World Economic and Financial Surveys

Regional Economic Outlook

Western Hemisphere

Watching Out for Overheating

APR 11

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Preface

This April 2011 issue of the *Regional Economic Outlook: Western Hemisphere* (REO) was prepared by a team led by Steven Phillips and Luis Cubeddu under the overall direction of Nicolás Eyzaguirre and the guidance of Rodrigo Valdés. The team included Gustavo Adler, Oya Celasun, Andrea Medina, Leandro Medina, Bennett Sutton, Sebastián Sosa, and Camilo E. Tovar. In addition, Nicoletta Batini and Martin Sommer contributed to Chapter 1; Jaime Guajardo and Alexander Klemm contributed to Chapter 2; and Francesco Columba, Erika Tsounta, Mercedes Vera Martin, Abdelrahmi Bessaha, Aminata Touré, Alfred Schipke, and Alexander Klemm contributed boxes. Production assistance was provided by Patricia Delgado Pino and Breno Oliveira. Martha Bonilla and Joanne Blake of the External Relations Department edited the manuscript and coordinated the production. This report reflects developments through April 15, 2011.

Executive Summary

The global economy continues to expand unevenly, with emerging economies running faster than advanced economies—and consequently, facing different challenges and risks. Output remains well below potential in the United States and other advanced economies. In many emerging market economies, including in Latin America, the recovery has been much faster, and the task is to avoid overheating.

- *The* World Economic Outlook *baseline scenario for 2011–12* envisages continued recovery of the global economy, led by emerging markets, amid high commodity prices and easy global financing conditions. Strong demand for commodities, especially the substantial share now coming from emerging Asian economies, will keep their prices unusually high. At the same time, economic slack and easy monetary policy in advanced economies will keep global financing sources cheap.

- For the *United States*, the near-term outlook for growth has become somewhat more favorable, although the overall picture of a sluggish recovery remains. With unemployment remaining high, monetary policy will need to provide ongoing support to demand, as fiscal consolidation needs to proceed in the coming two years.

Downside risks continue to dominate at the global level. The risk of a double-dip recession in the United States has receded, but Europe remains vulnerable and new risks have emerged. New uncertainties about oil supply have raised the risk of a jump in oil prices, which would slow global growth—and in turn push down prices of other commodities, including those exported by Latin America. The absence of a well-defined medium-term fiscal adjustment plan in the United States could put upward pressure on U.S. interest rates and tighten global financial conditions.

Global conditions continue to have varying implications for economies within the Latin America and Caribbean (LAC) region. They remain especially stimulative for those that are commodity exporters and are well integrated with global financial markets, as they experience double tailwinds. Economies that are most closely linked to the United States and other advanced economies will see conditions that are improving, but only gradually; their revenues from foreign tourism and remittances especially remain closely tied to the still-weakened labor and housing markets in advanced economies.

Overheating risks stand out in much of Latin America. Growth is moderating from fast rates last year, but remains above trend. Domestic demand has been growing even faster, pushed not only by favorable external conditions but also by macroeconomic policies that have been quite stimulative and are only gradually normalizing. Early signs of overheating pressures and possible excesses are appearing in several realms:

- *Inflation* is rising in much of the region, though so far it is still relatively close to targets in most cases. Some countries have begun to reverse monetary stimulus, but more rate hikes will be needed in light of cyclical considerations. Vigilance is required to ensure that the recent rise in food and energy prices does not spill over into core inflation (so "second-round effects" are limited). Fiscal policy generally has not been helping monetary policy, and it will be important to slow the growth of public expenditure this year.

- Reflecting strong domestic demand, *current account deficits* are widening in many countries, even in those benefiting from higher commodity export prices, as import growth outpaces exports. While current account deficits are not yet excessive, their movement in that direction will need to slow. In this fiscal policy can also contribute.

- *Credit and asset prices*. Credit growth is accelerating in many countries. While banking systems seem to remain sound, vigilance is required as leverage and external exposure is increasing in some countries. External borrowing by firms is up and some asset prices are looking increasingly bubbly. Countries have continued to adopt and strengthen macroprudential policies, though these should not be deployed as a substitute for macroeconomic policy adjustment.

Countries with weaker growth so far also will need to proceed carefully, in several dimensions. As their demand recovers, overheating risks will become ever more relevant. Those with less-established monetary policy frameworks will need to carefully watch that commodity price increases do not trigger large second-round effects on inflation more broadly. Many countries, including in Central America, need to turn fiscal policy now to the job of rebuilding buffers that were used during the recent global recession. In the Caribbean especially, where public debt is very high, fiscal policy will need to continue consolidating, to ensure macro stability and set the stage for better growth in the future.

For all countries of the region, rising global prices of commodities, especially food, pose an important social challenge, threatening the most vulnerable populations. This applies even to countries that are net exporters of commodities and food. In some cases existing social programs—including targeted transfers—can help meet this urgent need; in other cases second-best approaches need consideration. For all countries, the challenge is to target the effort to protecting the most vulnerable, avoiding universal subsidy approaches that are often very costly and regressive, and can turn out to be permanent, requiring large adjustments to other parts of the budget.

***

This edition of the* Regional Economic Outlook: Western Hemisphere *takes a special analytical look at foreign exchange market intervention. Chapter 3 presents the findings to date of a cross-country research project examining intervention practices, over the last seven years, of a sample of Latin American and other countries with floating or very flexible exchange rates. It analyzes their tendency to intervene in the foreign exchange market selectively, in apparent response to appreciation pressures against the U.S. dollar. The chapter also documents key aspects of how intervention is implemented in practice, including the use of policy rules, the reliance on different instruments, and the degree of transparency. Two empirical methodologies address the long-standing question of whether exchange market intervention has an effect on the exchange rate: such effects have been notoriously difficult to detect in previous work, but the analysis does turn up new evidence suggesting that under certain circumstances intervention can slow the pace of appreciation. This effect is larger when a currency already has appreciated substantially and where the capital account is less open. The chapter also documents the quasi-fiscal costs of the intervention practiced over the last seven years, finding that these have been significant for some countries, largely reflecting valuation losses.

1. Global, U.S., and Canadian Outlook

The global economy continues to expand, though heterogeneity and downside risks persist. The recovery in most advanced economies—where output remains below trend—is proceeding only gradually, and will continue to be constrained by the need to repair household, government, and financial sector balance sheets. Growth in emerging economies remains robust fueled by favorable external conditions, yet policies need to be tightened to avoid overheating.

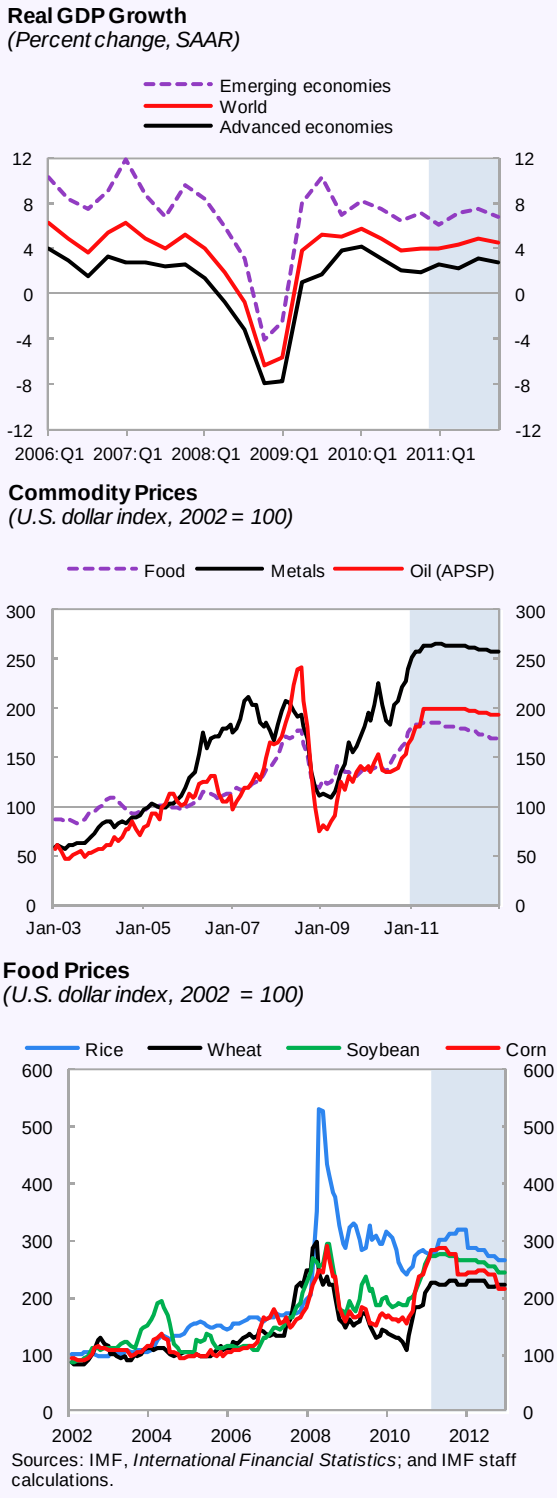
1.1. The Global Outlook—A Dual Speed Expansion Proceeds with Increasing Risks

The world economy continues to expand at multiple speeds (Figure 1.1). The recovery in advanced economies remains tepid considering the depth of the recession, and unemployment remains stubbornly high. On the other hand, output gaps have closed in many emerging market economies where growth remains brisk and overheating risks are emerging.

Commodity prices have risen further, reflecting strong demand from emerging Asia, particularly China. Weather-related supply shocks have contributed in pushing food prices to above precrisis levels, and recent political tensions in the Middle East and North Africa have added pressures to oil prices. While futures markets price in a gradual decline in commodity prices during the course of this year, as uncertainties dissipate and supply reacts, commodity prices will remain relatively high and above last year's average.

Financial conditions have been generally improving, though they remain stressed in some areas. Strong corporate profits have pushed equity prices higher, while more recent bouts of volatility in

Figure 1.1. Dual speed expansion proceeds, in the context of rising commodity prices.

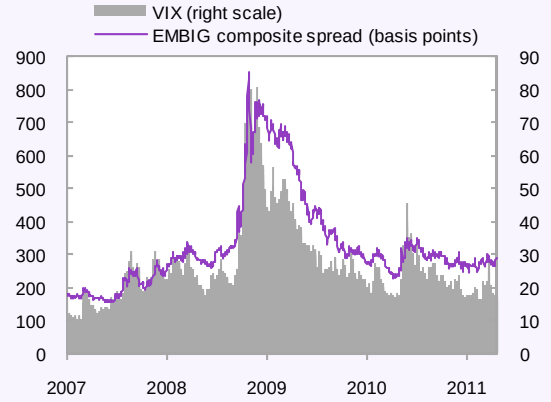


Sources: IMF, *International Financial Statistics*; and IMF staff calculations.

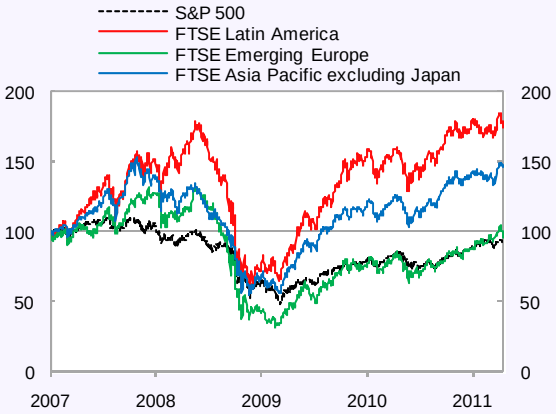
Note: This chapter was prepared by Oya Celasun and Luis Cubeddu, with contributions from Nicoletta Batini and Martin Sommer.

Figure 1.2. Low global interest rates and risk aversion are helping to push equity prices higher, though flows to emerging economies slowed in recent months.

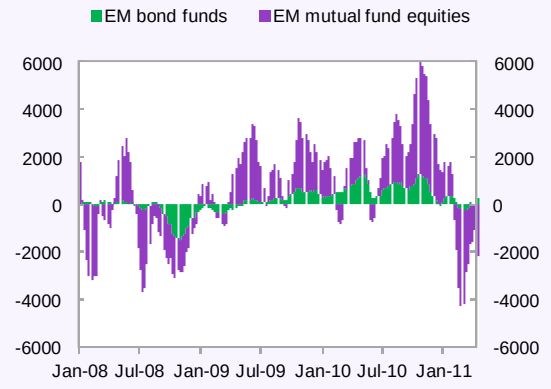
Global Risk Aversion and EM Spreads



Equity Prices
(January 4, 2007 = 100)



Emerging Market Net Flows : Equities vs. Bond[1]
(*Millions of U.S. dollars*)



Sources: Bloomberg, L.P.; Datastream; EPFR Global; and Morgan Stanley.
[1]Five-week moving average of net flows.

periphery Europe (Ireland and Portugal) have had limited and short-lived spillovers on global financial conditions (Figure 1.2). Attractive interest rate differentials, higher growth prospects, and other relatively more favorable fundamentals (including healthier public and private balance sheets in emerging markets than in many advanced economies), combined with declining global risk aversion, have supported strong capital flows to emerging economies through most of 2010. More recently, however, some positive news on the U.S. economy, as well as inflation risks and higher asset prices in emerging markets, have slowed such capital flows. The recent turmoil in the Middle East and North Africa and the earthquake in Japan are adding to overall uncertainties, though the impact on global risk aversion has been limited thus far.

Against this backdrop, IMF staff projects world growth to moderate somewhat from about 5 percent in 2010 to slightly less than 4½ percent during 2011–12, a scenario not very different from six months ago. Growth in advanced economies is expected to reach 2½ percent in 2011, ½ percent lower than last year as most countries consolidate their public finances, but still somewhat above potential growth rates. Emerging and developed economies are projected to expand by 6½ percent in 2011 (from 7¾ percent in 2010), as the policy stimulus is unwound and they gradually slow to trend growth.

Downside risks to the global outlook continue to dominate. While the likelihood of a double-dip recession in the United States has receded since the last *Regional Economic Outlook*, new downside risks have emerged. The potential for continued turmoil in the Middle East and North Africa and a more protracted nuclear crisis in Japan could also dent global growth and add to overall uncertainties. Moreover, vulnerabilities remain elevated in periphery Europe, with attendant risks to financial sector balance sheets in core European economies. In the case of many emerging economies, risks are more balanced—delays in stimulus withdrawal could add to growth in the near term, although they would raise concerns about a hard landing down the road.

Global imbalances persist, with continued official reserve accumulation, particularly in emerging Asia. Although the current account balances of key surplus and deficit countries have receded from precrisis peaks, a disproportionate portion of demand rebalancing has been through a shift of demand from deficit countries to emerging economies with flexible exchange rates and open capital markets—but not large surpluses, and indeed many in Latin America with increasing deficits. IMF staff projects that the imbalances will widen again in the coming years. The lack of sufficient demand rebalancing—between important advanced economies with deficits and emerging economies with surpluses—is a key concern for the sustainability of the recovery over the medium term.

Advanced Economies

The main challenge for advanced economies is to secure the recovery, while making further progress in repairing government, household, and financial sector balance sheets. Because fiscal consolidation needs to proceed, monetary policy will likely remain accommodative for a prolonged period in some advanced economies, given high unemployment, subdued core inflation, and stable long-term inflation expectations. Survey-based expectations suggest the policy rate in the United States will remain unchanged through late 2011, with some participants not expecting hikes at least until mid-2012.

Most advanced economies are appropriately seeking to consolidate their public finances in 2011, with the exception of the United States and Japan, where fiscal policy will remain accommodative. In the euro area, fiscal deficits are projected to decline by an average of 1½ percent of GDP in 2011, and an additional 2½ percent over the course of the next five years, though the specifics of the adjustment measures need to be better defined to bolster credibility. In the United States, the government adopted in late 2010 a new stimulus package worth 1 percent of GDP in fiscal years 2011–12 (partially offset by the recently agreed cuts to FY2011 spending). This development, which was not anticipated at the time of the last *Regional Economic Outlook,* has modestly raised the U.S. growth outlook for 2011. At the same time, it adds to uncertainties over the speed and content of plans to stabilize and reduce public debt over the medium term. Structural fiscal adjustment also has been postponed in Japan, where spending is bound to increase even more following the recent earthquake.[1]

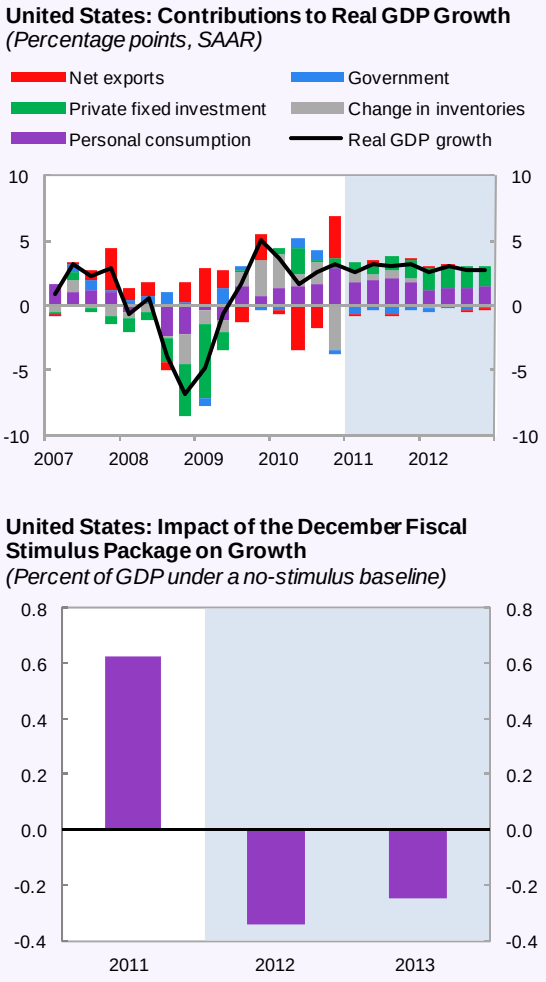
Financial sector repair in advanced economies needs to be accelerated, as discussed in the Spring 2011 *Global Financial Stability Report* (GFSR). As explained in the GFSR, market pressures persist in the euro area as countries continue to face large refinancing needs, and the European Central Bank should ensure orderly conditions in funding and sovereign debt markets while countries undertake the necessary fiscal and structural adjustments. Rigorous stress tests and credible recapitalization and restructuring plans are also needed to strengthen confidence particularly in Europe's financial sector. Similarly, in the United States, bank balance sheets will need to be strengthened should weaknesses in the housing sector persist, and a thorough implementation of financial sector reforms is necessary.

Emerging Market Economies

Policy challenges for many emerging market economies center on avoiding growing overheating risks resulting from favorable external financial conditions, remaining macroeconomic policy stimulus, and in some cases from improving terms of trade. These risks are manifesting themselves through a combination of higher inflation, widening current account deficits (prevalent in Latin America), and strong credit and asset price growth. Although most countries have begun to remove the policy stimulus implemented during the crisis, many remain behind the curve in normalizing monetary and fiscal policies.

[1] Prior to the earthquake, Japan's fiscal stance was expected to be broadly neutral for 2011.

Figure 1.3. Growth will be led by the private sector as the policy stimulus is withdrawn.



Sources: Bureau of Economic Analysis; and IMF staff calculations.

Emerging economies facing large capital inflows and appreciation pressures should generally tighten fiscal policy ahead of the full withdrawal of monetary accommodation. They may also need to strengthen prudential measures to contain the excessive procyclicality of credit and prevent asset bubbles from forming. Under certain circumstances, and provided appropriate macroeconomic policies are in place, temporary restrictions to the capital account may be needed. Such measures, however, cannot substitute for essential action on these other policy fronts. Rising food and fuel prices are adding to the challenge, both in terms of containing inflation and protecting the poor.

1.2. United States—Ongoing Recovery with Downside Risks

The U.S. economy continues to recover but downside risks are still dominant. Output and employment gaps are likely to close only gradually. Weak household, financial, and government balance sheets will continue to weigh down the growth outlook.

The U.S. economy expanded by an above-trend growth of 2.8 percent in 2010. After a strong start driven by a massive inventory boost, growth cooled considerably in the late spring just as European sovereign strains started to roil financial markets. Yet the economy managed to shrug off pervasive talk of a renewed dip and deflation risks, eking out above trend growth in the second half of 2010, helped by improved confidence on a new round of U.S. Federal Reserve easing. In particular, private consumption—after gradually accelerating through the year—gained some speed at end-2010. However, the recovery failed to produce a meaningful recovery in the labor market, and core inflation weakened to midcentury lows, given high levels of idle capacity.

The tentative signs of a stronger and more self-sustaining recovery at end-2010 have since been followed by certain setbacks and new risks. In particular, the surge in oil prices, if sustained, could significantly slow the recovery.

Monetary policy will remain supportive of growth through much of 2011. Policy interest rates are at the lower bound, with the U.S. Federal Reserve's bond purchases providing accommodation in the face of high unemployment and low inflation. Meanwhile, in contrast to what was projected six months ago, the federal fiscal structural deficit is now estimated to increase by 1¼ percent of GDP in 2011, following approval of the new stimulus package in December 2010 and despite the recently agreed cuts to federal FY2011 spending (Figure 1.3). The U.S. administration is committed to halving the federal fiscal deficit by 2013 relative to 2010, an adjustment that is included in staff forecasts. The commitment implies a large

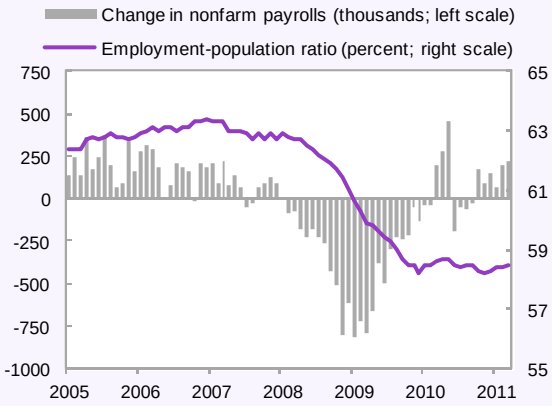
5 percent of GDP cumulative structural primary adjustment for the federal government during fiscal years 2012–13.

Drags from labor and housing fronts persist. Despite the recent decline in unemployment rates (from a peak of 10.1 percent to 8.8 percent in March 2011), long-term unemployment remains near historical highs and the employment-population ratio has barely increased since output began to recover in mid-2009 (Figure 1.4). Although the downtrend in initial unemployment insurance claims since early 2011 suggest some strengthening ahead, payroll growth has so far gathered only limited momentum. The mirror image of the weak growth in jobs has been sizable labor productivity gains and declining unit labor costs. The pace of job creation would need to increase significantly from current levels to meaningfully lift the employed share of the population. And without a serious improvement in employment and aggregate hours worked, consumption growth is likely to remain tepid, given the ongoing repair of household and bank balance sheets, and sluggish nominal wages.

The U.S. housing market—a key source of macrofinancial headwinds against a faster recovery—also remains weak. The large inventory of houses for sale is keeping a lid on residential construction (Figure 1.4). House prices—a key determinant of households' net worth and consumption—have declined in January for seven months in a row, and their outlook is clouded by the sizable shadow inventory of foreclosures—that is, the stock of mortgages that are either delinquent but not-yet written down, or current but deeply in negative equity, or modified but likely to redefault. Indeed, household deleveraging is occurring largely on the back of defaults on mortgages (as well as other household debt), exerting downward pressure on house prices through the adverse effects of distressed home sales on the prices of neighboring houses. The feedback loop between weak and uncertain house prices, vulnerable household and bank balance sheets, and private consumption is a major factor behind the sluggish pace of recovery (Box 1.1).

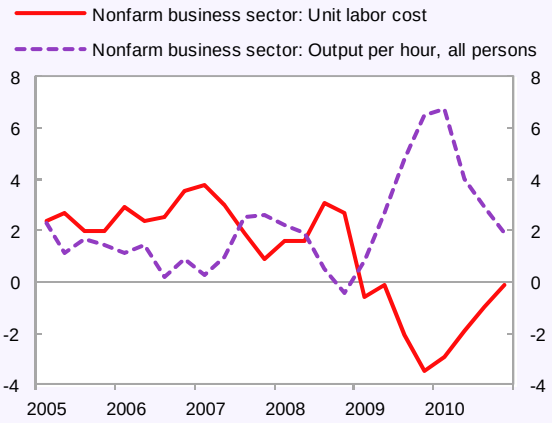
Figure 1.4. Employment's growth remains weak, in part reflecting slow recovery of housing.

United States: Employment Indicators

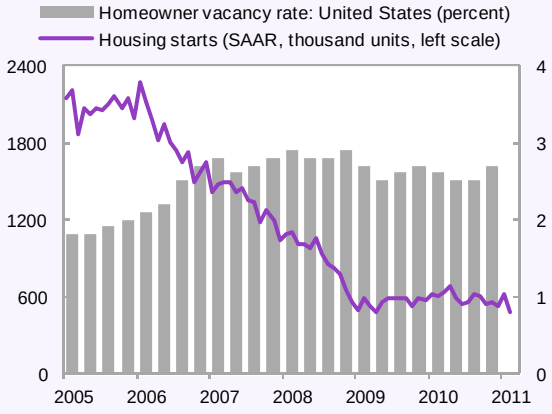


Source: Bureau of Labor Statistics and Haver Analytics.

United States: Labor Productivity and Costs
(Seasonally adjusted, annual percent change; nonfarm business sector)



United States: Housing Starts and Vacancies

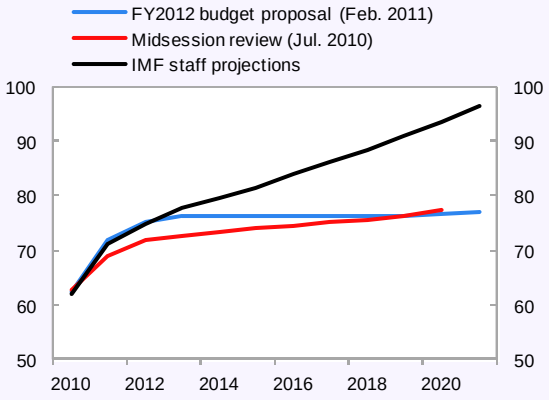


Sources: Bureau of Labor Statistics; U.S. Census Bureau; and IMF staff calculations.

Box 1.1. Long-Term Outlook for the U.S. Federal Government Finances

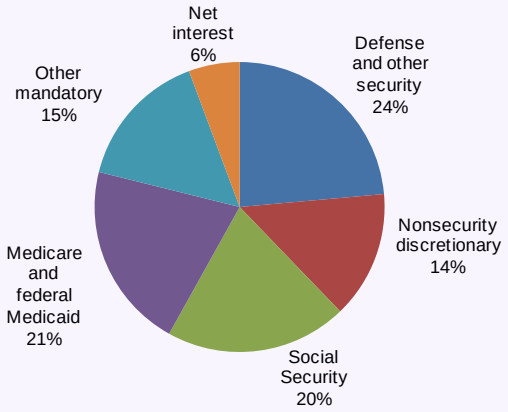
The U.S. public finances are on an unsustainable trajectory. According to the authorities' budget projections, federal debt held by the public is projected to increase from 62 percent of GDP in FY2010 to about 90 percent in FY2030, and continue rising thereafter owing to pressures from population aging and rapid cost growth in the health care sector. The debt dynamics are even bleaker under the IMF staff's more conservative macroeconomic assumptions. Because the financial crisis is expected by IMF staff to cause a permanent loss of output and budgetary revenues, federal debt could approach 95 percent of GDP already by the end of this decade (see figure at right)—approaching the levels last seen in the aftermath of World War II—and put upward pressure on interest rates both in the United States and abroad.

Federal Debt Held by the Public
(Percent of GDP; fiscal years)



Sources: U.S. Office of Management and Budget; and IMF staff calculations.

