites; and IMF staff calculations.

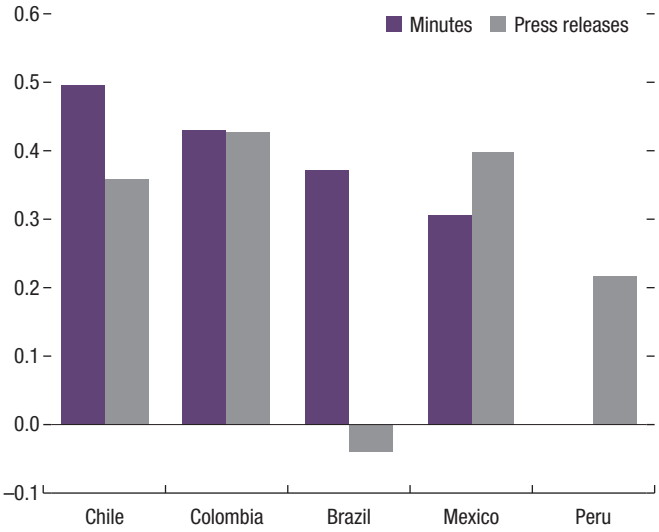
complicated language.[17] A longer central bank statement is not only more difficult to read, but also could reduce the ability of market participants to make informed judgments—highlighting the difference between the quantity and the quality of communication (Figure 3.8, panel 2). More readable press statements are also associated with lower monetary policy forecast errors (Figure 3.8, panel 3).

In terms of content, central banks can also enhance the effectiveness of monetary policy by including forward-looking language in their communications. Figure 3.9 displays the frequency of press releases with explicit guidance on the likely future direction of monetary policy. During 2011–17, with the notable exception of the Central Bank of Chile, explicit policy guidance by Latin American central banks was used infrequently. The Central Bank of Chile, on the other hand, has included a policy "bias" at a rate of once every two meetings. The use of this forward-looking language appears to be associated with higher transmission from policy rates to inflation expectations. As Figure 3.10 reports, monetary policy decisions appear to have a larger effect on long-term inflation compensation measures when accompanied with announcements that contain an explicit policy "bias." This analysis allows for a more direct identification strategy about the effects of transparency on credibility. Results suggest higher policy transparency helps build credibility, confirming the results presented in the previous section.

Guiding market expectations requires not only forward-looking communication, but also consistency between words and deeds. This track record of monetary policy communications and decisions supports the central bank's predictability and credibility. Using computational linguistic measures, first the tone in the policy discussion section in minutes can be summarized as being "hawkish" or "dovish," depending on word choice

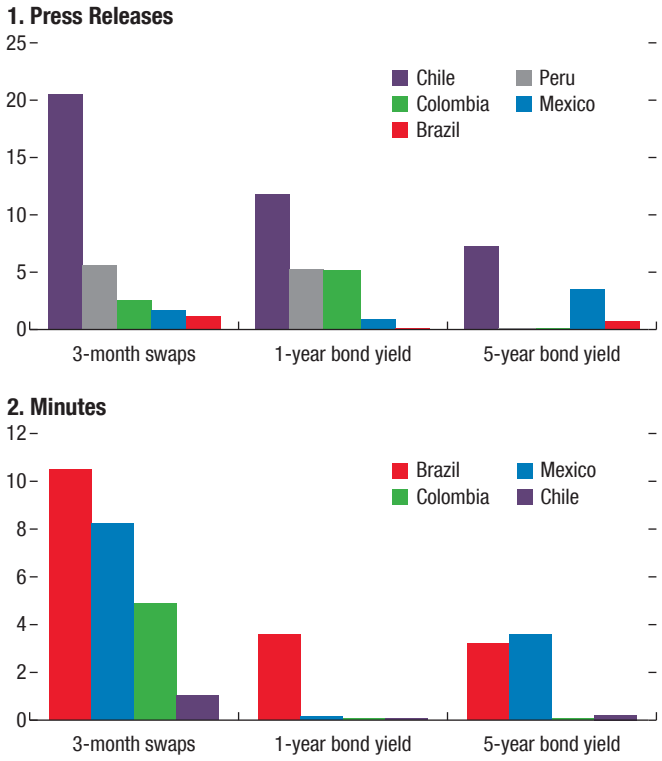
[17]Minutes are also an important central bank communication tool to shape market expectations. However, this analysis focuses on press releases, as these tend to receive more media attention, allowing central banks to reach a wider audience and not just financial market participants (Berger, Ehrmann, and Fratzscher 2011). In particular, it is the general public whose inflation expectations eventually feed into the actual evolution of inflation.

Figure 3.11. Correlation between Tone Index and Changes in Future Policy Rates, 2011–17
(One month ahead)



Sources: Central bank websites; and IMF staff calculations.

Figure 3.12. *R*-Squared from Regressions of Daily Changes in Market Rates and Tone Index, 2011–17
(Percent)



Sources: Haver Analytics; and IMF staff calculations.
Note: Panel 1 shows the difference in the adjusted *R*-squared between a regression of daily change in market rates on the unexpected monetary policy change and a regression in which the tone index of communication is included. Panel 2 shows the adjusted *R*-squared of a regression of the daily change in market rates on the tone index from minutes.

and context.[18] Second, the tone of communication can be compared to central bank policy action. Figure 3.11 displays the correlations between the tone indices and future policy rate changes. LA5 central banks tend to back up their words with deeds. More "hawkish" ("dovish") tones tend to result in a tightening (loosening) of the policy rate in subsequent meetings. The tone in central bank documents in Colombia and Mexico are reliable predictors of future policy changes. As mentioned above, this is particularly important when central bank credibility is not fully established.

Finally, markets appear to listen to the central bank, as the tone of press releases and minutes affects not only the short end of the yield curve but also medium- and long-term interest rates (Figure 3.12). In Chile, the tone in central bank press releases explains a significant share of the variation in market rates (particularly for short-term rates), while the tone in minutes has a negligible effect. This difference is due to minutes being closely aligned with the statements and the lag in their publication (Box 3.2). Market sensitivity to the tone in press releases is more muted in the other LA5 economies. However, market rates appear to be somewhat sensitive to the tone in minutes in Brazil, Mexico, and to a lesser extent in Colombia. These results indicate that, for a given level of central bank credibility, effective use of communication can provide greater room to maneuver interest rate policy in the face of transitory inflation shocks.

[18]See Annex 3.2 for a discussion of how this tone index is constructed.

Policy Takeaways

The credibility of a central bank—as measured by the absolute difference between medium-term inflation expectations and the midpoint of the central bank targets—has significant implications

for policy decisions in response to short-term inflationary shocks. Latin America's central banks present a mixed picture in this regard. Credibility, in turn, is strongly related to transparency and communication. In Latin America, central banks are at different stages of development in their transparency frameworks and communication strategies, which continue to evolve.

Based on the analysis presented in this chapter, there is scope for increasing central bank transparency in the region to enhance credibility. This would help the public better anticipate central bank decisions, and align their medium-term inflation expectations with the central bank's objective, and thus strengthen the effects of monetary policy changes. These changes, in turn, could help reduce (increase) the procyclicality (countercyclicality) of monetary policy and potential costs of policy changes depending on the shocks hitting the economy.

For transparency to increase predictability, the communication strategy plays an important role. It does not only matter what type of information central banks publish, but also how this information is communicated to the general public. The analysis in this chapter argues that central banks that communicate clearly and unambiguously tend to also be among the most predictable. In this context, it is evident that central banks that explicitly provide policy guidance (for example, an easing or tightening "bias") in the run-up to monetary policy decisions, with such statements explicitly conditional on current forecasts, considerably improve the transmission of policy rates to long-term inflation compensation measures.

While there have been significant improvements in transparency and communication frameworks in recent years, Latin America's central banks score relatively poorly across different transparency measures. Against this backdrop, the region should continue strengthening these frameworks. Steps include filling current data gaps, for example, by increasing the horizon of survey-based expectations. LA5 central banks could consider publishing the votes and comments of individual committee members, and central banks that do not publish minutes of policy meetings should consider publishing them.[19] The lag in the publication of minutes can also be reduced.[20] However, transparency and communication are not a panacea, and central banks have to tailor strategies aligned to their policy objectives.

[19]Minutes play a crucial role in central bank communication, particularly for those central banks making policy decisions by voting in a monetary policy committee, as is the case for many in the region. In particular, the minutes provide a more comprehensive explanation of the reasons for the committee's decisions and its views of the risks to the outlook; hence, they provide additional information beyond other communication tools. In this regard, Ehrmann and Fratzscher (2007) find that more active communication by committee members improves the predictability of monetary policy decisions significantly.

[20]Since August 2015, the Bank of England has published minutes alongside its interest rate decisions.

Box 3.1. Inflation Expectations from Financial Instruments in Latin America

Agents' inflation expectations are key to the decision-making of households and firms about consumption and investment. However, they are difficult to observe. One approach to obtaining inflation expectations is based on the consensus view of specialist economic forecasters, such as the surveys of professional forecasters published by central banks.

Surveys have the drawback that they are released relatively infrequently and the information is received with some time lag. Moreover, they only cover a small range of time horizons and, as identified in the literature (Ang, Bekaert, and Wie 2007; Chan, Koop, and Potter 2013), there is some bias and inertia in the responses. Instead of using surveys, the purpose of this box is to present the results of obtaining inflation expectations using prices of financial assets for a set of Latin American countries.

Inflation expectations are typically obtained by looking at the spread between conventional and index-linked bonds.[1] In Latin America, only a few countries issue inflation-linked bonds, and there is no market for inflation options at all. Due to the relatively low liquidity of inflation-linked securities in Latin American markets,[2] an alternative approach developed by Gimeno and Marqués (2012) is used here to obtain inflation expectations using standard nominal bonds in an affine framework that takes as factors the observed inflation and the parameters generated in the zero coupon yield curves. Government bond data from four countries (Brazil, Chile, Colombia, Mexico) are used here to estimate the affine model.[3]

Figure 3.1.1 shows inflation expectations computed from the model for the one-year, five-year, and ten-year horizons, as well as the inflation-targeting level established by the central bank in each country. One can see the different degree of anchoring by comparing the evolution of expectations for the one-year horizon with those for the five-year and ten-year horizons. Inflation expectations in Brazil and Colombia show a similar pattern for all horizons, while expectations in Chile and Mexico are more volatile over the one-year horizon, showing little change over longer horizons.

Regarding the inflation-targeting levels established by central banks, most countries currently show inflation expectations at long horizons within the window limits, although Brazil and Colombia have experienced recent periods when inflation expectations were well above these limits. In fact, both countries showed inflation expectations above the upper limit of the central bank targets before the large decrease experienced since the beginning of 2016. On the other hand, Mexico shows long-term inflation expectations slightly above the window limit of 4 percent, mainly due to the recent movement of the peso because of increasing uncertainties about trade relations with the United States. For Brazil, the deep recession of 2015–16 has affected expectations, which have seen a large decrease since the beginning of 2016. The behavior of inflation expectations began to change for Brazil at the end of 2016, with expectations increasing for longer horizons. In the case of Colombia, a series of policy hikes in 2016 appear to have anchored inflation expectations, which are now closer to the central bank target. Chile has experienced a decreasing trend in short-term expectations implicit in debt markets since mid-2014. Although short-term inflation expectations remain below the inflation target, expected inflation at long-term horizons has been broadly aligned with the medium-term target.

Finally, the forecasting accuracy of the inflation expectations obtained from the model here are compared with those provided by surveys. Table 3.1.1 shows the ratio of the mean square error (MSE) obtained using expectations from surveys, as well as from the model used here, to the MSE computed using current inflation

This box was prepared by Alberto Fuertes, Jose Manuel Marques, and Ricardo Gimeno from the Banco de España.

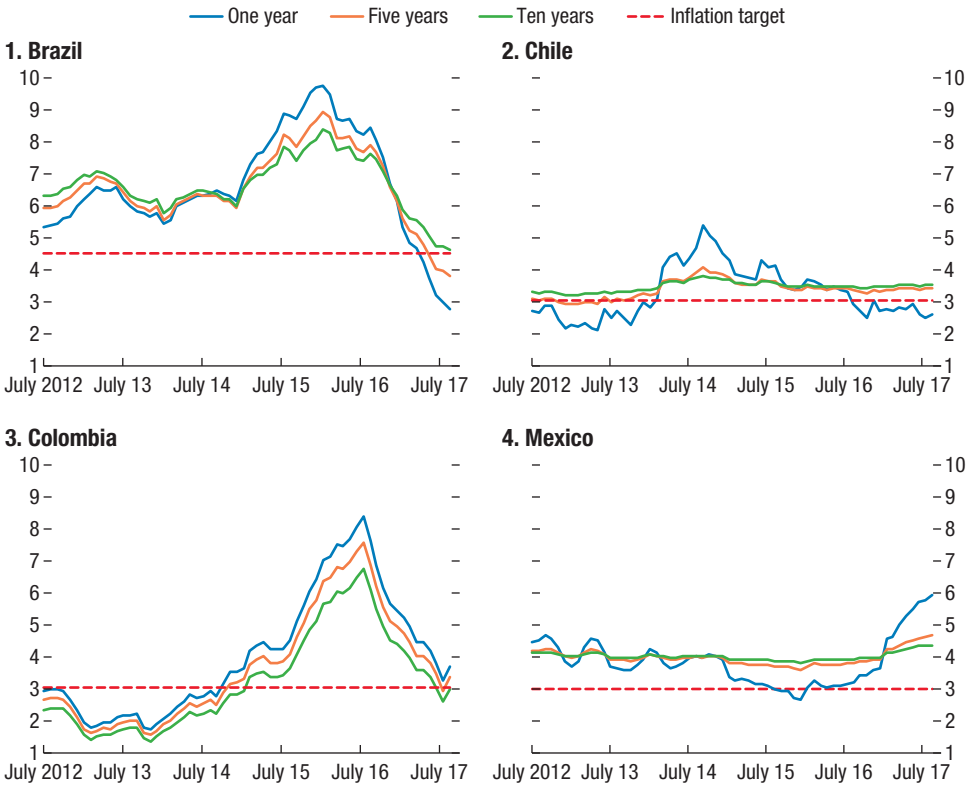
[1]These inflation compensation measures tend to be biased due to the liquidity premium in the market for inflation-linked bonds.

[2]With the notable exception of Chile, where inflation-indexed bonds account for most of long-term government bonds outstanding.

[3]Also, this approach makes it possible to obtain a measure of inflation expectations free of any risk premiums, given that the model allows the decomposition of nominal interest rates as the sum of real risk-free interest rates, expected inflation, and the risk premium.

Box 3.1 *(continued)*

Figure 3.1.1. Inflation Expectation from Financial Instruments at Different Horizons
(Percent)



Sources: Bloomberg Finance L.P.; and authors' estimates.

as the predicted future value (as in a unit root process). If the ratio is lower than 1, it means that the expected values provide a better prediction of future inflation than assuming inflation will remain the same as today. Both measures—inflation expectations from surveys and from the model used here—show lower MSE than the unit root prediction. Comparing the two measures, expected inflation from surveys shows lower MSE for Brazil, Colombia, and Mexico. The opposite happens in the case of Chile. Interestingly, a simple average of the two different expected values provides lower MSE for all countries except Brazil, which shows that inflation expectations obtained from the model used here complement those obtained from surveys and provide additional forecasting information.

Table 3.1.1. Expected Inflation Forecast Errors

Country	Sample	Survey[1]	Model[1]	Survey-Model[1]
Brazil	February 2007–October 2016	0.5833	0.8812	0.6178
Chile	July 2012–December 2016	0.7813	0.6344	0.6187
Colombia	February 2005–November 2016	0.7956	0.9356	0.7898
Mexico	May 2011–November 2016	0.6350	0.7078	0.6349

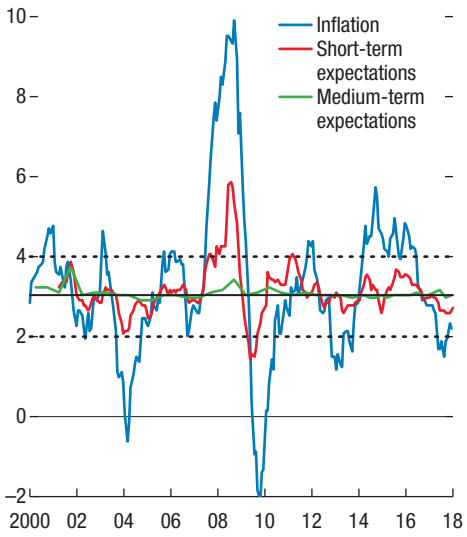
Source: Authors' calculations.
[1]Ratio of mean square error (MSE) of expected inflation from surveys and our model with respect to the MSE of prediction using current inflation as the predicted value. Survey-Model uses as predicted values the average of the expected inflation from the survey and our model. Expected inflation is 12 months for Brazil, Colombia, and Mexico; 11 months for Chile.

Box 3.2. Central Bank Communication Frameworks: The Case of the Central Bank of Chile

After a period of convergence in the 1990s, Chile adopted a free-floating exchange rate and an inflation-targeting regime in September 1999. Since then the Central Bank of Chile (CBC) has put significant emphasis on its communication with the public, transforming the CBC into one of Latin America's most transparent central banks (see Figure 3.4 in the main text). A well-defined mandate, spelled out in the CBC's monetary policy report, has helped communicate its policy intentions clearly.[1]

The combination of a clear mandate and a premium on transparency has helped Chile maintain low average inflation and build strong credibility. Despite realized inflation being highly volatile—due to Chile being a small and open economy and the peso a commodity currency (Cashin, Céspedes, and Sahay 2004)—inflation since 2000 has averaged 3.2 percent, almost exactly in line with the CBC's point target. Consequently, inflation expectations have been well anchored around the central bank's target, with medium-term expectations rarely deviating by more than a few basis points even when actual inflation has spent long periods above target—as was the case following the strong depreciation of the peso in 2013–14 (Figure 3.2.1).[2]

Figure 3.2.1. Realized and Expected Inflation in Chile
(Percent)



Sources: Consensus Economics; and IMF staff calculations.
Note: Expectations correspond to average—that is, "Consensus"—forecast. Short-term expectations refer to synthetic 12-month-ahead forecasts. Medium-term expectations refer to expected inflation two calendar years ahead.

Despite these achievements, the CBC is striving to further increase its predictability and ability to manage private sector expectations. In September 2017, it implemented a series of changes to its communication and decision-making processes, with the aim of improving the quality of the information made available to the public (CBC 2017).[3] The changes include reducing the frequency of monetary policy meetings; aligning the meetings with the release of the Monetary Policy Report; including additional information in the statements (that is, the vote tally, the main arguments given by the members of the Board of Directors, and the macro context); and introducing the publication of full meeting transcripts with a 10-year lag. Taken together, these changes will reduce the number of major communication events—meeting statements and report releases—from 16 to 8 a year, and will increase the informational content of each event.

The Central Bank of Chile's current monetary policy transparency framework features the following key outlets:

This box was prepared by Yan Carrière-Swallow and Andrea Pescatori.

[1]Upon adopting inflation targeting in 2000, the CBC adopted a band of 2 to 4 percent for consumer price index (CPI) inflation over a 12- to 24-month horizon. Since 2007, the CBC has stressed more clearly that "its explicit commitment [is] to keep annual CPI inflation at around 3 percent most of the time, within a range of plus or minus 1 percentage point. To meet this target, the Bank focuses its monetary policy on keeping projected inflation at 3 percent annually over a policy horizon of around two years." (CBC 2017, 5).

[2]It is worth noting that the CBC is inserted in a context of a generally sound institutional framework that has limited capital flow instability and has shielded the economy from global financial market turmoil.

[3]Following the implementation of these reforms, it can be estimated that the CBC's transparency score has reached 11.5 on the Dincer and Eichengreen (2014) scale.

Box 3.2 *(continued)*

- A ***Monetary Policy Report***—the Board of Directors' main vehicle for explaining the rationale behind policy decisions—is released in Spanish and English each quarter, or at every other policy meeting. Importantly, each report clearly states that the policy objective is to return inflation to target within the policy horizon of two years, and the document sets out to explain how the board intends to meet this target. The report is also the outlet for communicating key forecasts, such as growth and inflation fan charts, and providing (infrequently) estimates of unobservables such as the potential growth rate.
- ***Statements*** are published in Spanish following each monetary policy meeting that report the decisions taken and explain recent developments and expected future trends of key variables and risks.[4] Almost half the statements issued since 2011 have included clear and concise guidance about the likely future path of monetary policy (see Figure 3.9 in the main text), with such statements explicitly conditional on current forecasts. Since September 2017, statements have also included information on the arguments made by board members and their votes. The statement issued February 1, 2018, was the first to implement the new format and was 3.5 times longer than the average statement in 2017. Despite the additional length, the complexity of the statement's language remained broadly unchanged and remains in line with the business section of *El Mercurio,* a local newspaper (see Figure 3.8 in the main text).
- ***Minutes*** of the monetary policy meeting have been released with a two-week delay since 2006, in line with many central banks in other regions (for example, Israel, New Zealand, Sweden), and more rapidly than those of some major central banks (for example, European Central Bank, US Federal Reserve, Bank of Japan). With respect to the statement, minutes have traditionally included additional information about the details of the meeting discussion, including the outlook, the policy alternatives that were considered, the arguments presented by board members, and the balance of votes. Minutes have usually had only a very small market impact (see Figure 3.12 in the main text), which suggests that their content is closely aligned with the statements. Following the changes that were recently implemented, the amount of additional information contained in the minutes has been reduced substantially, further reducing their likely impact on markets.

A forward-looking policy organized around a medium-term objective has been crucial in enabling the CBC to communicate the case for implementing monetary accommodation despite persistent deviations of actual inflation from the target. Given its importance, future refinements to the CBC's communication framework should be considered. Currently, statements and reports provide qualitative guidance on the decisions that are likely to be needed to return inflation to target over the policy horizon. They also frequently refer to whether the board's view is broadly aligned with market expectations inferred from financial instruments.

In many central banks that score highest in transparency (for example, the Czech Republic, New Zealand, and Sweden), communication is aided by the publication of the forward path for the central bank's policy interest rate under the board's baseline scenario. The inclusion of a fan chart around the baseline helps illustrate the uncertainty associated with the outlook. Such a strategy would offer additional information and precision that may help prevent misinterpretations of verbal statements in some cases. However, care must be taken to avoid confusion about the nature of the central bank's commitment to the path, which should remain conditional on the future state of the economy. As Woodford (2012) describes in detail using the recent experience of Sweden's Riksbank, such an explicit strategy can also expose the central bank to concerns about lack of credibility if market expectations do not align with the published forward path.

[4]An English translation is released in parallel, but a note makes clear that the content in the Spanish version takes precedence.

Annex 3.1. Panel Vector Autoregression Model and Methodology

The empirical strategy to estimate the effect of terms-of-trade shocks on inflation expectation gaps and monetary policy procyclicality is based on a panel vector auto regression (PVAR) framework that captures the dynamic response of the policy interest rate, domestic demand, the nominal effective exchange rate, consumer price index (CPI) inflation, and two-year-ahead inflation expectation gaps to a terms-of-trade shock, akin to the one experienced by the region during the last six years.

Simultaneity issues are addressed in the identification of the empirical model by assuming that countries in the chapter's sample take the terms of trade as exogenously given—that is, variations in the terms of trade can be regarded as an exogenous source of aggregate fluctuations. This assumption is common in existing related literature (Schmitt-Grohé and Uribe 2018).

As mentioned in the main text, the PVAR is augmented to include interaction terms as in Towbin and Weber (2013) in order to allow the coefficients of the "domestic" variables to vary deterministically with structural country characteristics: the degree of anchoring when the shock hits and levels of central bank transparency. Both of these variables are lagged by one year to avoid endogeneity issues.

Denoting the vector of "domestic" variables as y_t and the vector of exogenously given variables as y_t^*, the model can be specified as follows:

$$\begin{pmatrix} y_t^* \\ y_t \end{pmatrix} = \begin{pmatrix} A_{11,i,t}(L) & 0 \\ B_{21,i,t}(L) & B_{22,i,t}(L) \end{pmatrix} \begin{pmatrix} y_{t-1}^* \\ y_{t-1} \end{pmatrix} + \begin{pmatrix} 0 & 0 \\ 0 & C_{22} \end{pmatrix} \begin{pmatrix} I_i \\ X_{i,t} \end{pmatrix} + \begin{pmatrix} R_1 & 0 \\ R_2 & R_3 \end{pmatrix} \begin{pmatrix} \varepsilon_{i,t}^* \\ \varepsilon_{i,t} \end{pmatrix} \quad \text{(A3.1.1)}$$

$$B_{pq,i,t} = A_{pq,i,t} + D_{pq,i,t} X_{i,t} \quad \text{(A3.1.2)}$$

The coefficients for the domestic variables, B, can vary with country characteristics $X_{i,t}$ (that is, credibility and transparency). $\varepsilon_{i,t}^*$ and $\varepsilon_{i,t}$ are vectors of *iid* shocks. L is the number of lags. The matrix R is computed using a Cholesky factorization of the estimated covariance matrix of reduced-form VAR residuals. The block-zero restriction is imposed a priori, and external shocks are identified using a small open economy assumption. The assumption implies that the external variable does not depend on domestic conditions. Because the analysis of the chapter focuses on the effects of terms-of-trade shocks, the ordering of the variables in the domestic variables vector, y_t, in the structural VAR is immaterial. The IPVAR is estimated using ordinary least squares and allows for country fixed effects. Two lags are chosen following the Schwartz criterion.

The dynamic response of inflation expectation gaps to terms-of-trade shocks is illustrated using cumulative, conditional impulse-response functions at a four-quarter horizon. In order to capture the strength of transmission of policy rates and the procyclicality of monetary policy, the cumulative impulse response of the policy rate is divided by the cumulative response of CPI inflation, both at the four-quarter horizon.

The vector y_t^* is given by

$$y_t^* = (ToT_{i,t}). \quad \text{(A3.1.3)}$$

$ToT_{i,t}$ denotes the log first difference of terms of trade, defined as the relative price of exports in terms of imports.

The vector of domestic variables y_t is given by

$$y_t = \begin{pmatrix} MPR_{i,t} \\ DD_{i,t} \\ NEER_{i,t} \\ CPI_{i,t} \\ Gap_{i,t} \end{pmatrix}. \quad \text{(A3.1.4)}$$

The variable *MPR* denotes the first difference of the monetary policy rate. The variables *DD*, *NEER*, and *CPI* denote the log first differences of real final domestic demand, the nominal effective exchange rate, and the headline CPI for country *i*, respectively. *Gap* is the first difference of the absolute difference between the two-year-ahead inflation expectations gap and the central bank's

target.[1] National accounts and financial data were obtained from Haver Statistics, the *NEER* measure was obtained from the IMF's Information Notice System, and inflation expectation forecasts were obtained from Consensus Economics long-term forecasts. Central bank transparency is measured using the Dincer and Eichengreen (2014) augmented transparency index.

The panel contains the following 20 economies under an inflation-targeting monetary policy framework: Australia, Brazil, Canada, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Mexico, New Zealand, Norway, Peru, Philippines, Poland, Romania, Russia, Thailand, and Turkey. The panel covers the period 2000–17 at a quarterly frequency.

Selection of countries in the sample was based on whether a country was classified as being under an inflation-targeting framework based on the IMF's 2016 *Annual Report on Exchange Arrangements and Exchange Restriction* (AREAER) and on the availability of long-term inflation forecasts from Consensus Economics. Sweden was excluded because its policy rate has been negative since 2014.

[1]The results from this exercise are robust to the use of forecasts at a five-year horizon, also from Consensus Economics.

Annex 3.2. Construction of the "Tone" Index

The methodology used to construct a "tone" index that captures central bank sentiment about the state of the economy closely follows Hansen and McMahon (2016). This chapter makes use of Latent Dirichlet Allocation (LDA) to capture the content of central bank policy discussions and measure the tone of the discussion of a certain topic based on word counting (also known as dictionary methods). This analysis is done for press releases about monetary policy decisions as well as minutes of monetary policy meetings, both stored as document-term-matrices using the text-mining package in the programming language R.

Before the LDA analysis, "stop words" (such as "the," "a," and "and") are removed and the remaining words are reduced to a common linguistic root ("economy" and "economic" both become "economi"). The LDA algorithm will form, in our case, eight topics that are probability distributions over words, and illustrate the words that tend to go together in central bank communication. The algorithm also forms document distributions that contain probabilities that capture the fraction of words policymakers devote to the different topics in their communications. For example, it might suggest that a sentence in a statement (our level of LDA analysis) is very likely (say, above 75 percent) related to domestic demand conditions (one of the eight topics) and less likely to be related to external factors (another one of the eight topics).

Once sentences about economic situation topics are identified, only these relevant sentences are used to create the time series of the "tone" index of central bank communication by counting the number of "hawkish" and "dovish" words that appear in each sentence of the central bank documents. The analysis was done for the Spanish version of the press releases and minutes, except for Brazil, whose English versions of the publications were analyzed. The list of English "hawkish" words used includes increase*, accelerat*, fast*, strong*, high*, gain*, and expand*. The list of English "dovish" words includes decreas*, decelerat*, slow*, weak*, low*, loss*, and contract*.

The "tone" index is then defined as:

$$Tone = \frac{\#hawkish - \#dovish}{TotalWords}. \qquad \text{(A3.2.1)}$$

The words in each sentence are scored in this way, and aggregated for the entire document, and the normalized series of this score is the index used in this analysis.

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4. Fiscal Multipliers: How Will Consolidation Affect Latin America and the Caribbean?

Lower global commodity prices, slower growth, and the past use of expansionary policies have contributed to rising public debt in many countries in Latin America and the Caribbean, precipitating a need for fiscal consolidation. But will this policy hinder the region's nascent recovery? Using a new database of fiscal policy actions, fiscal multipliers in the region are estimated to lie between 0.5 and 1.1—suggesting that consolidation will be more contractionary than previously thought. Nevertheless, these estimates are small enough to suggest that consolidations will improve the region's debt dynamics, even in the short run. Since expenditure multipliers vary according to the type of instrument used, consolidation plans should preserve public investment to support growth and employment.

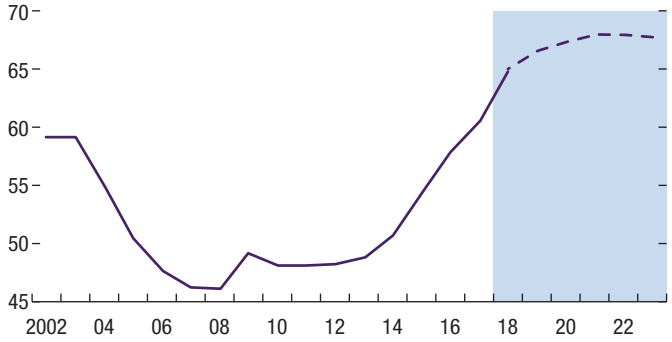
Over the period of 2002–07, many Latin American and Caribbean (LAC) countries took advantage of strong growth and favorable external conditions to lower their public debt levels, which had fallen substantially by the time the global financial crisis struck in 2008–09 (Figure 4.1, panel 1). But things have changed.

A combination of factors has eroded most of the region's fiscal space. The fiscal stimulus that was deployed in response to the crisis was not fully unwound once the recovery took hold (Celasun and others 2015). The fall in global commodity prices has negatively affected fiscal revenues of LAC countries that produce oil, gas, and agricultural and metal products. The subsequent slowdown in economic activity and the continued growth of real public expenditure (particularly public consumption) have all reduced the region's fiscal buffers (see Figure 2.9 in Chapter 2).

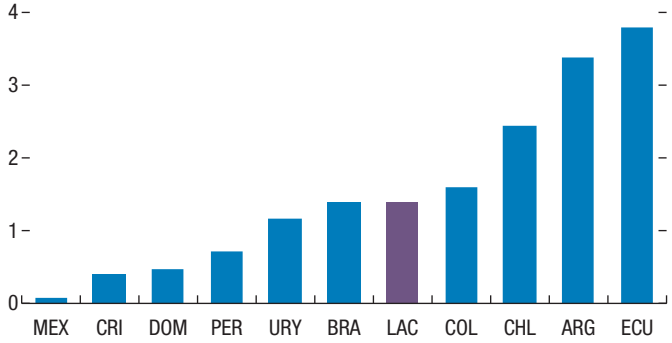
Most LAC countries closed fiscal year 2017 with primary deficits that exceed their debt-stabilizing levels, and as a result, public debt continues to rise. At a regional level, debt ratios in LAC have risen sharply and now stand well above the average for other emerging economies. In this context, most LAC countries have presented plans to consolidate their fiscal positions over the next few years, and many have already begun this arduous task. Between 2016 and 2020, the cyclically adjusted primary balance for the region is expected to improve by 1.4 percent of GDP (Figure 4.1,

Figure 4.1. Fiscal Worries; Plans to Address Them

1. Latin America and the Caribbean: Gross Public Debt[1]
(Percent of fiscal year GDP)



2. Expected Change in Cyclically Adjusted Primary Balance, 2016–20[2]
(Percentage points of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes, see page 115. LAC = Latin America and the Caribbean.
[1]US dollar nominal GDP-weighted average.
[2]LAC aggregate corresponds to US dollar nominal GDP-weighted average of 14 LAC countries listed in footnote 5. For Ecuador, the oil balance and a one-off payment to Occidental Petroleum in 2016 are excluded.

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panel 2), nearly half of which has already been accomplished.

With fiscal adjustment planned or underway in many countries, this chapter will explore the likely macroeconomic impact that these policy decisions can have in the short term, including on income inequality (Box 4.1). It does not address the questions of whether fiscal adjustment is needed, how much is required, and at what pace it should be pursued, all of which are best addressed on a case-by-case basis. Finally, as fiscal consolidation is likely to dampen growth in the short term, the chapter will ask what can be done to formulate the adjustment to minimize its undesirable effects.

The Elusive Search for a Measure of Fiscal Actions

The fiscal multiplier—the change in output caused by a fiscal action, measured in the same units—depends on a long list of characteristics that affect how agents respond to a change in policy. Consider the fiscal multiplier following government spending cuts. If private agents increase their own consumption and investment—for instance, because they anticipate lower taxes in the future—then the fiscal multiplier may be close to zero or even imply an economic expansion. If, on the other hand, private consumption and investment remain unchanged or decrease, then the short-run multiplier would be closer to one, or even larger. If existing distortions are acute or if there is sufficient slack in the economy, it has been argued that multipliers can be very large, perhaps reaching levels as high as 3 or 4 in extreme circumstances.[1]

While the size of the drag on growth imposed by fiscal consolidation is a key empirical question in macroeconomics, it is equally difficult to answer due to two main challenges.

First, fiscal revenue and spending are affected by many of the same factors that drive economic growth. This omitted variable problem makes it difficult to isolate the relationship between them. For instance, a fall in commodity prices may reduce fiscal revenues and hurt growth in a commodity-exporting country. It would be wrong to infer from this experience that a growing fiscal deficit is causing lower growth, since both are the product of another factor that is outside the control of policymakers.

Second, decisions about fiscal policy often respond to developments in the economy, and this reverse causality makes it difficult to distinguish the action from the response. For instance, a government facing a recession may expand public expenditure to support demand, or allow a deficit to increase due to a fall in cyclical tax revenue.

In both cases, the data will show a strong correlation between fiscal policy and growth, but in neither will that relationship have been caused by the fiscal policy itself. Thus, to estimate the effect of fiscal policy on other economic variables, one needs to identify movements of fiscal variables that are exogenous to current economic developments.

All Gain, No Pain? Existing Evidence on Multipliers in Latin America and the Caribbean

A large body of empirical work has set out to overcome these challenges, providing estimates for fiscal multipliers in Latin America and the Caribbean and other regions. A review of 132 recently published estimates suggests that the growth impact of fiscal adjustment is smaller in LAC countries, with an average multiplier of 0.3 compared to 0.6 for other emerging market and developing economies and 0.9 for advanced economies (Box 4.2). Some studies even point to fiscal multipliers that are very close to zero in the region, with the tantalizing implication that fiscal consolidation imposes almost no pain on LAC economies.

[1]See Gunter and others (2017) for the case of value-added tax multipliers when the rate of taxation is already very high, and Auerbach and Gorodnichenko (2012) for estimates of the US expenditure multiplier in periods of slack.

Is painless consolidation wishful thinking or is there an underlying economic justification? In theory, if fiscal consolidation triggers a surge in confidence, then the public contraction can be offset by vigorous private expansion.[2] Indeed, LAC has a relatively elevated level of perceived risk of sovereign default, and some structural factors such as high import-to-GDP ratios in some economies would further dampen the drag from fiscal consolidation. However, other characteristics of LAC economies would suggest larger fiscal multipliers, including tight credit constraints facing the private sector and less flexible exchange rates in many economies. Taken together, these theoretical considerations do not provide a clear prediction about the relative size of fiscal multipliers in the region, which ultimately remains an empirical question.

The Story behind the Numbers: Assessing the Motives of Fiscal Actions

One limitation of existing studies that focus on LAC economies is that they rely heavily on a single empirical approach: the structural vector autoregression (SVAR) model. This econometric approach is readily implemented using quarterly data, but has been criticized for a variety of reasons. First, it imposes strong assumptions to identify tax and spending shocks, such as the inability of government spending to respond to news about the economy within a three-month period. Second, it identifies fiscal actions that may have been anticipated by agents, and whose impact would thus have been felt well before the actions were taken. In contrast, estimates for advanced economies now frequently rely on several alternative identification strategies that set out to resolve these concerns.

One of these strategies is the narrative method (Romer and Romer 2010; Guajardo, Leigh, and Pescatori 2014; Alesina and others 2017). In this approach, the researcher relies on contemporaneous documents such as budgets, speeches, and third-party reports to assess the motivations that were behind each fiscal policy decision. The fiscal consolidation episodes selected are motivated by considerations such as reducing an inherited budget deficit, reducing public debt levels, or increasing economic efficiency to raise long-term growth. Decisions that are driven by a desire to respond to current or prospective economic conditions are discarded. In principle, this should reduce the endogeneity bias in empirical estimates. However, this strategy relies on the researcher's judgment to properly assess the motive behind each action taken by economic authorities, and thus requires local knowledge and a variety of sources. In addition, these episodes remain susceptible to having been anticipated by economic agents, either because they were preannounced by authorities, or because they could have been predicted using available information.

In the forecast error approach, fiscal actions are identified using forecast errors for public expenditure.[3] This approach has the advantage that the actions—by construction—were not anticipated. But it is also subject to limitations. First, the forecast errors will only be as good as the forecasts themselves, which may suffer from bias, inefficiency, and inaccuracy.[4] Second, the interpretation of forecast errors as fiscal actions is not direct, since they may reflect alternative factors, such as a change in relative prices or a data revision.

Where data availability allows, this chapter will use all three of these approaches to study the effects of fiscal consolidation in Latin America and the Caribbean within a single, readily comparable

[2]Such an "expansionary austerity" effect was first identified by Giavazzi and Pagano (1990), and is most commonly proposed in the context of public expenditure cuts.

[3]The forecast error methodology was pioneered by Auerbach and Gorodnichenko (2013, 2017) using forecasts by the Organisation for Economic Co-operation and Development, and employed by Abiad, Furceri, and Topalova (2016) and Furceri and Li (2017) using forecasts from the *World Economic Outlook*. For recent estimates using this method for sub-Saharan African countries, see Arizala and others (2017).

[4]Jalles, Karibzhanov, and Loungani (2015) document how the accuracy of private-sector fiscal forecasts is much lower for emerging economies than for advanced economies.

framework. It makes use of a new database of fiscal actions identified in the narrative record for 14 LAC economies between 1989 and 2016.[5] It also employs forecast errors for public expenditure, public investment, and public consumption from issues of the IMF's *World Economic Outlook* since 1990.[6] Finally, it uses fiscal shocks obtained from country-by-country SVARs following Blanchard and Perotti (2002) for eight Latin American countries.[7]

The impact of these identified fiscal actions on the economy—including output, the unemployment rate, the current account balance, and the exchange rate—are estimated using a common local projections specification.[8] In the estimation, factors that drive fiscal policy and output across the region are controlled for, as is country-specific revenue from the export of commodities. This common machinery generates fiscal multiplier estimates that conform to a consistent definition throughout the chapter: for each unit of fiscal action over h years, by how many units does GDP change?[9] It also allows for comparing the effects of fiscal actions across groups of countries, types of adjustment, and states of the economy.

The Macroeconomic Effects of Fiscal Consolidation in Latin America and the Caribbean

This section begins by studying the impact of a fiscal adjustment package that raises the primary balance by 1 percent of GDP, and which can be implemented using any combination of expenditure and revenue measures (Figure 4.2). After two years, output in the sample of 14 LAC economies contracts by an average of 0.9 percent, with a confidence interval between 0.6 and 1.1 at a 90 percent level.[10] Contrary to past evidence, LAC does not appear different from advanced economies—this range of multipliers is consistent with an estimate for a sample of 17 advanced economies, using comparable narrative fiscal consolidations constructed by Guajardo, Leigh, and Pescatori (2014) and Alesina and others (2017).[11]

Fiscal adjustments in Latin America and the Caribbean are also found to affect other aspects of the economy. In the case of the labor market, each percentage point of GDP in fiscal consolidation raises the unemployment rate by about 0.3 percentage point after two years, which is a somewhat smaller response than what is estimated here for advanced economies (an increase of over 0.5 of a percentage point). The mitigated impact on unemployment in the region may reflect the presence of a large informal sector in many countries, which offers an alternative margin of labor market adjustment following a demand shock. With consolidation putting at least some out of work, an important concern is that these policies may be exacerbating income inequality, which is already high in the region. As discussed in Box 4.1, no impact of fiscal consolidation on different measures of the Gini coefficient is found.

Most LAC economies are relatively open to international trade, making the response of the external sector an important channel for understanding the impact of fiscal policy. In line with the estimates reported here for advanced

[5]The countries included are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Jamaica, Mexico, Paraguay, Peru, and Uruguay. Each fiscal consolidation episode is documented and discussed in David and Leigh (forthcoming). The approach is based on the methodology pioneered by Romer and Romer (2010) that was implemented for a large group of advanced economies by Devries and others (2011).