Composition of Federal Spending



Sources: U.S. Office of Management and Budget; and IMF staff calculations.

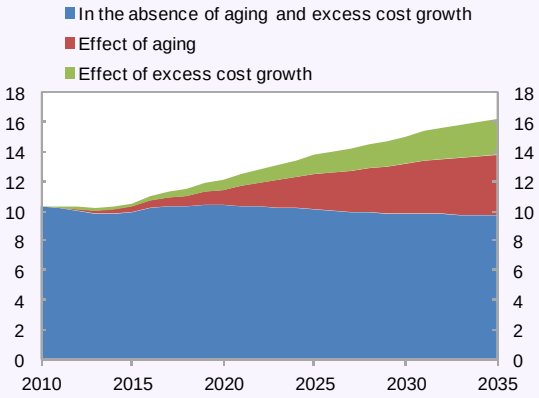
The long-term budgetary outlook remains troublesome despite the existing efforts to curb deficits. Although last year's health care reform is expected to bend the health care "cost curve" (the pace of increase in health costs) to some highly uncertain degree, the federal health care bill could still increase by 3 percent of GDP over the next 20 years according to the Congressional Budget Office. Other measures proposed by the administration such as a 5-year freeze on nonsecurity discretionary spending and defense savings are helpful, but cannot on their own address the fundamental long-term budgetary pressures, because mandatory health care, pension, and other spending make up a greater share of the budget and are projected to grow faster (see figure above). According to IMF staff calculations, the authorities would need to phase in additional saving measures worth roughly 2½ percent of GDP per year to achieve their federal debt projection of about 77 percent of GDP for FY2021. These measures would need to be implemented in addition to the existing plans, which include higher taxes for the upper-income taxpayers (from 2013) and lower tax concessions for certain industries. However, fiscal consolidation efforts should not stop there—additional saving will be needed to bring the debt ratio down to precrisis levels to avoid crowding out of private investment.

The authorities have a number of options to put the fiscal house in order without negative short-term effects on activity. Social Security (pension) reform would help reduce long-term fiscal imbalances without undermining the ongoing recovery—measures such as increasing the retirement age or lowering future benefits for upper-income retirees would have a minimal impact on current private

Note: This box was prepared by Martin Sommer.

spending. Identifying additional saving in health care and other mandatory spending categories would also be desirable (see the April 2011 *IMF Fiscal Monitor* for a discussion on options to reduce health care spending). Meanwhile, the tax system is riddled with loopholes and regressive tax expenditures worth over 7 percent of GDP. Gradually curbing this tax spending (including the mortgage interest deduction which largely benefits upper-income taxpayers) would help raise needed revenue while enhancing efficiency. Given low revenue from indirect taxes, consideration should also be given to the national VAT or sales tax, and higher energy taxes.

Sources of Growth in Federal Spending on Major Mandatory Health Care Programs and Social Security, 2010–35
(Percent of gross domestic product)



Source: U.S. Congressional Budget Office.

In light of the daunting fiscal outlook, early agreement on a comprehensive consolidation strategy is essential. The U.S. administration and Congress should find early political agreement on a comprehensive and balanced set of specific measures, based on the detailed blueprints put forth by the president's fiscal commission, various policymakers and other analysts. Preferably, such a plan should include legislation that sets out a clear medium-term debt target and addresses the key driver of long-term deficits—the mandatory spending related to pensions and health care (see figure above). The consolidation plan should also be prepared under credible economic assumptions. The current budget projections, for example, are based on GDP growth assumptions that are considerably more optimistic than the consensus forecast.

The overall balance of risks to the U.S. outlook remains tilted to the downside. The risk of deflation has lessened relative to six months ago, partly because of policy actions—in particular unconventional monetary easing. Meanwhile, the external environment continues to pose tail risks. Renewed financial turmoil in the euro area could substantially tighten global financial conditions and weaken global demand. And substantially higher oil prices could dampen confidence and weaken consumer spending. On the domestic front, housing prices could decline by more than expected, given the large shadow inventory of distressed properties, with adverse effects on household and financial balance sheets (see Box 1.2). On the other hand, strong corporate balance sheets and pent-up demand for consumer durables present upside potential.

What Kinds of Policies Are Needed?

High levels of slack in the labor and housing markets, low core inflation, and persistent downside risks call for a supportive macroeconomic policy stance. However, there is also an increasingly urgent need for implementing a comprehensive strategy to stabilize and then reduce public debt.

In that context, the U.S. Federal Reserve continues to signal that the high level of unemployment and low inflation call for near-zero policy rates for an extended period, and to implement its plan to purchase US$600 billion in Treasury bonds through June 2011. Although the bond purchase program is likely to add only modestly to growth, it has reduced perceptions of downside risks by reinforcing the U.S. Federal

Reserve's commitment to support the recovery and prevent a damaging fall in long-term inflation expectations. After the U.S. Federal Reserve started signaling in August 2010 the possibility of renewed large-scale asset purchases, equity prices rose strongly and inflation compensation embedded in indexed Treasury securities increased to normal levels. Nominal long-term yields have increased since the official announcement of purchases in November 2010 given the improved outlook and normalized inflation expectations. Bond yields will likely increase only gradually over the medium term.[2] That said, the absence of a well-defined medium-term fiscal adjustment plan could put upward pressure on U.S. interest rates and tighten global financial conditions.

Although the recent fiscal stimulus was justifiable given the weak labor and housing markets, it could have been better targeted. The extension of unemployment benefits and extension of the Bush tax cuts to medium- and lower-income taxpayers are helpful because they put cash directly in the hands of those most likely to spend it; however, most other components of the package are not targeted to areas of weakness. The federal fiscal deficit is now projected by staff to reach 10½ percent this year—the largest among major advanced economies—while the gross debt of the general government will likely exceed 110 percent of GDP by 2016.[3] The high deficit this year will require a larger structural adjustment for the United States to meet its G-20 commitment to halve the deficit between 2010 and 2013.

The unsustainable fiscal outlook makes urgent the need for the administration and Congress to agree on a comprehensive and balanced medium-term fiscal consolidation package. The alternative proposals recently put forward by the National Commission on Fiscal Responsibility and Reform, various policymakers and other analysts contain many useful ideas and provide comprehensive blueprints on which the policymakers can build. These proposed measures generally include reforms to entitlement programs, caps on discretionary spending, tax reform, and a strengthening of fiscal institutions.

The recent overhaul of financial system regulation and supervision has been encouraging, but will need to be followed by strong and early implementation.[4] In particular, it will be critical to strengthen: (i) coordination across regulators to detect and act on systemic risks; (ii) transparency and accountability in the securities and derivatives markets; and (iii) monitoring of the shadow banking sector.

Despite the restoration of financial stability, fragilities in the housing sector continue to weigh down banks' balance sheets, and challenges remain in implementing financial sector reforms. The U.S. authorities have presented Congress with a set of proposals to reform housing finance markets, as mandated by the Dodd-Frank Act. The recommendations include winding down the government-sponsored enterprises (GSEs) and crafting more focused housing policies, with more explicit government support and targeted benefits to lower-income households. The eventual reform will need to strike the right balance between delivering an appropriate level of government intervention and discouraging another cycle of overinvestment. Its timing will probably be influenced by the strength of the housing market. Also, the authorities should ensure that foreclosure documentation problems are promptly resolved and that banks recognize real estate losses in a timely fashion.

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[2] Celasun and Sommer (2010) argue that once private sector deleveraging ceases, the 10-year Treasury bond yields could rise by about 100 basis points (beyond cyclical factors) to close the projected gap between the supply and potential demand for federal debt securities.

[3] The fiscal projections reflect IMF staff views on the economic outlook (which are generally more pessimistic than the authorities') and assessment of likely policies. Given the ongoing debate in congress, IMF staff assume more frontloaded (and deeper) discretionary spending cuts than planned by the administration and a delayed action on revenue measures.

[4] See Box 1.3 from the October 2010 *Regional Economic Outlook: Western Hemisphere* for a fuller discussion.

Box 1.2. Household Deleveraging in the United States

Deleveraging is a hallmark of the aftermath of credit-fueled housing bubbles. True to form, the pace of the recovery from the Great Recession has been held back by the need for both households and lenders to repair their balance sheets.

How is the process of household deleveraging playing out in the United States? How much longer will it last, and what implications does it have for the outlook? Household leverage—defined as the ratio of debt to assets—climbed to a higher plateau in the late 1990s, as lending standards eased and households borrowed more to purchase houses of ever-increasing value and also borrowed against their housing equity to finance consumption. It then surged during the crisis as the values of both houses and financial assets collapsed, setting off the subsequent deleveraging cycle. Household debt stood at 122 percent of disposable annual income as of the end of the third quarter of 2010, down from its peak at 133 percent at end-2007. It would take another six years for liabilities to decline to the prebubble level of about 90 percent of disposable income if debt continues to decline at the pace seen since the peak. Experience with prior housing bubbles in advanced economies—most notably the Scandinavian countries—suggests that indebtedness indeed tends to return to prebubble norms over time.

How is the adjustment taking place? The stock of liabilities evolves with new loan originations, net repayments, and defaults that result in write-offs of debt. More than 60 percent of the reduction of liabilities since early 2008 is estimated to have happened through defaults, especially on mortgage debt. Meanwhile, originations of new loans are also weak, in line with reduced demand and tighter lending standards reported by senior loan officers in commercial banks.

What does this mean for the outlook? The reduced level of new originations comes hand in hand with subdued demand for houses and other consumer durables. Household saving rates are kept high by the unwillingness of consumers to take on new debt given their uncertain income prospects or because their liabilities are already high enough to raise the risk of financial distress. The unwillingness of lenders to extend new loans given their own balance sheet uncertainties also increases household saving. This process of deliberate deleveraging paves the way for healthier balance sheets and stronger consumption in the future, although it prevents a more rapid macroeconomic rebound in the meantime. But the reduction in household debt that occurs through defaults on mortgages has significant negative externalities for the broader economy. Distressed house sales have a disproportional adverse impact on house prices and thereby on household net worth—a key determinant of consumers' spending decisions.[1] Sustainable debt restructurings, which would break the vicious circle between weak aggregate demand, employment, foreclosures, and house prices, have proven elusive.[2] The weak outlook for house prices and housing wealth is a significant headwind against a faster recovery in output and employment in the United States.

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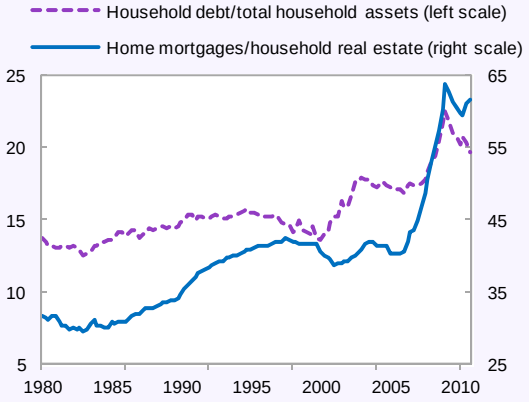
Note: This box was prepared by Oya Celasun.

[1] Campbell, Griglio, and Pathak (forthcoming) and Hartley (2010), among others, estimate that foreclosed residential properties lead to significantly lower prices in nearby property sales. Carroll, Otsuka, and Slacalek (2010) document that changes in housing wealth have significant effects on private consumption in the United States.

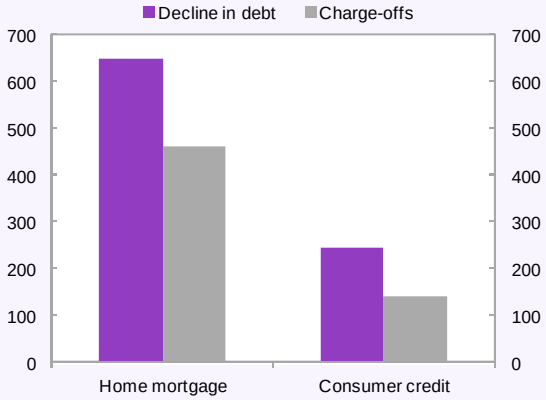
[2] Box 1 of the April 2011 *Global Financial Stability Report* discusses the ability of U.S. banks to absorb mortgage principal reductions.

Box 1.2. Household Deleveraging in the United States (*continued*)

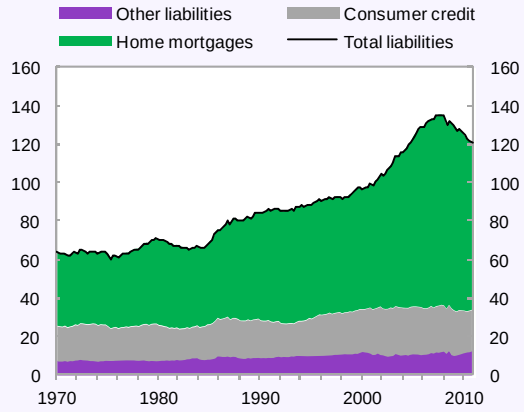
Household Leverage and Assets
(Percent)



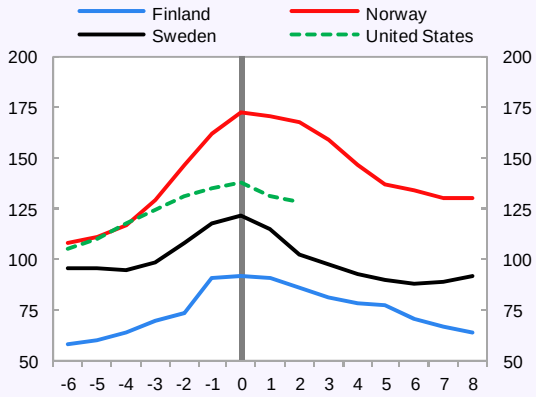
Deleveraging and Charge-offs, 2008:Q2–2010:Q3
(Billions of U.S. dollars)



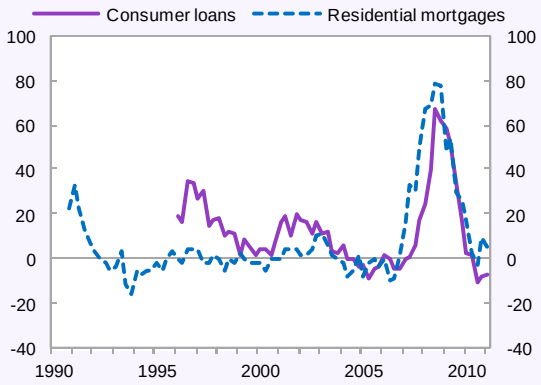
Household Liabilities
(Percent of disposable personal income)



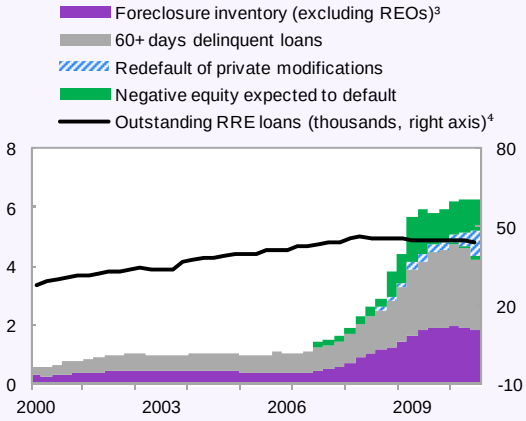
Household Debt in Percent of Disposable Income[1]



Lending Standards[2]
(Net share of domestic respondents indicating tightening standards)



Shadow Inventory of Houses
(Millions of outstanding mortgage loans)



Sources: Board of Governors of the Federal Reserve System; U.S. Federal Reserve Economist Jim Kennedy; IMF, World Economic Outlook; Norges Bank; Organization for Economic Cooperation and Development; Riksbank; and Statistics Finland.
[1] *t* = 0 corresponds to precrisis peak.
[2] Weighted average of lending standards for credit card and other consumer loans, weighted by the share of total consumer loans. Weighted average of prime and nontraditional loans,weighted by shares of total mortage loans.
[3] REO = real estate owned.
[4] RRE = residential real estate.

1.3. Canada—Recovery Gathers Strength

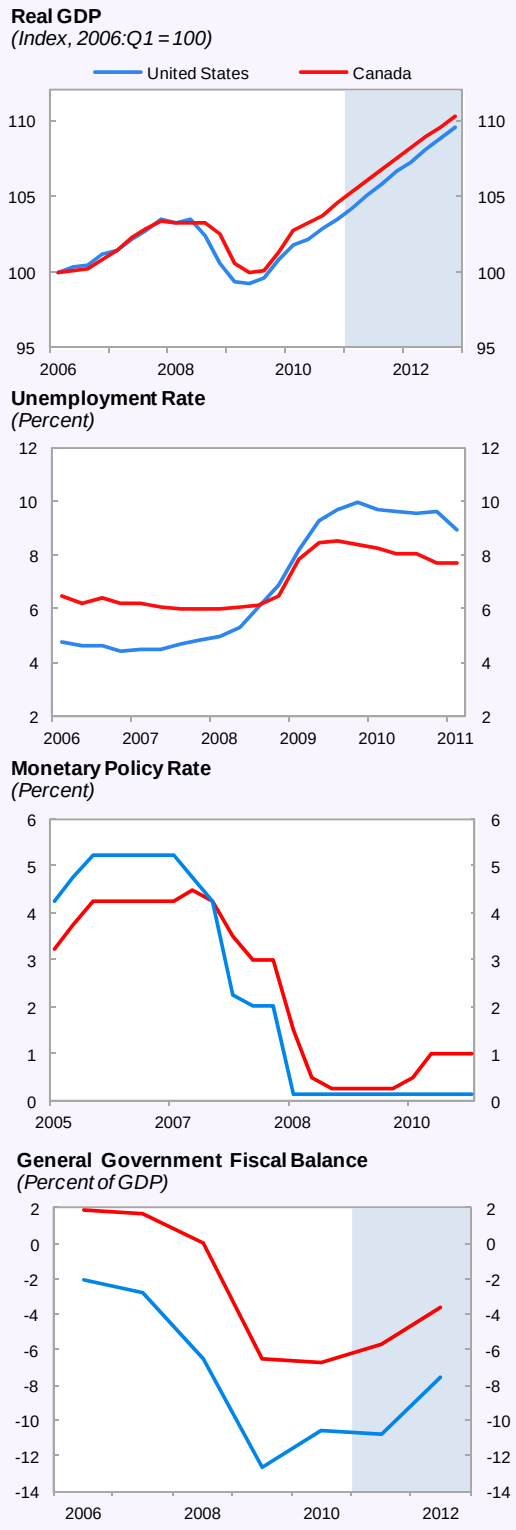
Despite its close ties to the United States, Canada's recovery from the global crisis has been relatively swift (Figure 1.5). Real GDP reached its precrisis level by 2010:Q2, initially led by strong domestic demand and accompanied by job creation, a large share of which has been in the form of temporary and part-time employment.

Fiscal and monetary policies were key to supporting the rapid turnaround of activity. On the fiscal side, the government launched a large and well-targeted stimulus—totaling 2 percent of GDP per year over 2009–10, including measures targeted at credit, housing, and labor markets. Likewise, monetary policy has remained highly accommodative, and interest rates have been unchanged following a small rate increase in mid-2010.

Canadian real GDP is estimated to have expanded by 3.1 percent in 2010, after contracting by 2.5 percent in 2009. Following a slowdown in 2010:Q3, growth picked up during the final months of last year driven by a large improvement in the net export balance. This improvement largely reflects better terms of trade, which increased by more than 6 percent in 2010, and a firming recovery of the U.S. economy.

Growth is projected to reach 2.8 percent in 2011, supported by high terms of trade. Domestic demand growth is projected to slow somewhat as household balance sheets are stretched and the fiscal stimulus is withdrawn (the general government deficit is projected to decline by 0.9 percentage points of GDP).[5] Markets expect that monetary policy will remain accommodative for an extended period of time, and that it will reach only gradually a neutral stance by end-2012.

Figure 1.5. The Canadian economy has been more resilient than that of the United States.

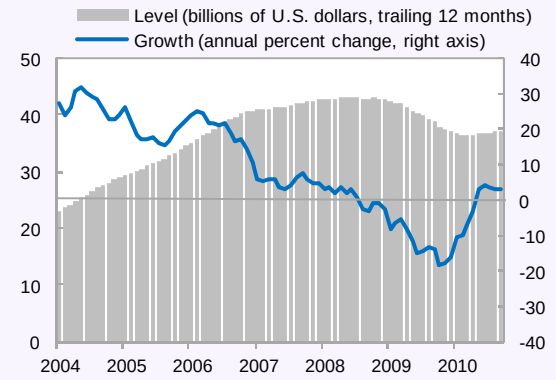


Sources: Bank of Canada; U.S. Bureau of Labor Statistics; U.S. Federal Reserve Board; and IMF staff calculations.

[5] Some of the stimulus measures adopted in 2009–10 were extended, including by postponing the normalization of employment insurance premiums and the deadline for the completion of certain infrastructure projects.

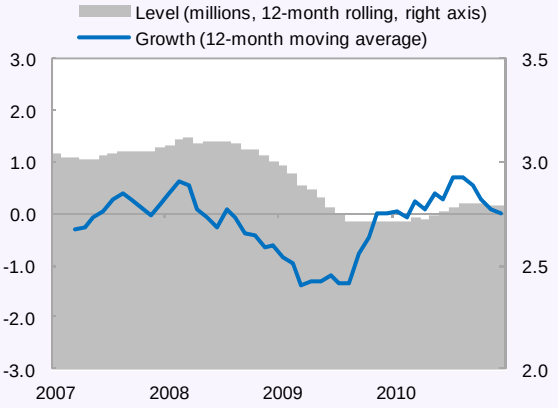
Figure 1.6. The recovery in remittances and tourism is being held back by labor conditions in advanced economies.

Remittances to Latin America and Caribbean[1]



[1] Includes Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Mexico, and Nicaragua. Data are through September 2010.

Caribbean: Tourist Arrivals[1]
(Index, 2007 = 100)



[1] Includes Bahamas, Barbados, Dominican Republic, ECCU, and Jamaica.

Sources: Caribbean Tourism Organization; national authorities; and IMF staff calculations.

Risks remain tilted to the downside. The main external risk is a more sluggish U.S. recovery that could prolong Canada's own recovery; the rise in household debt in Canada is an added domestic risk.[6] Though a sharp increase in oil prices (owing to a supply shock) would be beneficial for Canada's trade balance (as it is a net oil exporter), it would be largely offset by its negative impact on global growth and a stronger Canadian dollar.

Looking forward, the policy mix for this year is appropriately set to entail a continued stimulative stance of monetary policy, as fiscal policy begins a path from extraordinary stimulus to medium-term budget balance, in the context of still high unemployment and idle capacity. Both federal and provincial governments are rightly focused on bringing budgets back toward balance, with the recently released federal budget now targeting a modest medium-term surplus. On the financial sector, maintaining resilience will require continued vigilance, with further steps toward managing the level of household leverage if needed (Box 1.3).

1.4. Implications for the Latin American and Caribbean Region

High commodity prices are supporting growth particularly in commodity-exporting countries with stronger trade links with Asia. However, the recent increase in global food and energy prices are adding to policy challenges, as countries seek to contain its impact on inflation and to protect the poor. A further supply-related increase in oil prices for a protracted period is a potential risk that could dampen global growth, particularly in Central America and the Caribbean given their dependency on imported oil.

The improved U.S. performance is having positive spillovers on growth, especially in Mexico and Central America. However, weak employment prospects, particularly in the construction sector, will continue to constrain the recovery of workers' remittances to those economies, which are still below precrisis levels (Figure 1.6). Similarly, tourism growth will remain subdued, given its linkages with labor conditions in Europe and the United States.

Fiscal constraints in advanced economies suggest that monetary policy will remain accommodative for some time. Low interest rates in the United States will continue to make available abundant and cheap private capital to the more financially integrated

[6] Since the mid-1980s, total household debt as a share of personal disposable income in Canada has almost tripled—from 50 percent to about 150 percent—with visible acceleration since 2007.

Box 1.3. Canada's Financial System Resilience: What Can Others Learn?

Canada's financial system displayed remarkable stability during the global turbulence. The system has avoided systemic pressures: no financial institution failed or required public capital injections (banks raised capital in markets, albeit at elevated cost owing to higher global risk aversion).

Key factors behind this relatively strong performance included:

- *Sound supervision and regulation:* The 2008 Financial Stability System Assessment Update found that the regulatory and supervisory framework meets best practice in many dimensions, including with regard to the revised Basel Core Principles for banking supervision.
- *Stringent capital requirements:* Solvency standards apply to banks' consolidated commercial and securities operations. Tier 1 capital generally significantly exceeds the required 7 percent target (which in turn exceeds the Basel Accord minimum of 4 percent). The leverage ratio is limited to 5 percent of total capital. The Canadian leverage cap is calculated on total (Tiers 1 and 2) capital (versus Tier 1 capital in the United States), and some off-balance-sheet exposures (for example, credit derivatives, financial standby letters of credit, guarantees, and surety arrangements) are included in its definition of assets (unlike the U.S. leverage calculation).
- *Low risk tolerance and conservative balance-sheet structures:* Banks have a profitable and stable domestic retail market, and (like their customers) exhibit low risk tolerance. Banks had smaller exposures to "toxic" structured assets and relied less on volatile wholesale funding than many international peers as reflected in their stock valuations.
- *Proactive response to financial strains:* The authorities quickly reacted to the crisis by expanding liquidity facilities, providing liability guarantees, and purchasing mortgage-backed securities (all of those facilities have now expired). In addition, the resolution framework was reformed providing authority for public capital injections and other transactions to support financial stability. More recently, and amid concerns of household indebtedness, new rules to curb mortgage credit were introduced, including: (i) reducing the maximum amortization period from 35 years to 30 years for new government-backed insured mortgages with loan-to-value (LTV) ratios of more than 80 percent; (ii) lowering the cap on borrowing to refinance mortgages (to 85 percent from 90 percent of the value of their homes); and (iii) withdrawing government insurance backing on lines of credit secured by homes, such as home equity lines of credit. These measures are consistent with the best practices for stable housing finance systems that recommend enhanced underwriting standards and a careful calibration of government participation to the housing market (see *Global Financial Stability Report*, April 2011, Chapter 3).
- *Effective coordination between supervisory agencies:* Officials meet regularly in the context of the Financial Institutions Supervisory Committee (FISC) and other forums to discuss issues and exchange information on financial stability matters.[1]
- *Regulation reviews:* To keep pace with financial innovation, federal authorities review financial sector legislation every five years—the next review is to be completed in 2012.
- *Conservative residential mortgage markets:* Only 5 percent of mortgages are nonprime and only 30 percent are securitized (compared with 25 percent and 60 percent, respectively, in the United States); all of which are effectively unconditionally government guaranteed. About two-thirds of residential loans are guaranteed, because almost all loans that are securitized, plus those with an LTV ratio above 80 percent held by regulated depository institutions must be insured for the full loan amount (rather than the portion above the 80 percent LTV, as in the United States). Also mortgage interest is nondeductible, encouraging borrowers to repay quickly; and mortgages are recourse, that is they allow the lender to come after the borrower's other assets in case of default.

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Note: This box was prepared by Francesco Columba and Erika Tsounta.

[1] The FISC comprises officials from the Office of the Superintendent of Financial Institutions, Finance Canada, Bank of Canada, Canada Deposit Insurance Corporation, and the Financial Consumer Agency of Canada.

economies of the region, stimulating demand and giving rise to widening current account deficits and net capital inflows. The management of this environment poses an important challenge, because flows could reverse abruptly should global conditions worsen and risk appetite fall. The recent slowdown of inflows to emerging market economies highlights the importance of being prepared for the volatility of these inflows and an eventual tightening in monetary conditions in advanced economies.[7]

Renewed turmoil in the euro area, particularly if the epicenter shifts to Spain and core Europe, poses a downside risk to Latin America, though the financial impact will be limited by the fact that most Spanish banks in the region follow a subsidiary model where local deposits are the primary source of funding. The possibility of increased and continued political tensions in the Middle East and North Africa could sharply increase oil price and undermine the strength of the global recovery. In addition to the direct impact on growth, this downside scenario will likely be associated with some decline in non-oil commodity prices, at least in the near term, adversely affecting many of the region's agricultural and metal commodity exporters.

Countries in the region should take advantage of the current favorable external conditions to rebuild the policy buffers used during the crisis in case these downside scenarios materialize.

[7] Global liquidity conditions could tighten should key advanced economies have trouble defining and implementing their fiscal consolidation plans.

2. Outlook and Policy Issues for Latin America and the Caribbean

The region continues to grow at a robust pace, led by rapidly expanding domestic demand. Growth is projected to moderate this year, though a quicker withdrawal of monetary and fiscal policy stimulus may be necessary to guard against rising overheating risks, particularly in economies experiencing strong "tailwinds" from rising commodity export revenues and capital inflows. In countries with the strongest real links to advanced economies, economic weakness was more prolonged, but their recoveries are gaining traction. Throughout the region, rising global prices of food and fuel are adding to challenges of containing inflation and protecting the poor. Downside risks to the global outlook highlight the need to build policy buffers and to guard against an eventual reversal of capital inflows.

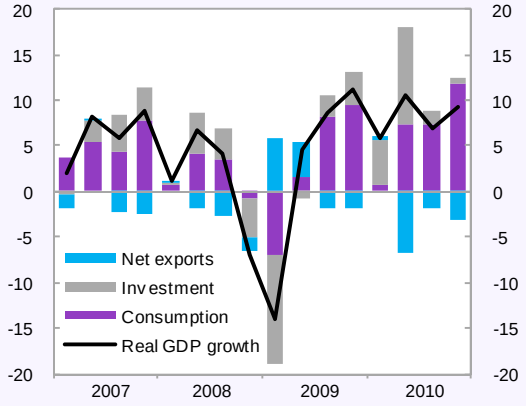
2.1. Overview

Real GDP growth is moderating yet remains robust and above trend rates in much of the region, led by strong private demand (Figure 2.1). Output gaps have closed or are quickly closing for much of the region and overheating pressures are emerging. Inflation is rising, current account deficits are widening, and in some countries credit and asset prices are growing rapidly. Double tailwinds from high commodity prices and easy external financing conditions, coupled with still-accommodative macroeconomic policies are lifting economic activity above its potential level. Meanwhile, the recovery is gaining strength in Central America on the back of a gradual pickup of the U.S. economy and of domestic demand. In the Caribbean, economic activity is starting to recover after a deep recession, with output still well below precrisis levels in most countries.

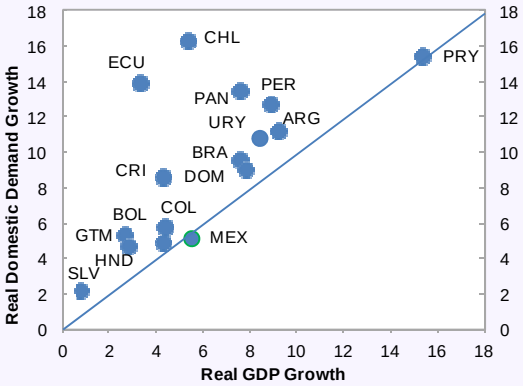
Output growth is estimated to have reached about 6 percent in 2010, slightly higher (¼ percent) than projected in the October 2010 *Regional Economic Outlook: Western Hemisphere*. Domestic demand growth was somewhat stronger than anticipated, likely reflecting more favorable terms of trade and a slow pace of withdrawal of policy stimulus. Real GDP growth of the region is projected to moderate to 4¾ percent this year and to converge to its potential rate, about 4 percent, over the next two years. Growth will continue to be led by domestic demand, consistent with a further deterioration in the current account deficit. This baseline scenario

Figure 2.1. Real GDP growth is moderating, yet domestic demand continues to grow strongly.

Selected Latin American Countries: Contribution to GDP Growth[1]
(Percent, SAAR; GDP PPP-weighted averages)



Latin America: Domestic Demand vs. Real GDP Growth, 2010

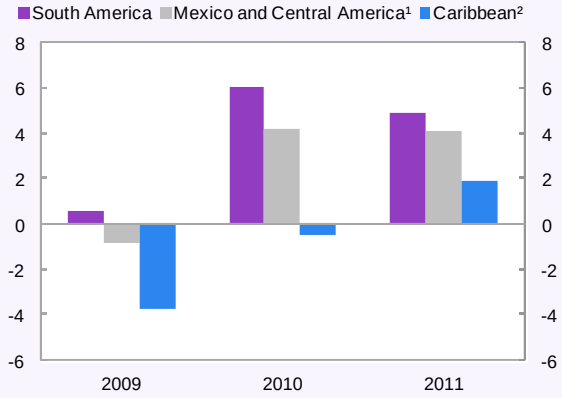


Sources: National authorities; and IMF staff calculations.
[1] Includes Argentina, Brazil, Chile, Colombia, the Dominican Republic, Ecuador, Mexico, Peru, and Venezuela. Data are through 2010:Q4, except for Ecuador (2010:Q3).

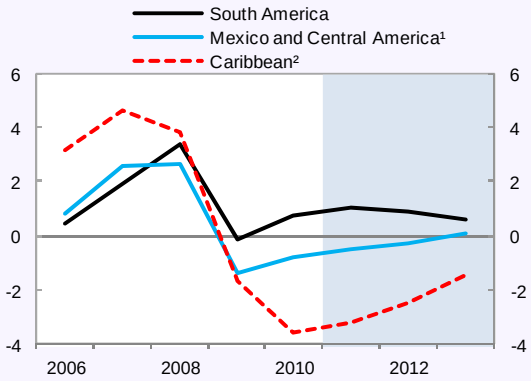
Note: This chapter was prepared by Luis Cubeddu and Sebastián Sosa, with contributions from Jaime Guajardo and Alex Klemm.

Figure 2.2. The expansion will be less uneven, with output gaps closed or closing for much of the region. Differences in terms of trade persist.

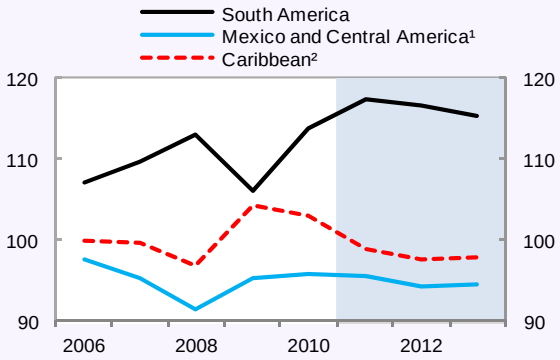
Latin America and Caribbean: Real GDP Growth by Region, 2009–11
(*Simple average, annual percent change*)



Latin America and Caribbean: Output Gaps
(Percent of potential GDP; simple average by region)



Latin America and Caribbean: Terms of Trade
(2005 = 100, simple average by region)



Sources: National authorities; and IMF staff calculations.

[1] Central America includes the Dominican Republic and Panama.
[2] Caribbean excludes the Dominican Republic.

assumes a significant withdrawal of the policy stimulus and a deceleration of private sector demand growth, particularly for countries that are large commodity exporters.

Economic performance will be less uneven within the region in 2011, compared with the previous two years. There are signs that the recovery is finally gaining traction in economies with closer real links to advanced economies, where recovery has lagged (Figure 2.2). South America's commodity exporters will continue to lead the expansion, though growth is expected to moderate this year, in a healthy way, with the assumed withdrawal of the policy stimulus. The recovery in most of Central America and the Caribbean countries is projected to strengthen, though countries will continue to be constrained by the effects of weak employment conditions in advanced economies, less favorable terms of trade, and in some cases by high public debt.

Although downside risks dominate for the world economy, risks for the near-term outlook in Latin America are tilted to the expansionary side as a whole. A distinct risk is that domestic demand and GDP growth could be higher than the baseline scenario if the assumed policy tightening does not materialize or proves insufficient to slow domestic demand. Under this scenario, inflation and current account deficits also would turn out higher than we project, raising the risk of boom-bust dynamics down the road. In that sense, the "upside" risks for 2011 could turn out to be downside risks for subsequent years.

However, downside tail risks remain for the near term. Increased and continued political tensions in the Middle East and North Africa or a more protracted crisis in Japan could compromise the global recovery currently under way. A large further increase in oil prices driven by oil supply conditions would adversely affect global growth; such a global slowdown would likely bring also a decline in the price of other commodities, having an added negative impact on the region's non-oil commodity exporters. Moreover, the situation in Europe remains fragile, as

many sovereigns face large refinancing needs and banks require further capitalization. Although recent bouts in market volatility (Greece, Ireland, and Portugal) have not had large effects in Latin America, renewed turbulence in the euro area, particularly if the epicenter were to shift to Spain or to the core European economies, could have a stronger impact on the region.

The rest of this chapter is organized as follows. The next section discusses the policy challenges for the different subregions of Latin America, referring to specific countries when appropriate. The following sections provide more detailed views on policies for dealing with (i) rising commodity prices; (ii) accelerating credit growth and asset prices; and (iii) significant and volatile capital inflows.

2.2. Policy Challenges

With output gaps already closed in much of the region, the primary policy challenge is not very different from six months ago: first to normalize and eventually tighten the stance of fiscal and monetary policies, to avoid boom-bust dynamics down the road. Increasing world prices of food and fuels are adding to challenges facing the net commodity importing regions, particularly Central America and the Caribbean, where recovery from the crisis generally has been slower. For all countries, rising commodity prices create social challenges and strain the poor especially, as well as complicating the task of containing inflation.

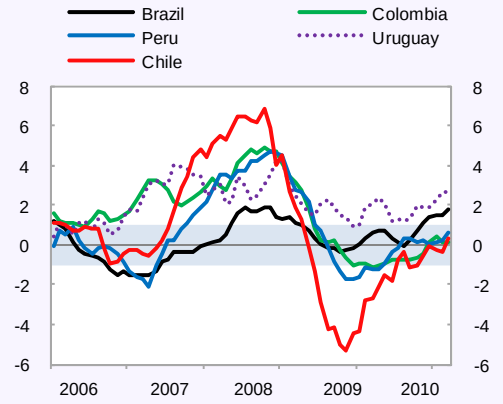
South America—Managing Double Tailwinds

Macroeconomic policies should be tightened to prevent growing overheating pressures, particularly in the face of external stimulus to demand coming from strong terms of trade and easy external financing conditions. Consideration will need to be given to expanding the policy toolkit to limit the procyclicality of credit and excesses by the private sector. In some countries, addressing supply bottlenecks that are holding back trend growth remains a key priority.

Growth in most commodity exporting countries of South America is projected to moderate this year,

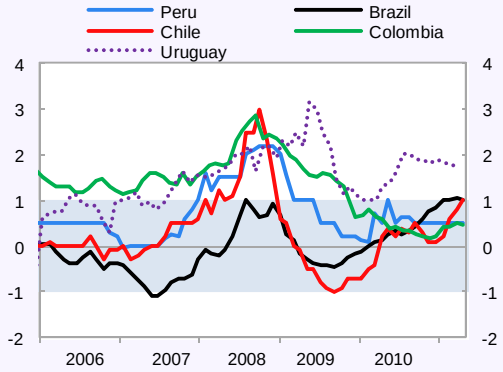
Figure 2.3. Headline inflation has picked up, with core and inflation expectations slowly trending upward, in the context of tight labor market conditions.

Headline Inflation Less Target Inflation[1]
(Percent)



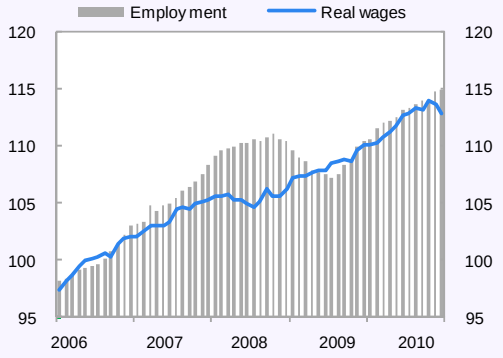
[1] Target inflation is midpoint of inflation band. Shaded area represents inflation target range (± 1), except for Brazil and Uruguay, which are (± 2). Data are through March 2010.

Inflation Expectations Less Target Inflation[1]
(12-months ahead, 12-month percent change)



[1] Target inflation is midpoint of inflation band. Shaded area represents inflation target range (± 1), except for Brazil and Uruguay, which are (± 2). Data are through March 2010.

Latin America: Employment and Real Wages[1]
(Index, 2006 = 100)

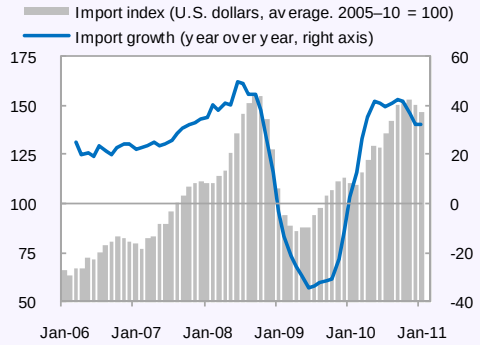


[1] Simple average of Brazil, Chile, Colombia, Peru (only employment), and Uruguay.

Sources: National authorities; and IMF staff calculations.

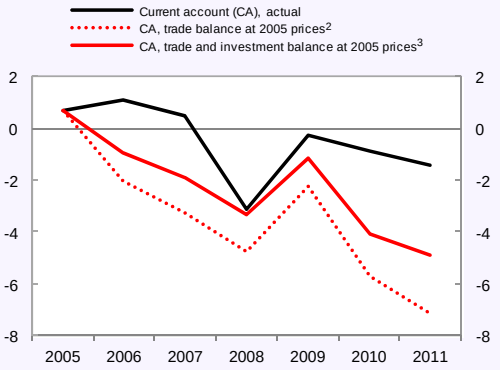
Figure 2.4. Despite improved terms of trade, the current account deficit has widened further, led by a strong growth in private sector demand.

Imports in Selected Latin American Economies
(*U.S. dollars, 3-month moving average*)



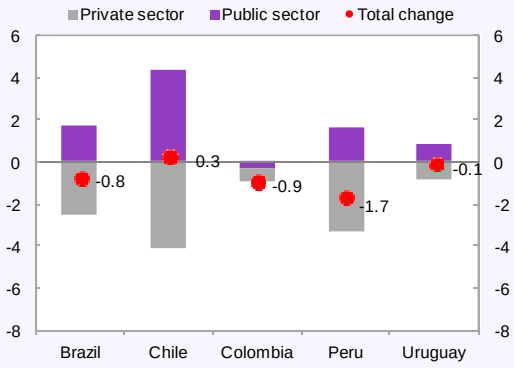
[1] Data through Jan-2011 for Brazil, Chile, Colombia, and Peru.

Current Account Balance at Current and Constant 2005 Prices[1]
(Percent of GDP, simple average)



[1] Simple average for Brazil, Chile, Colombia, Peru, and Uruguay.
[2] Keeping terms of trade constant at 2005 levels.
[3] Controlling also for the sensitivity of repatriation of profits and dividends to commodity prices.

Change in Current Account Balance: Private vs. Public Sector Contribution, 2009–10
(Percentage points of GDP)



Sources: IMF, *International Financial Statistic*; and IMF staff calculations.

after reaching an average of 6½ percent in 2010, as the policy stimulus and natural inventory cycle are unwound. Commodity exporters will continue to benefit from very favorable terms of trade, and countries with strong links to financial markets (Brazil, Chile, Colombia, Peru, and Uruguay) will also benefit from easy external financing conditions. Meanwhile, countries with strong trade links to Brazil (Argentina, Bolivia, Paraguay, and Uruguay) will continue to benefit from robust growth in that South American giant.

With continued rapid growth and output already above or around its potential level, *inflation* is projected to continue increasing this year in much of South America. Headline inflation is trending upward, though it still remains near targets or within target ranges in most countries (Figure 2.3). These developments reflect both incipient demand pressures and the (direct and indirect) effects of higher prices of food and fuel products. Higher inflation has been broadening into services and pushing core inflation and inflation expectations up in many countries, particularly those with tight labor market conditions (Brazil and Uruguay). In this light, many central banks have been raising policy rates (from low levels), yet only gradually, perhaps out of concern for attracting more capital flows and further strengthening exchange rates.

After appreciating sharply during much of last year, *exchange rates* have stabilized since October 2010, in tandem with some slowdown in portfolio flows to emerging economies worldwide (Figure 1.2). Although more positive news on the U.S. economy and higher asset prices in emerging economies themselves likely acted to slow capital flows, various policy measures also may have played a role. Countries not only stepped up foreign exchange market intervention, but also increased taxes on inflows, and strengthened or adopted additional macroprudential measures. Real exchange rates are in the upper part of the ranges observed over the past decade, though this largely reflects stronger fundamentals and improvements in their terms of trade.

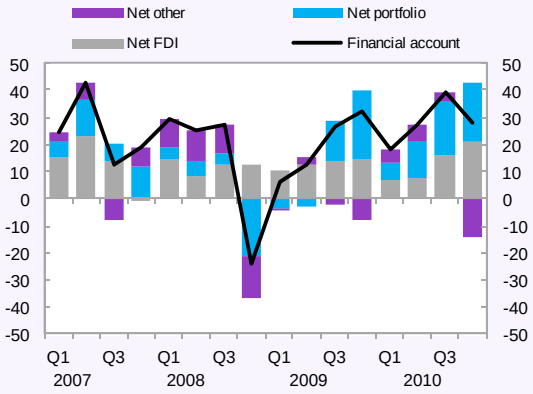
Robust private sector demand is leading to a widening in the *current account* deficit in most countries (Colombia is an exception).[1] The current account deficit for the more financially integrated economies of South America is projected to average about 2 percent of GDP in 2011, ¼ percentage point larger than in 2010, despite higher commodity export prices. A simple exercise of keeping export and import prices constant at 2005 levels, and controlling for the sensitivity of foreign investors' profits and dividends to commodity prices, suggests that the current account would be 3 percentage points of GDP weaker this year if terms-of-trade gains had not occurred (holding volumes constant). The deterioration in the current account is being driven mainly by the private sector, where investment is outstripping saving (Figure 2.4).[2] It is worth noting that although the increased geographic diversity of exports is a welcomed development; this has come at the expense of an increase in the commodity dependence of the region (Box 2.1).

Credit growth accelerated during much of last year and continues to do so; *asset prices* remain high after large gains (Figure 2.5). Private sector credit growth in real terms reached an average of 10–15 percent by end-2010, very strong though well below the 20–25 percent observed in the years prior to the global crisis. The credit expansion is now more broad-based and even across countries in the region, though Brazil and Peru are clear outliers since their credit slowdowns during the crisis were small and short lived.[3] Equity prices increased sharply in 2010, and despite some normalization and reversals in recent months, they are up by an average of more than 20 percent in U.S. dollars over the past year. A more detailed discussion can be found in Section 2.4 on credit markets and asset prices.

[1] Import growth moderated slightly in recent months, yet remains strong (30 percent year over year in January 2011).
[2] The projected private sector current account deficit for 2011 (1 percent of GDP) is still below the average observed during 1993–97 (2½ percent of GDP).
[3] In the case of Brazil, public banks have also played a key role in the credit expansion (Chapter 3 of the Fall 2010 *Regional Economic Outlook*).

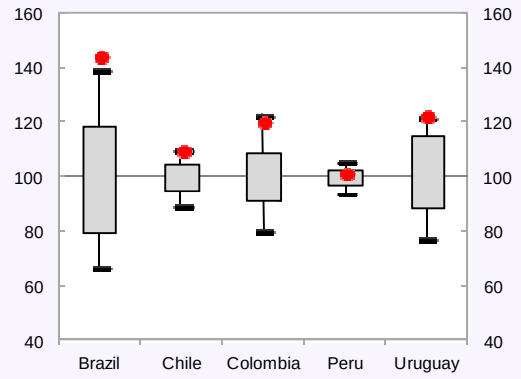
Figure 2.5. Amid strong capital inflows, real exchange rates remain high, and credit is expanding fast.

South America, Financially Integrated: Financial Account [1]
(Billions of U.S. dollars)



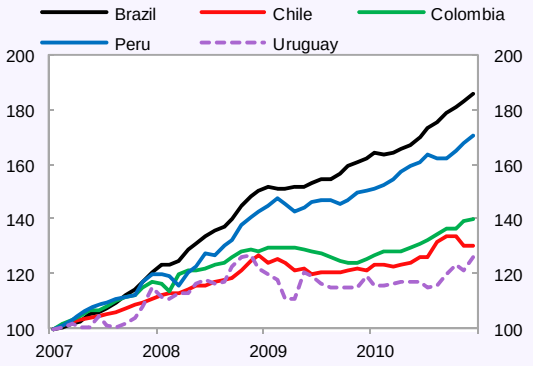
[1] Includes Brazil,Chile, Colombia, Peru, and Uruguay.

Real Effective Exchange Rate [1]
(Average 2000–10 = 100)



[1] Shows 95th percentile and 5th percentile for the period from January 2000 to December 2010. Gray box covers range between 25th and 75th percentile of REER. Dots are latest observation (Dec-10).

Real Credit to the Private Sector
(Index, Jan. 2007 = 100)



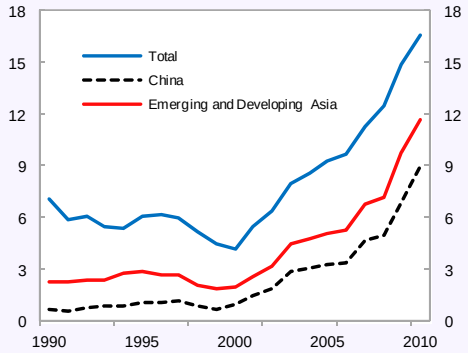
Sources: National authorities; and IMF staff calculations.

Box 2.1. Changing Export Patterns in Latin America and the Caribbean

Increased trade openness over the past decade has been accompanied by significant change in the region's trade structure. Emerging economies are playing a more significant role in trade relations, and commodities represent an increasing share of the region's exports. Despite regional integration efforts, the share of exports within the region has been broadly unchanged.

Rising power of emerging economies. The share of exports to emerging economies has increased by 10 percentage points over the past decade, reaching 35 percent of total exports in 2010. Although this trend has been common across regions, it has been particularly strong for Latin America. Exports to emerging economies outside the region, particularly China, explain the bulk of this increase, with intraregional trade playing a more muted role. The increased reliance on trade with Asia and other emerging regions allowed many countries in the Latin America and Caribbean (LAC) region (particularly in South America) to bounce back more quickly from the global crisis.

LAC: Exports to Emerging and Developing Economies
(Percent of total exports)



Sources: IMF, *Direction of Trade Statistics;* and IMF staff calculations.

Increased reliance on commodities. The share of commodity exports increased from 40 percent in 2000 to 52 percent by 2008, mainly reflecting increased demand from emerging market countries. The sharp increase in exports has been driven not only by positive price effects, but also higher volumes (total export volumes increased by 35 percent between 2000–10). Moreover, a bulk of this increase reflects increased exports of metals and agricultural products, with oil playing a minor role. The dependence on commodity exports makes the region especially vulnerable to a reversal in Asia's economic performance and a downward adjustment in global commodity prices. Increased reliance on commodities may also raise issues in terms of growth and development prospects, including Dutch disease and deindustrialization, though the empirical evidence remains inconclusive.

Little action on the intraregional trade front. On average, 20 percent of all exports are to countries within the region, well above the level observed in other emerging regions. However, despite regional integration efforts, the share of exports within Latin America and the Caribbean has remained relatively flat over the past decade. This is in stark contrast to emerging Asia—where intraregional trade rose by 40 percent since 2000 largely reflecting increased openness from China.

Trading patterns vary somewhat across the existing customs unions.

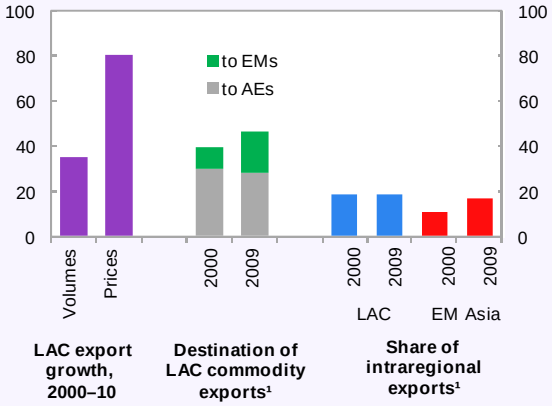
- In *CAPDR* (which includes Central America, Panama, and the Dominican Republic), the share of intraregional trade has been on an upward trend since the late 1990s, and today is the region that trades the most within itself.
- The share of trade within *Mercosur* (which includes Argentina, Brazil, Paraguay, and Uruguay) is up since 2002, with Brazil emerging as an increasingly important trade destination for Argentina, Paraguay, and Uruguay. However, trade within the region is well below the levels reached in the mid- to late 1990s, where exports represented 25 percent of total exports. Associate members include Bolivia, Chile, Colombia, Ecuador, and Peru. Venezuela signed a membership agreement in 2006 that has yet to be ratified.
- Trade within the *Andean Community of Nations* (which currently includes Colombia, Bolivia, Ecuador, and Peru; Venezuela withdrew its membership in 2006) is down; exports within the regional bloc remains low, at about 8 percent of total exports.

_____

Note: This box was prepared by Andrea Medina and Mercedes Vera Martin.

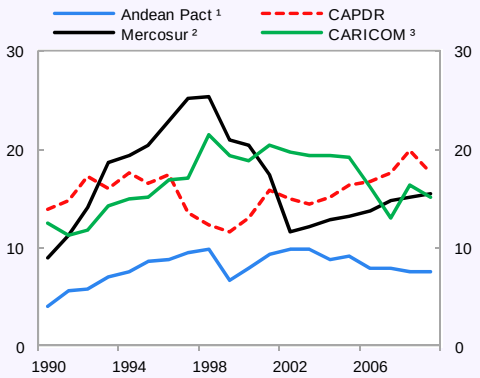
- The share of exports within *Caricom* (which includes The Bahamas; Barbados, Belize, ECCU, Guyana, Haiti, Jamaica, Trinidad and Tobago and Suriname) has also fallen from an average of about 20 percent in 2000 to about 15 percent currently. Exports from Trinidad and Tobago and Barbados represent over 80 percent of all intraregional exports, the bulk of which are in the form of fuel and lubricants and agricultural commodities.

LAC Export Trends: Several Perspectives, 2000–10



Sources: IMF, *Direction of Trade Statistics*; World Bank, World Integrated Trade Solutions Database; and IMF staff calculations.
¹ Percent of total merchandise exports.

LAC Exports within Regional Trading Blocs
(Percent of total exports)



Sources: IMF *Direction of Trade Statistics, and* IMF staff calculations.
¹ Includes Venezuela for full period.
² Includes Argentina, Brazil, Paraguay, and Uruguay.
³ Data do not include the Bahamas and Haiti.