[6]The sample includes 19 LAC countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

[7]The exercise, which requires quarterly data, is carried out for Brazil, Chile, Colombia, Dominican Republic, Mexico, Paraguay, Peru, and Uruguay.

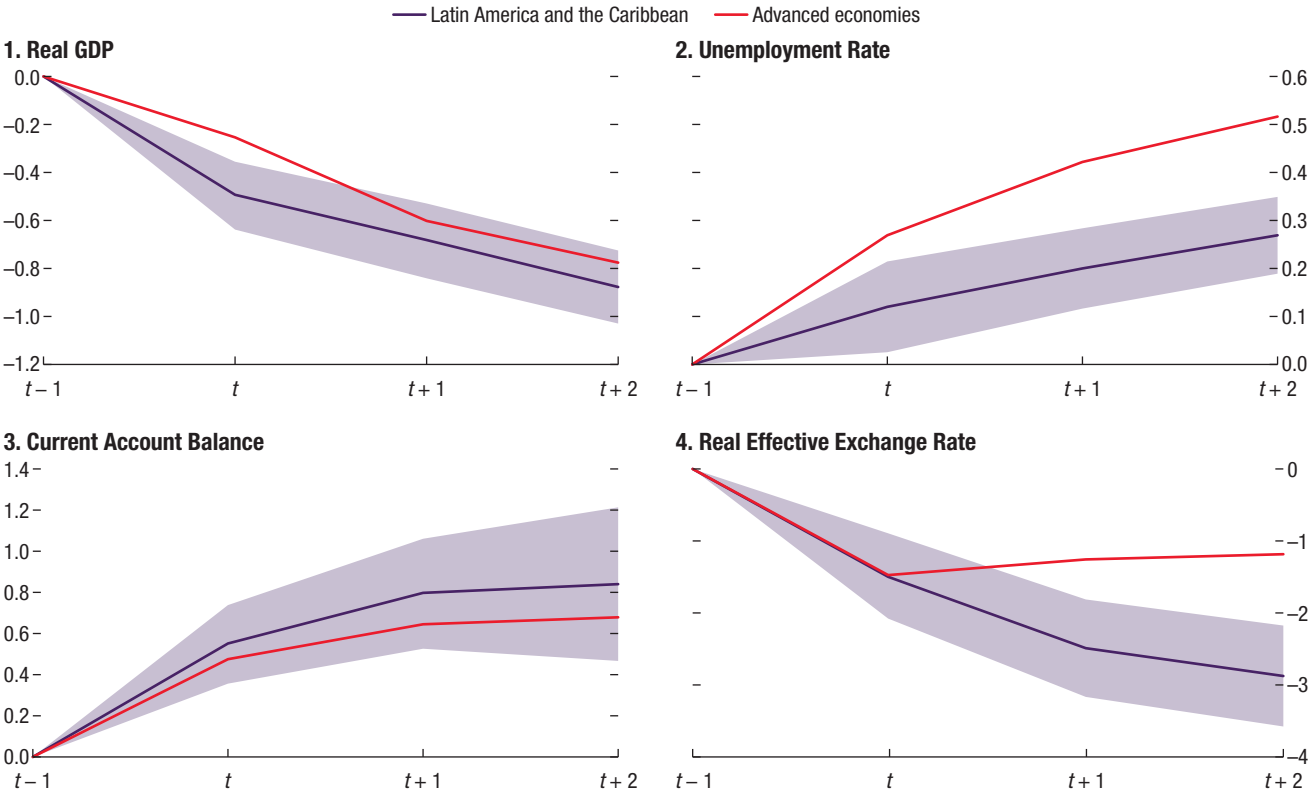
[8]See Annex 4.1 for technical details and the full specification.

[9]This definition of the cumulative fiscal multiplier follows Ramey and Zubairy (2018), who refer to it as the integral multiplier.

[10]Jordà and Taylor (2015) argue that narrative shocks for advanced economies can be predicted using observable data. Carrière-Swallow, David, and Leigh (forthcoming) account for this possibility using a propensity-score based matching estimator, and find that multiplier estimates for LAC remain within the confidence interval reported here.

[11]The advanced economies included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Portugal, Spain, Sweden, United Kingdom, and the United States.

Figure 4.2. Macroeconomic Effects of Fiscal Adjustment Packages in Latin America and the Caribbean



Sources: IMF, Information Notice System database; IMF, World Economic Outlook database; and IMF staff calculations.
Note: Estimates based on identification of fiscal actions using narrative approach. Cumulative multiplier functions show deviations in percentage points for a fiscal shock with accumulated impact of 1 percent at each horizon in years. Shaded area indicates +/– 1 HAC standard error.

economies, fiscal consolidation in LAC countries leads to an improvement of the external current account balance of approximately one-to-one, in line with the twin deficits view. The evidence also shows that the exchange rate is an important adjustment channel, as fiscal consolidation leads to a depreciation of the real effective exchange rate of close to 3 percent, which is a stronger response than is observed among advanced economies.

There is an unresolved debate as to whether the growth impacts of fiscal policy differ when the economy is in a period of slack. A series of studies on the United States have come to different conclusions in this regard, with some documenting very large multipliers during recessions, and others finding only small differences over the business cycle.[12] To test this hypothesis for Latin America and the Caribbean, the multiplier estimate is conditioned on the sign of the output gap one year prior to the fiscal shock. No significant differences in the multiplier are found depending on whether the measure is taken when the economy is in a period of slack.[13]

[12]Auerbach and Gorodnichenko (2012) find multipliers of almost 3 in the United States during recessions, but Ramey and Zubairy (2018) demonstrate that this estimate falls to less than 1 when the persistence of the fiscal action is taken into account.

[13]This null result is produced regardless of whether one uses output gap estimates from the World Economic Outlook database or estimates the gap using the Hodrick-Prescott filter.

Does Fiscal Consolidation Trigger Confidence Effects?

If fiscal consolidation is part of a credible plan to stabilize public debt, it may ease financing conditions for the economy, and thus stimulate private demand. Convincing the private sector of such an intent may be easier when the inherited situation is perceived to be dire. This section verifies whether the impact of fiscal consolidations on output in LAC depends on the perceived severity of the fiscal situation when the policy is implemented (Figure 4.3). Following Guajardo, Leigh, and Pescatori (2014), an index of perceived sovereign risk provided by Institutional Investor LLC is used, and the sample is split in half into low- and high-risk bins.

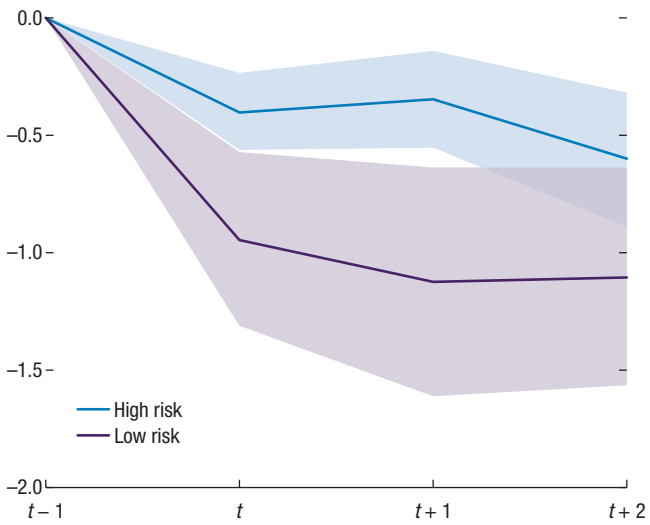
For economies that are perceived to be subject to higher sovereign default risk, fiscal consolidation places a smaller drag on growth, with a multiplier of 0.6 after two years. This compares to a multiplier of 1.1 in those economies that implement fiscal consolidation from a position of relatively low default risk.[14] This is an important finding, because in those LAC economies where fiscal consolidation is most urgently needed to stabilize public finances, taking action tends to have a smaller impact on growth.

One possible channel for this result is the presence of confidence effects, whereby consolidation brings better prospects for fiscal sustainability, triggering lower interest rates, easing fiscal burdens, and crowding in private investment.[15] However, it is important to note that any such effect appears insufficient to fully offset the contractionary impact of the fiscal action: even in countries starting from a position of high perceived sovereign default risk, fiscal consolidation remains contractionary.

[14]Given the lower precision of these state-dependent estimates, we are unable to reject a null hypothesis of equal impacts across states at conventional confidence levels.

[15]On average across the episodes in the 14 economies for which narrative episodes were identified, we find suggestive evidence of a modest response of the Emerging Markets Bond Index sovereign spread, which falls by about 100 basis points after two years.

Figure 4.3. Confidence Effects Following Fiscal Consolidation Packages in Latin America and the Caribbean?
(Output multiplier, by perceived sovereign risk)



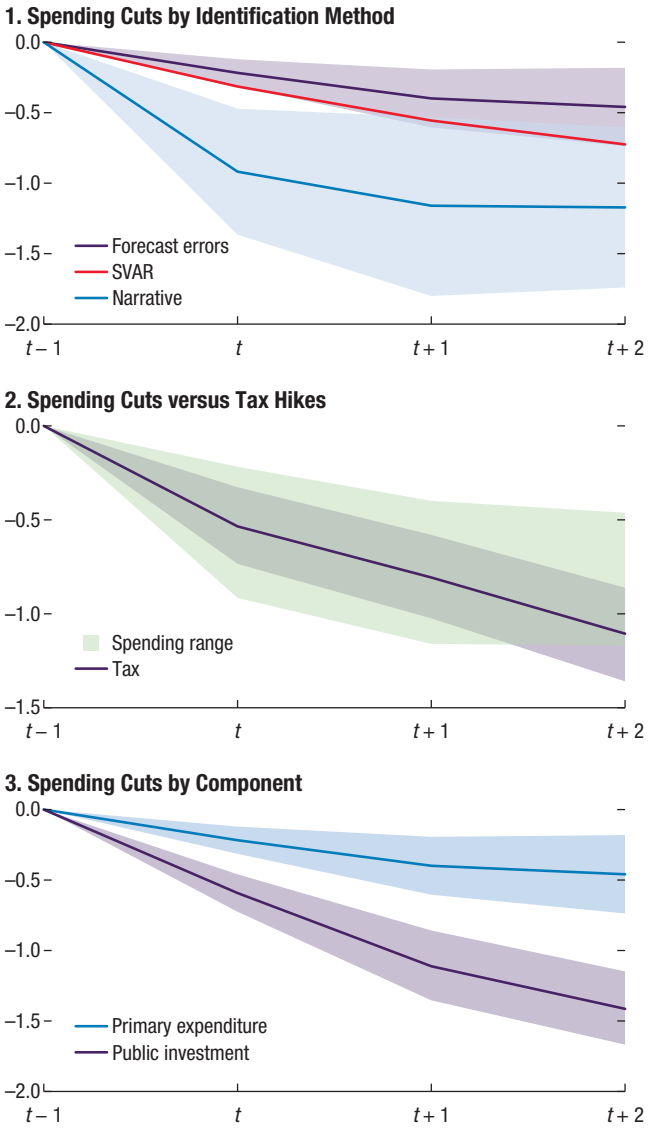
Source: IMF staff calculations.
Note: Estimates based on identification of fiscal actions using narrative approach. Shaded area indicates +/– 1 HAC standard error. The LAC sample is split at the median of the empirical distribution for the index of perceived sovereign risk constructed by Institutional Investor LLC. LAC = Latin America and the Caribbean.

Protecting Growth while Tightening Belts: Getting the Composition Right

The results presented so far are clear: fiscal consolidation in LAC is likely to have a larger contractionary impact on the economy than may have been expected based on previous empirical studies, with consolidation packages producing an output multiplier between 0.6 and 1.1 after two years. But if consolidation is needed to stabilize public debt, what can policymakers do to minimize the harmful short-term impact of their actions? To explore this question, fiscal actions are distinguished based on the composition of the adjustment.

The analysis begins by considering fiscal actions that affect public spending. Because of ample data availability for primary expenditure, public spending multipliers can be estimated using all three identification strategies: SVAR, forecast errors, and the narrative approach. Results of this comparative exercise are reported in panel 1

Figure 4.4. Fiscal Multipliers in Latin America and the Caribbean by the Composition of Adjustment
(Cumulative multiplier)



Source: IMF staff calculations.
Note: Panel 1 reports spending multiplier estimates for the three identification methods (solid lines). Panel 2 compares the range of spending multiplier estimates with the tax multiplier estimate using the narrative approach. Panel 3 reports estimates based on identification of fiscal actions using forecast errors for a sample of 19 LAC countries. Shaded areas in Panels 1 and 3 indicate +/– 1 HAC standard error. SVAR = structural vector autoregression.

of Figure 4.4. While the narrative identification approach tends to yield somewhat larger multipliers than the other two, the width of confidence intervals does not allow for inference about their relative size. Information from all three methods is used to present a likely range for spending multipliers in LAC, which suggests that the expenditure multiplier lies between 0.5 and 1.1 after two years. This range fully encompasses the range of consolidation package multipliers reported above.

Is raising taxes more harmful for growth than cutting spending? Panel 2 of Figure 4.4 compares the range of estimates for expenditure multipliers with the estimate for tax hikes based on the narrative approach. While the estimated multiplier range for tax hikes allows for the possibility of larger multipliers—a result that is consistent with the existing literature from other regions—no compelling evidence is found for a difference between spending cut and tax hike multipliers in LAC.[16]

Are all changes to public spending equal? The availability of *World Economic Outlook* forecasts for public investment and consumption since the early 1990s allows for implementing the forecast error methodology for each subcomponent of public expenditure (Figure 4.4, panel 3). The composition of spending measures appears to have major implications for the growth impact of a change in public expenditure: the multiplier for public investment reaches almost 1.5 after two years, compared to only 0.5 for primary expenditures in general, and well outside the range based on three methods reported above. This is much larger than the estimate of the public

[16]A comparison of tax and spending multipliers identified using only the narrative approach also leads to the conclusion that they are not significantly different. This finding is also robust to an approach that classifies consolidation packages as tax- or spending-based.

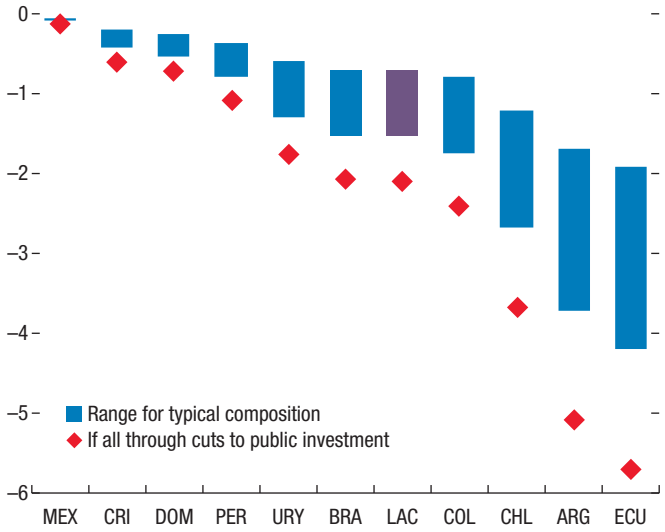
consumption multiplier, which appears close to zero.[17,18]

Policy Implications

Stabilizing public debt in Latin America and the Caribbean will require some degree of fiscal consolidation in most countries, and governments have laid out plans to implement these actions. On average, LAC countries are expected to undertake fiscal consolidation amounting to 1.4 percent of GDP between 2016 and 2020. This chapter has uncovered four likely implications of these policies.

First, fiscal consolidation in the region will hurt, placing a drag on economic growth and employment in the short term. The size of this effect is likely to be larger than has been typically reported in the empirical literature, but also somewhat smaller than the largest multiplier estimates found in recent work (Gunter and others 2016, 2017). The analysis suggests that the impact of fiscal consolidation on the level of regional output will be between 0.7 and 1.5 percent during 2016–20. Across individual countries, this impact will vary depending on the size of their adjustment plans (Figure 4.5).[19]

Figure 4.5. Expected Impact of Fiscal Consolidation on the Level of Output, 2016–20
(Percentage points of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: Calculation uses change in cyclically adjusted primary balance reported in Figure 4.1, panel 2, as measure of fiscal consolidation. For International Organization for Standardization (ISO) country codes, see page 115. LAC = Latin America and the Caribbean.

Second, policymakers can design the composition of their plans to mitigate their drag on growth and thus accelerate progress toward stabilizing the debt-to-GDP ratio. While no large differences are found between fiscal multipliers in LAC when comparing tax and expenditure measures—contrary to some existing evidence for advanced economies—growth effects do differ across expenditure items. Governments should favor plans that preserve public investment where possible. If adjustment is implemented exclusively through public investment cuts, then the short-term impact on regional output would be expected to reach 2.1 percent over the same period (diamonds in Figure 4.5). For many countries, this recommendation aligns with the long-term imperative to close infrastructure gaps (see Chapter 5 in April 2016 *Regional Economic Outlook: Western Hemisphere*).

Third, fiscal consolidation in LAC is likely to help stabilize debt, even in the short term. It is useful to recall that the objective of fiscal

[17]The estimate for the public consumption multiplier is not shown in Figure 4.4, but is equal to –0.6 after two years—implying an expansionary effect from cutting this type of spending. However, the use of forecast errors for identification of public consumption shocks is problematic in LAC for at least three reasons: (1) forecast errors are a very weak instrument for actual changes in public consumption, with a relationship of approximately 10 to 1; (2) forecast errors for public consumption are followed by a very strong response of public investment of the opposite sign, suggesting that they are associated with spending shifts rather than cuts; and (3) forecast errors for public consumption do not lead to a change in the cyclically adjusted primary balance, and thus do not capture episodes of fiscal consolidation. None of these concerns apply in the case of forecast errors for primary expenditure and public investment in LAC, nor do they appear to apply to forecast errors for public consumption in the rest of the world.

[18]The larger multiplier for public investment than for public consumption is in line with the results reported in Furceri and Li (2017) for a large sample of developing economies, as well as the October 2017 *Regional Economic Outlook: Sub-Saharan Africa*.

[19]This period was considered because it captures a broad set of consolidations across the region, and is short enough to be mapped to local-projection estimates presented in the chapter.

consolidation is not to stabilize the amount of debt itself, but rather its ratio with respect to output. If the fiscal multiplier were large enough, then the short-term impact on the denominator could dominate the reduction in the numerator, causing the debt-to-GDP ratio to rise. Over time, a sustained fiscal effort will outweigh the one-off contractionary effect on the flow of output. However, the absence of demonstrable improvements in the first few years can endanger the plan's sustained implementation if public support frays. In a simple debt-accumulation exercise, the estimated range of fiscal multipliers in LAC is used to calculate the short-term impact of fiscal consolidation on the debt-to-GDP ratio.[20]

For the levels of debt and the size of government observed on average in the region, the range of multiplier estimates is not large enough to trigger unfavorable debt dynamics in the short term.

Finally, countries should take into account in their consolidation plans that multipliers in LAC appear to be broadly constant over the business cycle. Moreover, periods of high perceived sovereign default risk are a particularly opportune moment to undertake consolidation, as the contractionary effects tend to be mitigated to some extent, possibly reflecting beneficial confidence effects when policies are deployed to address a dire situation.

[20]See Eyraud and Weber (2013) for arithmetic that illustrates how the fiscal multiplier impacts the short-run dynamics implied by a simple debt-accumulation equation.

Box 4.1. Fiscal Consolidation and Income Inequality in Latin America and the Caribbean

This chapter has documented substantial aggregate effects of fiscal consolidation on output and unemployment in Latin America and the Caribbean (LAC). Do these policies also have implications for income inequality? In theory, this could happen through effects on the distribution of market incomes, as well as through a change in fiscal redistribution that further affects disposable (that is, post-tax and transfer) income.

For advanced economies, there is evidence that fiscal consolidation tends to increase income inequality, with especially strong effects when the consolidation is spending-based (Ball and others 2013; Furceri, Jalles, and Loungani 2015; Woo and others 2017). There are reasons to suspect that this relationship may be different in LAC, where fiscal redistribution is much less extensive—about 3 percent of GDP in 2015, compared to almost 17 percent in advanced economies—and where tax systems are more reliant on indirect taxes, and spending on transfers is smaller and less targeted (Bastagli, Coady, and Gupta 2015). Indeed, Azevedo and others (2014) do not find an association between fiscal adjustments and disposable income inequality using subnational data from Brazil.

This box provides a first step toward analyzing the effect of fiscal consolidation on income inequality in LAC at the regional level, where evidence to date has been limited. To do so, the analysis makes use of the same fiscal shocks identified by the narrative approach for 14 LAC countries that are used throughout the chapter.[1] It then employs the same local projections specification to estimate the response of market and post-tax and transfer disposable income distributions following fiscal consolidation shocks.[2] Since inequality is a highly persistent, slow-moving variable, responses to a longer horizon of five years are presented.