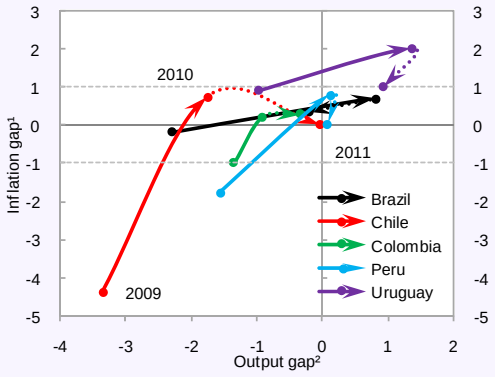
On *monetary policy*, countries have taken steps to raise interest rates and—in a few cases—reserve requirements, though further tightening is warranted in most cases. Policy rates in most countries are still below estimates of "neutral" rates (Figure 2.6), whereas real sector developments and the stages of their business cycles would suggest that rates should be around or above neutral levels.[4] In addition, there is a need for some additional tightening to maintain (ex ante) real interest rates given predictable second-round effects from recent commodity price increases to headline inflation as well as to contain these spillovers (see Section 2.3 for a fuller discussion).[5] To achieve inflation objectives, another consideration will be the stance of fiscal policy, which should avoid placing an excessive burden on monetary policy in the context of overheating risks, capital inflows, and currency appreciation pressures. To avoid undermining the credibility of inflation-targeting regimes, countries should avoid adjusting their established framework when being tested, including the target (even if that target is temporarily missed).

Fiscal policy, after being expansionary in most countries in 2010, needs to "downshift" this year, at least into a neutral gear. Last year, fiscal policy generally added to demand pressures, in the sense that real expenditures grew considerably faster than potential output (Figure 2.6). Amid closed or rapidly closing output gaps,[6] the projected slowing of expenditure growth in several countries this year is welcome, and will avoid adding a further burden to monetary policy. That said, while primary balances

[4] Given difficulties in determining neutral rates, IMF staff estimates a range using different approaches.
[5] As of early April, surveys suggest that markets expect policy rates to increase by an additional 50 bps in Brazil and 200 bps in Chile over the next 12 months; expectations of U.S. monetary policy tightening during that period, if any, are generally much lower.
[6] Real primary expenditure growth is generally a good proxy of changes in a country's fiscal stance, though a more complete picture requires assessing changes in revenue policy and administration.

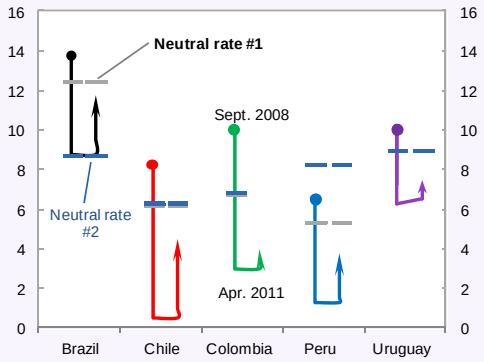
Figure 2.6. Output gaps have closed (or are rapidly closing) amid still accommodative policies.

A View of the Cycle
(Percent)



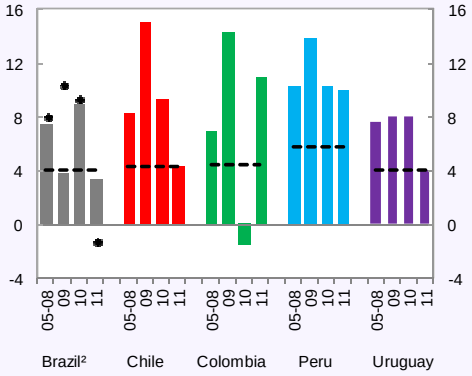
¹ Projected inflation at end-year minus inflation target. Bands of (±1) percentage points apply to all countries, except Brazil (±2).
² Projected GDP minus potential GDP, in percent of potential GDP.

Monetary Policy Rate¹
(Percent)



¹ Policy rate from September 2008 to April 2011. Neutral policy rate #1 based on Globlal Projection Model (see Chapter 3, October 2008 *Regional Economic Outlook: Western Hemisphere*) and neutral policy rate #2 estimated as potential growth plus inflation target.

South America: Real Primary Expenditure¹
(Percent change)



¹ Real expenditures deflated by the CPI. Dotted line is potential output growth.
² For Brazil, dots represent a broader measure of real primary expenditure that includes policy lending by BNDES. Both measues exclude the recapitalization of Petrobras in 2010.

Sources: National authorities; and IMF staff calculations.

are projected to improve this year amid strong revenue growth, real expenditure plans will in most cases preserve, rather than begin to unwind, the higher expenditure levels established last year. In the event that revenue growth were to turn out higher than projected, governments should avoid letting this translate into higher expenditure. Such discipline would also help build fiscal space to cope with adverse shocks in the future.[7]

The budget cuts recently approved in Brazil (1¼ percent of GDP) and Chile (about ½ percent of GDP) are steps in the right direction; it will be critical to ensure their timely implementation. In the case of Brazil, it will also be important to undertake the announced reduction in policy lending by the state-owned bank (BNDES). During the course of the year, if governments incur higher fiscal costs as a result of higher food or fuel prices, it would be best to take offsetting actions.

Exchange rate flexibility should remain an important component of the macroeconomic policy package. In the context of monetary tightening, some additional currency appreciation may occur (although it is likely that appreciation based on expected further interest rate hikes already has occurred). Such appreciation, by reorienting private demand to external suppliers, would help temper inflation. Although concerns have been raised about the possible negative impact on growth and exports of real exchange appreciation, the empirical evidence on the link between "Dutch disease" and overall growth is inconclusive (Magud and Sosa, 2010). This is particularly the case for commodity exporting countries, where the export sector is known to have relatively low labor intensity. That said, although currency appreciation is desirable on cyclical grounds, foreign exchange market intervention could continue to be part of the policy toolkit, particularly after a substantial degree of appreciation has been allowed and "one-sided bets" have subsided. Foreign exchange intervention needs also to be mindful of potentially large sterilization costs.

[7] In Colombia, the projected increase in public spending reflects in part reconstruction costs following floods in late 2010.

A discussion on the modalities, effectiveness, and costs of foreign exchange intervention can be found in Chapter 3.

In the context of loose external financial conditions and strong credit growth, *macroprudential policies* remain an essential component of the policy reaction (see the October 2010 *Regional Economic Outlook: Western Hemisphere* for a fuller discussion). Many countries continue to actively use macroprudential instruments, including by raising reserve requirements, tightening foreign borrowing limits, and strengthening capital requirements on certain loan types (Box 2.2). These measures should be aimed at preserving financial sector stability and, although recognizing their effects on the macroeconomy, not be deployed as a substitute for basic macroeconomic policy adjustments. Moreover, actions on the regulatory front should be complemented by efforts to quantify their impact and to improve coordination among supervisors and regulators to monitor systemic risks. Capital controls may also be part of the policy reaction on a temporary basis, although as in the case of macroprudential policies they should not play a substitute role for fiscal and monetary policies.[8]

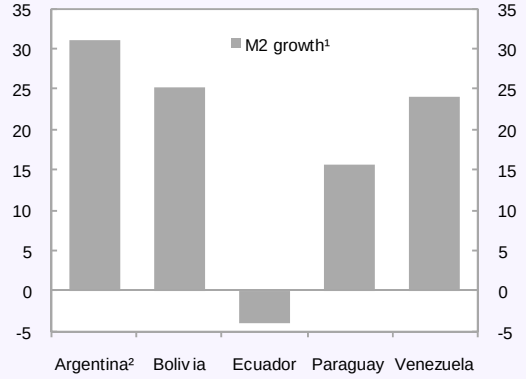
South America—The Less Financially Integrated Commodity Exporters

The less financially integrated economies of South America will continue to benefit from high commodity export prices, though differences in growth performance and outlook within this group will persist. Argentina and Paraguay are projected to record strong growth in 2011—albeit at lower rates than in 2010—reflecting also close real linkages to Brazil as well as procyclical policies. In Bolivia, output is projected to expand in line with potential. Supply-side constraints and weak investment climate will continue to constrain growth in Ecuador and Venezuela.

[8] In October 2010, Brazil increased the tax on external inflows from 4 percent to 6 percent to discourage investments in the local fixed-income market. In March/April 2011, it also raised to 6 percent the tax on external short-term borrowing by firms and increased the maturity threshold from 90 days to 720 days.

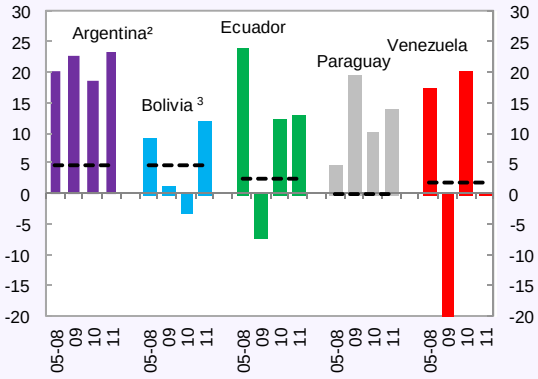
Figure 2.7. In the less financially integrated economies of South America, policies generally remain expansionary.

Nominal Growth in Monetary Aggregates, 2010
(Percent)



[1]12-month percent change through December 2010.
[2] Based on official data.

South America: Real Primary Expenditure[1]
(Percent change)



[1] Real expenditures deflated by the CPI. Dotted line is potential output growth.
[2] Deflated by offical inflation estimates.
[3] Excludes operating expenses of public enterprises.

Sources: National authorities; and IMF staff calculations.

Highly expansionary macroeconomic policies in most countries are stimulating demand and fueling inflation (Figure 2.7). Monetary aggregates are growing at an annual rate of more than 20 percent. Real primary expenditures are projected to continue to grow well above the rate of potential output in most countries. Real credit growth is accelerating, exceeding 20 percent in some countries, adding to concerns over boom-bust dynamics. The external current account is projected to deteriorate, though it will remain in surplus in most countries buoyed by large terms-of-trade gains.

Box 2.2. An Update on Macroprudential Policies

An increasing number of emerging economies, including from the region, continue to adopt prudential measures (see table below) in an effort to: (i) slow credit growth (by introducing speed limits or targeting specific sectors such as housing or foreign exchange); and (ii) improve the management of liquidity and credit risk. Policies introduced thus far generally have not focused on the cross-sectional dimension of systemic risk such as spillovers, or interconnectedness.

Macroprudential Policies and Objectives

Policy tool	Recent examples or proposals	Motivation/Objective
• Countercyclical capital requirements	Basel III; Brazil (auto loans-December 2010)	Buffer ranging between 0–2.5 percent to be introduced when aggregate credit is growing too fast.
• Dynamic provisioning	Bolivia (2008); Colombia (2007); Peru (2008); and Uruguay (2001)	Countercyclical tool that builds up a cushion against expected losses in good times so that they can be released in bad times.
• Leverage ratios	Basel III	Constrain the leverage in the banking sector, to mitigate the risk of the destabilizing deleveraging processes; and supplement the risk-based measure with a simple, transparent, independent measure of risk.
• Loan-to-value (LTVs) ratios	Canada (Mortgage market-April 2010, March/April 2011);	Regulatory limit to moderate cycles in specific sectors by limiting loan growth and leaning on asset demand.
• Debt-to-income (DTIs) ratios	Korea (August 2010)	Measure to limit the leverage of borrowers and manage credit risk.
• Liquidity requirements	Colombia (2008); New Zealand (2010); and Basel III	Tools to identify, measure, monitor, and/or control liquidity risk under conditions of stress.
• Reserve requirements on bank deposits	Peru (January and April, 2011); Brazil (December 2010); China (January 2011); and Turkey (2009–11)	Countercyclical tool that acts as: i) speed limit on credit; ii) tool for credit allocation; and iii) complement to monetary policy to achieve macroprudential goals.
• Tools to manage foreign exchange credit risk	Peru (July 2010); Uruguay	Tool to internalize foreign exchange credit risks associated with lending to unhedged borrower.
• Limits to foreign exchange positions	Colombia (2007); Israel (restrictions on banks derivatives transaction-2011)	Measures to manage foreign exchange risk in on- and off-balance-sheet FX-denominated assets and liabilities. Also useful for dealing with surges in capital inflows, which may pose systemic risks to the financial system when they create "bubbles" in certain economic sectors.
• Others	Brazil (tax on consumer credit-April 2011)	Curb credit expansion

Sources: Basel Committee on Banking Supervision; central banks; and supervisory authorities.

Brazil and Peru have been particularly active on this front since October 2010.

Brazil: (i) increased by 50 percentage points the risk-weighting on consumer and automobile loans depending on their loan-to-value ratio and maturity; (ii) introduced a 60 percent reserve requirement on short U.S. dollar positions; and (iii) increased the tax on consumer credit from 1.5 percent to 3.0 percent.

Peru: (i) raised by 100 basis points the implicit reserve requirement rates on domestic and foreign currency deposits, and the unremunerated portion of reserve requirements (currently 9 percent of deposits); (ii) reduced reserve requirements on external FX liabilities with maturities under 2 years (from 75 percent to 60 percent), but extended their application to credit channeled through off-shore branches of domestic financial institutions; and (iii) established limits on the net FX derivative position of banks (40 percent of capital or S/.400 million, whichever is higher).

Note: This box was prepared by Camilo E. Tovar.

The withdrawal of the policy stimulus is necessary to avoid overheating and accelerating inflation in most countries. Policy frameworks need to be strengthened to insulate the economies from large fluctuations in commodity export prices, including through the adoption of fiscal rules that effectively limit spending growth during commodity price booms. Consideration should be given to gradually reducing domestic fuel subsidies, which are highly distortionary in encouraging excessive fuel consumption, costly, and typically not well targeted to the poor (if they are targeted at all). Improving the business climate to address supply bottlenecks remains critical to boost growth potential in some countries.

Mexico and Central America—Rebuilding Policy Buffers

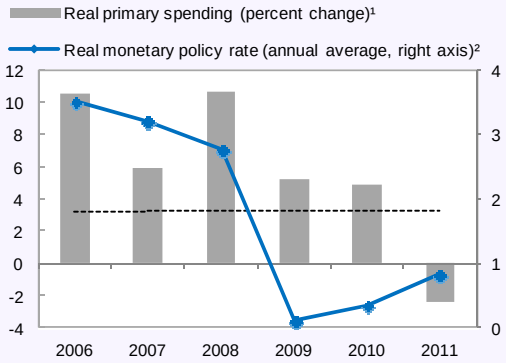
Growth is strengthening in Mexico and Central America largely reflecting an improved U.S. outlook. In Mexico, where the output gap is closing, the task ahead involves a gradual adjustment of the policy stance and continued efforts to ensure fiscal consolidation. Central America should regain the policy space used during the crisis, though this could proceed at a somewhat slower pace should terms of trade deteriorate more sharply.

The recovery is strengthening in *Mexico* in line with the improved performance of the U.S. economy and more recently a pickup in domestic demand responding in part to easy external financing conditions. Output expanded by about 5½ percent during 2010; growth is projected to moderate somewhat this year to about 4½ percent, as fiscal consolidation proceeds. Mexico's output gap is expected to continue closing apace this year, as growth remains above trend.

Given Mexico's cyclical position, the task ahead for monetary policy involves gradually adjusting to a closing output gap. Although inflation is near the 3 percent target (and within the 2–4 percent variability range), and expectations remain well anchored, the authorities need to remain vigilant for potential second-round effects of food and fuel price inflation. Fiscal consolidation is envisaged to

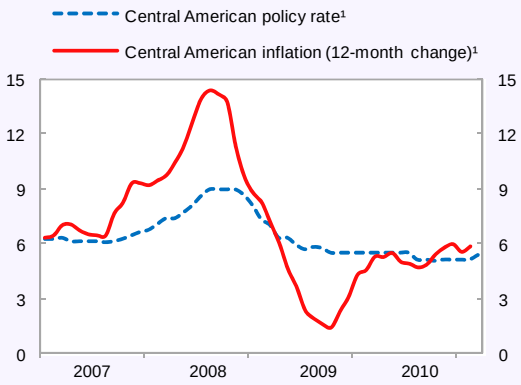
Figure 2.8. In Mexico, fiscal consolidation is proceeding. Meanwhile, in much of Central America, policies remain generally stimulative.

Mexico: Monetary and Fiscal Policy



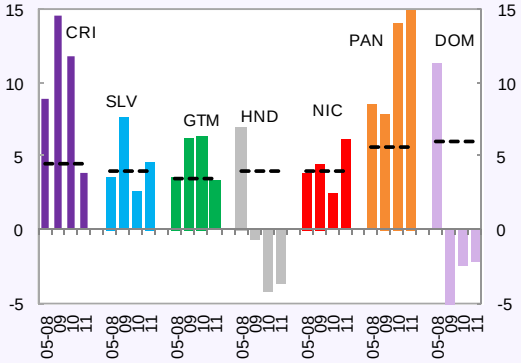
¹ General government primary expenditure. Dotted line is potential output growth.
² Policy rate net of CPI inflation. For 2011, figure is equivalent to average through February.

Inflation and Policy Rates
(Percent)



¹ Simple average of Costa Rica, Dominican Republic, Guatemala, and Honduras. Data are through March 2011.

Central America: Real Primary Expenditure¹
(Percent change)



¹ Real expenditures deflated by the CPI. Dotted line is potential output growth.

Sources: National authorities; and IMF staff calculations.

continue this year, helping to rebuild buffers. Consensus on a strategy to further consolidate public finances needs to be developed given the prospects of declining oil revenues and pressures from age-related spending over the medium term.

Risks to Mexico's outlook are linked to the downside risks in the United States noted in Chapter 1. Slower U.S. growth would imply weaker demand for Mexican exports as well as lower remittances. Renewed turbulence in the euro area could have adverse effects in Mexico, in part through banking channels, but such an impact should be limited given a robust subsidiary model and a tighter regulation limiting liquidity drains.

In *Central America,*[9] the recovery gained strength in 2010, led by a rebound in domestic demand in the context of stimulative macroeconomic policies (Figure 2.8). Exports and remittances have picked up, yet remittances remain below precrisis levels reflecting weak U.S. employment conditions (Figure 1.6). Growth has been particularly strong in the Dominican Republic and Panama, which are benefiting from strong FDI and private demand. In contrast, growth has been more anemic in El Salvador, given its close ties to the U.S. economy and fiscal consolidation efforts. Output in Central America is projected to expand by an average of about 4 percent in 2011, but rising energy prices represent a downside risk to growth given the region's reliance on imported oil.

With relatively small (and closing) output gaps, it continues to be appropriate for Central American countries to regain policy space, particularly by slowing the pace of government spending, which remains above potential output growth in many countries. Although measures should be adopted to shield the poor from increasing food and energy prices, these should take place within the established budget envelopes. To boost growth in the medium term, priority should be given to supply-side policies that improve business climate and strengthen competitiveness, rather than demand policies.

[9] Analysis includes the Dominican Republic and Panama.

Rising commodity prices also present a challenge to monetary policy. Headline inflation has picked up since October 2010, as would be expected given the high weights of food and fuel in CPI baskets. So far, core inflation has been subdued, but the risk of acceleration needs to be watched carefully. Countries moving toward inflation targeting and more flexible exchange rates have kept policy rates low (though the Dominican Republic and Guatemala raised their policy rates more recently) perhaps fearing further currency appreciation pressures, and may need to raise rates more aggressively to limit second-round effects—which have traditionally been strong in these countries. For countries with limited currency flexibility, the burden falls on fiscal policy, and ensuring wage policies remain prudent.

The Caribbean—Recovery Beginning Amid High Debt

The recession has been protracted in most Caribbean countries. The region is projected to exit from recession in 2011 as the recovery in advanced economies proceeds, but rising food and fuel import prices could weaken prospects. Because high public debt is an ever-present obstacle to growth as well as stability, fiscal consolidation plans will need to proceed. Efforts will need to be made to protect the poor in that context.

The Caribbean is beginning to turn the corner after a long and deep recession. Weak external demand and high public debt levels have held back economic activity in much of the region for the last two years, which has also been adversely affected by natural disasters. Tourism is recovering gradually (Figure 1.6), with larger islands (The Bahamas, Barbados, Dominican Republic, and Jamaica) observing a faster and earlier pickup in tourist arrivals than the smaller islands of the Eastern Caribbean Currency Union.

The Caribbean economy (excluding the Dominican Republic and Haiti) is projected to expand by an average of about 2 percent in 2011, following a contraction of about ½ percent last year. The recovery is supported by a mild improvement in labor market conditions in advanced economies

(critical for tourism and remittances), as fiscal consolidation proceeds in most of the region. However, rising commodity import prices present a clear downside risk for most countries (with the exception of Trinidad and Tobago, which stands to benefit from higher oil export prices). Meanwhile, reconstruction efforts in Haiti are expected to take growth above 8 percent this year (Box 2.3).

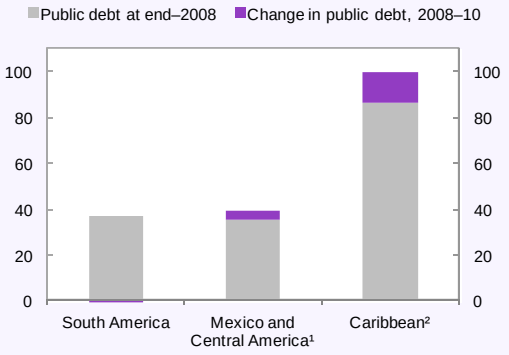
Given the high debt burden in most countries (Figure 2.9), fiscal consolidation should proceed. In this, efforts will be needed to reallocate spending to protect the poor from the impact of higher food and energy prices. Special efforts will be required to contain expenditure growth and in particular wages to strengthen overall competitiveness. As discussed in the next section, price subsidies should be avoided, particularly in the case of energy, as they tend to be costly and limit substitution. In countries where a well-functioning social safety net is not in place, temporary subsidies on staples consumed by the poor could be considered, with the fiscal cost offset by adjustments in other fiscal outlays.

The financial system remains vulnerable to shocks from cross-border financial conglomerates. The resolution of the insurance subsidiaries of the CL Financial Group is still pending, with potentially large fiscal costs. Contingent liabilities could reach 10 percent of GDP in Trinidad and Tobago, where investors are being paid in full up to a threshold, while the remaining amounts are restructured. In the ECCU, where insurance claims exceed 17 percent of GDP, the restructuring of the failed subsidiary is proceeding more slowly, and in Barbados a judicial manager is being appointed to oversee the resolution process. Regulators should aim to complete the resolution while containing fiscal costs and to continue efforts to strengthen the legislative, supervisory, and regulatory framework.

Improved export performance is crucial to boosting and sustaining growth in the Caribbean over the medium term. Efforts to further develop and diversify Caribbean exports are needed, including by refreshing the tourism product (by diversifying markets, for example, to South

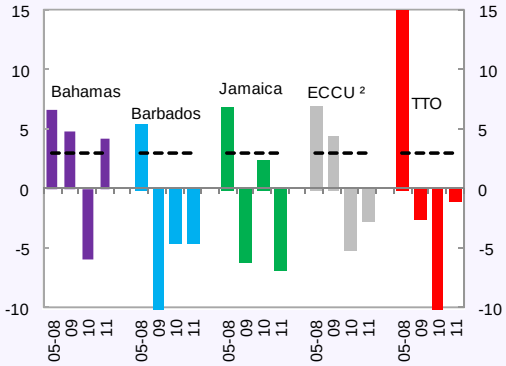
Figure 2.9. In most of the Caribbean, high debt level and oil dependency will constrain recovery.

Latin America and the Caribbean: Public Debt
(Percent of GDP, simple average)



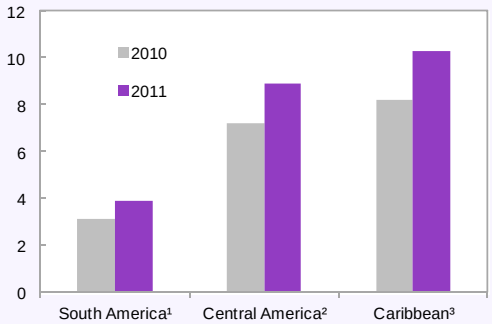
¹ Includes the Dominican Republic and Panama. Excludes Nicaragua and Belize.
² Excludes the Dominican Republic and Haiti.

Caribbean: Real Primary Expenditure¹
(Percent change)



¹ Real expenditures are deflated by the CPI. Dotted line is potential output growth.
² Simple average of Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and Grenadines.

Oil Imports by Region
(Percent of GDP, simple average)



¹ Includes Brazil, Chile, Paraguay, Peru, and Uruguay. Excludes net oil and energy exporters (Argentina, Bolivia, Colombia, Ecuador, and Venezuela).
² Includes Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.
³ Excludes the Dominican Republic and Trinidad and Tobago (a net oil exporter).

Sources: National authorities; and IMF staff calculations.

Box 2.3. Haiti: Economic Developments since the January 2010 Earthquake

Haiti is gradually recovering from the devastating earthquake of January 2010. International support is aiding reconstruction efforts, though political uncertainties and rising commodity prices are posing additional challenges.

In the aftermath of the January 2010 earthquake, the IMF provided significant support.

- An initial emergency fund disbursement in the amount of US$110 million, two weeks after the earthquake. This was followed by the cancellation of all of Haiti's debt to the IMF, releasing an amount of US$268 million to speed the reconstruction process. Similar debt relief was provided by other multilaterals (Inter-American Development Bank and World Bank) as well as bilaterals (Canada, France, Italy, and Venezuela).
- A three-year US$65 million program was approved in July 2010, which aims at providing a framework to boost growth and combat poverty. Emergency technical assistance is being provided to restore essential state functions (Treasury and revenue administration), and maintain financial sector stability.

Since the earthquake, the macroeconomic situation has improved, reflecting the authorities' efforts to quickly restore state institutions and prudent macroeconomic policies.

- Real GDP is estimated to have contracted by about 5 percent in FY2010 (Oct-09 to Sep-10). The impact of the earthquake on growth was mitigated by resilient agricultural and manufacturing activity, and a pickup in public investment.
- The fiscal deficit (excluding grants and foreign financed capital spending) increased to 5.2 percent of GDP from 4.3 percent in FY2009, reflecting higher capital spending.
- The current account deficit widened somewhat, as higher reconstruction-related imports more than offset a rebound in exports and higher official transfers. However, net international reserves are up US$400 million since September 2009, reaching 1.1 billion at end-January 2011 owing to sizable donor inflows and debt relief.

Haiti's economy is projected to rebound sharply in 2011, though political uncertainties, unfavorable terms of trade, and further delays in donor disbursements could complicate the recovery.

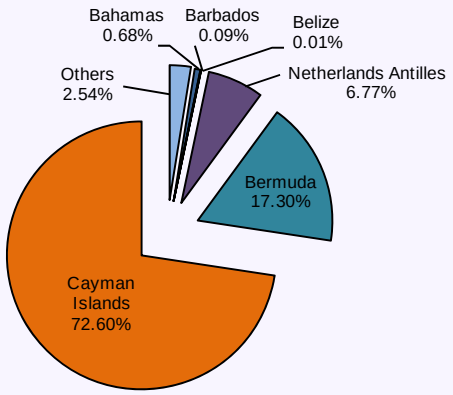
- Real GDP is projected to grow by about 8½ percent in 2011, as reconstruction efforts intensify. This projection assumes an acceleration in the pace of donor disbursements, which in turn is based on the resolution of election-related uncertainties. Thus far, only one-fourth of the total US$5.5 billion (20 percent of GDP) pledged for 2010–11 at the New York Donor's Conference of March 2010 has been disbursed.
- The rise in global food and energy prices is pushing inflation, with possibly negative consequences on growth and the poor. The government recently froze domestic fuel prices, though it intends to partially pass-through further increases in global fuel prices. Fuel subsidies are being financed through concessional financing from Petro-Caribe, though this could pose risks for external debt sustainability.
- Moreover, continued weakness in administrative capacity could hamper implementation of reconstruction efforts and programs to protect the poor. It will be critical that financial support continues to be accompanied by capacity building, to build a stronger nation less vulnerable to natural disasters and recurrent health epidemics.

Note: This box was prepared by Abdelrahmi Bessaha and Aminata Touré.

Box 2.4. Caribbean Offshore Financial Centers: Opportunities and Challenges

Some Caribbean countries are considering diversifying their economies through the further development of offshore financial services. Not only do offshore financial centers (OFCs) provide employment opportunities for local labor, they can also generate spillovers to other sectors in the economy, including tourism and infrastructure, because they require improved telecommunication and transportation. Indeed the empirical evidence suggests that OFC-related portfolio flows contribute to economic growth (for more details see González, Khosa, Liu, Schipke, and Thacker, forthcoming). Currently, the Caribbean accounts for more than half of global OFC-related flows, though much of it is dominated by nonsovereign territories, such as the Cayman Islands (see figure). Although OFCs account for a relatively smaller share of GDP in sovereign Caribbean countries, in some countries (Bahamas and Barbados) their economic/fiscal contribution is significant.

OFCs in the Caribbean
(Total portfolio liabilities, 2009)



Given the increasingly large volume of financial flows handled by OFCs, international pressure has built in recent years to ensure these centers follow stricter prudential and supervisory financial standards, control money-laundering activities, and limit opportunities for tax evasion. These initiatives are spearheaded by a number of different global institutions, including the Global Forum on Transparency and Exchange of Information, the Financial Stability Board, and the Financial Action Task Force (with support from the IMF). A strong understanding of the details of these different initiatives is necessary to limit reputational risks (via the possibility of black/grey listing) in cases of noncompliance.

Status of OECD's List: International Tax Standard

	Number of Agreements		
	Apr. 09	Jan. 11	Latest Status
Sovereign			
The Bahamas	1	12+	White
Barbados	12+	12+	White
Belize	0	12+	White
Antigua and Barbuda	7	12+	White
Dominica	1	12+	White
Grenada	1	12+	White
St. Kitts and Nevis	0	12+	White
St. Lucia	0	12+	White
St. Vincent and the Grenadines	0	12+	White
Overseas Territories			
Aruba	4	12+	White
Bermuda	3	12+	White
British Virgin Islands	3	12+	White
Cayman Islands	8	12+	White
Netherlands Antilles	7	12+	White
U.S. Virgin Islands	12+	12+	White
Montserrat	0	11	Grey
Turks and Caicos Islands	0	12+	White

Source: OECD (April 2011).

Countries and jurisdictions hosting OFCs are taking steps to demonstrate their commitment to adhere to these international standards. For example, all countries except one have signed the required Tax Information and Exchange Agreements to be moved to the "white" list by April 2011. However, continued efforts will be needed to ensure compliance with all of the initiatives, especially as they are moving toward the mutual assessment/effectiveness stages. Indeed the empirical evidence suggests that countries/territories that adopt good regulatory standards benefit from higher inflows.

Note: This box was prepared by Alfred Schipke.

American visitors), and developing new high value-added export services to take advantage of the new and emerging growth poles, including offshore financial centers (Box 2.4). For a more in-depth discussion of growth issues, see Chapter 5 of the October 2010 *Regional Economic Outlook: Western Hemisphere*.

2.3. Dealing with the Oil and Food Price Shock

Rising global food and energy prices present a serious challenge to efforts to anchor inflation and are a particular hardship to the poor. Monetary policy may need to be tightened to contain higher food and fuel prices from spilling over into core inflation and inflation expectations, particularly in countries with weaker policy frameworks and track records. Steps should be taken to protect vulnerable groups from higher food prices, ideally through proven targeted income transfers, while avoiding costly and distortive generalized price subsidies.

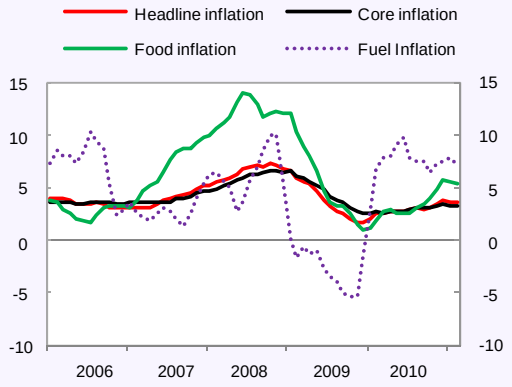
International commodity prices, as reviewed in Chapter 1, are back near peaks observed prior to the global crisis. Although weather-related shocks and political tensions in the Middle East and North Africa are responsible for the more recent surge in food and oil, continued strong growth in the demand for commodities is expected to keep prices near current highs (see the April 2011 *World Economic Outlook*). In the case of food, although futures markets indicate a gradual reduction in some prices over the course of this year (as supply shocks dissipate), prices will remain near precrisis highs.

Impact of Global Commodity Price Shocks on Inflation

The increases in domestic food and fuel prices in much of the region are pushing headline inflation upward (Figure 2.10). Central banks are increasingly concerned that the recent (possibly one-off) increase in food and fuel inflation may unhinge inflation expectations and spill over into core inflation, similar to the 2007–08 episode. Although inflation has been relatively contained thus far and remains within the target range in much of the region (in Brazil and Uruguay, it is close to or above the top of

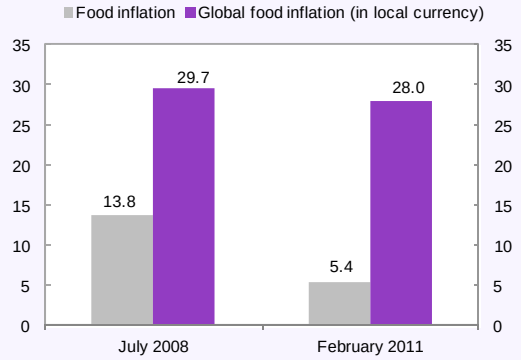
Figure 2.10. The global commodity price shocks are gradually transmitting into higher domestic food and fuel prices, pushing headline inflation up and affecting the poor in the region, who spend a larger share of their income on food.

Latin America: Inflation Developments[1]
(12-month percent change)



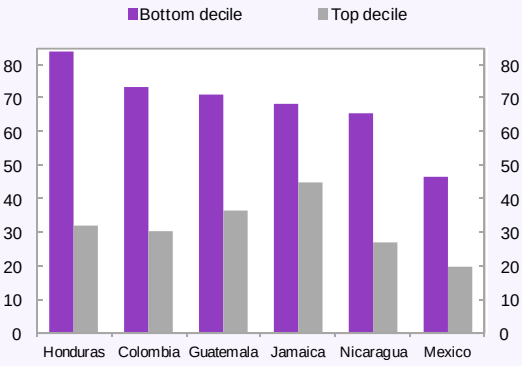
[1] Simple average for Brazil, Chile, Colombia, Mexico, and Peru.

Latin America: Food Inflation Developments[1]
(12-month percent change)



[1] Simple average for Brazil, Chile, Colombia, Mexico, and Peru.

Food Spending by Decile
(Percent of total spending)



Sources: National authorities; Robles and others (2008); and IMF staff calculations.

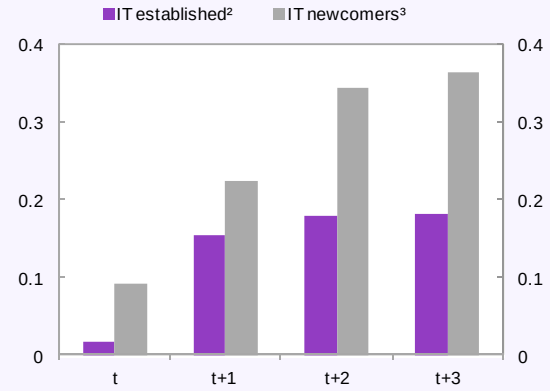
the band), core inflation and inflation expectations are slowly trending upward, and prices are likely to increase further in the months ahead as lagged pass-through effects play out.

To assess the potential impact on inflation of the recent commodity price shock, we reestimate what has been the typical pass-through from global to domestic food and fuel prices (*first-round effects*), and also the historical rate of pass-through from those domestic food and fuel prices to core prices (*second-round effects*) for a group of 10 countries in the region. The selected countries (Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, Paraguay, Peru, and Uruguay) have either inflation-targeting regimes or otherwise have scope for monetary policy. It should be noted that the estimated historical pass-through coefficients are also dependent on the historical monetary policy responses and the credibility of the monetary policy regime. This is particularly important, because most of these countries have strengthened their monetary policy frameworks during the period of analysis. Annex 2.1 includes technical details of the estimation as well as country-specific results.

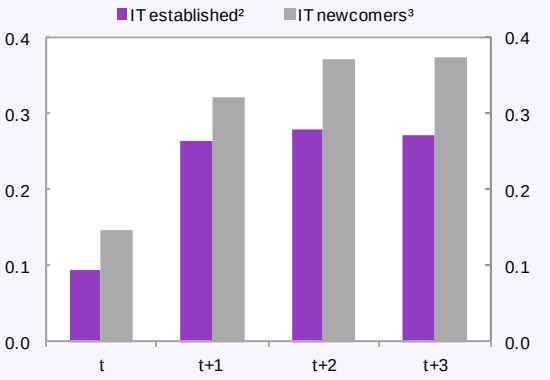
First-round effects: World commodity price shocks are found to have a nonnegligible impact on the corresponding food and fuel subcomponents of domestic consumer price indices (Figure 2.11). A 10 percent increase in the index of key global food prices leads to an increase in domestic food prices by an average of almost 3 percent, over an horizon of three quarters. Most of the effect arrives with a lag, but with little if any additional effect after three quarters. This pass-through tends to be somewhat larger for the poorer countries in the sample, probably reflecting the fact that food processing, distribution, and marketing typically account for a smaller share of the food cost structure. A similar average pass-through is found for fuel prices, though differences across countries are much greater, likely reflecting differences in subsidy policies. In some cases (for example, Mexico and Colombia), where fuel prices are administered,

Figure 2.11. The pass-through from global commodity price shocks varies depending on the strength of the policy framework and other structural factors.

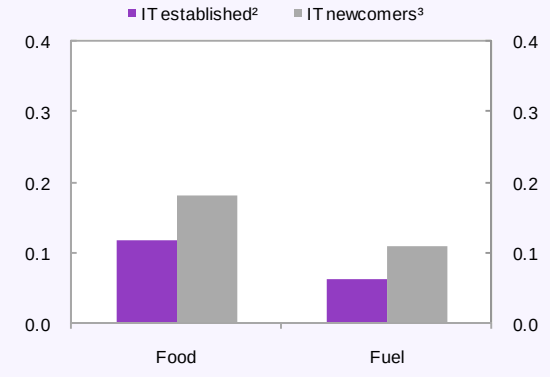
Pass-through from World to Domestic Food Prices[1]
(Over 4-quarter period, simple average)



Pass-through from World to Domestic Fuel Prices[1]
(Over 4-quarter period, simple average)



Pass-through from Noncore to Core Prices
(Over one quarter, simple average)[4]



Source: IMF staff calculations.
[1] Each *t* represents one quarter. World prices are in local currency.
[2] Includes countries with inflation-targeting regimes since early 2000 (Brazil, Chile, Colombia, Mexico, and Peru).
[3] Includes countries that have adopted inflation targeting more recently (Costa Rica, Dominican Republic, Guatemala, and Uruguay), plus Paraguay.
[4] The impact is not statistically significantly at longer horizons.

domestic prices are less sensitive to international price changes, but in countries where prices are fully market determined (for example, Chile), the pass-through is much larger (Annex 2.1).

Second-round effects: Increases in domestic food and fuel prices also tend to show up, to varying degrees, in core inflation in the region. A 10 percent increase in the domestic price of food would increase core prices by an average of 1¾ percent, though the impact is generally smaller in countries with longer inflation-targeting track records. The average pass-through from domestic fuel to core prices is much lower, roughly half that of food. The transmission to core prices is generally fast, with most of the impact typically occurring within one quarter after the shock to domestic food and fuel prices. The higher pass-through from food to core prices is likely related to the fact that food (given its higher weight in the consumption basket) plays a more important role in the wage-setting process and in influencing inflation expectations.

Combining these two effects, we find that—on average—the projected 24 percent average increase in global food prices this year could add 2½ percentage points to inflation in 2011, whereas the projected 36 percent increase in global fuel prices would add another 1½ percentage points.[10] The impact would be smaller to the extent that these estimations do not fully capture the gains in monetary policy credibility that some countries have achieved to date. The impact of the global food price shock could be smaller this time around to the extent that local firms are able to absorb part of the price increase through reduced profit margins.[11]

Monetary Policy in the Face of Commodity Price Shocks

How should monetary policy react in response to the recent surge in commodity prices? To limit the risk that the recent increases in food and fuel prices spill over excessively into core inflation and unhinge inflation expectations, policy rates may need to be tightened in addition to what would have been necessary on cyclical grounds (see previous discussion) and to avoid a decline in ex-ante real interest rates (in light of predictable second-round effects of higher food and fuel prices on headline inflation). Monetary policy decisions should not take too much comfort from developments in core inflation to date, as it is likely to increase following persistent commodity price increases, albeit with some lag (see Box 2.5 on core inflation).

Monetary policy adjustments will need to take into account country circumstances, ensuring consistency with the policy regime. Countries with shorter monetary policy horizons and/or narrower target bands may need to tighten relatively more than those with more forward-looking policy horizons or broader bands. Moreover, the timing and extent of the policy reaction depends critically on the credibility of the policy framework. Countries with weaker frameworks and inflation track records may need to tighten earlier and more aggressively to limit the pass-through from higher food and fuel prices to core inflation and to keep inflation expectations anchored. As noted earlier, in countries with limited scope for monetary policy (dollarized economies and countries with limited exchange rate flexibility), the burden should fall on fiscal and wage policies.

Social Policies and Commodity Price Shocks: Protecting the Poor

Higher food prices will most negatively affect the poor across the region (with the exception of those rural poor who benefit from higher agricultural prices), as they typically spend a larger share of their budget on food. To protect the poor, efforts should be centered on scaling up proven social safety net

[10] The impact would be smaller in inflation-targeting countries, with the projected increases in global food and fuel prices adding 1½ percentage points and 1 percentage point to inflation, respectively.

[11] Recent inflation reports for Chile and Peru make this argument, because domestic food prices did not decline as sharply as global food prices in the aftermath of the global crisis.

Box 2.5. The Information Value of Core Inflation

We perform a series of tests to assess the information value of core inflation in 10 Latin American economies.

Does core inflation drive headline inflation or vice versa? Using a methodology developed by Marques, Neves, and Sarmiento (2003), we assess whether core inflation is a "magnet" for headline inflation. Such assessment has a direct bearing on how useful is the chosen definition of core inflation. Here, we use the authorities' definitions of core inflation, which in most cases excludes food, fuel, and administered prices. Of course, the results are not independent of how monetary policy is conducted; they reflect past associations rather than a deep relation.

- *Are differences between headline and core inflation rates temporary* (that is, are they cointegrated, with unitary coefficient)? Passing this test ensures that both measures are related over the medium term and do not grow apart indefinitely.
- *Does headline inflation converge to core inflation*? Passing this test is essential, otherwise there would be no point in knowing whether core inflation exceeds or is below headline.[1] Moreover, one should also ensure that core inflation does not converge to headline (otherwise, if headline and core inflation differ, it would be unclear which one would converge to the other).

Tests of Core Inflation[1]

	Difference Headline-Core Stationary?[2]	Headline Converging to Core?	Core not Converging to Headline?
Brazil	yes	x	yes
Chile	yes	yes	yes
Colombia	yes	x	yes
Costa Rica	yes	x	x
Dominican Rep.	yes	x	yes
Guatemala	yes	yes	x
Mexico	yes	yes	yes
Paraguay	yes	x	yes
Peru	yes	yes	yes
Uruguay	yes	x	yes

Source: IMF staff calculations.
[1] Based on methodology developed by Marques, Neves, and Sarmento (2003).
[2] Sample period 1996–2010. In addition to cointegration, a mean zero difference between core and headline inflation is found in all countries, except Costa Rica and Guatemala.

The findings, based on track records during 1996–2010, suggest that Chile, Mexico and Peru have been somewhat more successful in shielding core inflation from noncore price developments. Although differences between headline and core inflation rates are found to be temporary, in most countries it is difficult to determine, with statistical confidence, that headline inflation converges to core.

Is core inflation a good predictor of headline inflation? Preliminary findings for the region suggest that core inflation is a better predictor of headline inflation (for horizons of 12 months and 24 months) than headline inflation itself.[2] The findings are consistent with those in the literature (see Crone and others, 2008); by excluding items that are particularly volatile, core inflation usually contains more information about future headline inflation. (Of course, a simple measure of core inflation alone is unlikely to give the "best" possible forecast of headline inflation, in part because it does not take into account expected developments on noncore items, nor the state of the economy.)

Measuring core inflation. Despite its widespread use, there is no generally agreed measure of core inflation. Some core measures focus on persistent inflation, stripping out any volatile or transitory shocks (Bryan and Cecchetti, 1993; and Cutler, 2001), and others exclude exogenous or supply-driven price shocks. The common practice of excluding most or all food and fuel prices is generally consistent with both, as those prices are typically volatile and sensitive to world markets. However, this division of the CPI is not a clean one: for example, many "core" goods and services are likely to have components that rely on fuel inputs (for example, transportation services). Moreover, most food items in the CPI have a large element of domestic labor inputs associated with processing, and are not simply agricultural raw materials.

Note: This box was prepared by Alexander Klemm.

[1] The test on whether headline inflation converges to core inflation is implemented by a *t*-test on γ in: $\Delta\pi_t = \sum_{i=1}^{4} \alpha_i \Delta\pi_{t-i} + \sum_{i=1}^{4} \beta_i \Delta\pi^*_{t-i} - \gamma(\pi_{t-i} - \pi^*_{t-i}) + \epsilon_t$, where π is headline inflation, and π^* is core inflation. Hence this is equivalent to testing whether core inflation Granger-causes headline inflation in an error-correction mechanism. The test is passed if a zero coefficient is rejected. The test on whether core converges to headline is specified accordingly, with the difference in core inflation as the dependent variable. The test is passed if a coefficient of zero is not rejected.

[2] In regressions of headline inflation on past levels of core, food, and fuel inflation, the estimated weight on core inflation tends to exceed the actual weight of core inflation in the CPI basket.

programs (that is, targeted income transfers, school lunches and child nutrition programs). Generalized price subsidies (or controls) and indirect tax reductions should be avoided as these measures tend to be more costly, not well targeted and distort price setting (see the October 2008 *Regional Economic Outlook: Western Hemisphere* for a fuller discussion of policies in this context).

The lack of fiscal space in some countries (mainly in Central America and the Caribbean) and cyclical considerations in others (mainly South America) will constrain the design of income policies. In this context, in much of the region, the fiscal cost of measures to protect the poor will need to be offset elsewhere in the budget, again highlighting the value of targeting. In countries where capacity constraints prevent the scaling up of safety net programs, subsidies on certain food items could be temporarily considered. However, fuel subsidies should be avoided, as these tend to be 4–5 times more costly to the budget, disproportionately benefit the rich, and discourage energy conservation.[12]

In the case of food-exporting countries, supply-side measures to boost agricultural production could be helpful over the medium term. Export taxes or restrictions should be avoided as they distort production incentives, reducing future supply and, moreover, have negative spillovers at the global level. In food-importing countries (Central America and the Caribbean), steps could be taken to further liberalize trade, by lifting nontariff restrictions to imports, or reducing import tariffs on food items—especially if part of a broader trade reform that enhances overall economic efficiency and does not compromise fiscal sustainability.

[12] During the 2007–08 commodity price boom fuel subsidies in a large sample of low- and middle-income countries averaged about 1½ percent of GDP compared with ¼ percent in the case of food (IMF, 2008a).

2.4. Credit Markets and Asset Prices—Are Bubbly Conditions Taking Hold?[13]

Strong terms of trade and capital inflows are boosting credit and asset prices in many countries of the region. Although commonly used metrics do not yet suggest the presence of credit booms or clear evidence of asset bubbles, financial oversight needs to be strengthened and monitoring extended to include the corporate sector where indebtedness is also growing. Further consideration should be given to adopting prudential measures to prevent excessive procyclicality of credit, and information systems require strengthening to detect systemic risks in the housing and corporate sectors

Bank Credit Growth

Bank credit is accelerating in much of the region, raising concerns as to whether this credit expansion is becoming excessive and eventually unsustainable. This is particularly the case in countries benefiting from improved terms of trade and strong capital inflows, where bank credit growth has been fastest. Though commonly used metrics suggest that the current expansion does "not yet" rise to the level of a credit boom, it would if the expansion were sustained for a prolonged period.[14] Credit levels are currently at or above their underlying trend, though deviations appear to be still below danger thresholds (Figure 2.12 and Panel 2.1). However, it is worth noting that standard methods and thresholds to identify credit

[13] The assessment focuses on credit and asset price developments in six of the more financially integrated countries in the region: Brazil, Chile, Colombia, Mexico, Peru, and Uruguay.

[14] We consider here a definition of credit boom already used in the literature. A given credit expansion is identified as a boom if (i) the level of credit exceeds the underlying trend (estimated using a rolling, backward-looking Hodrick-Prescott filter) by a threshold equal to 1.5 times the standard deviation of credit fluctuations around trend (the exercise was also conducted using the credit-to-GDP ratio instead of credit levels); or (ii) the ratio of credit to GDP exceeds the underlying trend by more than 18 percent relative to trend (or, alternatively, if the absolute deviation between actual and trend credit-to-GDP ratio exceeds 4 percentage points of GDP). These approaches as well as the rationale for these thresholds are described in Mendoza and Terrones (2008) and Gourinchas, Valdés, and Landerretche (2001). The data frequency in those studies (annual) differs from the data frequency in this chapter (monthly).

booms are somewhat arbitrary, and that a more holistic approach is required, particularly since the estimated trend may also be growing too fast.

Credit developments have differed somewhat across sectors. Corporate credit—which accounts for the largest share of total bank credit in most countries—and consumer credit experienced the sharpest growth rate decline during the crisis, yet are recovering fast. Mortgage credit, which unlike advanced economies did not suffer much during the crisis, continues to expand at a very fast pace, especially in Brazil, Colombia, and Peru.[15] Though the mortgage market is still relatively small in these countries (below 4 percent of GDP, compared with 20 percent in Chile), monitoring of the housing sector needs to be strengthened (see section on housing prices below).

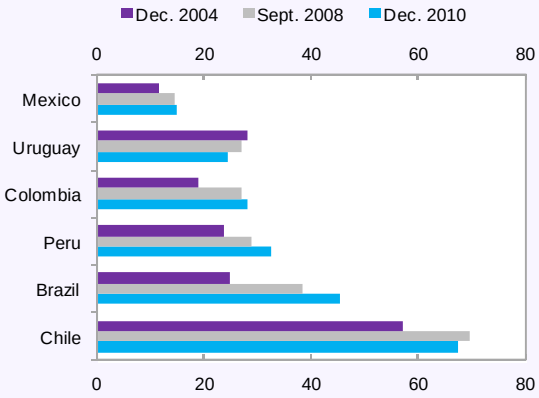
Banks in the region remain sound and standard financial sector indicators have improved some since the crisis—capital adequacy ratios are up from already comfortable levels, nonperforming loans returned to a downward trend, and bank profitability recovered somewhat. However, the rapid rebound in credit growth has been associated with a small increase in the loan-to-deposit ratio and liabilities to nonresidents. Although funding ratios remain generally healthy (bank foreign liabilities do not exceed 10 percent of total liabilities), authorities need to remain vigilant, as nonresident liabilities are typically a more volatile source of funding and bank assets tend to be overvalued in good times (Figure 2.13).

As discussed in the October 2010 *Regional Economic Outlook: Western Hemisphere*, much of the expansion of bank credit since 2005 could be attributed to improved fundamentals and a process of financial deepening (credit has been growing on average faster in countries that started from lower credit-to-GDP levels). However, policymakers should not be complacent, particularly given the region's long history of credit boom-bust cycles and

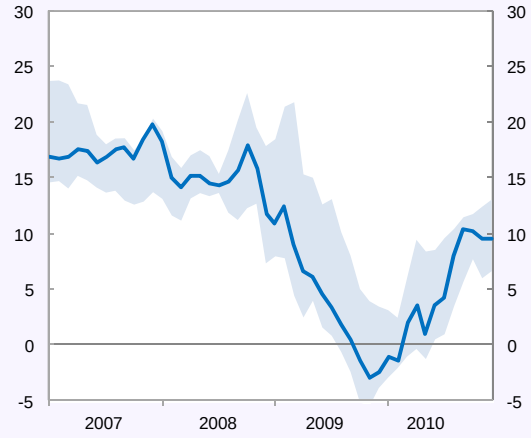
[15] In Brazil, for example, real annual mortgage credit growth exceeded 40 percent, more than tripling the level of early 2007.

Figure 2.12. Credit growth has picked up, but remains below both precrisis levels and danger thresholds.

Private Sector Credit
(Percent of GDP)

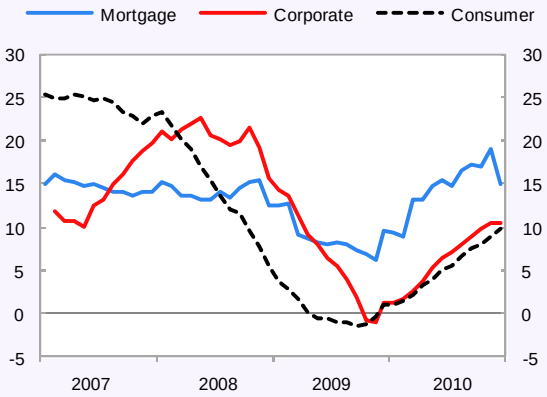


Real Credit to the Private Sector [1]
(12-month percent change)



[1] Median of Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. Shaded area is the 25th to 75th percentile range.

Real Private Sector Credit Growth by Type[1]
(Percent change)

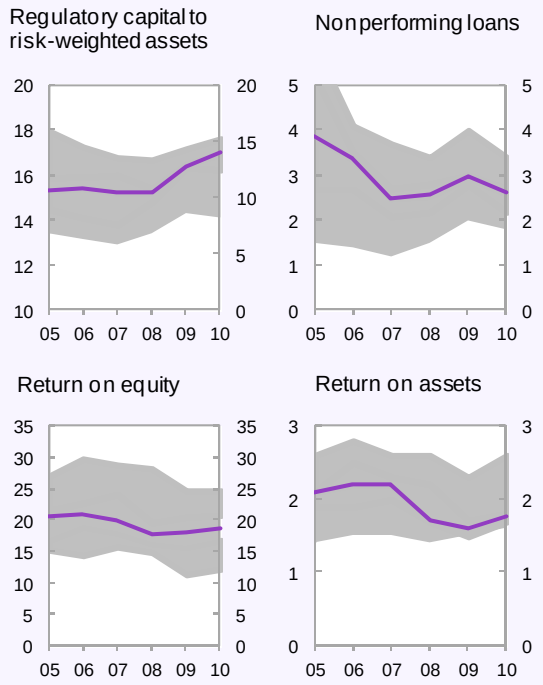


[1] Simple average for Brazil, Chile, Colombia, Mexico, Peru, and Uruguay.

Sources: National authorities; and IMF staff calculations.

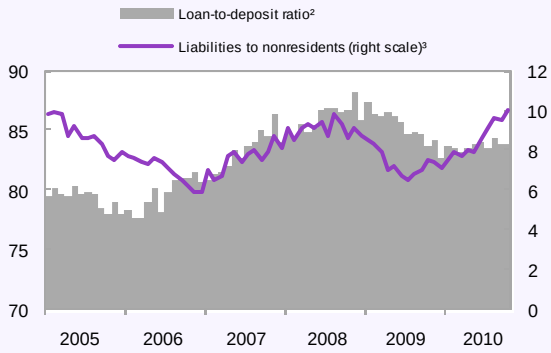
Figure 2.13. Financial sector remains sound though credit expansion has been funded more recently from external sources.

Financial Soundness Indicators[1]
(Percent)



[1] The official definition of soundness indicators varies by country. The solid lines indicate the median of the indicators across countries in the group, whereas the shaded area contains the second to the fourth quintiles. The countries in the sample are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Panama, Paraguay, Peru, Uruguay, and Venezuela.