Fiscal consolidations have very little effects on income inequality in LAC. Point estimates are positive but very small—the market Gini increases by 0.03 units after two years—and are not statistically significant (Figure 4.1.1, panel 1). This is despite a reduction in output of about 1 percent and an increase in unemployment of 0.3 of a percentage point, as demonstrated in the main text. Focusing on the distribution of disposable income does not affect these results, with the Gini coefficient being relatively insensitive to fiscal consolidation shocks.

Focusing on fiscal consolidation through expenditure cuts, a moderate increase in income inequality is observed (Figure 4.1.1, panel 2). The increase in market Gini is more persistent, and the increase in disposable Gini is larger than for the market Gini in years 0 and 1, implying a decrease in fiscal redistribution. This suggests that expenditure cuts might have worsened inequality by decreasing transfers. In year 2, fiscal redistribution recovers somewhat and partially offsets the increase in market Gini. In any case, any inference about possible mechanisms is impeded by the imprecision of the estimates.

To sum up, fiscal consolidation shocks have very little effects on disposable income in the sample. These results are in contrast to the stronger effects found in advanced economies by Ball and others (2013), Furceri, Jalles, and Loungani (2015), and Woo and others (2017), where spending-based consolidation episodes have significant effects on disposable income inequality. Nevertheless, these findings are in line with those of Azevedo and others (2014) for Brazil.[3]

This box was prepared by Takuji Komatsuzaki.

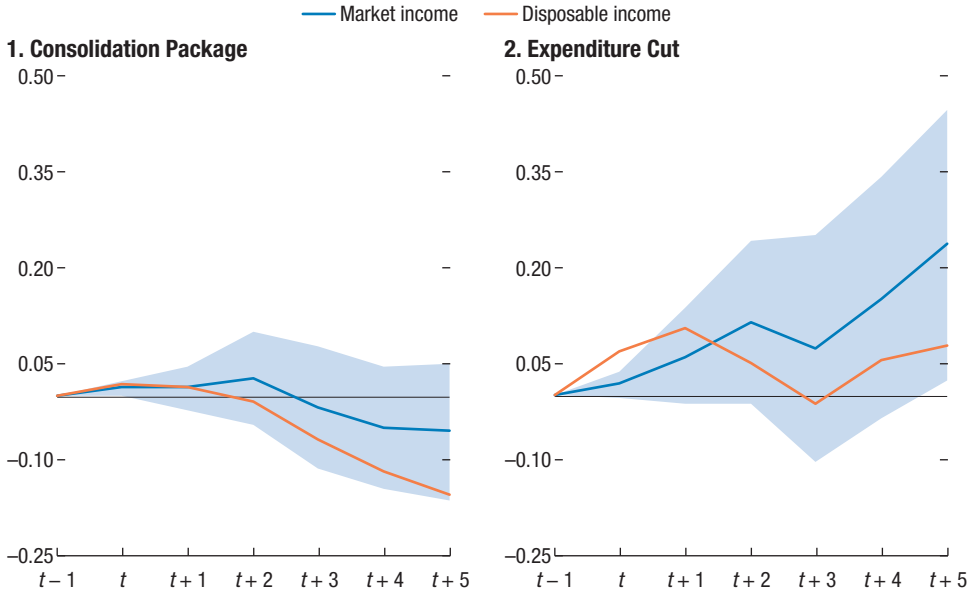
[1]See David and Leigh (forthcoming) for details. Countries include Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Jamaica, Mexico, Paraguay, Peru, and Uruguay.

[2]Income inequality is measured by market and disposable income inequality in SWIID 6.1 developed by Solt (2016). The period of estimation is 1989–2016.

[3]The definition of spending-based consolidations used in these papers differs from the approach used here, which makes use only of the spending portion of all consolidation packages.

Box 4.1 *(continued)*

Figure 4.1.1. Response of Income Inequality Following Fiscal Consolidations in Latin America and the Caribbean
(Change in Gini coefficient following fiscal action)



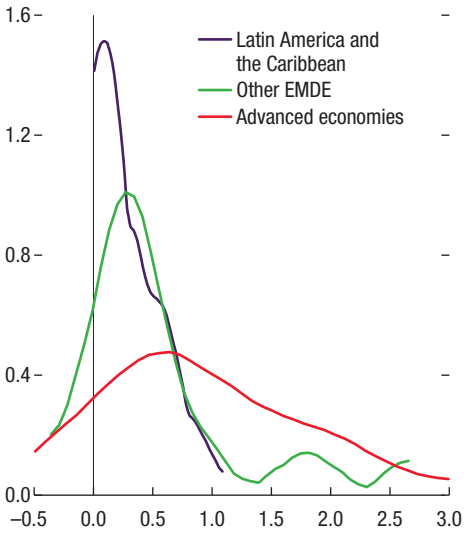
Source: IMF staff calculations.
Note: Cumulative change following fiscal shocks of 1 percent of GDP identified using a narrative approach. Shaded area indicates +/– 1 HAC standard error.

Box 4.2. Existing Empirical Evidence on Fiscal Multipliers in Latin America and the Caribbean

There is a vast empirical literature on the impact of fiscal policy actions on output covering a wide range of countries. This box provides a summary of 132 recent estimates. To facilitate comparison across studies, the fiscal multiplier is defined as the change in GDP over a two-year horizon in response to a fiscal adjustment of 1 percent of GDP.

The meta study finds that estimates for fiscal multipliers in Latin America and the Caribbean (LAC) are typically smaller than in other regions—averaging less than 0.3—with a high proportion of estimates concentrated just above zero (Figure 4.2.1). Estimates for other emerging market and developing economies and for advanced economies average 0.6 and 0.9, respectively.

Figure 4.2.1. Distribution of Empirical Multiplier Estimates by Country Group
(Density of estimates for fiscal multiplier after two years)



Sources: IMF staff calculations based on a survey of the empirical literature.
Note: EMDE = emerging market and developing economies.

While structural characteristics of countries in the region might be an important factor explaining these results, methodological choices can also play a role. Most studies surveyed for LAC countries employ timing restrictions in vector autoregressions (VARs) or similar approaches to identify fiscal shocks. But endogeneity bias and measurement error are likely to plague such estimates, biasing the coefficients obtained. In fact, when considering the full sample of estimates, studies using the narrative approach obtained larger multipliers (median multiplier of 1.1) than those that used VAR-based or alternative approaches (median multiplier of 0.4).

This box was prepared by Antonio David and Daniel Leigh.

Annex 4.1. Technical Details

Estimation of Impacts Using Local Projections

The macroeconomic impacts of fiscal shocks are estimated using the local projections method of Jordà (2005) in a panel setting:

$$y_{c,t+h} - y_{c,t-1} = \alpha_c + \gamma_t + \beta_h \sum_{s=t}^{t+h} Shock_{c,s} + \delta \boldsymbol{X}_{c,t} + \varepsilon_{c,t}, \quad \text{(A4.1.1)}$$

where $y_{c,t}$ is the dependent variable (such as real GDP, the unemployment rate, the current account balance as a share of GDP, or the real effective exchange rate), α_c are country fixed effects, and γ_t are year fixed effects. For stationary variables such as the unemployment rate and sovereign risk perception index, $y_{c,t}$ enters in levels. Otherwise, natural logarithms are used.

The vector $\boldsymbol{X}_{c,t}$ contains country-specific control variables, including two lags of the growth rate of the dependent variable, two lags of the fiscal shock, and the contemporaneous growth rate of commodity export revenues as a share of GDP and two of its lags. The latter is calculated using trade data from the United Nations Comtrade database of 33 commodities whose world prices are reported in the IMF's *International Financial Statistics* (Gruss 2014).

Fiscal shocks $Shock_{c,s}$ correspond to externally identified fiscal actions based on one of the three available methods: country-by-country Blanchard-Perotti (2002) structural vector autoregression (SVAR) models; the narrative study described in David and Leigh (forthcoming); and the forecast-error approach. Each is described below. In all cases, the variable is expressed as a percentage of GDP. In the case of shock series identified using the SVAR and forecast-error approaches, the variable is truncated at the 2nd and 98th percentiles.

In the case where the dependent variable $y_{c,t}$ corresponds to real GDP, the estimated parameter $\hat{\beta}_h$ is interpreted as the cumulative fiscal multiplier at horizon h. The use of the summation operator that accumulates the fiscal shocks makes $\hat{\beta}_h$ equivalent to the ratio of the integrals from t to $t+h$ below the SVAR impulse-response functions for output and for the propagation of the shock on itself.

Identification Using the Narrative Approach

The fiscal consolidation episodes were constructed by examining contemporaneous policy documents to assess the motivation, expected size, and timing of discretionary policy actions. The sources used include reports from multilateral institutions such as IMF staff reports and Organisation for Economic Co-operation and Development Country Economic Surveys, as well as budget-related documents (such as several issues of the *Informe de Finanzas Públicas* for Chile and Paraguay and the *Criterios Generales de Política Económica* for Mexico).

The motivation for a given policy action is a key dimension of the analysis. Following Romer and Romer (2010) and Devries and others (2011), only policy actions that were motivated by a desire to reduce an inherited deficit and/or to address a high level of debt, or for long-run considerations that are unrelated to the economic cycle, were included in the dataset. Episodes that are primarily driven by a response to current or prospective economic conditions were deliberately excluded. Moreover, spending-driven tax changes (that is, tax changes motivated by a change in government spending within the same year, such as a tax increase because the country is fighting a war) were also excluded from the database.

The measures of the magnitude of fiscal policy changes rely on estimates of the revenue or expenditure impact of the given policy action at the time of implementation (expressed in annual terms) and at the prevailing level of GDP. If measures were announced but were not implemented, they are not included in the database, as described in detail in David and Leigh (forthcoming).

Identification Using Forecast Errors

Forecasts are taken from October publications of the IMF's *World Economic Outlook* (WEO), which are available for a large number of countries since 1990, including 19 countries from Latin America and the Caribbean (LAC). To minimize the risk of errors due to changes in data conventions, first-release outcomes are taken from the WEO of the following year. Forecast errors are constructed for the annual growth rate of public consumption (series code *ncg*) and public investment (series code *nfig*), which are deflated by the growth rate of the GDP deflator (series code *ngdp_d*) from the contemporaneous vintages. Forecast errors are then multiplied by the average ratio of nominal spending to nominal GDP (*ngdp*) for each country over the sample period. In line with the convention used in the chapter, the sign of the shocks is inverted so that a positive value corresponds to an unexpected cut to spending. The forecast errors for primary expenditure are constructed as the sum of forecast errors for (real) public consumption and investment.

Do these forecast errors identify exogenous fiscal policy actions? A valid concern is that they are instead capturing inflation surprises or an endogenous response to output shocks. To mitigate these concerns, the analysis here follows Chapter 4 of the October 2017 *World Economic Outlook* by regressing forecast errors on forecast errors of inflation and real GDP growth, using the residuals as the series $Shock_{c,s}$ in equation (A4.1.1).

Identification Using Country-by-Country SVAR Models

Fiscal shocks are identified using country-by-country SVARs following Blanchard and Perotti (2002). The approach uses time-series analysis to identify movements in government spending and tax revenues that are exogenous to the economic cycle.

The strategy consists of unveiling an unobservable structural model starting from a reduced-form vector autoregression $X_t = A(L,q)X_{t-1} + e_t$, where $X_t = [S_t, T_t, Y_t]'$ includes the logarithm of quarterly spending (government consumption and investment), tax revenue (minus transfers and interest payments), and GDP, respectively, in real per capita terms, and e_t is the vector of estimated residuals. To do so, it is first assumed that there is a linear relationship between the reduced-form estimated residuals e_t and the structural shocks u_t:

$$e_t^s = b_1 e_t^y + b_2 u_t^T + u_t^s \quad \text{(A4.1.2)}$$

$$e_t^T = a_1 e_t^y + a_2 u_t^s + u_t^T \quad \text{(A4.1.3)}$$

$$e_t^y = c_2 e_t^s + c_1 e_t^T + u_t^y. \quad \text{(A4.1.4)}$$

As in Blanchard and Perotti's SVAR, it is assumed that unexpected movements in spending (e_t^s) are due to GDP forecast errors ($b_1 e_t^y$), structural shocks to taxes ($b_2 u_t^T$), and structural shocks to government spending (u_t^s). Forecast errors in taxes (e_t^T) are due to surprise movements in GDP ($a_1 e_t^y$), structural shocks to spending ($a_2 u_t^s$), and structural shocks to taxes (u_t^T). Finally, GDP forecast errors (e_t^y) are due to surprise movements in spending ($c_2 e_t^s$), surprise movements in taxes ($c_1 e_t^T$), and structural shocks to GDP (u_t^y).

Since there are more unknown parameters than equations in the system, it is necessary to impose restrictions on some parameters. This annex follows Blanchard and Perotti (2002) in assuming that the government does not change spending as a reaction to what happens to GDP within the quarter, such that $b_1 = 0$. In addition, decisions on spending are taken before those on taxation, and thus $b_2 = 0$. Blanchard and Perotti (2002) then estimate a_1—the effect of GDP surprises on tax revenues—outside the system. Using regressions for several types of taxes, they obtain the elasticity of the tax base to GDP and the elasticity of tax collection to the base, and combine them. In practice, this elasticity is often assumed to be 1 or slightly larger. A reasonable level for LAC could be between 1 and 2, since economic growth is associated with formalization. For the sake of comparability, the Blanchard and Perotti estimate of 2 is used for all countries, but the identification of the shocks is not very sensitive to the size of this constant. Finally, Blanchard

and Perotti obtained c_1 and c_2 outside the system, using an instrumental variable estimation of equation (A4.1.4). Since causality goes both ways—taxation and GDP affect each other—Blanchard and Perotti use as an instrument in this estimation the cyclically adjusted, reduced-form tax residual $er_t = e_t^T - a_1 e_t^y$, and only estimate a_2 inside the SVAR. However, this external instrumental variable estimation of c_1 and c_2 is not necessary, since those coefficients can also be estimated within the SVAR. Indeed, c_1 and c_2 were obtained within the SVAR, although in some cases one of these coefficients was picked from the respective instrumental variable estimation when it was statistically significant.

The timing assumption at the core of this methodology requires the availability of quarterly data on fiscal variables and real output, which reduces the sample of available LAC countries to eight: Brazil, Chile, Colombia, Dominican Republic, Mexico, Paraguay, Peru, and Uruguay. The variables used were government revenue net of interest payments and part of the subsidies and transfers (subtracted in the spirit of Blanchard and Perotti 2002); government spending, including expenditures on wages and goods and services plus investment and the remaining part of the transfers; and the country's GDP. To control for the effect of commodity and foreign demand on government revenues and spending, the terms-of-trade index and the trade-weighted foreign partners' GDP were included as exogenous variables in the SVARs.

Description of Fiscal Shocks across Identification Strategies

Each of the three identification strategies described above has benefits and drawbacks. It is useful to consider the different properties of the alternative shock series used as $Shock_{c,s}$ in equation (A4.1.1), and how they compare to each other during overlapping periods. Panel 1 in Table A4.1 reports summary statistics for each shock series over the LAC samples used in the chapter. The narrative shocks display a smaller range and variability than those identified using SVAR and forecast-error approaches.

Panel 2 in Table A4.1 reports contemporaneous pairwise correlations across shock series, and includes the change in the cyclically adjusted primary balance as a reference for fiscal policy effort. Only the shocks identified using the narrative approach have a significant correlation with the change in the cyclically adjusted primary balance, while shocks identified using forecast errors and the SVAR models have very low correlations with all other shocks. This suggests that the alternative identification strategies are capturing different concepts, and that these are not always closely related to the overall change in the fiscal balance.

Annex Table 4.1. Comparing Fiscal Shocks in Latin America and the Caribbean across Methodologies

1. Summary Statistics

	Countries	N	Mean	Median	Standard Deviation	Range
Narrative						
Packages	14	392	0.2	0.0	0.6	[−0.9, 4.1]
Spending measures	14	392	0.1	0.0	0.2	[−0.5, 2.0]
Tax measures	14	392	0.1	0.0	0.4	[−0.9, 4.1]
Forecast errors						
Primary expenditures	19	532	−0.1	−0.1	1.6	[−7.2, 7.8]
Public consumption	19	570	0.0	0.0	0.9	[−4.1, 4.1]
Public investment	19	672	−0.1	−0.2	1.2	[−4.7, 5.5]
SVAR						
Primary expenditures	8	154	0.0	0.0	1.4	[−2.7, 4.2]

2. Pairwise Correlations

	Narrative			*Forecast errors*			*SVAR*	*CAPB*
	Packages	Spending	Tax	Primary Expenditures	Consumption	Investment	Primary Expenditures	Change
Narrative								
Packages	1.00							
Spending	0.68	1.00						
Tax	0.91	0.33	1.00					
Forecast errors								
Primary expenditures	0.11	0.12	0.07	1.00				
Consumption	0.05	0.03	0.04	0.56	1.00			
Investment	0.10	0.14	0.05	0.77	−0.01	1.00		
SVAR								
Primary expenditures	0.04	0.07	0.00	−0.03	−0.16	0.09	1.00	
CAPB								
Change	0.38	0.31	0.32	0.13	0.04	0.15	0.04	1.00

Source: IMF staff calculations.

Note: In the case of forecast errors and SVAR shocks, sample has been trimmed at the 2nd and 98th percentiles. CAPB = cyclically adjusted primary balance; SVAR = structural vector autoregression.

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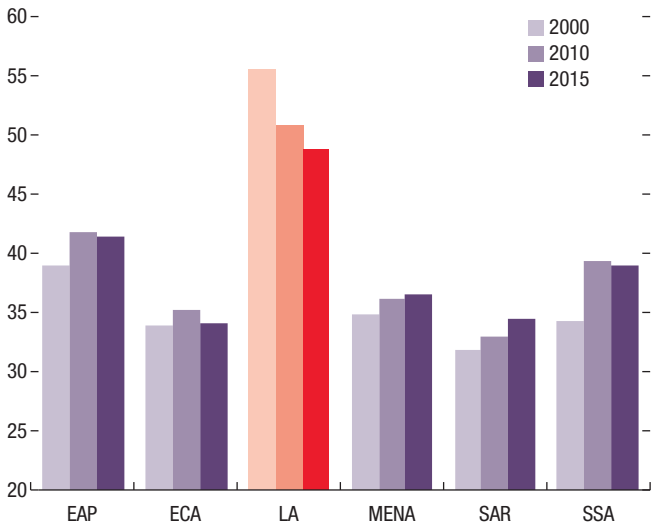
5. Poverty and Inequality in Latin America: Gains during the Commodity Boom but an Uncertain Outlook

Latin America has made impressive progress in reducing inequality and poverty since the turn of the century, although it remains the most unequal region in the world. The declines in inequality and poverty were particularly pronounced for commodity exporters during the commodity boom. Much of the progress reflected real labor income gains for lower-skilled workers, especially in services, with a smaller but positive role for government transfers. With the commodity boom over, a tighter fiscal envelope, and poverty rates already edging up in some countries, policies will have to be carefully recalibrated to sustain social progress. Increasing personal income tax revenues while rebalancing spending could help maintain key social transfers and infrastructure spending. Better targeting of social transfers and reforming decentralization frameworks also have an important role to play.

Throughout the 20th century, Latin America was associated with some of the highest levels of inequality in the world,[1] but since 2000 it has been the only region to have seen a significant reduction in inequality (Figure 5.1).[2] Poverty has also fallen significantly, although this has been replicated in other regions, and Latin America started from a relatively low base (Figure 5.2).[3]

Figure 5.1. Gini Coefficient
(Gini index; population-weighted average)



Sources: World Bank, PovcalNet database; and World Bank, World Development Indicators (WDI) database.
Note: For 2015, Latin America is the average of available values from WDI. Countries include Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Panama, Paraguay, Peru, and Uruguay.
EAP = East Asia Pacific; ECA = Europe and Central Asia; LA = Latin America, MENA = Middle East and North Africa; SAR = South Asia; SSA = sub-Saharan Africa.

Of great concern looking ahead is that some of the gains have started to reverse (ECLAC 2017; Messina and Silva 2018).

Against this backdrop, this chapter documents recent regional trends in inequality and poverty, differentiating between South America and Central America (including Mexico), as well as between commodity importers and exporters. It finds that the gains were particularly pronounced for commodity exporters. It then asks why and explores the channels through which commodity cycles impact social progress by using micro-data case studies of commodity exporters. The chapter also examines the design of fiscal decentralization in the context of large revenue windfalls and

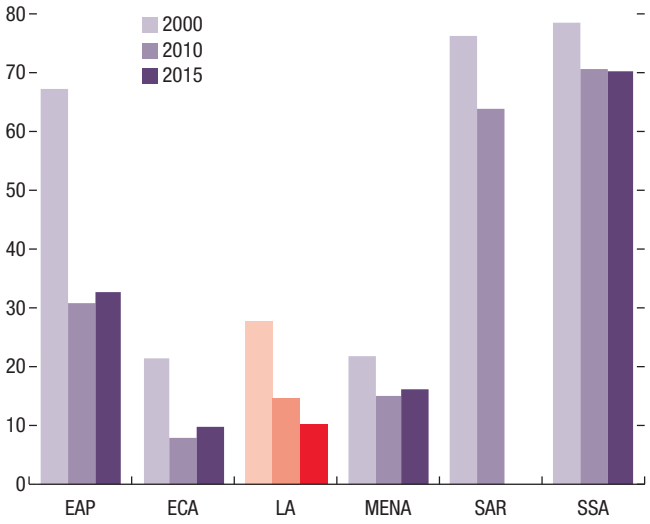
This chapter was prepared by Ravi Balakrishnan, Frederik Toscani, and Mauricio Vargas. Adrian Robles provided excellent research assistance and Pablo Bejar provided valuable support in production. The chapter is based on a forthcoming IMF Departmental Paper that will present further analysis and details on commodity cycles and inequality in Latin America.