Latin America: Bank Funding and Liabilities[1]
(Percent, simple average)



[1] Includes Brazil, Chile, Colombia, Mexico, and Peru.
[2] Estimated by dividing private bank credit by the sum of total deposits and securities.
[3] Percent of total liabilities.

Sources: National authorities; and IMF staff calculations.

the current easy global financing conditions. The main challenge is to avoid the excessive procyclicality of credit that could end later in a financial collapse. Supervision needs to be further strengthened, monitoring and perhaps regulation of nonbank intermediaries needs to be stepped up, and prudential regulation upgraded to mitigate credit excesses and asset price bubbles.

Corporate Indebtedness

Cheap financing conditions, both external and internal, are fueling corporate sector borrowing outside the banking system. Total issuance of securities is up relative to precrisis highs, led by increased corporate and quasi-sovereign borrowing (Figure 2.14).

Although the region's corporate sector leverage is still below the precrisis peak, and is broadly in line with that in other emerging market regions (except for Brazil, where debt-to-equity ratios have been higher), several trends are a source of concern. A greater share of corporate financing is increasingly in the form of foreign bond placements, reversing the trend observed prior to the crisis and with the potential of increasing currency mismatch risk. Moreover, leverage ratios can be a misleading measure of corporate vulnerabilities, particularly in the context of low global interest rates and increasing equity prices. A fuller discussion can be found in the April 2011 *Global Financial Stability Report*.[16]

Monitoring of the corporate sector needs to be strengthened, particularly in the context of easy financing conditions. The U.S. financial crisis showed the importance of pockets of lightly regulated sectors—the shadow banking system in that case. Even if prudential measures can dampen the cycle-amplifying effect of the financial sector, firms could bypass the domestic financial system, and be prone to overleveraging and to excessive currency and maturity mismatches. Improving

[16] Financing costs are down sharply. More than 40 percent of all corporate bonds in U.S. dollars have a yield to maturity of below 6 percent compared with below 20 percent in the period 2006–08.

information systems to monitor the financing structure of firms remains a key priority (see Cubeddu and Tovar, 2011). And although the region has made progress in compiling and disseminating firm balance sheet data, relatively little information is available on their debt structure (currency and maturity) and exposure to derivative instruments. Shortcomings of this nature were brought to light in Brazil and Mexico in 2008, when firms experienced severe losses from operations in the foreign exchange derivative market.[17]

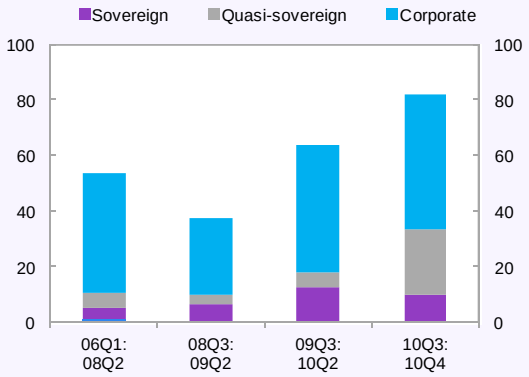
Equity Prices

Equity prices in the region rebounded sharply after the global crisis and in most countries are above precrisis levels, outperforming other emerging markets (Figure 1.2). Although systemic bubbles are not clearly evident and are difficult to measure, stock prices are currently above trend levels in most countries, with signs of stretched valuations in a few countries (Chile, Colombia, and Peru), where price-to-earnings ratios are well above historical averages and levels observed in other emerging markets (Figure 2.15 and Panel 2.1).

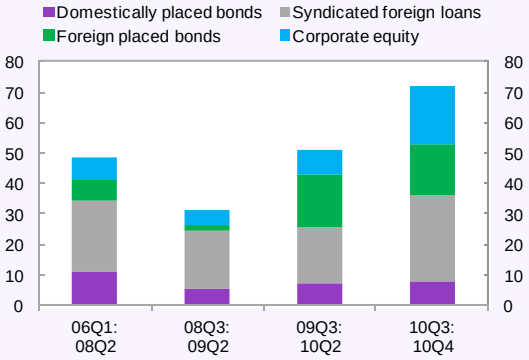
The surge in commodity prices is attracting new investments and pushing up valuations of commodity-related firms (Box 2.6). Prices of basic material firms have increased sharply since 2005; their price-to-earnings ratios were relatively stable until more recently (early 2010) when they started to move up sharply. It is worth noting that part of the increase in these ratios is of a temporary nature, because earnings from new investments in oil and minerals extraction take time to come to fruition. That said, authorities should remain vigilant and consider providing their evaluation to help markets in their "price discovery" process.[18]

Figure 2.14. Nonbank corporate borrowing has surged, surpassing precrisis levels. Though leverage remains in check, vulnerabilities are building.

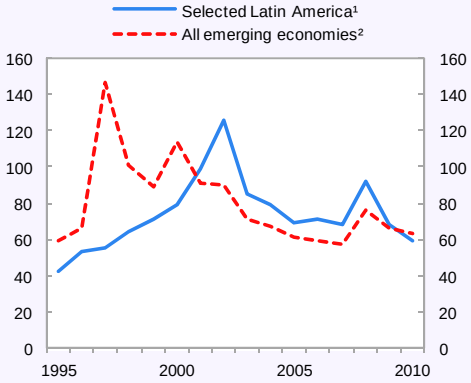
Average Quarterly Issuance by Sector, 2006–10 [1]
(Millions of U.S. dollars)



Average Quarterly Corporate and Quasi-Sovereign Issuance by Type, 2006–10 [1]
(Millions of U.S. dollars)



Corporate Leverage: Ratio of Debt to Equity
(Percent, simple average)



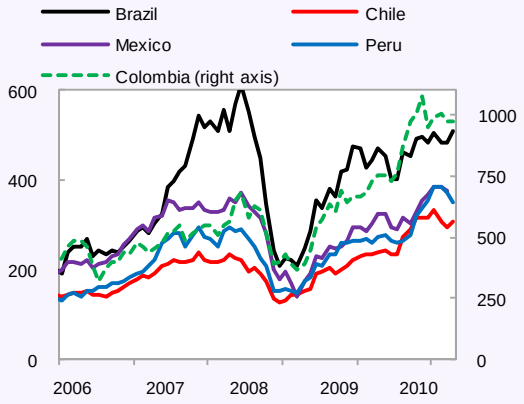
Sources: Dealogic; Worldscope; and IMF staff calculations.

[1] Includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.
[2] Emerging economies average includes Argentina, Brazil, Chile, China, Colombia, Egypt, Hungary, India, Indonesia, Malaysia, Mexico, the Philippines, Poland, Russia, South Africa, Sri Lanka, Taiwan Province of China, Thailand, and Turkey.

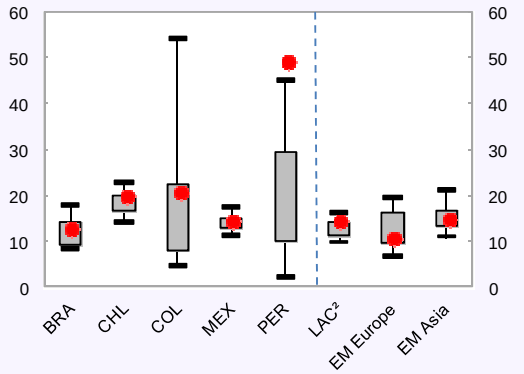
[17] Measures were adopted in 2009 requiring financial institutions to report their exposures to derivative contracts (Brazil) and firms that issue bonds or equity to document their market, credit, and liquidity risks related to financial derivative contracts (Mexico).
[18] See the *Financial Stability Report* of Chile (December 2010) and Colombia (September 2010).

Figure 2.15. Equity prices recovered sharply, with signs of stretched valuations in a few countries.

Latin America: Stock Market Price Index
(*Index, 2004 = 100; U.S. dollar terms*)



Stock Market Price-to-Earnings Ratios—Latin America vs. Other Regions, 2001–11[1]



Sources: Datastream; and IMF staff calculations.
[1]Shows 95th percentile and 5th percentile for the period from January 2001 to March 2011. Gray box covers range between 25th and 75th percentile, and red dots are latest observation.
[2]Weighted average for Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela.

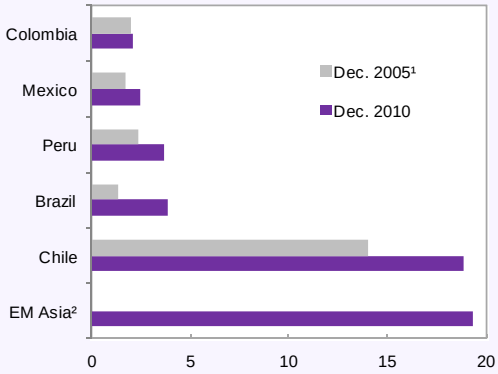
Housing Prices

Despite the growing importance of mortgage credit, data on housing indicators remain scant in the region. Currently, and in contrast to other regions in which data availability is somewhat greater, only four countries in Latin America produce data on housing prices (Colombia, Mexico, Peru, and Uruguay), and many of these series are of short duration, with varying coverage and methodologies. Real housing prices in these four countries have increased by an annual average rate of 10 percent since 2005, with the crisis having had only a small and short-lived impact on values. Home price inflation has been somewhat faster than in emerging Asia, yet far below that observed in emerging Europe in the years leading up to the crisis (Figure 2.16).

The absence of systematic housing price series in the region hampers risk monitoring and assessment and, by extension, timely decision making to avoid excesses related to the real estate sector. Improving information on the mortgage market, where credit has been growing fast, is of critical importance. Housing price indicators should be developed and relationships between construction firms and the banking sector closely monitored. Consideration could be given to tightening loan-to-value ratios, a measure which generally seems to have worked well in Asia's emerging markets.

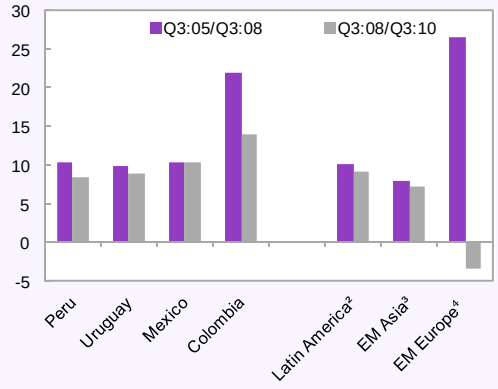
Figure 2.16. Mortgage credit is expanding at a fast pace, and housing prices have been increasing somewhat faster than in emerging Asia.

Emerging Economies: Mortgage Credit
(Percent of GDP)



[1] For Colombia, December 2006.
[2] Simple average for Korea, Indonesia, Malaysia, Taiwan Province of China, Thailand, and the Philippines.

Housing Prices in Latin America and Other Emerging Economies
(*Simple average, annual real percent change*)[1]



[1] Data through September 2010 for most countries. Coverage of housing market varies according to countries.
[2] Includes Colombia, Mexico, Peru and Uruguay.
[3] Includes China, Hong Kong (PoC), Indonesia, Korea, Malaysia, and Thailand.
[4] Includes Bulgaria, Hungary,Lithuania, Russiam Slovakia, and Slovenia,

Sources: Bank for International Settlements; national authorities; and IMF staff calculations.

2.5. Capital Inflows—Guarding Against the Reversal of Favorable Global Conditions[19]

Net capital flows to Latin America experienced a fast rebound after the collapse in the wake of the global financial crisis, driven by strong portfolio flows. This trend of strong net flows is expected to continue as long as the current conditions of low global interest rates, low risk aversion, and a relatively weak outlook in advanced economies persist. However, changes in these global conditions, including a tightening in U.S. monetary policy, may be associated with a larger reduction of capital inflows to the region, relative to other emerging economies given Latin America's larger direct financial exposure to the United States.

Net capital flows to Latin America recovered rapidly after their retrenchment at the wake of the global financial crisis, driven by low global interest rates, improved fundamentals, and stronger growth prospects in the region. Compared with other emerging market economies, the post–global-crisis rise in net flows (in percent of GDP) was smaller in Latin America, but these flows recovered from a higher base. Net flows in the first three quarters of 2010 were already above the 2004–07 average, although below that observed during 1991–96, when the region financed larger current account deficits (Figure 2.17).

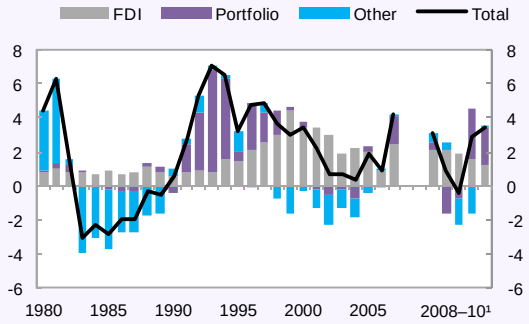
The recovery in net flows to Latin America during the first three quarters of 2010 was largely driven by debt creating flows, while the share of FDI flows has fallen. The recent composition of net flows is similar to that of 1991–97, when more than half of the flows was debt creating. This trend warrants special attention from policymakers, given evidence that portfolio debt flows are among the least persistent.

The Spring 2011 *World Economic Outlook* shows that net capital flows to emerging economies, particularly non-FDI flows, are sensitive to favorable global conditions (low interest rates and low risk aversion and large growth differentials between emerging and advanced economies). In Latin America, the dynamics of net inflows around these episodes are driven by

[19] Jaime Guajardo of the IMF Research Department contributed to this section.

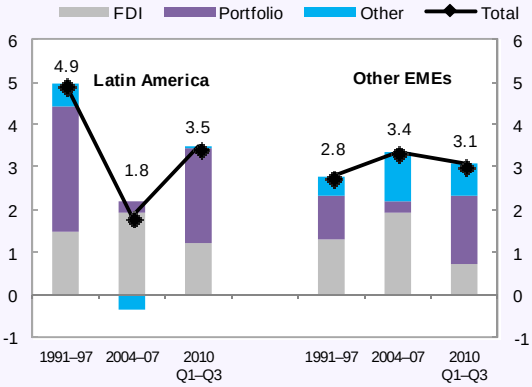
Figure 2.17. Despite rebounding quickly following the crisis, capital flows to the region are sensitive to changes in global conditions.

Latin America: Net Capital Inflows, 1980–2010(Q3)
(Percent of GDP)

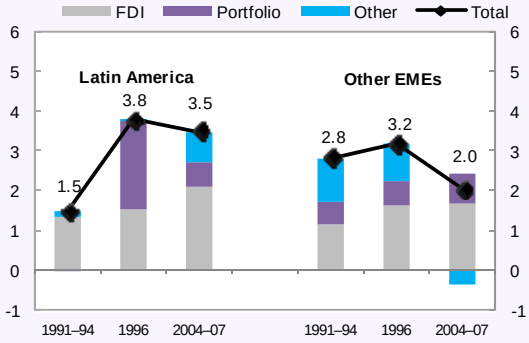


¹ First four bars present the two semesters of 2008 and 2009. The final bar presents the average of 2010:Q1–Q3. Total flows may not equal the sum of the individual components because of a lack of data on the underlying compositions in some economies.

Emerging Economies: Periods of Large Net Capital Inflows[1]
(Percent of GDP)



Net Inflows to Emerging Economies[1, 2]
(Percent of GDP)



Sources: CEIC; IMF, *Balance of Payments Statistics*; national sources; and IMF staff calculations.
[1]The Latin America group includes: Argentina, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Paraguay, Peru, and Uruguay. See Appendix 4.1 of the April 2011 *World Economic Outlook* for the list of economies included in the other emerging market economies group.
[2] 1991–94 corresponds to a period of low global rates. 1996 presents a period of low VIX and high growth.

portfolio debt flows, while in other emerging economies, bank and other private flows play a bigger role. Additionally, the findings in the Spring 2011 *World Economic Outlook* suggest that net inflows to Latin America can be more sensitive to changes in U.S. monetary policy than in other emerging regions, in part reflecting closer financial ties to the United States.[20]

A summary of these results follows:

- Latin America's financial exposure to the United States (average 25 percent) is larger than that of other emerging economies (17 percent).[21]
- For a country with a financial exposure to the United States equal to that of the average Latin American economy, a one standard deviation *unanticipated* rise in the U.S. real interest rate—about 5 basis points—would reduce net inflows relative to the average emerging market economy by an additional 0.2 percentage point of GDP in the first quarter, and by a cumulative 1.0 percentage point of GDP after two years.

The sharper response in Latin America could reflect not only the higher financial exposure to the United States, but also the larger share of portfolio debt flows in net flows compared with other emerging economies, which are generally more sensitive to U.S. monetary policy changes. The high sensitivity of inflows to changes in global conditions suggests that concerns about the duration and stability of capital flows in the recent recovery are not unreasonable, particularly for Latin America. In fact, the recent slowdown of portfolio and equity inflows to emerging markets and the region (likely resulting from positive surprises in the U.S. outlook, inflation risks, and higher asset prices in emerging markets), reinforces the need to prepare against a sudden reversal of global conditions.

This concern is particularly relevant for countries in the region that already have current account deficits. Their macroeconomic policies will need to adjust to ensure a moderation of domestic demand growth, before current account deficits become too large. To limit bubbles and excessive risk taking, prudential measures should form part of the policy response. In some circumstances, capital account restrictions could be needed also, though these cannot substitute for basic macroeconomic policies. Particularly in light of Latin America's high degree of financial openness, amid a continuation of unusually easy external financing conditions, a temporary use of some capital account restrictions could be part of a package of policies that prudently seeks to prevent a boom-bust cycle. For a more detailed discussion on policy challenges and options for dealing with capital inflows in the Latin American context, see Eyzaguirre and others (2011), as well as Ostry and others (2010 and 2011), and IMF (2011c).

[20] This analysis is based on a panel data set of 20 advanced and 30 emerging economies for the period 1989–2010, and analyzes whether differences in direct financial exposure to the United States affects the sensitivity of their net capital inflows to U.S. monetary policy changes (after controlling for country-fixed effects, time-fixed effects, and domestic drivers).

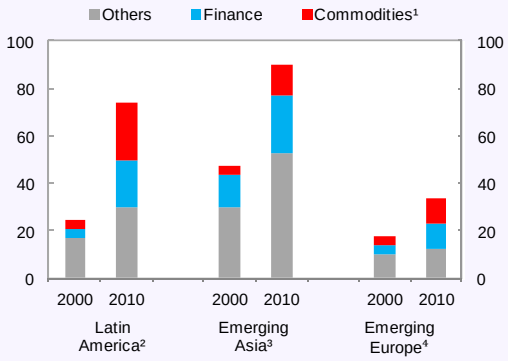
[21] The direct financial exposure to the United States is defined by the share of its total foreign assets and liabilities that are U.S. related.

Box 2.6. Stock Market Developments in the Region: The Role of Commodities

Equity markets in Latin America have been undergoing an important transformation. Stock market capitalization has grown from an average of 25 percent of GDP in 2000 to about 75 percent by end-2010. The deepening of equity markets has been fairly broad-based, though the increase in capitalization has been more muted in Mexico. Today Brazil is home of the fourth largest stock market in the world, and represents about 55 percent of the region's equity market.

The deepening of equity markets has taken place in tandem with the expansion of the commodity sector. The share of commodity-related firms has more than doubled from an average of 15 percent in the early 2000s to close to 35 percent by end-2010. The share of finance firms has also increased (with the opening of the sector), whereas telecommunication and utility sectors have lost ground in most countries.

Stock Market Capitalization
(Percent of GDP)

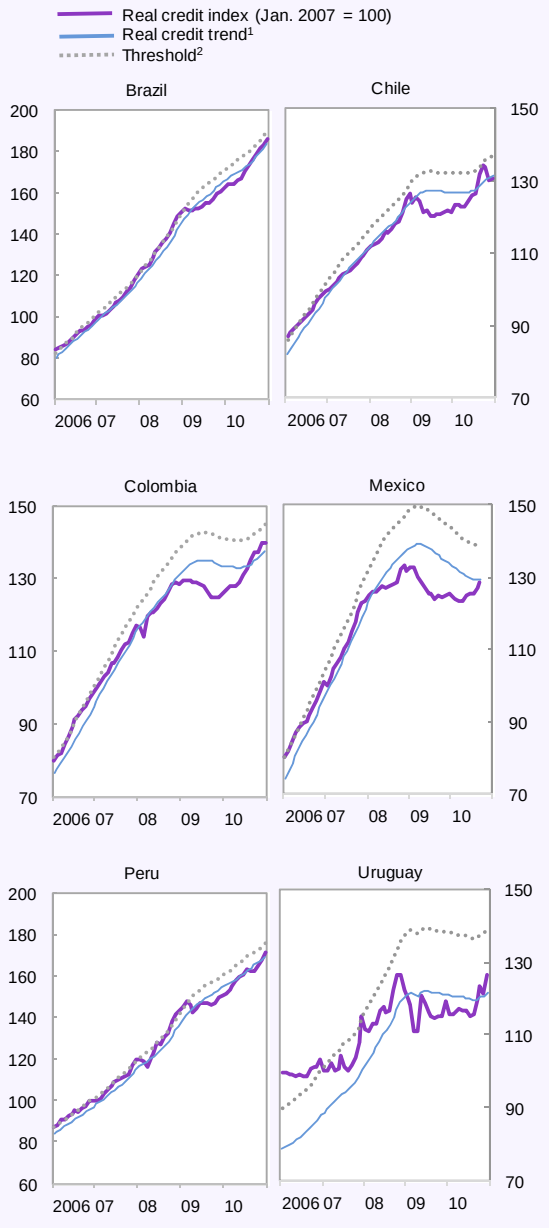


Sources: Datastream; and IMF staff calculations.
[1] Commodities include oil and gas and basic materials.
[2] Simple average for Brazil, Chile, Colombia, Mexico, and Peru.
[3] Simple average for China, India, Indonesia, Malaysia, Taiwan Province of China, Thailand, Singapore, South Korea, and the Philippines.
[4] Simple average for Czech Republic, Hungary, Poland, Russia, and Turkey.

Note: This box was prepared by Leandro Medina.

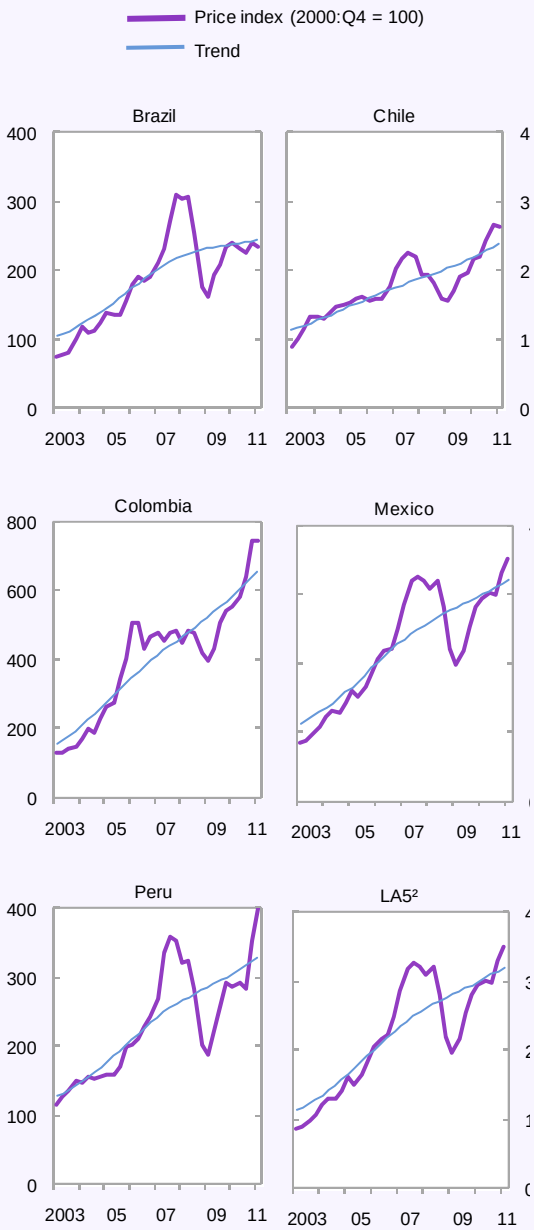
Panel 2.1. Credit and Asset Prices in Selected Latin American Economies: Deviations from Trend

Real Credit: Observed and Trend



Sources: National authorities; and IMF staff calculations.
[1] Computed using a rolling, backward-looking Hodrick-Prescott filter for the period January 2000 to December 2010.
[2] Threshold is equivalent to 1.5 times the standard deviation of credit fluctuations around the estimated trend.

Stock Market Indices: Observed and Trend[1]



Sources: Datastream; and IMF staff calculations.
[1] Using a Hodrick-Prescott filter for the period January 1993 to December 2010.
[2] Simple average.

Annex 2.1. Estimating Inflation Pass-Throughs

This annex describes the methodology used to estimate pass-throughs from commodity price shocks. The analysis is done using quarterly data for the period 1996:Q1 to 2010:Q4, and on a sample of 10 countries in the Latin America and Caribbean region with either inflation-targeting regimes or otherwise with scope for monetary policy. These include: Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, Paraguay, Peru, and Uruguay.

Food and Fuel Pass-Through

The methodology is similar to that used by De Gregorio, Landerretche, and Neilson (2007), Blanchard and Galí (2007), and the October 2008 *World Economic Outlook*, and is summarized as follows:

Step 1: The **pass-through from international to domestic prices of food and fuel** is estimated using country-by-country regressions of this form:

$$\pi_t^{f/dom} = \alpha + \sum_{i=1}^{4} \beta_i \, \pi_{t-i}^{f/dom} + \sum_{i=0}^{4} \gamma_i \, \pi_{t-i}^{f/world} + \varepsilon_t$$

where π^f stands for the quarter-over-quarter log difference in food or fuel prices, respectively (the equations also include seasonal dummies). World prices are expressed in domestic currency.

We are interested in the impact of a one-period increase in the world food/fuel inflation rate (that is, a permanent increase in the price level). The immediate impact on domestic food and fuel inflation would be given by γ_0, whereas the (not cumulated) impact *j* periods after would be:

$$\frac{\gamma_j}{1 - \sum_{i=1}^{j} \beta_i}$$

Based on these coefficients, the pass-through from an increase in world food and fuel prices into domestic prices is computed for different time horizons, as presented in the previous section.

Step 2: The **pass-through from domestic food and fuel to core inflation** is estimated for each country using a simple Phillips curve specification:

$$\pi_t^{core} = \alpha + \sum_{i=1}^{4} \beta_i \, \pi_{t-i}^{core} + \sum_{i=0}^{4} \gamma_i \, (y_{t-i} - y_{t-i}^*) + \sum_{i=0}^{4} \delta_i \, \pi_{t-i}^{food} + \sum_{i=0}^{4} \varphi_i \, \pi_{t-i}^{fuel} + \varepsilon_t$$

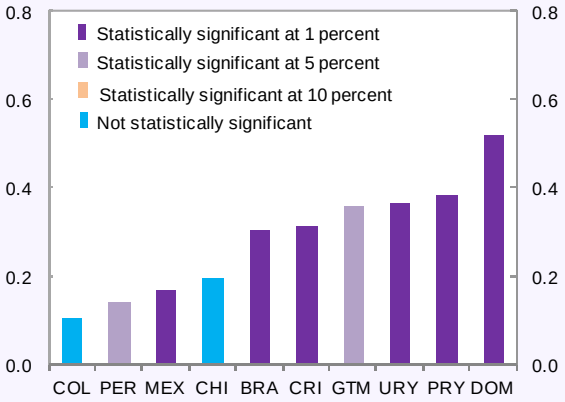
where *y* and *y** are quarterly, seasonally adjusted GDP and potential GDP in logs (seasonal dummies are also included). The immediate impact and the impact after *j* periods are calculated as under step 1 using δ_i and φ_i.[22]

Note: This annex was prepared by Alexander Klemm and Sebastián Sosa.