[1]Analysts argue that this is a legacy of colonization and the institutions put in place by the conquistadores (Engerman and Sokoloff 1997, 2000, 2002; Acemoglu, Johnson, and Robinson 2001, 2002). Such a legacy has been linked to (1) the existence of strong elites, (2) capital market imperfections, (3) inequality of opportunities (in terms of access to high-quality education), (4) labor market segmentation (for example, due to informality), and (5) discrimination against women and non-whites (see Cornia and Martorano 2013 for a survey).

[2]Given that there are only limited data on inequality available for the Caribbean, this chapter focuses on Latin America.

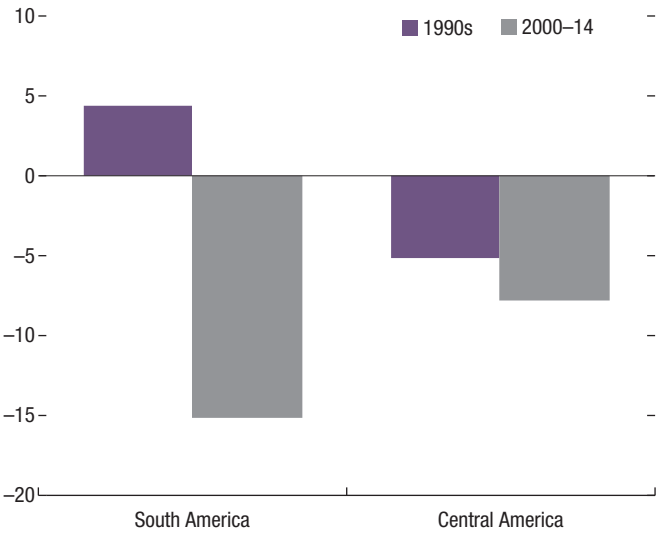
[3]Comparing poverty and especially inequality across countries and regions is challenging. The data used for Latin America are harmonized across countries. But given that inequality data for Latin America are generally income-based, while for other regions the data are consumption-based, cross-region comparisons have certain limitations.

Figure 5.2. Poverty Rate
(Percent; headcount ratio at $3.20 a day; 2011 PPP)



Source: World Bank, World Development Indicators (WDI) database.
Note: For 2015, Latin America is the average of available values from WDI. Countries include Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Panama, Paraguay, Peru and Uruguay. No data available for SAR in 2015. EAP = East Asia Pacific; ECA = Europe and Central Asia; LA = Latin America; MENA = Middle East and North Africa; SAR = South Asia; SSA = sub-Saharan Africa; PPP = purchasing power parity.

Figure 5.3. Change in Poverty Rate
(Percentage points; headcount ratio at $3.10 a day)



Source: Inter-American Development Bank, SIMS database.
Note: South America comprises Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay. Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama.

policies that can help maintain progress in the current period of lower commodity prices.

Panoramic View of Social Gains during the Commodity Boom

Overall, poverty reduction was strong across the region during the commodity boom,[4] especially in South America (Figure 5.3).[5] Inequality as measured by the Gini coefficient declined in both Central and South America, but significantly more in the latter (Figure 5.4).[6] In South America, the difference between the 1990s (when poverty and inequality increased) and the boom period was particularly stark.

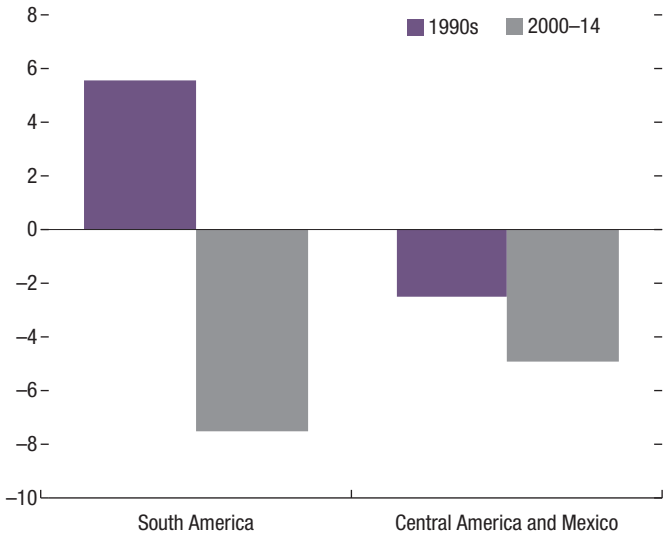
A large literature has shown that the widespread decline in inequality across the region during the 2000s was due to a reduction in hourly labor income inequality, and to more robust and progressive government transfers (Azevedo, Saavedra, and Winkler 2012; Cornia and Martorano 2013; de la Torre, Messina, and Pienknagura 2012; López-Calva and Lustig 2010; Lustig, López-Calva, and Ortiz-Juarez 2013). For poverty reduction, and to some degree for inequality declines, an obvious hypothesis is that higher growth across Latin America during the boom period might have been the key driver. Relative to the 1990s, Figure 5.5 shows that during the commodity boom growth did indeed increase in South America (where poverty fell the most), while in Central America growth was lower but remained high. Figure 5.6 shows that

[4]While the peak in commodity terms of trade varies across countries, for comparability purposes the end of the boom is defined here as the start of the 2014 oil price shock.

[5]Given data availability, country coverage includes Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay. Commodity exporters are determined according to whether net commodity exports surpassed 10 percent of total exports plus imports at the time of the October 2015 *World Economic Outlook*. Brazil is added because it has the largest estimated natural resource reserves in the region. Hence, the full list of commodity exporters is Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Honduras, Paraguay, and Peru.

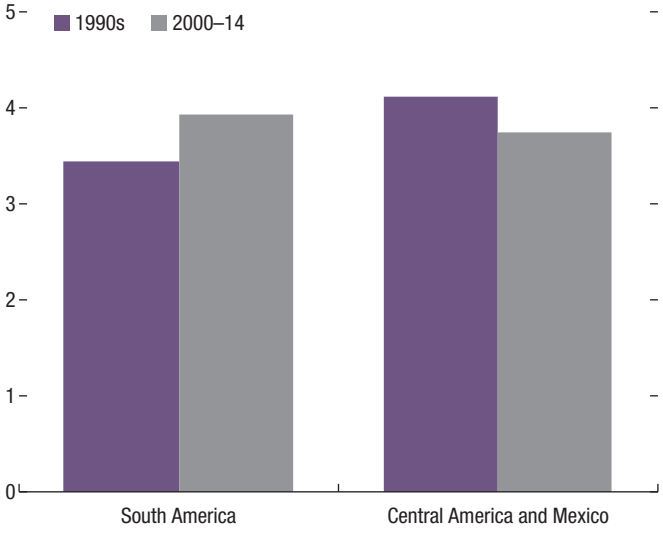
[6]This chapter examines income inequality (income Gini) rather than wealth inequality.

Figure 5.4. Change in Average Gini Coefficient
(Gini units)



Sources: World Bank, World Development Indicators database; and IMF staff calculations.
Note: South America comprises Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay. Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

Figure 5.5. Average Real GDP Growth
(Percent)



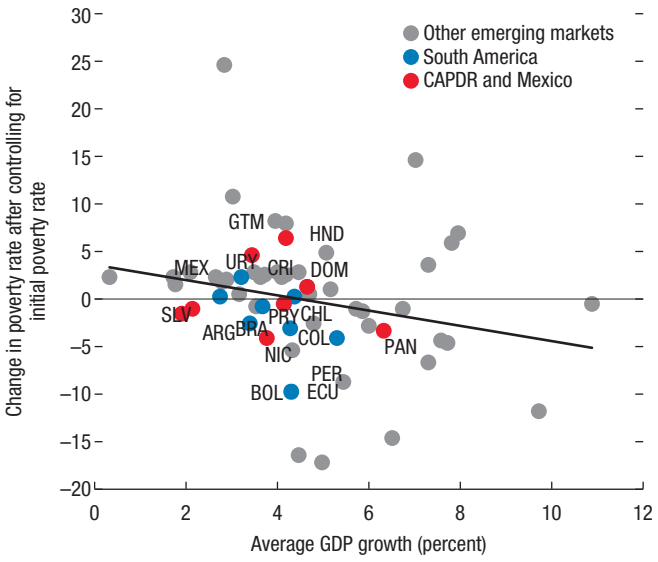
Sources: IMF, World Economic Outlook database; and IMF staff calculations.
Note: South America comprises Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay. Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

the association between GDP growth and poverty reduction for individual countries across emerging regions during the boom was positive.[7] South American countries, however, are generally below the fitted line, meaning that for every additional percentage point of growth, they reduced poverty by more than other countries. This suggests that factors beyond high growth have been behind the remarkable turnaround in poverty reduction in South America in the 2000s.

A key question then is why were the social gains greater in South America during the boom relative to other regions? Figure 5.7 provides a potential link: South America is home to many commodity exporters that experienced a significant boost in their terms of trade relative to other countries. Figures 5.8 and 5.9 zoom into the differences in inequality and poverty reduction between individual commodity exporters and importers. The largest gains on both fronts were made in

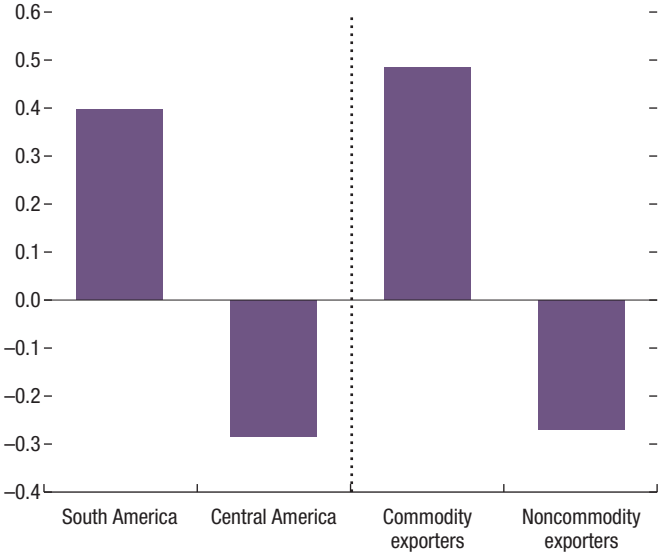
[7]To control for the initial level of poverty, the variable on the *y*-axis is the residual of a regression of the change in poverty on the initial poverty ratio.

Figure 5.6. Average GDP Growth and Change in Poverty Rate, 2000–14
(Headcount ratio at $3.10 a day; PPP)



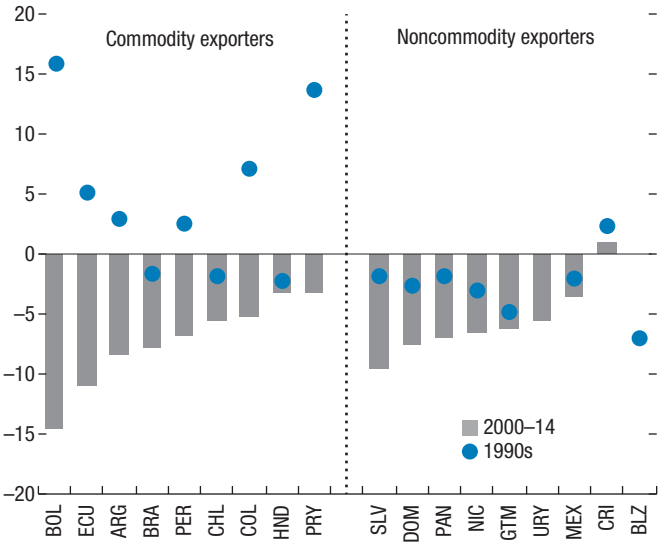
Sources: IMF, World Economic Outlook database; Inter-American Development Bank, SIMS database; and IMF staff calculations.
Note: South America comprises Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, and Uruguay. Central America comprises Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama. The graph controls for convergence effects. Specifically, the variable on the *y*-axis is the residual of a regression of the change in poverty on the initial poverty rate. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. CAPDR = Central America, Panama, and the Dominican Republic; PPP = purchasing power parity.

Figure 5.7. Average Commodity Terms-of-Trade Growth during Boom, 2000–14
(Percent)



Source: IMF staff calculations.
Note: Terms of trade is the commodity net export price index weighted by GDP (see Gruss 2014). All countries in South America are commodity exporters except Uruguay. All Central American countries are noncommodity exporters except Honduras.

Figure 5.8. Change in Gini Coefficient
(Gini units)



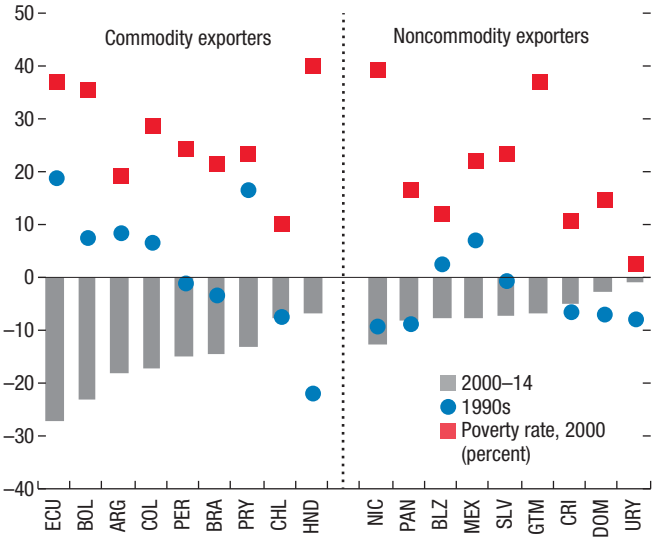
Sources: Inter-American Development Bank, SIMS database; World Bank, World Development Indicators database; and IMF staff calculations.
Note: Colombia uses 2003 and Brazil uses 2001 values for 2000 given data availability. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

two countries highly dependent on commodity exports, Bolivia and Ecuador. Indeed, commodity exporters made larger gains in poverty reduction across the board except for Chile and Honduras, which experienced smaller gains than some non-commodity exporters such as Nicaragua and Panama.[8]

For inequality, the same pattern holds but the picture is more mixed, with El Salvador and the Dominican Republic seeing bigger reductions in inequality than several commodity exporters (Chile, Colombia, Paraguay and Honduras).[9]

The significant progress in many commodity importers underscores the various factors driving

Figure 5.9. Change in Poverty Rate
(Percentage points; headcount ratio at $3.10 a day)



Source: Inter-American Development Bank, SIMS database.
Note: Colombia uses 2003 and Brazil uses 2001 values for 2000, given data availability. For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

[8]That poverty fell less in Chile than in other commodity exporters largely reflects the fact that Chile had relatively low poverty rates before the boom: poverty in 2000 stood at 10.3 percent and fell to 2.6 percent by 2013.

[9]The mean poverty reduction during the boom period was statistically significantly larger in commodity exporters than nonexporters. For inequality, the mean reduction is also larger, but the result is not statistically significant.

social progress, of which commodity cycles is only one. Indeed, Messina and Silva (2018) argue that supply factors, such as an increasing supply of skilled workers, were likely the key drivers of lower inequality in Central America and Mexico, and played an important role across the region. Lustig, Lopez-Calva, and Ortiz-Juarez (2012) also point to the expansion of cash transfers in Mexico, while IMF (2017) highlights the role of government policies to boost low wages in Uruguay.

Commodity Cycles, Poverty, and Inequality

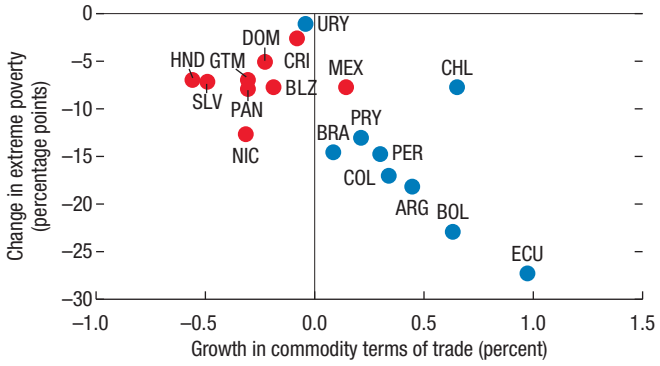
Is There a Statistical Association?

What is the relationship between social indicators and the commodity cycle? The correlation between the reduction in poverty and inequality during the boom and the change in commodity terms of trade points to an interesting story (Figure 5.10).[10] For noncommodity exporters, there is no clear association between changes in commodity terms of trade and those in poverty and inequality. For commodity exporters, however, the relationship is strong, particularly for poverty. The size of poverty reduction is directly proportional to the growth rate of the commodity terms of trade in commodity exporters.[11] For inequality, the relationship for commodity exporters is not as strong as for poverty but is still clearly visible. A closer relationship between the commodity cycle and poverty (rather than inequality) is an empirical regularity found throughout this chapter.

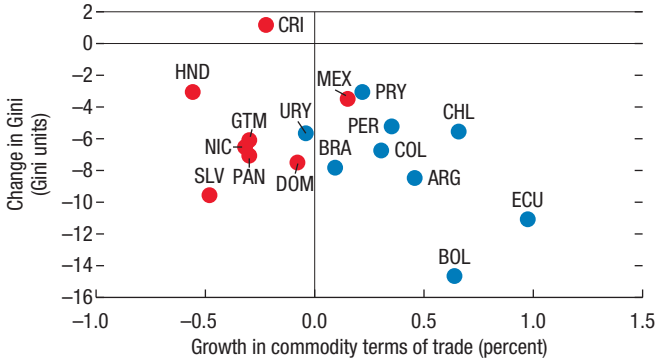
Table 5.1 reports regressions of the share of income by decile on commodity terms of trade as well as several control variables.[12] Income shares of the second to eighth deciles increased significantly, while the share of the top decile declined. Since both low-income and medium-to-high-income segments gained, the poverty result is stronger than the inequality result. Nevertheless, inequality did tend to fall, as the share of income going to

Figure 5.10. Commodity Terms of Trade, Poverty, and Gini Coefficient

1. Average Commodity TOT Growth and Change in Poverty Rate (During boom period 2000–14)



2. Average Commodity TOT Growth and Change in Gini Coefficient (During boom period 2000–14)



Sources: Inter-American Development Bank, SIMS database; World Bank, World Development Indicators database; and IMF staff calculations.
Note: Red dots correspond to CAPDR and Mexico and blue dots to South America. CAPDR comprises Central America and the Dominican Republic. Chile uses 2013 values for 2014 poverty headcount ratio due to data availability. For International Organization for Standardization (ISO) country codes used in data labels, see page 115. CAPDR = Central America, Panama, and the Dominican Republic; TOT = terms of trade.

[10]This captures the income gain or loss a country experienced during the period due to commodity price movements (Gruss 2014).

[11]While Honduras is classified as a commodity exporter given its high net commodity exports, its commodity terms of trade declined because it exports nonextractive commodities and imports extractive ones whose prices increased by more. Consequently, commodity price changes led to a negative wealth effect for Honduras and poverty fell significantly less than in most other Latin American countries.

[12]The sample here only includes commodity exporters, given that there is no statistical association for non-commodity exporters. The regression includes country fixed effects and lagged GDP per capita as a control variable.

Table 5.1. Commodity Terms of Trade and Income Share by Decile in Commodity Exporters

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
(Log) Net commodity	0.151	0.395**	0.392*	0.405*	0.476**	0.575**	0.716***	0.790***	0.436	–4.310**
Price index	(0.120)	(0.191)	(0.207)	(0.226)	(0.236)	(0.255)	(0.267)	(0.259)	(0.301)	(1.735)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita	GDP per capita
Period	2000–14	2000–14	2000–14	2000–14	2000–14	2000–14	2000–14	2000–14	2000–14	2000–14
Observations	114	114	114	114	114	114	114	114	114	114
R-squared	0.608	0.627	0.664	0.674	0.685	0.658	0.604	0.488	0.020	0.638
Number of countries	9	9	9	9	9	9	9	9	9	9

Sources: Socio-Economic Database for Latin America and Caribbean (CEDLAS and World Bank); and IMF staff calculations.

Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

the highest decile fell substantially on average.[13] Interestingly, the bottom income decile did not see its share go up in a statistically significant way in response to higher commodity terms of trade, although its absolute income went up. As expected and consistent with Figure 5.9, poverty reduction was driven more by developments closer to the poverty line, namely the second to fourth decile, depending on the country.[14]

What Are the Channels?