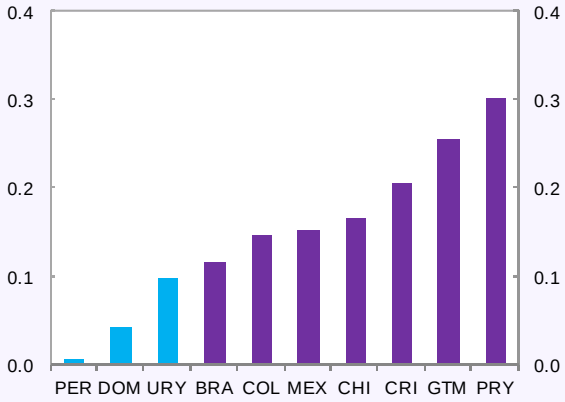
[22] The pass-through from domestic food and fuel prices to core prices was also estimated using predicted values of domestic food and fuel inflation from the first step regressions. This implies that domestic food and fuel inflation reflect only variations owing to changes in international prices and own lagged effects, rather than changes in labor, transportation, and distribution costs that are explained by factors that also drive overall inflation. The results, however, do not change significantly.

Annex 2. Figure 1. Pass-Through from Global Commodity Price Shock to Domestic Prices

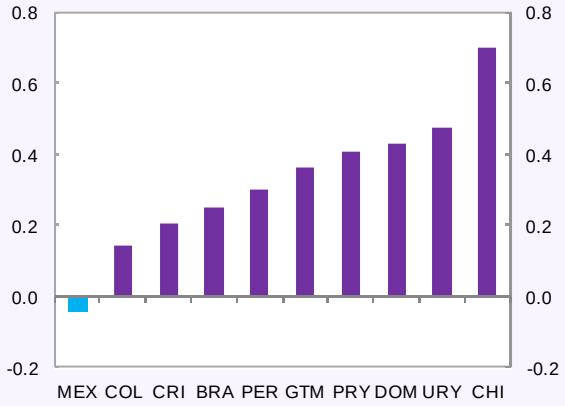
Pass-Through from World to Domestic Food Prices
(Cumulative, over 4-quarter period)



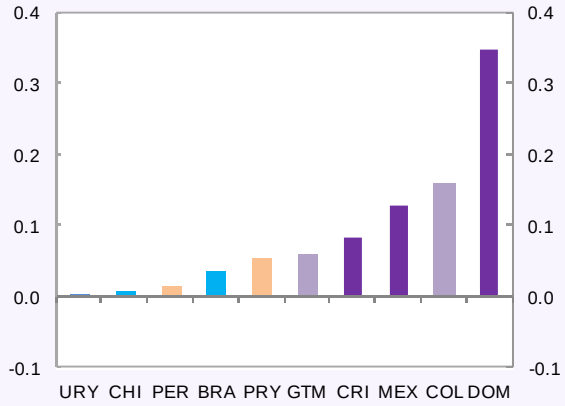
Pass-Through from Domestic Food Prices to Core Prices
(Over one quarter)[1]



Pass-Through from World to Domestic Fuel Prices
(Cumulative, over 4-quarter period)



Pass-Through from Domestic Fuel Prices to Core Prices
(Over one quarter)[1]



Source: IMF staff calculations.
[1] The impact is not statistically significant at longer horizons.

3. Foreign Exchange Market Intervention: How Good a Defense Against Appreciation Winds?

Emerging markets have increasingly relied on foreign exchange intervention to confront currency appreciation pressures arising from "easy external financing conditions." Focusing on the last seven years, this chapter discusses the experience of selected Latin American economies with these policies, and compares them with those of other regions. It also examines the role of different modalities of intervention, and offers a new cross-country approach to assess its effectiveness and costs.

Central banks intervene for various (nonexclusive) reasons, but the nature and time profile of their interventions often suggests an effort to mitigate currency appreciation pressures. When practicing intervention, a number of countries in Latin America rely on rules but these often leave significant room for discretion; it is unclear whether rule-based settings are more effective (in mitigating appreciation). Evidence suggests that interventions can slow the pace of appreciation, but such effects decrease rapidly with the degree of capital account openness; and interventions appear to be more effective when there are signs that the currency may be becoming overvalued. Costs associated with intervention often have been sizable, reflecting not only high interest rate differentials but also large valuation losses.

3.1. Introduction

Abundant liquidity in global markets and a high exposure to international capital movements have put foreign exchange intervention (FXI) at center stage of the policy debate in Latin America. Despite the widespread use of FXI policies to confront the spillover effects of easy external financing conditions—including on exchange rates—there is no guarantee of their success. The empirical literature (focused mostly on advanced economies) has failed to reach a conclusion about the effects of FXIs on exchange rates, frequently suggesting their absence. Under current global conditions favoring capital flows to emerging markets, and with added currency appreciation pressures arising from marked changes in fundamentals—for example, terms-of-trade gains for commodity exporters—the effects of FXI have become even more difficult to grasp. Still, many central banks appear to believe in the effectiveness of FXI and continue to pursue such policies (see Neely, 2008; Bank for International Settlements, 2005).

At the same time, whatever their own assessment of the effects and benefits of FXI, central banks are aware that FXIs are "no free lunch." If aimed at preventing a necessary adjustment of the exchange rate toward equilibrium, they are likely to incentivize one-sided bets, attract further capital inflows, and induce currency mismatches. They can also carry nonnegligible quasi-fiscal costs. And in inflation-targeting frameworks, they may lead to inconsistencies with main monetary policy objectives. Against this backdrop of uncertain benefits and more apparent costs, the desirability of such policies is an open question.

This chapter takes a fresh look at the issue of FXI with a focus on Latin America. In particular, how have Latin American countries intervened, and how has this differed from other emerging market economies (EMEs)? What motives have driven such polices? How effective has FXI been in affecting the exchange rate—assuming that this has been one of the objectives—and how costly has it been?

In focusing on the possible effects of FXI on the exchange rate, this chapter puts aside the issue of whether affecting the exchange rate is desirable. It also leaves aside the issue of how FXI compares with other policy tools available to manage currency movements (and, in general, the effects of strong capital inflows). Those broader questions are discussed extensively in a number of recent papers,

Note: This chapter was prepared by Gustavo Adler and Camilo E. Tovar, with research assistance from Ben Sutton.

including recent editions of the *Regional Economic Outlook—Western Hemisphere*.[1]

The main object of study is sterilized FX *purchases*. This has been, by far, the more prevalent direction of intervention among the countries studied (except during the 2008–09 financial crisis, which is not analyzed in this work),[2] and it is of considerable policy interest to know whether such operations could mitigate current appreciation pressures. The emphasis is on *sterilized* rather than unsterilized interventions because only the former entails pure exchange rate policy—the latter involves also a decision to simultaneously relax monetary policy, for which an effect on the exchange rate would seem more obvious.[3]

Despite an abundant literature on intervention, there is often little clarity on the precise definition of FXI. Conceptually, we consider FXI to be any operation that affects the central bank's net foreign exchange (FX) position.[4] In practice, however, high frequency data on central banks' FX position are often unavailable, requiring the use, instead, of observable FX market transactions or changes in international reserves as proxies (Box 3.1).

The analysis draws on the experience of Latin American economies as well as relevant comparator countries, during the period 2004–10,[5] although data unavailability restricts parts of the analysis (see Annex 3.1 for details on the data employed). This time span is meant to capture a period of accentuated capital flows to EMEs and FXI. The sample excludes countries with pegged exchange rates (for which the decision to intervene and the scale of intervention are not matters of policy choice, given their commitment to a peg).

The chapter is structured as follows. Sections 3.2 and 3.3 present essential stylized facts on global trends and on the modalities of intervention, both quantitative and qualitative. Section 3.4 investigates empirically the effectiveness of intervention in influencing exchange rates. Section 3.5 briefly examines the costs of intervention. The chapter concludes with a discussion of key findings and their potential policy implications.

3.2. Key Trends

Nearly all of the 2004–10 period—with the exception of the global crisis episode—was characterized by highly favorable external financing conditions for EMEs, in terms of ample liquidity and low risk aversion (as reflected, for example, in levels of the real federal funds rate, the VIX, and emerging economies sovereign spreads). During this period also, large capital inflows tended to bring heavy or accelerated FXI, particularly in the run-up to the 2008 crisis and during the postcrisis period (Figure 3.1).

A glance at changes in central banks' international reserves puts in perspective these trends, and highlights the common (asymmetric) direction of intervention during the sample period—as well as the tendency for the intensity of "leaning against the wind" in different regions to show common fluctuations over time. Still, the magnitude of intervention has varied across countries. In general, Latin American countries have intervened less than the economies of emerging Asia.

[1] In the current juncture, strong appreciation pressures resulting from capital inflows have raised concerns among policymakers about risks of sudden and sharp reversals, as well as possible "Dutch-disease" effects. For a discussion of these considerations, and of alternative policy tools to confront such risks, see Eyzaguirre and others (2011); IMF (2011c); Ostry and others (2011), and the May 2010 and October 2010 *Regional Economic Outlook—Western Hemisphere*.

[2] See, for example, Jara and others (2009) for a discussion on FX intervention policies during the global crisis.

[3] Unsterilized intervention, as a policy that induces an expansion of the money supply would, ceteris paribus, lead to a loss of value of the currency (in terms of both inflation and exchange rate depreciation).

[4] In some countries, the Treasury may have also conducted FX operations with the aim of influencing the exchange rate. However, disentangling those from regular cash operations is difficult as data are frequently unavailable. In other instances, central banks conducted FX operations on behalf of other agents (with no change in their FX position). The analysis leaves aside the first type, but corrects for the second type of transactions, by focusing on central bank FX operations net of those undertaken on behalf of other agents.

[5] The sample includes 15 countries, of which 8 are Latin American (Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Peru, and Uruguay), and the remainder are either EMEs (India, Indonesia, Russia, Thailand, and Turkey) or "small" advanced economies (Australia and Israel).

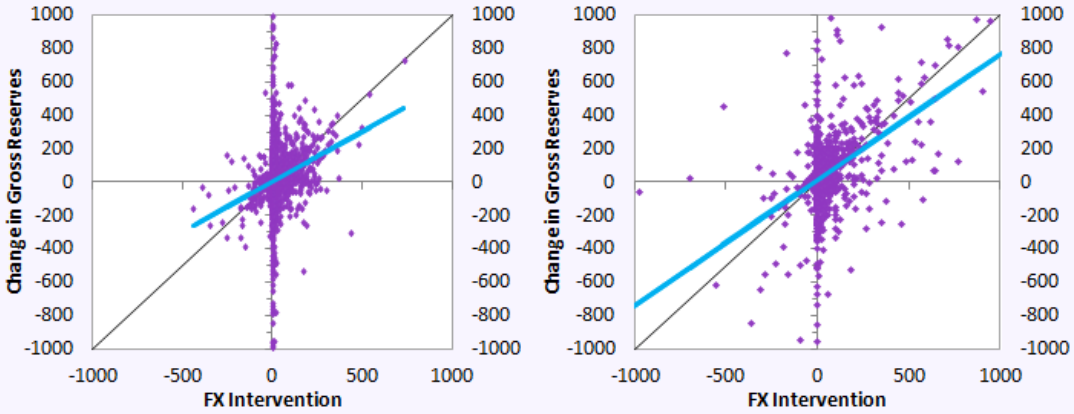
Box 3.1. Actual Intervention and Changes in Gross International Reserves

Data availability limitations usually hamper the analysis of FX intervention. Because FX intervention data are often confidential and not available, the literature usually addresses this by using the change in gross international reserves as a proxy for intervention.

However, actual intervention data and the change in gross reserves frequently differ from each other. The reason is that reserves change not only because of FX intervention, but also because of valuation changes, income flows (for example, accrual of interest), debt operations on behalf of other agents, and so on.

How good is the change in reserves as a proxy for intervention? A regression of reserves on actual intervention data, for countries with both forms of data available (Colombia, Costa Rica, Guatemala, Peru, and Uruguay) suggest that, at a daily frequency, intervention data and the reserve proxy can differ markedly.[1] The regression coefficient relating these variables tends to be quite low. This is evident for highly dollarized economies, where reserves can change on account of regular liquidity operations with the domestic banking system. However, the use of reserves as a proxy for intervention improves significantly at lower frequencies. On a weekly basis, the regression coefficient is higher for most countries. This feature supports the use of weekly reserve series as a proxy in the econometric exercises.

Actual Intervention Data vs. Gross Reserves[1]
Daily data (left) and weekly data (right), 2004–10 (Millions of U.S. dollars)



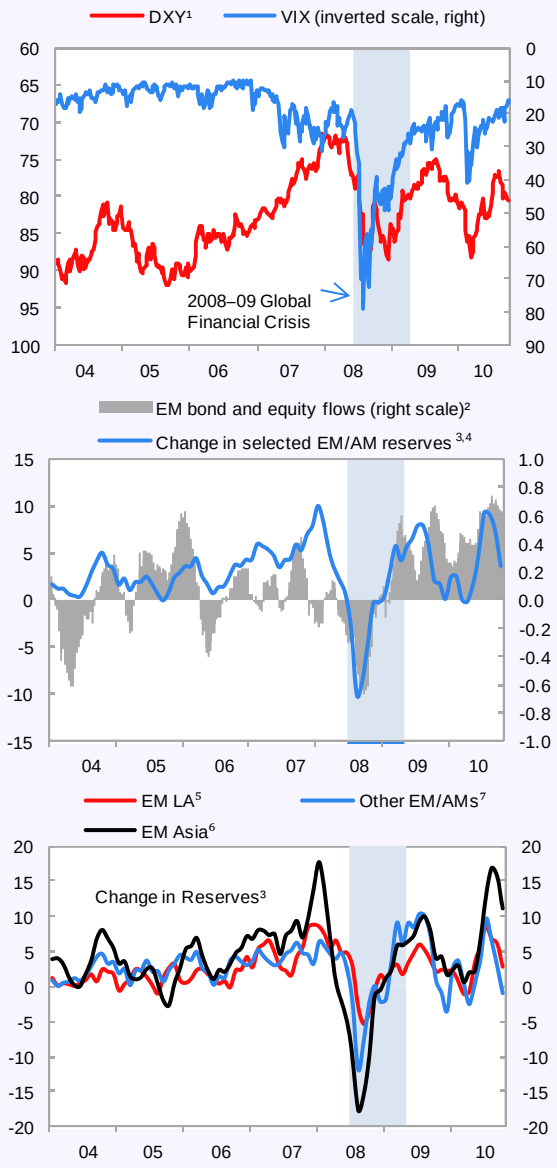
Source: IMF staff calculations.
Note: Daily chart blue line: predicted value. Black line: 45 degree line. Regression coefficient: 0.59 with standard error 0.03 and $R^2 = 0.03$. Weekly chart blue line: predicted value. Black line: 45 degree line. Regression coefficient: 0.75 with standard error 0.04 and $R^2 = 0.19$.
[1] Includes Colombia, Costa Rica, Guatemala, Peru, and Uruguay.

More importantly, the measurement error is unlikely to have a significant influence on the econometric estimations assessing the impact of intervention on the exchange rate. This is confirmed by the low and two-side correlation between the measurement error and the exchange rate (see econometric section for further discussion).

Note: This box was prepared by Camilo E. Tovar.
[1] Regression results for individual countries are not reported owing to confidentiality reasons.

Figure 3.1. EM interventions co-move, responding to shifts in global financial conditions.

Global Conditions and Change in International Reserves—Selected EM/AM Economies



Sources: IMF, *International Financial Statistics*; and IMF staff calculations.
[1] U.S. dollar trade-weighted exchange rate. A decline in the index corresponds to an appreciation.
[2] 12-week average flows to emerging market dedicated mutual funds (in percent of assets under management).
[3] International reserves minus gold. Annualized 3-month moving average, in percent of 2006–07 average GDP.
[4] Includes Brazil, Chile, Colombia, Czech Republic, India, Indonesia, Israel, Hungary, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Uruguay. Simple average.
[5] Includes Brazil, Chile, Colombia, Mexico, Peru, and Uruguay. Simple average.
[6] Includes India, Indonesia, Korea, Malaysia, Philippines, and Thailand. Simple average.
[7] Includes Czech Republic, Hungary, Israel, Poland, Romania, Russia, Turkey, and South Africa. Simple average.

Within Latin America, however, there have been noticeable differences, with Chile, Colombia, and Mexico displaying limited amounts of intervention relative to Brazil, Peru, and Uruguay, where interventions have been very large at times. Chile is noteworthy for its long "spells" without any FXI.

Examination of (monthly) data on actual intervention and exchange rates for some countries of the region shows that the widespread use of FXI has been accompanied by marked currency appreciation (Figure 3.2). This highlights the inherent difficulties in assessing the effects of intervention in the absence of an observable counterfactual, as simple correlations would misleadingly suggest that positive interventions (purchase) tend to appreciate the currency.[6]

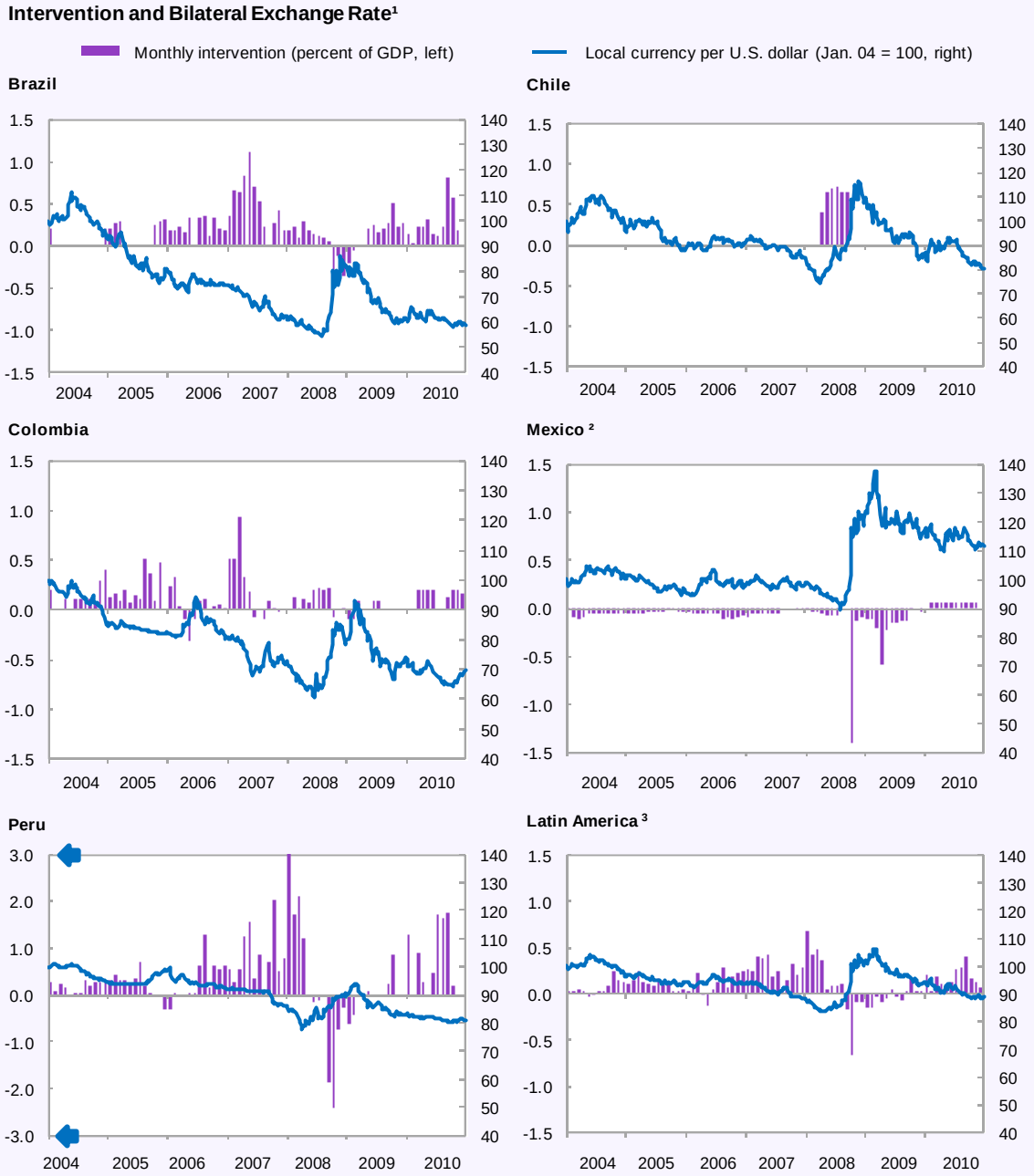
3.3. Modalities of Intervention

In general, knowledge of the manner in which central banks intervene in FX markets is limited. This is partly because many central banks withhold such information, but also because the country information that is available is dispersed, and the literature on intervention tends to focus on one country at a time. Some studies have examined intervention practices through surveys, aiming at drawing lessons on best practices (Neely, 2008, 2001; Bank for International Settlements, 2005; Shogo and others, 2006; and Canales-Kriljenko, 2003).[7] Still, systematic and up-to-date cross-country information on modalities of intervention is scarce.

This section discusses key findings from our research project to characterize intervention practices

[6] This is the "endogeneity problem," well known in the literature on FX intervention.
[7] These studies describe how central banks characterize and evaluate their own policies. The Bank for International Settlements (BIS), 2005, for example, presents a description of central banks' approaches to FX intervention in Chile and Mexico, in the context of strengthening the credibility of their monetary frameworks, and on the relevance of policy announcements (see De Gregorio and Tokman, 2005; and Sidaoui, 2005). In the case of Peru, the survey offers an overview of FX intervention considerations for a highly dollarized economy (Armas, 2005). Finally, the reviews for Colombia and Mexico present a discussion on the use of option rules for FX intervention (Uribe and Toro, 2005; and Sidaoui, 2005).

Figure 3.2. Intervention has nearly always been in the same direction, but varies greatly in both frequency and intensity across countries. Intervention has been accompanied by exchange rate appreciation in many cases.



Source: IMF staff calculations on the basis of central bank data.
Note: Latin America includes Costa Rica, Guatemala, and Uruguay. Positive values of intervention refer to purchases, whereas negative values refer to sales. For the sake of completeness, both purchases and sales are depicted. Upward movements of the exchange rate correspond to depreciations. Arrows on the axis denote that the scale has been changed relative to previous and subsequent panels.
[1] Intervention measured as a percentage of the average annual GDP between 2004 and 2010.
[2] Some FX operations conducted by Banco de Mexico may not be considered as intervention and show how difficult it is to have a proper definition. In particular, prior to the crisis, the central bank was selling, according to an announced rule, exactly half of the increase in net reserves, which reflected Pemex and the federal government's law-mandated transfers of their FX receipts to the central bank. The policy adopted by the foreign exchange commission was to reduce the pace of accumulation of international reserves. Actual purchases (through options) have taken place only since March 2010. Option auction data reported.
[3] Simple averages.

Table 3.1. Stylized Facts of Foreign Exchange Purchases, 2004–10

	Frequency (Percent of working days)	Intensity			
		Cumulative intervention as percent of GDP[1,2]	Daily average (Millions of U.S. dollars)[1]	Daily maximum (Millions of U.S. dollars)[1]	Has there been active FX intervention in 2011?
Chile	6	3.8	50	50	yes
Colombia	32	10.3	34	733	yes
Guatemala	19	1.6	9	332	yes
Mexico[3]	1	0.6	600	600	yes
Peru	39	36.1	55	494	yes
Latin America[4]	**19**	**10.5**	**150**	**442**	
Others					
Australia[5]	62	2.5	15	377	n.a.
Israel	24	22.3	84	300	no[6]
Turkey	66	12.5	61	4966	yes

Source: IMF staff calculations on the basis of central bank and its information.
Note: Some countries do not maintain an active permanent presence in the market during the full period (e.g. Chile, Israel, or Mexico).
[1] Based on days with foreign exchange purchases.
[2] Nominal average GDP for the period.
[3] Option auction data. If exercised values are used, the daily average equals US$25 million and the maximum daily amount reaches US$571 million.
[4] Simple average.
[5] Daily net foreign exchange market transactions as reported by the Reserve Bank of Australia.
[6] Complementary measures have been adopted: a new requirement to report transactions in foreign exchange and in debt instruments, and the imposition of a liquidity requirement for foreign exchange transactions.

across EMEs. In contrast to the previous discussion, this section relies on daily data.[8] A novelty is that the quantitative data are augmented with qualitative information describing the manner in which central banks conduct intervention. The database was constructed from official central bank statements, as found in web sites, communiqués, press releases, and annual or other periodic reports.

How frequent are foreign exchange interventions? Most, but not all, countries in the region have had a fairly regular presence in the FX market (Table 3.1 and Figure 3.2). On average about one-third of the countries in the region intervened in any given day, a relatively high number considering that most of them declare themselves to be floaters. Although FXI in the region tends to come in waves—frequently corresponding with shifts in global financial conditions—there are important cross-country differences. The central banks of Brazil and Uruguay have had a frequent presence in the market—about two-thirds of the time (not reported). At the other extreme are central banks with fairly rare market presence over the 2004–10 period—Chile, Mexico, and Guatemala more recently. Even so, two central banks traditionally viewed as "noninterveners" have entered the FX market in the postcrisis period: Mexico in February 2010 and Chile in January 2011, with the announcement of reserve accumulation programs.

How large have foreign exchange purchases been? A rough comparison of the relative size of interventions—scaled by GDP—shows that Chile, Guatemala, Mexico, and Colombia (in that order) are low or moderate interveners. Uruguay and Peru—highly dollarized economies—are heavy interveners (Table 3.1). Daily reserves data (as well as monthly intervention data) suggest that Brazil's intervention has also been large at times (Figure 3.2).

What are the stated motives for intervention? The two reasons most often stated for intervening have been: i) to build international reserve buffers; and ii) to contain exchange rate volatility (in some sense, as will be discussed below—see also Box 3.2). Slowing the *speed* of appreciation is a motive stated only at

[8] High frequency data on intervention are available for Australia, Chile, Colombia, Costa Rica, Guatemala, Israel, Mexico, Peru, Turkey, and Uruguay. Countries for which reserves data are used instead are Brazil, India, Indonesia, Russia, and Thailand. See details in Annex 3.1.

one point in our survey, by Colombia's central bank. "Other" reasons sometimes stated, as summarized in Figure 3.3, have included correcting misalignments, addressing disorderly market conditions, and managing liquidity in FX markets. These statements were often vague.

At some point in the sample period, most central banks declared that their intervention was to strengthen their reserves buffers, often simultaneously stating that they had no intention to influence the exchange rate (for example, Chile and Mexico).[9] Other central banks (Peru, Colombia, and Guatemala) have explicitly stated to have intervened to contain excessive exchange rate volatility, but—unless there was a rule in place—thresholds to determine what excessive means were not always stated.

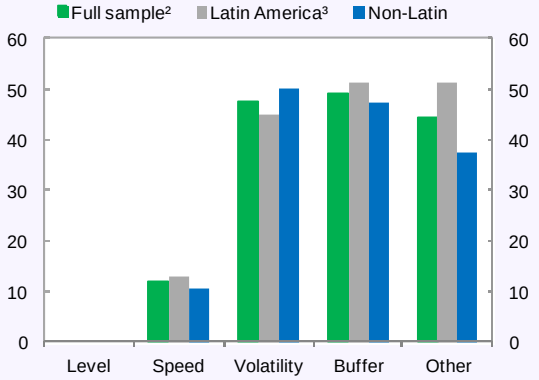
Not one central bank in our sample declared *targeting* an exchange rate level as a motive for intervention. It is noteworthy that a 2005 BIS survey reported that a significant share of central banks in emerging markets intervene to *influence* the exchange rate level or to "lean-against-the-appreciation-wind" (BIS, 2005). Although this could suggest a tension between declared and actual motives, it may also reflect that stated objectives are often not precisely defined. For example, "influencing" the exchange rate is somewhat ambiguous, as it could refer to its level, its appreciation rate, or its high or low frequency volatility. Importantly, "leaning against the wind" need not mean targeting a particular level of the exchange rate, and could be interpreted as seeking to reduce (low frequency) exchange rate volatility, in the sense of dampening a perceived cycle of *temporary* excessive appreciation.