The statistical relationship naturally leads to the question of the channels through which the commodity cycle influences social indicators. Essentially, a commodity boom is a positive wealth shock that propagates through the economy via various channels, as described in the sections that follow.[15]

Market and Private Sector Channels

The positive wealth shock has a direct impact on the commodity sector and spillovers to the rest of the economy, many of them transmitted via the labor market:

- First, the booming commodity sector expands. This draws in labor and other resources. Higher labor demand pushes up real wages and/or employment. It can also reduce or increase the skills premium, depending on the relative labor intensity of the commodity sector.[16]
- Second, improved terms of trade and the expansion of the commodity sector have spillovers to other sectors. With higher wealth and incomes, domestic demand increases, benefiting the nontradable sector. Higher investment by the commodity sector leading, for example, to more construction is another way through which the positive wealth shock feeds into the economy, again expanding the nontradable sector.
- Third, changes in relative wages (a compression in the skills premium if the commodity sector and the nontradable sector are intensive in unskilled labor) will benefit more skill-intensive sectors and lead to further reallocation (Benguria, Saffie, and Urzua 2017).

Overall, the above channels should lead to more employment in the commodity and nontradable sectors. The impact on the noncommodity tradable sector is not clear ex ante. On the one hand, the classic natural resource curse ("Dutch disease") could be operating—higher demand expands the nontradable sector but crowds out the noncommodity sector due to a more appreciated real exchange rate (Harding and Venables 2016). On the other hand, if key tradable inputs are provided locally, there can be positive spillovers from the commodity sector to the manufacturing sector, as has been shown for the United States.[17] Given the relatively narrow initial manufacturing base in most Latin American countries, both effects might be modest, but commodity booms are likely to hamper export diversification to some degree.

In terms of social outcomes, the expansion of the commodity and nontradable sectors, and the related increase in wages, should reduce poverty if those sectors employ workers from the lower end of the income distribution. Additionally, inequality will fall if the expanding sectors are intensive in low-skilled labor, causing the skills premium to decline.

[13]It is not possible to infer what happened to the income level of the top decile from these income-share regressions. Nonetheless, Figure 5.13 shows that real wages grew across all skill levels in commodity exporters on average during the boom, suggesting that in most countries the result in Table 5.1 reflects a relative rather than absolute loss for the top decile.

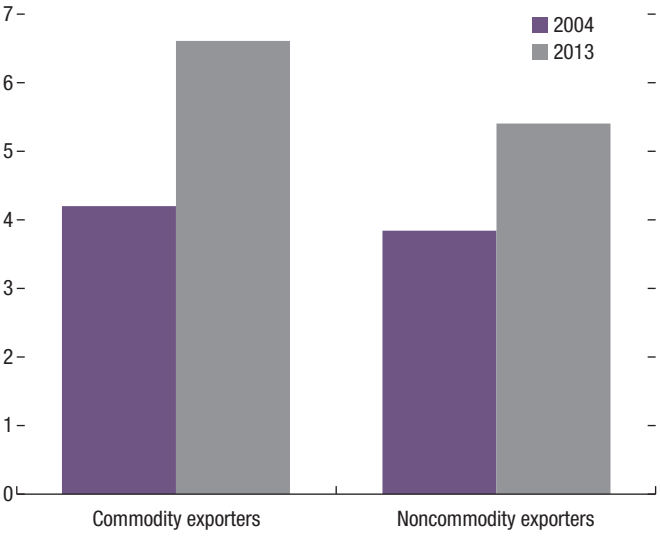
[14]For example, in Bolivia nearly 40 percent of the population was below the poverty line in 2000.

[15]On the larger question of the long-term impact of natural resource abundance on GDP growth and development, there is no consensus. Van der Ploeg (2011), for example, shows that results supporting "the natural resource curse" are sensitive to sample periods and countries.

[16]Oil and gas production, for example, is substantially less labor-intensive than agriculture but is more intensive in skilled labor.

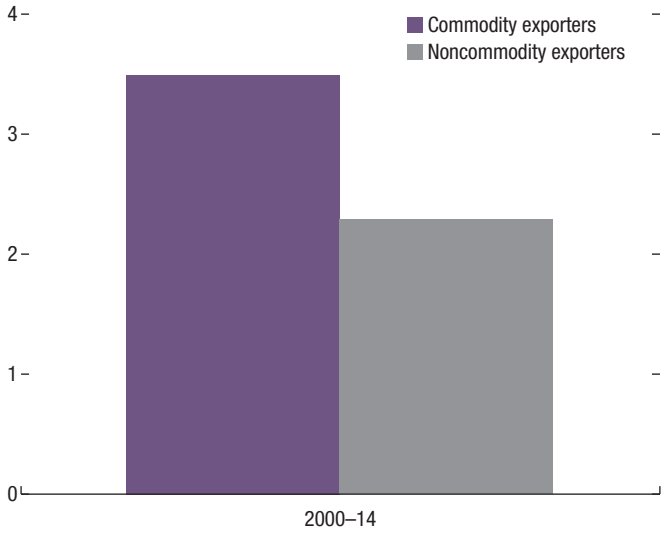
[17]Allcott and Keniston (forthcoming) demonstrate positive spillovers of the oil and gas sector to manufacturing in the United States. Michaels (2011) finds a similar positive result for the United States.

Figure 5.11. Public Investment in Latin America
(Percent of GDP)



Sources: IMF, World Economic Outlook database; and IMF staff calculations.

Figure 5.12. Total Employment Growth
(Percent)



Source: Inter-American Development Bank, SIMS database.

Fiscal Channels

The positive wealth shock is also transmitted via higher fiscal revenues and expenditures:

- Higher government investment operates in a manner similar to higher commodity sector investment. It leads to more domestic demand, for example via increased construction, with a resulting impact on wages and thus poverty and inequality.[18]
- Larger transfers will have a direct impact on poverty and inequality, especially if the transfers are targeted toward lower-income individuals.

Other General Equilibrium Effects

While not a focus in the remainder of this chapter, the wealth shock can be transmitted via other general equilibrium effects, for example via migration or the financial system.[19]

Regional Macroeconomic Evidence

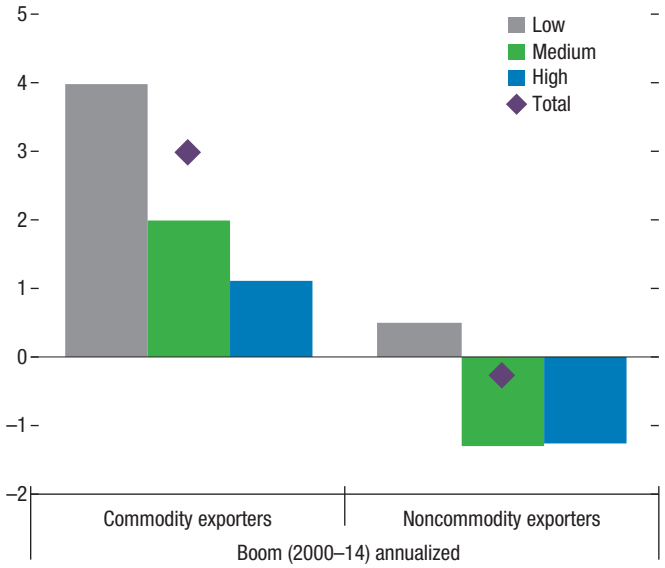
In aggregate, then, commodity booms should reduce poverty and inequality through labor market developments and fiscal transfers.[20] And indeed, these mechanisms seem to have played out in the region. Public investment and employment growth were higher in commodity exporters than importers (Figures 5.11 and 5.12). In line with the results of de la Torre and others (2015), commodity exporters also experienced significantly larger real labor income gains than noncommodity exporters across all skill levels (Figure 5.13). Low-skilled workers gained the most, compressing the skills premium and reducing inequality in both commodity exporters and nonexporters (Figure 5.14) but due to different underlying wage dynamics. Specifically, as Messina and Silva (2018) note, the skills premium reduction reflects not just demand factors tied to the commodity boom, but also an increase in the supply of high-skilled labor. In addition to labor income, government transfers also increased more in commodity exporters than

[18]Of course, public and private investment can also expand supply, not just demand.

[19]See, for example, Alberola and Benigno (2017).

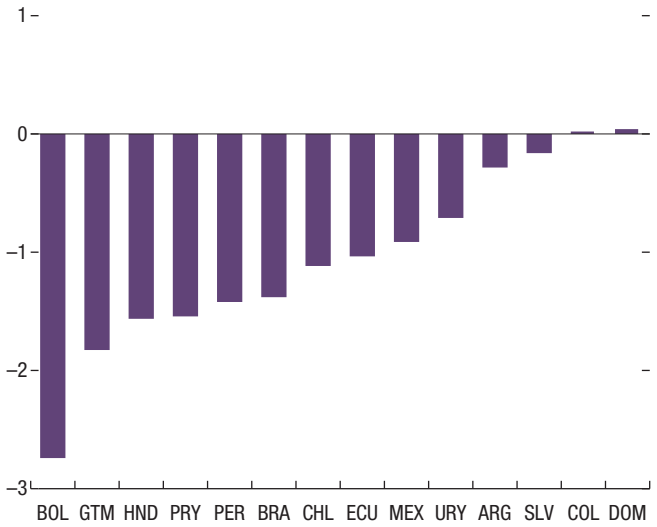
[20]Note that the vast majority of households in Latin America outside the highest-income segments do not receive any capital income, so transfers and labor income account for the overwhelming share of their total income.

Figure 5.13. Real Labor Income Growth by Educational Level
(Percent)



Source: Inter-American Development Bank, SIMS database.

Figure 5.14. Skill Premium Change in the 2000s
(Percentage point change in the ratio of hourly wage; high to low education)



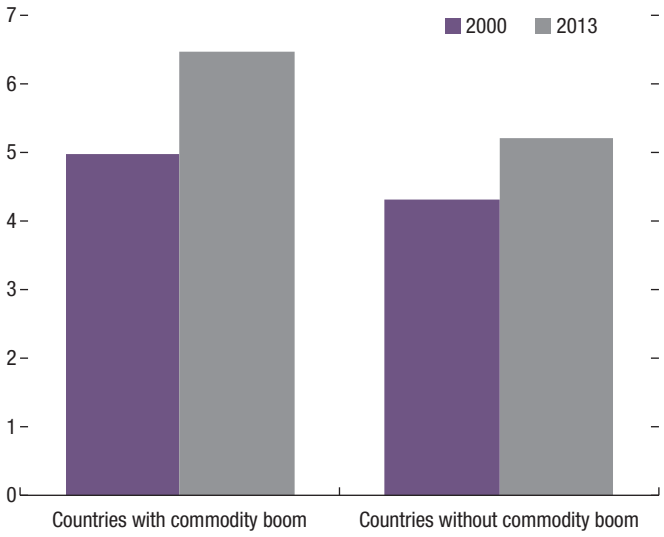
Sources: Socio-Economic Database for Latin America and Caribbean (CEDLAS and World Bank); and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

nonexporters, further contributing to greater poverty and inequality declines in commodity exporters (Figure 5.15).

Micro-Data Case Studies: Bolivia, Brazil, and Peru

This section examines Bolivia, Brazil, and Peru, all of which experienced significant reductions in poverty and inequality. They are also commodity exporters, although Brazil is more diversified. The analysis first uses Shapley decompositions of household survey data for Bolivia and Peru to analyze the drivers of the national inequality and poverty decline.[21] This helps identify whether labor income or transfer income played a larger role.[22] Within-country studies are then conducted for Brazil and Bolivia to disentangle the impact

Figure 5.15. Average Government Transfers in Latin America
(Percent of GDP)

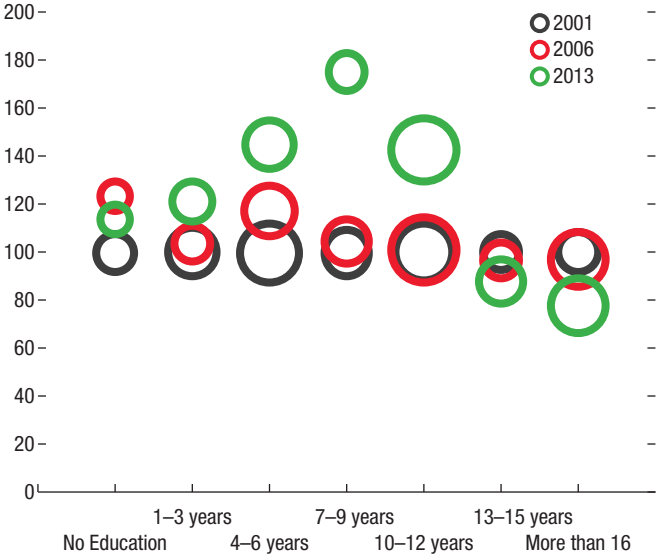


Sources: IMF, World Economic Outlook database; and IMF staff calculations.

[21]Official household survey data are used. For Bolivia, 2013 data are compared to 2007 data, while in Peru that comparison is between 2011 and 2007. For both countries, the official poverty lines are used to define poverty thresholds.

[22]Broadly speaking, a Shapley decomposition is a rigorous way to calculate how much any one factor contributed to changes in the income distribution. It isolates the contribution of one specific factor (say, an increase in wages in the agricultural sector) by calculating a counterfactual distribution holding all other factors constant. See Azevedo, Inchauste, and Sanfelice (2013) for more details.

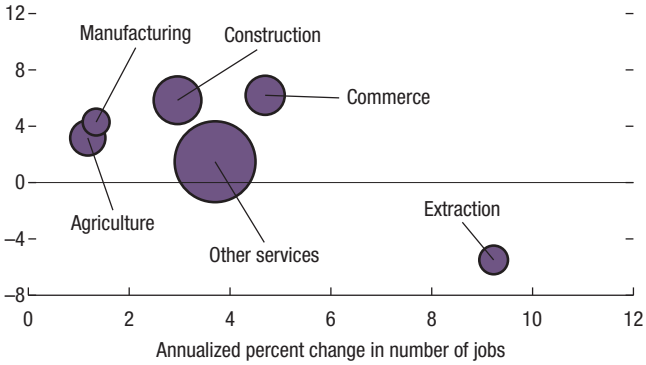
Figure 5.16. Bolivia: Index of Monthly Real Labor Income by Educational Level
(Index: 2001 = 100)



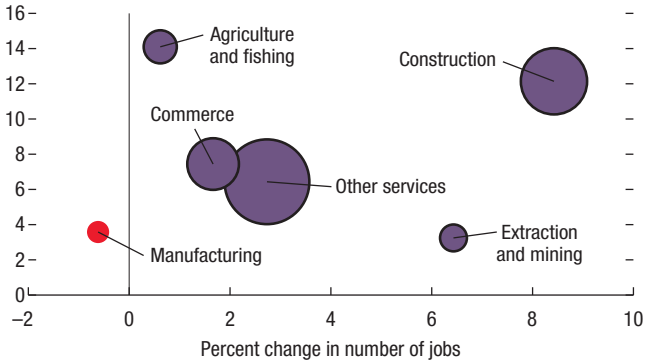
Sources: Programa de mejoramiento de las encuestas y medicion sobre condiciones de vida (MECOVI) household survey; and IMF staff calculations.
Note: The size of the bubble corresponds to the relative size of workers in each category.

Figure 5.17. Real Labor per Capita and Sectoral Employment in Bolivia and Peru

1. Bolivia: Annualized Percent Change in Real Labor Income per Capita, 2006–13



2. Peru: Annualized Percent Change in Real Labor Income per Capita, 2007–11



Sources: Encuesta nacional de hogares (ENAHO) household surveys for Peru; programa de mejoramiento de las encuestas y medicion sobre condiciones de vida (MECOVI) household surveys for Bolivia; and IMF staff calculations.
Note: The size of the bubble corresponds to the absolute change between 2006 and 2013 in the number of workers in each sector whose income depend on each of the sectors for Bolivia, and the absolute change between 2007 and 2011 in the number of workers in each sector whose income depend on each of the sectors for Peru. In red, a negative change.

of a fiscal windfall from the pure market impact associated with a commodity boom.

What Do Household Survey Data Show regarding Wage, Employment, and Government Transfer Developments in Bolivia and Peru?

In Bolivia, real labor income increased for all skills segments except for the highest segments during the boom. The largest gains were for workers with intermediate levels of education (Figure 5.16), consistent with the cross-country regression results on changes in income share by decile.

Figure 5.17 looks at real per capita labor income and employment by sector for Bolivia (Panel 1) and Peru (Panel 2). In terms of employment growth, the biggest winners were construction and the extractive sector in Peru, and the extractive sector and commerce in Bolivia, in line with the previous discussion on channels. In terms of numbers of jobs created, the broad services sector contributed the most in both countries, in part reflecting its size. Overall, employment growth came from extractive and nontradable sectors. Interestingly, the picture is more mixed for real wage growth. Average wages in the extractive sector fell in Bolivia, likely reflecting a compositional effect, with the number of informal (poorly paid) miners increasing faster than employees in larger, capital-intensive mines during the boom. Manufacturing did poorly in both countries, especially in terms of employment

Table 5.2. Composition of Household Total Income

		2006	2007	2011	2012	2013
Bolivia	Labor	82.8	82.4	81.8	80.9	79.1
	Nonlabor	16.4	17.0	17.9	18.4	20.4
	Of which: Transfers from government	5.7	5.4	9.8	11.2	. . .
		2007	**2008**	**2009**	**2010**	**2011**
Peru	Labor	83.6	84.2	84.9	84.8	85.8
	Nonlabor	16.4	15.8	15.1	15.2	14.2
	Of which: Current transfers[1]	9.4	9.0	9.0	8.6	8.3
	Of which: Programa JUNTOS	0.5	0.7	0.3	0.3	0.3

Sources: Encuesta Nacional de Hogares (ENAHO) household surveys for Peru; Programa de Mejoramiento de las Encuestas y Medicion sobre Condiciones de Vida (MECOVI) household survey for Bolivia; and IMF staff calculations.
Note: Figures for Bolivia do not exactly sum to 100 percent since extraordinary retirement benefits, scholarships, and insurance compensation are not included.
[1]Includes transfers within the country: pensions and transfers from individuals and institutions, public and private.

growth, again in line with a standard crowding-out story as well as with global trends.[23]

Finally, Table 5.2 reports the share of labor versus transfers in gross income (which includes transfers from the government and from family members or others). In Bolivia, government transfers increased markedly during the boom, partly reflecting the introduction of a noncontributory pension scheme. In Peru, transfers from the government did not increase substantially. In both countries, however, transfers account for a much smaller share of income than labor income, mechanically limiting their scope to lower poverty and inequality.

Shapley Decompositions

The formal Shapley decompositions largely confirm the earlier conclusions. For both Bolivia and Peru, labor income played a larger role than nonlabor income in reducing inequality and poverty. Across sectors, changes in labor income of the nontradable (services) sector explain much of the social progress (Figure 5.18).[24]

Across skill levels, changes at the lower end of the distribution were important for understanding changes in social indicators. Specifically, low-skilled workers—defined as having complete primary or incomplete secondary education—were one of the biggest contributors to the fall in poverty and inequality. Interestingly, skilled workers in both countries (with complete secondary or tertiary education) were also important contributors to poverty reduction, even though they have the highest wages on average and their wages grew the least. This is because while average income did not increase for skilled workers, wages at the lower end of their wage distribution moved up during the boom. This allowed a nontrivial fraction of skilled workers to exit poverty.[25]

In summary, the case studies for Bolivia and Peru show that poverty and inequality in both countries fell largely due to labor income gains for low-to-medium-skilled workers in the nontradable sector. Whether such gains are sustainable after the boom is a question to which the final section of this chapter will return.

Municipal-Level Analysis

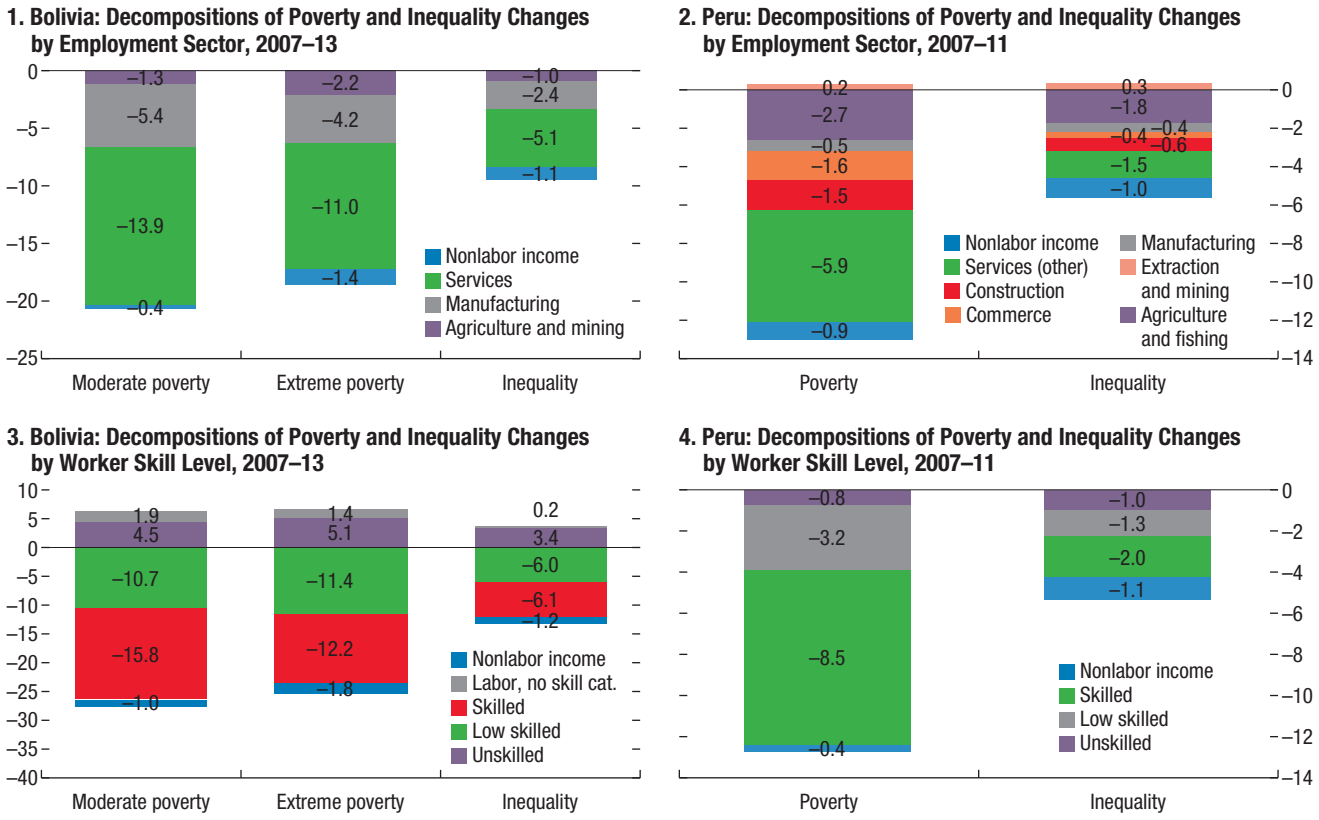
This section studies the differences between commodity-producing and non-commodity-producing regions within Brazil and Bolivia. Both Brazil and Bolivia produce commodities with a range of labor intensity and redistribute a large share of the commodity windfall to producing regions.

[23]A decline in manufacturing employment has been a phenomenon not only in commodity exporters (see Chapter 3 of the April 2018 *World Economic Outlook*).

[24]See Vargas and Garriga (2015) for more details on the Shapley decomposition for Bolivia.

[25]For example, in Peru, skilled workers make up about a third of the poor, with many close to the national poverty line.

Figure 5.18. Shapley Decompositions of Poverty and Inequality by Employment Sector and Skill Level for Bolivia and Peru



Sources: Encuesta Nacional de Hogares (ENAHO) household Surveys for Peru; Programa de Mejoramiento de las Encuestas y Medicion sobre Condiciones de Vida (MECOVI) household surveys for Bolivia; and IMF staff calculations.
Note: Gini coefficient change based on rescaled gini coefficients in the range (0–100); Poverty changes in percentage points. Unskilled (never attended school or incomplete primary education); low skilled (complete primary or incomplete secondary education); skilled (complete secondary, incomplete tertiary, or complete tertiary education). Cat. = category.

Did Poverty Fall across the Whole Country or Only in Certain Regions?

Based on census data, poverty reduction was broad-based in both Bolivia and Brazil, with the entire municipal poverty distribution shifting toward less poverty during the boom period (left shift in Figure 5.19).[26] Indeed, poverty fell in 97 percent of Bolivian municipalities and in 99 percent of Brazilian municipalities between the two census rounds.[27] On average, poverty fell by 14 percentage points in Bolivian municipalities and by 18 percentage points in Brazilian ones.

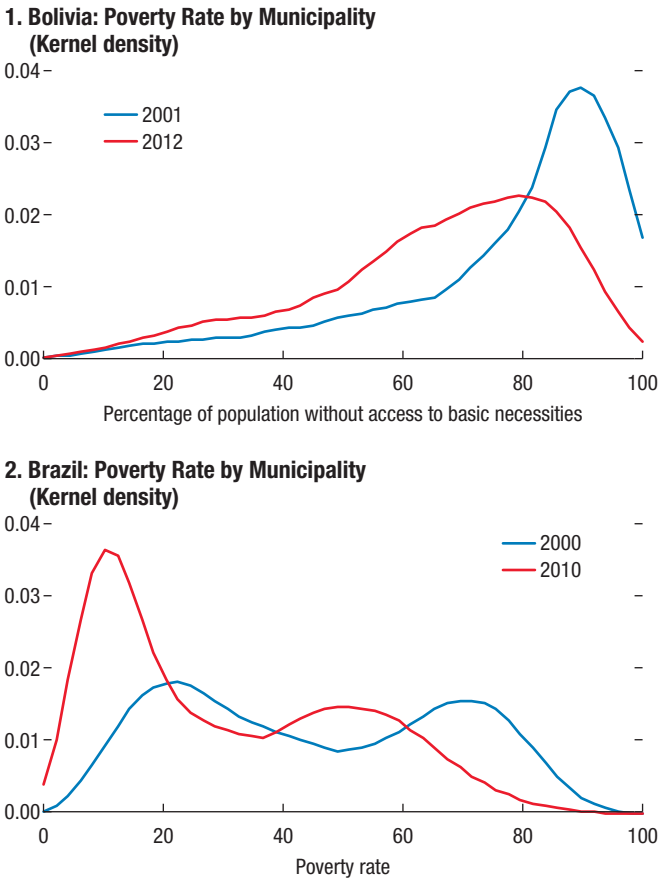
Did Municipalities Producing Natural Resources Improve More than Others?

For Brazil, information from the national oil and gas regulator (Agência Nacional do Petróleo, Gás Natural e Biocombustíveis - ANP) and the Ministry of Mining were combined to construct the real value of natural resource production per capita for each municipality (Figure 5.20). For Bolivia, data at this level of precision were not

[26]Population census data are used because household survey data are generally not representative at the municipal level. Typically, such data are only available at one-decade intervals (2001 and 2012 for Bolivia; 2000 and 2010 for Brazil). Importantly, poverty measures from the Brazilian and Bolivian censuses are not directly comparable. Specifically, the Bolivian population census does not provide data on monetary income, so it is not possible to calculate inequality or a standard income-based poverty measure. To capture poverty, measures of access to basic necessities were used (sanitation, water, electricity, adequate living space, etc.). See Feres and Mancero (2001).

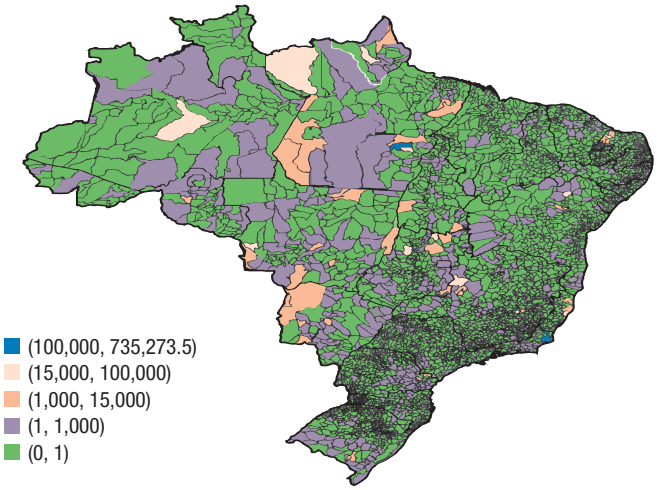
[27]The "hump-shape" in the Brazilian distribution mostly reflects large differences between the south and north of the country, with much higher poverty in the north and northeast than in other regions.

Figure 5.19. Poverty Rate Density Distributions by Municipality in Bolivia and Brazil



Sources: Instituto Brasileiro de Geografia e Estadistica (IBGE) for Brazil; Instituto Nacional de Estadistica (INE) for Bolivia; and IMF staff calculations.
Note: These figures show the density of the municipal level poverty distributions for Bolivia and Brazil.

Figure 5.20. Value of Natural Resource Production per Capita by Municipalities, 2010



Sources: Agência Nacional de Petróleo (ANP); Brazilian Mining Ministry; Instituto Brasileiro de Geografia e Estatística (IBGE) (2010); and IMF staff calculations.
Note: The map shows natural resource (hydrocarbons + minerals) production per capita in 2010 for 5,565 Brazilian municipalities. Population data from the 2010 population census. Data on hydrocarbon production volumes by field are from Agência Nacional de Petróleo (ANP). These data are assigned to municipalities based on geographic information and are valuated according to annual price data by state, also from ANP. Mineral production values data are from the Brazilian Mining Ministry. Values are in constant 2010 Brazilian reais.

available. Instead, a list of all municipalities that produce either hydrocarbons or minerals was constructed, without obtaining the precise volume or value of production.

In both countries, many municipalities produce natural resources, but in terms of the total volume and value, production is regionally concentrated, creating a relatively small group of municipalities with high per capita natural resource production. For example, out of Brazil's more than 5,500 municipalities, the top 20 producers account for 75 percent of total production. In Bolivia, the region of Tarija produced about 70 percent of total natural gas in 2012.

To study the impact of natural resources, the change in poverty in producer municipalities is compared to the change in poverty in other municipalities, controlling for other factors (see Annex 5.1 for details of the identification strategy).

Poverty fell by more in natural resource municipalities (Table 5.3). For Brazil, higher real values of natural resource production are associated with larger declines in poverty, with producer municipalities reducing poverty by 1.4 percentage points on average relative to nonproducer ones.[28] For Bolivia, the natural resource municipalities reduced poverty by 2.7 percentage points more than other municipalities. Regarding inequality, the results are mixed for Brazil, with statistical significance

[28]To construct the natural resource producer dummy variable in Brazil, a municipality is defined as a producer if it produces more than the mean amount of natural resources per capita (this essentially captures larger producers as opposed to municipalities with only, for example, very small-scale mining).

Table 5.3. Impact of Natural Resource Boom on Producer Municipalities in Brazil and Bolivia

	Brazil		Bolivia
	Poverty	Gini Coefficient	Poverty
Impact of increase in real per capita natural resource production (range for top 20 increases)	−0.39*** to −9.1***	0 to −0.05**	N/A
Impact of being a natural resource producer municipality (dummy variable analysis)	−1.44***	0	−2.75*

Source: IMF staff calculations.
Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

depending on which technique is used. This is consistent with the earlier cross-country results of a clearer result on the poverty front.

In summary, the social gains in Brazil and Bolivia were broad-based across municipalities, but natural resource producers experienced larger gains.

What Can within-Country Analysis Show about the Channels through Which the Commodity Boom Affected Poverty and Inequality?

To isolate the fiscal impact from other channels, natural resources can be divided into offshore oil and gas production and domestic mineral mining for Brazil; and into onshore gas megacampos[29] and mineral mining for Bolivia.[30] Mineral mining tends to yield smaller fiscal windfalls but generates substantial labor demand in the local extractive sector. Offshore oil and gas has a minimal labor demand effect (and labor may not even be located in the municipality closest to the rig), but generates important fiscal windfalls for municipalities closest to the oil field (see Annex 5.2 for details). Hence, for Brazil, the impact of offshore oil and gas production proxies the pure fiscal channel while mining picks up the combined impact. This can be seen in Table 5.4. A similar logic applies to the distinction between gas megacampos and mineral mining in Bolivia, although the analysis is less precise because neither the value or volume of production nor exact fiscal windfalls at the municipal level are known.

In Brazil, the pure fiscal impact (as measured by the impact of offshore oil and gas production) leads to some reduction in poverty and a marginal increase in labor formality (Figure 5.21).[31] It also

Table 5.4. Impact of Mineral and Offshore Hydrocarbon Production on Municipal Revenues and Extractive Sector Employment

	(1) Natural Resource Royalties per Capita	(2) Current Revenues per Capita	(3) Share of Workers in Extractive Industries
Change in mineral production per capita	0.0174***	0.0241***	1.33e-05***
	(0.000922)	(0.006010)	(0.000004)
Change in offshore oil and gas production per capita	0.0209***	0.0248***	−2.56E-06
	(0.001300)	(0.002640)	(0.000002)
Geographic controls	Yes	Yes	Yes
Dependent variable in 2000	Yes	Yes	Yes
Change in dependent variable between 1991 and 2000	No	No	No
State fixed effects	Yes	Yes	Yes
Observations	5,507	4,982	5,507
R-squared	0.886	0.834	0.223

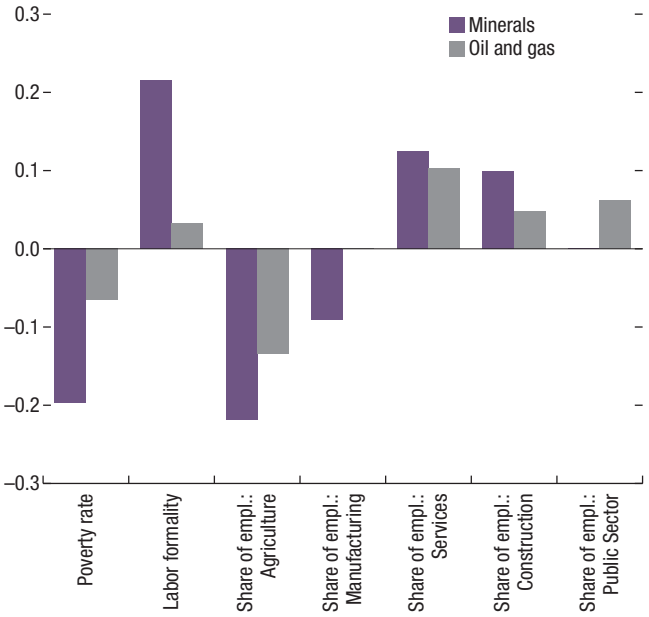
Source: IMF staff calculations.
Note: *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

[29]So-called gas "megacampos" are the largest gas fields in Bolivia.

[30]For each country there is an additional category (onshore oil and gas production for Brazil and non-megacampo onshore oil and gas production for Bolivia) for which no impact is found (production is significantly smaller), so that category for each country is omitted from the discussion.

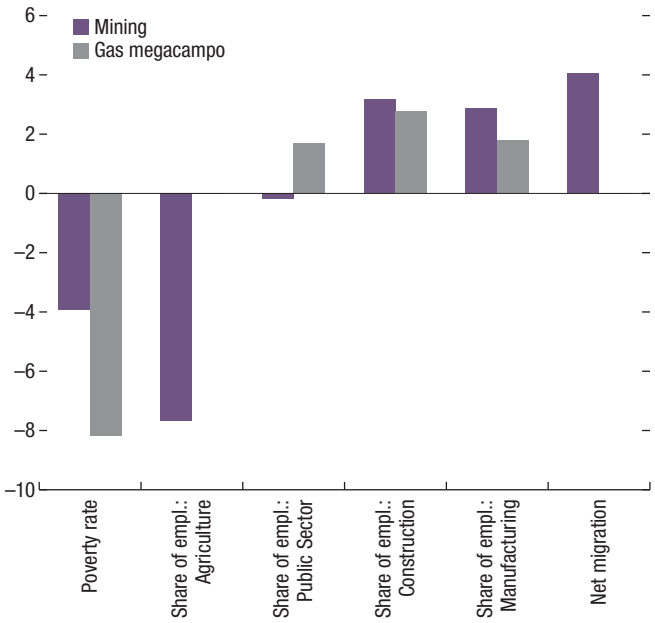
[31]All coefficients shown in Figures 5.21 and 5.22 are statistically significant. When a coefficient is not statistically significant the corresponding bar chart is zero (for example, public employment in Brazilian mineral municipalities).

Figure 5.21. Brazil: Impact of One Standard Deviation Increase in Natural Resource Extraction at the Municipal Level
(Percentage points)



Sources: Instituto Brasileiro de Geografia e Estatística (IBGE); and IMF staff calculations.
Note: The change between the 1991 and 2000 census is included in the regressions as a control variable when available. Standard errors are clustered at the state level. Estimated coefficients are set to zero when they are not significant at least at the 10 percent level. When they are significantly different from zero, the graph shows the impact of a one-standard deviation increase in the value of natural resource production per capita between 2000 and 2010.
Empl. = employment.

Figure 5.22. Bolivia: Impact of Natural Resource Extraction at the Municipal Level
(Percentage points)



Sources: Instituto Nacional de Estadistica (INE); and IMF staff calculations.
Note: Empl. = employment.

leads to a shift of labor out of agriculture and into nontradables, essentially services and construction, because of the increased fiscal resources being partly used for public investment.[32] Additionally, part of the fiscal windfall is used to increase public sector employment. In mineral municipalities, the labor market effects are much larger. Labor formality increased significantly and labor shifted from agriculture and manufacturing into construction and services. The results thus point to an important role for both fiscal and market channels, but especially the latter, in reducing poverty.[33]

Similarly, in Bolivia, while poverty fell by more in gas megacampo municipalities, the labor market impact is greater in mining municipalities given that the fraction of agricultural employment decreased significantly and net migration increased (Figure 5.22). In megacampo municipalities, public sector employment increased significantly, in line with the Brazilian results, and pointing to the fiscal windfall being used for public employment. Indeed, the increase in public employment is notable considering the small share of public sector workers in the average Bolivian municipality—the increase of around 2 percentage points in public sector employment in gas megacampo municipalities is greater than one standard deviation.

[32]From regressions with local budget data, fiscal windfalls tend to increase mainly capital expenditure but also current expenditure, including wages.

[33]The effects are small for most municipalities—a one standard deviation increase in the value of mineral production per capita reduces the poverty rate by only 0.2 of a percentage point. For the big producers, however, the impact is economically significant, with an estimated reduction in poverty of between 3 and 9 percentage points for the top five producers.

Overall, the results for Brazil and Bolivia are in line with growing evidence from other within-country studies in Latin America.[34]

Fiscal Decentralization in the Context of Large Commodity Windfalls

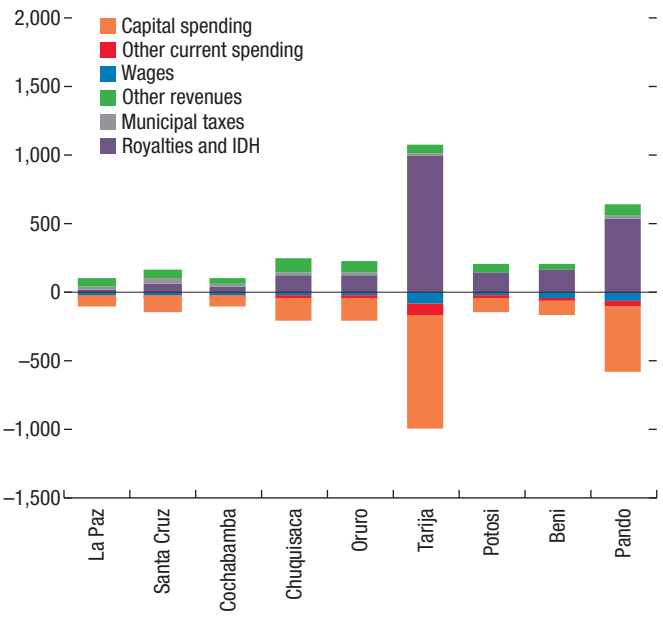
In Latin America, Bolivia, Brazil, and Peru redistribute large parts of the fiscal windfalls from natural resource extraction back to subnational producers. Colombia also redistributes royalties to subnationals but with less focus on producers since a reform in 2012 (see Annex 5.2 for further details, including on the frameworks in advanced economies such as Canada and Norway).

While fiscal windfalls do have some beneficial effects for producer regions, sharing large amounts of natural resource revenues with subnational producers has several conceptual drawbacks. First, it is not clear whether geographical and geological differences between regions should determine fiscal envelopes given the large horizontal inequities this implies. Second, the volatile nature of natural resource revenues calls for careful intertemporal planning, which is even harder to achieve at the local level than at the national level. Third, resource revenues are essentially transfer revenues from a local government's perspective and thus do nothing to encourage accountability and the building of own-revenue bases. Fourth, when the fiscal windfall is large in per capita terms, it can lead to problems with absorptive capacity as well as governance (IMF 2009). Of course, the environmental impact of mining activity needs to be considered, and creates a case for an additional transfer to producing regions.

Consider the departmental budget breakdown of Bolivia for 2012 (Figure 5.23). The main gas region (Tarija) has a population share of around 5 percent. Yet its budget accounted for over a third of all departmental revenues and wages, and nearly half of all departmental capital expenditure. In Peru in the same year, the main natural-resource-producing departments (Moquegua and Cusco) received more than S/ 2,000 per capita in commodity-related transfers (canons), while some other departments received less than S/ 1 per capita. Indeed, 12 of the 183 provinces in Peru receive about 50 percent of canon revenues (Santos and Werner 2015).

In both Peru and Bolivia, some local governments with the biggest windfalls per capita began to accumulate large deposits during the boom, while acute investment needs existed in other regions (Santos and Werner 2015, Chapter 10). Since the boom, the most important commodity-producing regions in Bolivia and Brazil, Tarija and Rio de Janeiro, respectively, have suffered severe fiscal sustainability problems. This is consistent with the drawbacks noted above, and several papers provide evidence that governance problems and/or capacity constraints at the subnational level

Figure 5.23. Bolivia: Departmental Budgets, 2012
(US dollars per capita)



Sources: National authorities; and IMF staff calculations.
Note: IDH = Impuesto Directo a los Hidrocarburos.

[34]See Benguria, Saffia, and Urzua (2017) and Cavalcanti, Da Mata, and Toscani (2016) on Brazil; Pellandra (2015) and Alvarez, Garcia, and Ilabaca (2017) on Chile; and Aragon and Rud (2013) and Loayza and Rigolini (2016) on Peru. Cust and Poelhekke (2015) provide a review of the literature.

often limit the effectiveness of public spending, especially in the context of high per capita natural resource revenues.[35]

Given this, when the opportunity exists for substantive reforms to decentralization frameworks, those reforms should aim to minimize horizontal inequities, avoid boom-bust revenue cycles at the local level, and, crucially, clarify the goals of the revenue-sharing agreement. To help avoid boom-bust cycles leading to large spending shocks, further use could be made of precautionary stabilization funds, such as in Chile, Colombia, and Norway. To reduce horizontal inequities, the reform of royalty-sharing arrangements in Colombia in 2012 is a good example of what can be done.[36]

Notwithstanding the Colombia example, achieving consensus on larger reforms of revenue-sharing arrangements is difficult. Other steps can still play an important role, including building capacity at the subnational level and encouraging local governments to build their own-revenue bases to reduce reliance on transfers (for example, via property taxes). Transfer arrangements should also be made as transparent as possible to facilitate planning and oversight. Such measures will increase ownership and accountability, and reduce revenue volatility. Finally, nonresource transfers can potentially be used to offset some of the horizontal inequities by using measurable criteria of local needs in some of the allocation formulas (for example, the equalization scheme in Canada).

Can Social Progress Be Sustained with Lower Commodity Prices?

To sum up, Latin America made tremendous progress in reducing inequality and poverty in the 2000s, especially in commodity-exporting countries. Much of the decline in poverty and the Gini coefficient was because labor income inequality fell, linked to a declining skills premium and the expansion of services and lower-skill jobs. But increasing social transfers did also play a role.

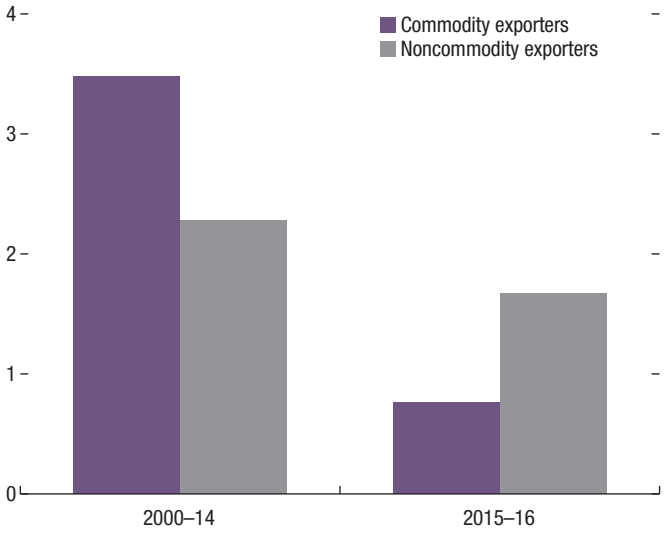
Looking ahead, given that commodity prices have been significantly lower since the end of the boom in 2014, there are concerns that the social progress is under threat, especially in commodity exporters. Indeed, post 2014, employment growth has slowed much more in commodity exporters than importers, while real wage growth has been negative for all skill groups (Figures 5.24 and 5.25). The poverty cycle has also turned in some commodity exporters, with increases in poverty rates in Brazil and Paraguay. As discussed earlier, the impact of commodity cycles on inequality is not as strong as on poverty. Nonetheless, inequality in commodity exporters has largely moved sideways post 2014 following the tremendous reduction in the boom years. At the same time, fiscal space in many commodity exporters has fallen, given a decline in commodity-related revenues and slowing growth. All this suggests that absent policy measures, lower commodity prices carry with them a significant risk of slower poverty reduction and possibly higher inequality in commodity exporters in the coming years.

How should commodity exporters respond to this challenge? While the channels by which commodity prices affected inequality and poverty during the boom will also be present in reverse during the post-boom period, they need not be symmetric. For example, many commodity exporters saw significant migration to urban areas from rural areas. This may not reverse in the post-boom period given high costs associated with moving. Moreover, countries that built up fiscal cushions during the boom can use the buffers in the post-boom period to smooth the adjustment to lower commodity prices. Some countries, such as Bolivia and Peru, have been doing this already, while the adjustment in countries without fiscal buffers (such as Ecuador) has been more difficult.

[35]See Caselli and Michaels (2013) for Brazil; Arrellano-Yanguas (2011) for Peru; and Perry and Olivera (2009) for Colombia.

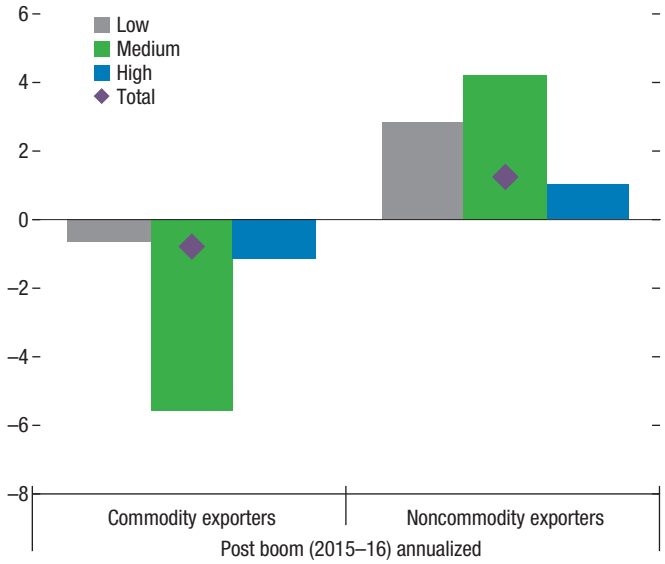
[36]Colombia's royalty sharing arrangements are not fully integrated into the annual budget. A unified budget would be a preferable option for most countries.

Figure 5.24. Total Employment Growth
(Percent)



Source: Inter-American Development Bank, SIMS database.

Figure 5.25. Real Labor Income Growth by Educational Level
(Percent)



Source: Inter-American Development Bank, SIMS database.

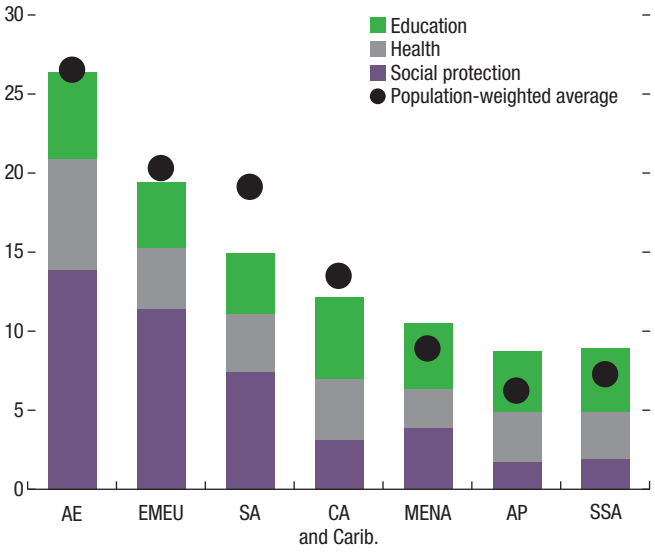
And as shown in the social progress made in many commodity importers in Latin America despite a negative commodity terms-of-trade shock, there is still a clear role that other policies can play to mitigate the impact of lower commodity prices on social progress:

- For central governments, especially in countries with limited fiscal buffers, there is potential to maintain the quality of social and infrastructure spending by increasing revenues and reprioritizing spending.[37] Indeed, on the social protection side, Latin America already spends significantly less than emerging Europe or advanced economies (Figure 5.26). Space to maintain such spending levels could, for example, be created by (1) increasing revenues from progressive personal income taxes, which as Figure 5.27 shows tend to be less in Latin America compared to other regions;[38] and (2) reducing universal price subsidies (for example, energy subsidies), which are present in Latin America and typically highly regressive, although at lower levels than in other emerging regions (Figure 5.28). Increasing the efficiency of spending could also play a role. For example, existing social transfers could be better targeted in many countries by making further use of means testing where feasible (IMF 2014).
- The allocation of revenue-capacity and spending responsibilities at different levels of government could be improved. Enhancing capacity at the local level is essential. Apart from reforming formulas for revenue-sharing

[37]Latin American tax and transfer systems are substantially less progressive than such systems in Organisation for Economic Co-operation and Development countries (Lustig 2012; Hanni, Martner, and Podesta 2015; OECD 2018). Lustig (2012) finds that in some Latin American countries, the net income of the poor and near-poor can be lower than it was before taxes and cash transfers. In-kind transfers in education and health, however, are progressive throughout the region.

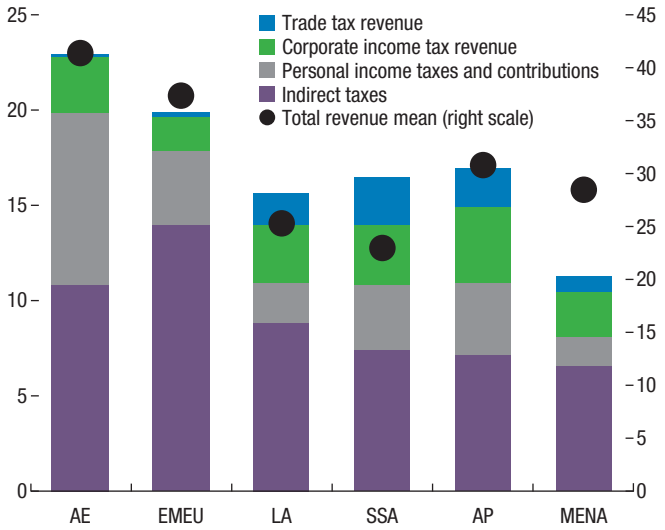
[38]Hanni, Martner, and Podesta (2015) find that while maximum legal personal income tax rates in Latin America range from 25 to 40 percent, the effective tax rates tend to be substantially lower, with the effective rate for the top decile only at 5.4 percent on average. Consequently, the redistributive impact of personal income taxes in Latin America is very limited, achieving a reduction of just 2 percent in income inequality, which contrasts markedly with the countries of the European Union, whose distribution improves more than 12 percent after income taxes (OECD 2018). IMF (2014) recommends progressive personal income taxes as an important tool to achieve fiscal redistribution.

Figure 5.26. Composition of Social Spending, 2010
(Percent of GDP)



Sources: IMF, Fiscal Affairs Department database; and IMF staff calculations.
Note: AE = advanced economies; EMEU = emerging Europe; SA = South America; CA and Carib. = Central America and the Caribbean; MENA = Middle East and North Africa; AP = Asia Pacific; SSA = sub-Saharan Africa.

Figure 5.27. Global Revenue Mix by Regions, 2015
(Percent of GDP)

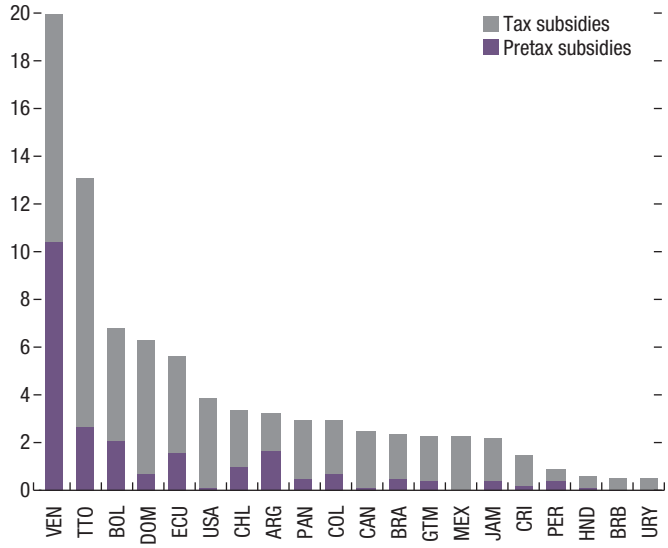


Sources: IMF, Fiscal Affairs Department database; and IMF staff calculations.
Note: AE = advanced economies; EMEU = emerging Europe; LA = Latin America; MENA = Middle East and North Africa; AP = Asia Pacific; SSA = sub-Saharan Africa.

to take greater account of spending needs (for example, population size and poverty levels), thought should be given to greater use of stabilization funds, with clear rules and governance arrangements, in commodity exporters.

- Increasing the flexibility of labor markets and deploying policies aimed at retooling workers would help smooth the necessary adjustment to the rebalancing of demand caused by lower commodity prices. And while always challenging, continuing structural reforms to help diversify the production base would increase the resilience of commodity exporters to commodity price shocks.
- Given that better education was an important structural factor that helped reduce inequality and lift people out of poverty during the boom, pushing for further improvements in the quality of education should remain a priority, although gains from any policy measures will take time and only accrue in the longer run.

Figure 5.28. Subsidies in Latin America, 2015
(Percent of GDP)



Sources: IMF, Fiscal Affairs Department database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 115.

Latin America, and especially South America, faces an important challenge in managing the impact of lower commodity prices on social progress, especially their impact on the inequality and poverty reductions since the turn of the century. Implementing the right policies will be key to meeting this challenge.

Annex 5.1. The Local Impact of Natural Resource Booms in Latin America: Methodology

Brazil: The following equation is estimated to capture the local impact of the resource boom:

$$\Delta y_{i,2010} = \alpha + \beta \Delta x_{i,2010} + \gamma \Delta y_{i,2000} + \delta y_{i,2000} + \theta_s + \rho Z_i + \epsilon_i, \quad \text{(A5.1.1)}$$

in which $\Delta y_{i,2010}$ is the change in the dependent variable between 2000 and 2010 in municipality i and $\Delta x_{i,2010}$ is the change in the explanatory variable (natural resource production per capita measured in constant 2010 Brazilian reais) in municipality i. β is the coefficient of interest. We include both the level of the dependent variable in 2000 ($y_{i,2000}$) to capture convergence effects, and the change in the dependent variable between the previous census rounds (1991 to 2000 – $\Delta y_{i,2000}$) to control for municipality-specific pretreatment trends. Additionally, we include state fixed effects θ_s to account for regional dynamics and a vector of geographic controls Z_i that measure whether a municipality is located on the coast, for example. Standard errors are clustered at the state level.

Bolivia: The following simple difference-in-difference regression model is estimated using data from the 2001 and 2012 population census:[1]

$$y_{it} = \alpha + \gamma EM_i + \theta T_t + \rho(EM_i * T_t) + X'_{it}\beta + \varepsilon_{it}, \quad \text{(A5.1.2)}$$

in which y_{it} is the dependent variable, EM_i is a dummy variable that is 1 for extractive sector municipalities, T_t is a time dummy that is 1 in 2012, and the interaction $D_{it} = (EM_i * T_t)$ is the treatment variable, so that ρ is the coefficient of interest. X'_{it} is a vector of municipality and time-varying covariates. A differentiation is made between mineral producers, "small" oil and gas producers, and the natural gas megacampo producers.

Since data prior to 2001 are not available for Bolivia, the parallel trend assumption or control for pretreatment trends in the estimation cannot be explicitly tested. To improve identification, the control group is limited to those municipalities that have the best covariate overlap with the treatment group. In other words, the aim is to compare extractive sector municipalities to municipalities that prior to the resource boom looked very similar to them. To do this, an entropy balancing technique is used (Hainmueller and Xu 2013). The method assigns weights between 0 and 1 to municipalities in the control group to achieve optimal covariance overlap and is well suited to the setup with many more control municipalities than treatment municipalities.[2]

[1]See Toscani (2017) for more details.

[2]Entropy balancing achieves virtually perfect overlap both for the first and the second moment of the distribution. Like the now-popular synthetic control method, entropy balancing implicitly makes a strong linearity assumption, however.

Annex 5.2. Details of Natural Resource Revenue Sharing in Latin America and Elsewhere

Natural resource revenues are largely centralized in Chile, Ecuador, Mexico, Norway, Trinidad and Tobago, and Venezuela, with either very limited or no redistribution to subnational producers. In the three case study countries and Colombia, significant amounts go to subnational governments (see Viale 2015 for an overview). In Canada, provinces manage nonrenewable natural resources.

Bolivia: Out of the total 18 percent hydrocarbon royalty, 11 percentage points go to producing departments, 6 percentage points stay with the central government, and 1 percentage point goes to the lightly populated departments of Pando and Beni. The 32 percent hydrocarbon tax (Impuesto directo a los hidrocarburos—IDH) is allocated in a more complicated way, going to both producing and nonproducing departments as well as municipalities, with 20 percentage points remaining with the central government. Mining royalties are distributed only to producing departments and municipalities, with an 85–15 split between the two. For more details, see IDB (2015).

Brazil: Sixty-five percent of mineral royalties are distributed directly to the producing municipality, while 23 percent go to the producing state and the remainder to the federal government. For oil and gas, the allocation formula is much more complicated, but since the 1997 royalties law, substantial amounts of oil and gas revenues have been distributed to municipalities that either host an onshore oil and gas field or face on offshore oil and gas field. In some cases, royalties can account for over 50 percent of a municipality's revenues.

Canada: In addition to being subject to the federal and provincial corporate income tax, natural resource income is subject to mining taxes, royalties, and land taxes at the provincial level. There is also a fiscal stabilization program that enables the federal government to provide financial assistance to any province faced with a year-over-year decline in nonresource revenues greater than 5 percent and caused by an economic downturn. Finally, Canada has an equalization program to reduce fiscal disparities between provinces. The equalization transfers are unconditional and determined by measuring provinces' ability to raise revenues.

Colombia: Prior to the 2012 reform, roughly 80 percent of royalties went directly to producer departments and municipalities, which only had 17 percent of the population. Following the 2012 reform, this was reduced to roughly 10 percent, with the remainder of the resources assigned to a number of central funds with specific goals. Around 30 percent is saved in a stabilization fund, 10 percent goes to a science and innovation fund, 10 percent to a regional pension fund, and the remainder is allocated to subnational investment projects with a relatively complex distribution formula based on poverty levels and other factors. As a result, 1,089 municipalities received a share of commodity royalties in 2012 compared to 522 in 2011.

Norway: Government revenues from petroleum activities are transferred to the Government Pension Fund Global. Under the fiscal rule, petroleum revenues are phased into the economy gradually. Specifically, over time government spending must not use any of the fund's capital, only its expected real return, which is currently estimated at 3 percent. The fiscal rule also provides for petroleum revenue spending to be increased during economic downturns and decreased during economic upturns.

Peru: Overall, about 60 percent of fiscal revenues from the mining sector go to subnational governments, mainly consisting of mining sector corporate income taxes (canon minero) and mining royalties. There are various canons and they are only transferred to the department where production of the natural resource takes place. Resources are then further distributed within producing departments, resulting in producing provinces and municipalities receiving a large share of the pie. See Santos and Werner (2015, Chapter 10) for more details.

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Country Groups and Country Abbreviations

Country Groups

CAPDR	Caribbean Commodity Exporters	Caribbean Tourism Dependent	Central America	Eastern Caribbean Currency Union (ECCU)	LA7	LA6	South America
Costa Rica	Belize	Antigua and Barbuda	Belize	Anguilla	Argentina	Brazil	Argentina
Dominican Republic	Guyana	The Bahamas	Costa Rica	Antigua and Barbuda	Brazil	Chile	Bolivia
El Salvador	Suriname	Barbados	El Salvador	Dominica	Chile	Colombia	Brazil
Guatemala	Trinidad and Tobago	Dominica	Guatemala	Grenada	Colombia	Mexico	Chile
Honduras		Grenada	Honduras	Montserrat	Mexico	Peru	Colombia
Nicaragua		Jamaica	Nicaragua	St. Kitts and Nevis	Peru	Uruguay	Ecuador
Panama		St. Kitts and Nevis	Panama	St. Lucia	Uruguay		Guyana
		St. Lucia		St. Vincent and the Grenadines			Paraguay
		St. Vincent and the Grenadines					Peru
							Suriname
							Uruguay
							Venezuela

List of Country Abbreviations

Antigua and Barbuda	ATG	Guyana	GUY
Argentina	ARG	Haiti	HTI
The Bahamas	BHS	Honduras	HND
Barbados	BRB	Jamaica	JAM
Belize	BLZ	Mexico	MEX
Bolivia	BOL	Nicaragua	NIC
Brazil	BRA	Panama	PAN
Canada	CAN	Paraguay	PRY
Chile	CHL	Peru	PER
Colombia	COL	St. Kitts and Nevis	KNA
Costa Rica	CRI	St. Lucia	LCA
Dominica	DMA	St. Vincent and the Grenadines	VCT
Dominican Republic	DOM	Suriname	SUR
Ecuador	ECU	Trinidad and Tobago	TTO
El Salvador	SLV	United States	USA
Grenada	GRD	Uruguay	URY
Guatemala	GTM	Venezuela	VEN

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