Do central banks' intervention frameworks favor rules or discretion? On average about one-third of the central banks had in place some form of rule-based intervention framework at any moment within our sample period (Figure 3.4). In Latin America, the

[9] There is a large body of literature examining the reasons behind the accumulation of international reserves, which we do not address in this chapter. Interested readers are referred to IMF (2011c).

Figure 3.3. Reducing exchange rate volatility and building up reserves are the most often stated motives for intervention.

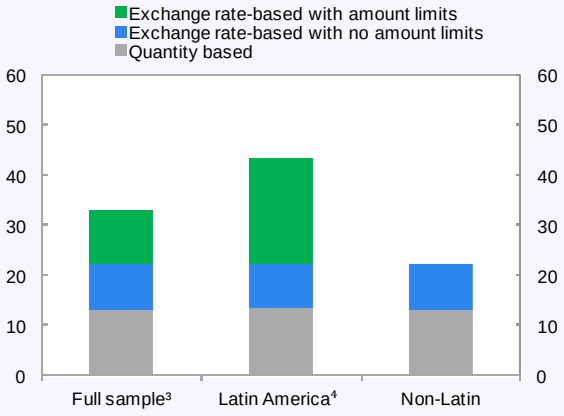
Motives for Intervention, 2004–10[1]
(Percentage of countries)



Source: IMF staff calculations.
[1] Based on declared ex post motives for intervening as made publicly available in official central bank statements (e.g., press releases, annual reports, web site, etc.), otherwise ex ante statements of objectives are employed. Averages for the period.
[2] Includes Latin America, Australia, India, Indonesia, Israel, Russia, Thailand, and Turkey.
[3] Includes Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Peru, and Uruguay.

Figure 3.4. Some central banks rely on rules, particularly in Latin America.

Framework for Intervention, 2004–10[1,2]
(Percentage of countries in the sample)



Source: IMF staff calculations.
[1] Declared intervention rules according to official central bank statements (e.g., press releases, annual reports, web site, etc.). Exchange rate-based rules are triggered by some exchange rate-related measure (e.g., change or volatility). If the amount of intervention is specified then it is considered to be "with amount limits"; otherwise it is considered "with no amounts limits." Quantity-based rules specify an amount to be exercised over a horizon along with the specific daily or weekly quantities. Averages for the period.
[2] Rules using options are categorized as exchange rate-based (with amount limits) because it is the exchange rate that triggers the actual purchase of FX (that is, the option is exercised).
[3] Includes Latin America, Australia, India, Indonesia, Israel, Russia, Thailand, and Turkey.
[4] Includes Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Peru, and Uruguay.

Box 3.2. Foreign Exchange Intervention Rules in Practice: Selected Latin American Experiences

When applying rules for conducting foreign exchange purchases, Latin American central banks have relied on two main types: i) quantity-based rules; and ii) exchange rate-based rules.

- **Quantity-based rules**

These rules usually announce a window of time over which the central bank will be accumulating reserves along with a quantity of FX purchases. A recent example is that of the Central Bank of Chile, which announced on January 3, 2011, a program to accumulate US$12 billion over the course of 2011 through the daily purchase of US$50 million reserves in competitive auctions. The central bank explained that the purpose of the program was to accumulate reserves.

- **Exchange rate-based rules**

These rules announce conditions under which the behavior of the exchange rate can trigger central bank purchases of foreign exchange.

The central banks of Colombia and Guatemala have employed exchange rate-based rules. These rules specify a threshold determined by a moving average of the exchange rate, and the amount of intervention either in cash or instruments. In Colombia, the rule (operational from 1999 through October 2009) authorized the central bank to auction US$180 million in put options (granting holders the right to sell dollars to the central bank) whenever the exchange rate fell 5 percent below the average exchange rate of the previous 20 working days.[1] In Guatemala, the central bank started to rely on a similar rule starting in 2005. In 2010, the rule established FX purchase (or sale) auctions of up to US$32 million per day whenever the exchange rate fell below its average of the previous 5 days plus a tolerance band of 0.6 percent. Both central banks stated that the purpose of these rules was to control the volatility of the exchange rate.

Mexico is a current example of an exchange rate-based rule adopted for the purpose of reserve accumulation. On February 22, 2010, the authorities announced the use of the put option mechanism as a means to accumulate reserves.[2] The mechanism auctions US$600 million on a monthly basis in put options granting holders the right to sell dollars to the central bank, with a strike price equal to the previous day's interbank reference rate (FIX), as long as that rate is below its previous 20-day average.

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Note: This box was prepared by Camilo E. Tovar.

[1] This rule was replaced by a direct intervention mechanism through auctions. See the central bank's web site for current regulations. See also Rincón and Toro (2010), Echavarría and others (2009), and Uribe and Toro (2005) for a detailed account of these rules in Colombia.

[2] This mechanism was also used by Banco de México between 1996 and 2001. See Sidaoui (2005).

share of countries with such a framework was somewhat higher (almost half). However, rules are not uniform in nature. FXI rules can be categorized into two main groups: "exchange rate-based" and "quantity-based."

Exchange rate-based rules are those announcing that intervention will be *triggered by some exchange rate-related measure* (for example, change, or volatility). The volatility-triggered rules in Colombia and Guatemala are examples of this (see Box 3.2). Some trigger rules have specified the amount of FX purchases, but others have not.

On the other hand, *quantity-based* rules do not specify any trigger for intervention, but do *specify an intervention amount* to be exercised over an announced *time horizon (*along with the daily or weekly intervention quantities). During the period studied, these rules were associated mainly with reserve accumulation as their stated motive, such as those recently employed by Chile.

This taxonomy, based on declared intervention frameworks, irrespective of whether FX operations were actually undertaken under those frameworks, reveals that about half of the rule-based frameworks in the sample were quantity based. In Latin America, there has been a preference for exchange rate-based rules—in particular those with amount limits (Figure 3.4).

A different question is what approach has been chosen at times when interventions have actually been conducted? To answer this question, we examine the use of rules or discretion, conditional on being in the FX market (Figure 3.5). When they did intervene, Chile and Mexico always used rules. Colombia and Guatemala also relied on rules—with certain objectives in mind—but at the same time gave themselves room for discretionary purchases. Brazil, Peru, and Uruguay did not use rules.

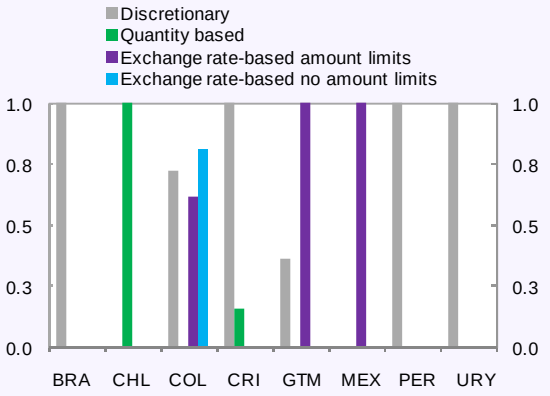
In which market does intervention take place? The dominant market across regions is the spot market (Figure 3.6), possibly reflecting a higher degree of liquidity vis-à-vis other markets. As derivative markets have expanded over time, however, some central banks have increased the use of such instruments (Figure 3.7). In the region, Brazil is the main example, with operations in the forward and swap markets.[10] Two other central banks in the region (Colombia and Mexico) have used options. The rest have intervened only in the spot market (see Box 3.3 for a discussion on considerations for the choice of different instruments).

How transparent are central banks about intervention? Around the world, most EMEs refrain from publishing information about their FXI operations (or reserve stocks on a high frequency basis, from which FXI might be inferred). This is precisely what restricts the country sample in our analysis in several parts of this chapter, including

[10] In early 2011, the central bank of Brazil intervened heavily in these three markets. As of late February, FX spot, swap, and forward purchases amounted to US$14.9 billion, US$6.4 billion, and US$0.4 billion, respectively.

Figure 3.5. Despite the popularity of rules, most central banks have left room for discretion.

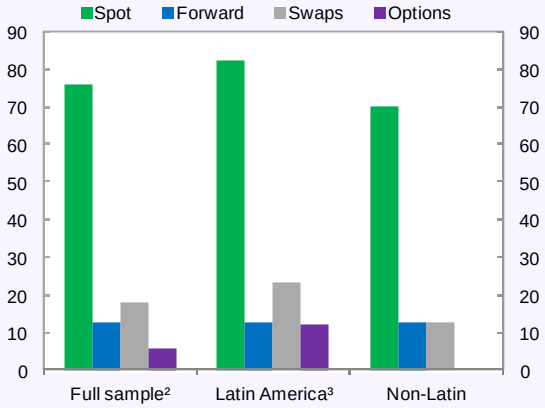
How Do Latin American Countries Actually Intervene? 2004–10[1]
(Average intensity use of each rule[2,3])



Source: IMF staff calculations.
[1] Declared intervention rules according to official central bank statements (e.g., press releases, annual reports, web site, etc.). Exchange rate-based rules are triggered by some exchange rate-related measure (e.g., change or volatility). If the amount of intervention is specified then it is considered "with amount limits"; otherwise it is considered "with no amount limits." Quantity-based rules specify an amount to be exercised over a certain time horizon along with the daily or weekly quantities of intervention. Averages for the period.
[2] 1 = always and 0 = never. Intensity refers to the proportion of days with FX purchases in which a specific rule is declared to be in place by the central bank.
[3] Rules using options are categorized as exchange rate-based because it is the exchange rate that triggers the actual purchase of FX (that is, the option is exercised).

Figure 3.6. Intervention mainly takes place in the spot market.

Instruments of Intervention, 2004–10[1]
(Percentage of countries)



Source: IMF staff calculations.
[1] Declared intervention instruments according to official central bank statements (e.g., press releases, annual reports, web site, etc.). More than one instrument may be used for intervention by a single central bank, thus totals do not add to 100. Averages for the period.
[2] Includes Latin America, Australia, India, Indonesia, Israel, Russia, Thailand, and Turkey.
[3] Includes Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Peru, and Uruguay.

Box 3.3. Instruments for Foreign Exchange Purchases

Central banks have a range of instruments with which they might directly influence the exchange rate, including FX spot purchases, forwards, swaps, and options.[1]

- FX spot purchases are transactions made by the central bank for "immediate" delivery.
- Forward FX purchases entail a future purchase of FX at a preagreed exchange rate. These can be deliverable or nondeliverable.
- Cross-currency swaps involve the simultaneous purchase and sale of one currency for another at two different dates. Interventions with this instrument are composed of two legs: (i) a spot FX purchase, reversed by (ii) a future FX sale at the spot exchange rate at that time.[2]
- FX put options are contracts that give the holder the right to sell foreign exchange to the central bank under certain contingent conditions (see also Box 3.2).

The spot market is the most developed market in the region, and central banks have traditionally considered it as the natural market for interventions (see Figures 3.6 and 3.7).

Although forwards have been used only occasionally in the region, there is a long history of use of options (by Colombia and Mexico). Cross-currency swaps have been used only by Brazil (*cupom cambial*).[3]

A number of considerations can influence the choice of instruments.[4] For instance, (i) the use of derivatives reduces the degree of transparency of central bank operations vis-à-vis spot transactions, thus weakening the signaling channel (although this can be partially addressed by a clear communication policy); (ii) they obscure the central bank's balance sheet FX position; (iii) although normally they do not require immediate sterilization (except for some cross-currency swaps) thus helping mitigate ex ante the quasi-fiscal costs of interventions, their use exposes the central bank to the risk of a sudden capital loss, if interventions fail to contain appreciation pressures; and (iv) derivatives carry counterparty and liquidity risk, which can be particularly pronounced in thin markets. On the other hand, (i) put options offer the additional benefit of working as automatic stabilizers of the exchange rate, as they are exercised only under conditions of appreciation pressures; and (ii) derivatives can be settled in local currency, and do not necessarily entail the use of reserves at any point in the contract. This can be a desirable feature for central banks that prefer to avoid the potentially negative signaling associated with fluctuations in the level of reserves. Relatedly, the unwinding of derivative positions, once appreciation pressures have receded, seems easier than the unwinding of the reserve accumulation that would result from spot transactions.

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Note: This box was prepared by Gustavo Adler and Camilo E. Tovar.

[1] Other policy instruments, not discussed here (for example, reserve requirements, interest rates), may also influence the exchange rate, but in a less direct manner, and are normally not used with this objective in mind.

[2] Cross-currency swaps are different from regular currency (FX) swaps. The latter—often issued for liquidity management, rather than FX intervention—entails a forward leg that is settled at a preagreed exchange rate, thus eliminating exchange rate risk. A cross-currency swap, on the other hand, carries exchange rate risk, as the forward leg is settled at the spot rate prevailing at the end of the contract, thus changing the FX position of the central bank and its counterparty.

[3] The *cupom cambial* is a derivative equivalent to a cross-currency swap that pays the difference between the local interest rate and changes in the real/U.S. dollar exchange rate. Although originally the central bank took the long real-open interest rate, it has recently switched to take the short real-interest rate position to dampen appreciation pressures.

[4] See also Canales-Kriljenko and others, 2003; Shogo and others, 2006; and Blejer and Schumacher, 2000.

here. Latin America is among the most transparent regions, with a level of transparency that has increased over the past seven years, particularly in comparison with other regions of the world. Latin American central banks tend to publish information earlier compared with other countries that publish (Figure 3.8).

3.4. Searching for Effects of Intervention: New Evidence

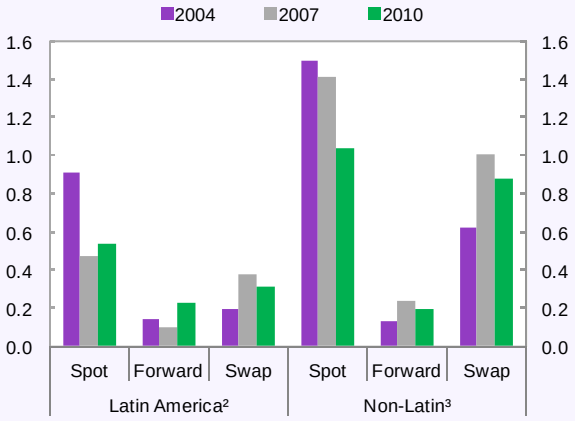
We investigate the effect of FX intervention on the exchange rate using two complementary approaches: (i) a panel regression analysis; and (ii) an event study. As a by-product, the first approach also offers empirical insights into the motivations or triggers for FX intervention.

An Econometric Panel Approach

A critical problem in assessing the effectiveness of intervention is overcoming the endogeneity of changes in exchange rates and intervention, as the latter tends to react to the former (see Boxes 3.4 and 3.5 for a discussion on transmission channels and a brief literature review). The econometric approach presented in this section addresses this issue by focusing on episodes of significant global shocks leading to appreciation pressures in emerging markets and estimating the effect of intervention[11] in a panel setting that exploits the heterogeneous reaction of different central banks to such shocks. As in other studies, a two-stage estimation procedure is used, with the first stage estimating a country-specific reaction function that allows for different behavior across countries. Predicted values of the reaction function are used as instruments for the second stage, which entails estimating a behavioral equation linking the exchange rate to intervention, in the panel setting. The approach allows identification of the effect of intervention, mitigating the endogeneity problem by focusing on short time spans during which unobservable country-specific shocks are less likely to be large (at least in relation to the global shock, on the basis of which the episode is identified).

Figure 3.7. The most liquid market segment is the spot market, but derivative markets are catching up.

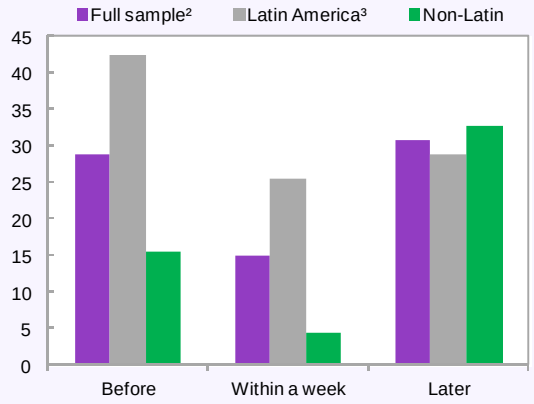
Daily Foreign Exchange Market Turnover?[1]
(*Percentage of GDP*)



Source: Bank for International Settlements.
[1] According to Bank for International Settlements' definitions.
[2] Includes Brazil, Chile, Colombia, Mexico, and Peru.
[3] Includes India, Indonesia, Israel, Russia, Thailand, and Turkey.

Figure 3.8. Latin American central banks reveal their intervention, and more quickly than other central banks.

When Are Amounts of Intervention Published?[1]
(*Percentage of countries*)



Source: IMF staff calculations.
[1] Disclosures according to official central bank statements (e.g., press releases, annual reports, web site, etc.). In certain cases, it was unclear when information was disclosed. Thus totals may not add to 100. Averages for the period.
[2] Includes Latin America, India, Indonesia, Israel, Russia, Thailand, and Turkey.
[3] Includes Brazil, Chile, Colombia, Costa Rica, Guatemala, Mexico, Peru, and Uruguay.

[11] The analysis is asymmetric, focusing only on "positive" interventions (that is, purchases of foreign exchange or derivative operations with similar effects).

Box 3.4. Channels of Transmission of Foreign Exchange Intervention to the Exchange Rate

The extent to which FX intervention can affect the exchange rate is not, a priori, obvious. Any incipient effect that might begin to move the currency away from its equilibrium value (that is, implied by fundamentals or market perceptions of these) should be arbitraged away by private agents. Thus, some form of market friction is necessary for sterilized[1] intervention to have an impact on the exchange rate. Three main forms of market friction (channels of transmissions) have been identified by the literature:[2]

A portfolio balance channel operates when domestic and foreign assets are not perfect substitutes, and the risk premium increases with the supply of domestic assets. FX interventions precisely expand the amount of domestic assets (either high-powered money or sterilization instruments) potentially raising the risk premium and, by arbitrage, depreciating the currency.

An informational/signaling channel. Through its FX interventions, the central bank can potentially signal future policy intentions. For example, it could indicate its willingness to adjust its monetary stance (that is, reduce policy rates) to prevent further appreciation of its currency. Prospects of a lower interest rate would normally lead to a spot-market depreciation. Sterilization with interest-bearing instruments can reinforce this channel by increasing the financial gains of reducing interest rates. Interventions (or even simple "open mouth" operations) can also help to coordinate market expectations about the appropriate level of the exchange rate, if market participants believe the central bank has an informational advantage in this regard.

A microstructure channel. Some studies have argued that the structure of the FX market can play a role in determining the effectiveness of interventions, as frictions at a microeconomic level can affect the extent to which information embedded in central bank operations (assuming an informational advantage exists) reaches market participants and shapes their expectations.

Whether, or to what extent, these channels operate in practice remains an open question in the literature, as the empirical evidence on the effectiveness of intervention, let alone its channels, remains inconclusive.

Note: This box was prepared by Gustavo Adler.

[1] This discussion refers to sterilized interventions only, as the effect of unsterilized operations is arguably more straightforward, because the expansion of the money supply (beyond monetary growth consistent with inflation targets) would normally lead to a loss of value of the domestic currency, including through a depreciation. In other words, unsterilized interventions can be thought of as two distinct policies applied at the same time: a loosening of the monetary stance together with (or by means of) FX intervention.

[2] See BIS (2005); Shogo and others (2006); and Disyatat and Galati (2007) for a more detailed discussion.

The analysis focuses on 15 countries for which weekly data on intervention or international reserves are available. Countries include Australia, Brazil, Chile, Colombia, Costa Rica, Guatemala, India, Indonesia, Israel, Mexico, Peru, Russia, Thailand, Turkey, and Uruguay.

Triggers for Intervention

The first step to analyze the effectiveness of intervention—and as a by-product provide some insights into the motives for intervention—entails estimating individual central bank reaction functions for 11 countries in the sample.[12] The model seeks to capture the role of various possible behavioral triggers that may lead central banks to intervene, or intervene more intensely, in the FX market.[13] (Details on the specification and the methodology are discussed in Annex 3.2.) In particular, the model looks at the sensitivity of intervention (scaled by GDP) to:

[12] Countries with preannounced quantity-based rules—or no intervention—for most of the period (Chile, Israel, Mexico, and Turkey) do not have sufficient variance in their interventions to allow estimation of this reaction function.

[13] See also Gonzalez (2009) for an analysis of motives for intervention in Latin America.

Box 3.5. Overview of Recent Empirical Studies on Foreign Exchange Intervention in Latin America

There is a fairly large literature on foreign exchange (FX) intervention covering two questions: (i) the motives for intervention, and (ii) the effectiveness of intervention.[1] Much of the work has focused on advanced economies.[1] This box briefly reviews these main areas of research while highlighting relevant work for Latin America.

Studies Examining the Motives behind FX Intervention

This strand of literature builds upon surveys, drawing conclusions from declared practices (Neeley, 2008; BIS, 2005; and Canales-Kriljenko, 2003) or alternatively they infer them by estimating a FX intervention reaction function (see Sarno and Taylor, 2001). Few studies have estimated FX intervention reaction functions for Latin America. Evidence for Colombia suggests that the central bank's main objective is to slow down the appreciation of the currency, and in a specific episode the central bank was responding to higher frequency exchange rate volatility (Kamil, 2008). In the case of Peru, it has been found that FX policies actually respond to exchange rate volatility as claimed by the central bank (Humala and Rodriguez, 2009). Specifically, the finding is that average FX purchases are eight times smaller when the exchange rate volatility is low. Possibly the most comprehensive study is that of Gonzalez (2009), who uses actual daily intervention data to examine the motives of intervention in Brazil, Colombia, Peru, and Uruguay. She finds that Brazil aims at preventing sharp appreciations; Colombia intervenes to prevent deviations of the exchange rate from a trend; Peru reacts to a number of measures of exchange rate pressures; and Uruguay aims at dampening volatility.

Studies on the Effectiveness of Intervention

Another strand of research studies the effectiveness of intervention by estimating a behavioral exchange rate equation that controls for some measure of intervention. The main challenge of this approach is to address the endogeneity bias (for example, see Kearns and Rigobon, 2005). Three main solutions have been proposed: (i) to lag the intervention policy measure. Unfortunately, under efficient markets, this can seriously distort the results; (ii) an alternative is to use simultaneous equations or a two-stage estimation approach modeling simultaneously the exchange rate and the intervention reaction function; finally, (iii) a more consistent method is an instrumental variable approach. The common practice is to use the predicted value of intervention obtained from the estimation of an intervention reaction function as an instrument (as done in this chapter).

A number of studies for the region focus on the effectiveness of FX intervention (for example, Tapia and Tokman, 2004, for Chile; or Rincón and Toro, 2010; and Kamil, 2008, for Colombia). They use actual daily intervention data and find some impact of intervention. However, these effects are usually not direct. For instance, in analyzing the Chilean experience with FX intervention early in the decade, Tapia and Tokman (2004) find that intervention has no effect on the level or change of the exchange rate. However, policy announcements do play a statistically significant role, inducing a currency appreciation ranging between 1.5 percent and 3 percent. A recent study for Colombia finds that interventions have no effect on the level of the exchange rate but can increase the volatility of the exchange rate (Rincón and Toro, 2010). However, when complemented with capital controls, FX interventions are found not only to have a level effect on the exchange rate but also to have no adverse effect on the volatility of the exchange rate. A key aspect is that these effects are short lived and their economic significance varies over time, becoming more important after 2008. A different study for Colombia has also found that the effectiveness of FX intervention may also depend on its consistency with the monetary policy stance (Kamil, 2008). In particular, it is shown that FX purchases can be effective in depreciating the exchange rate if monetary policy is in its easing cycle (a US$30 million FXI induces a 0.23 percent daily depreciation), but are ineffective when monetary policy is being tightened. The intuition is related to the impact of interest rate on capital flows: higher interest rates stimulate capital inflows, creating one-sided bets. Thus FX interventions must be consistent with market expectation about monetary policy.

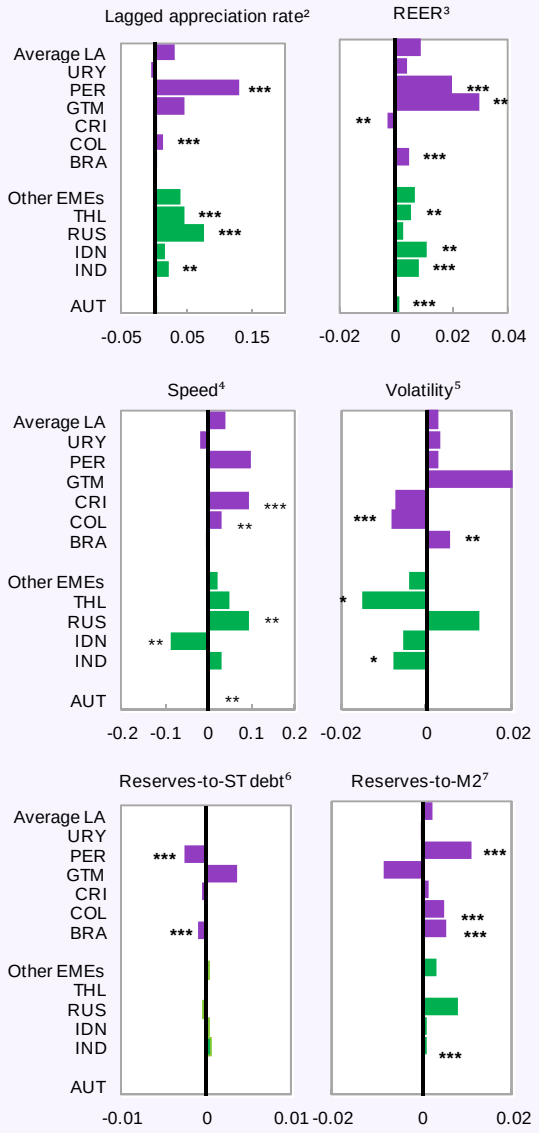
_____

Note: This box was prepared by Camilo E. Tovar.

[1] Few studies examine emerging market economies' experience using actual intervention data. See Disyatat and Galati (2007) for an overview. See IMF (2007) for a cross-country analysis for Asia; and Dominguez, Fatum, and Vacek (2010) or Melvin, Menkhoff, and Schmeling (2009) for recent studies applied to transition economies. Finally, Jara and others (2009) present a discussion of intervention during the crisis period.

Figure 3.9. Intervention seems to respond to various triggers, including some linked to the exchange rate.

Central Bank Intervention Reaction Functions
(Selected coefficients)[1]



Source: IMF staff calculations.
[1] Results of a Tobit model estimated for each country individually, on the basis of nonoverlapping weekly data, over the period for which either intervention or reserves data are available at least on a weekly frequency. Results should be interpreted as reflecting "average" preferences over the sample period 2004–10. As such, they may not reflect current preferences or objectives. See further details in Annex 3.2.
[2] Lagged (U.S. dollar bilateral) exchange rate appreciation rate.
[3] Deviation of the real effective exchange rate from the estimated equilibrium value, based on the history of the assessments of the Consultative Group on Exchange Rates (CGER). For Costa Rica, Guatemala, Peru, and Uruguay, a measure of deviation of the real effective exchange rate (REER) from its 5-year moving average is used, as CGER data are unavailable.
[4] 30-day appreciation rate.
[5] 1-week volatility.
[6] Reserves in percent of external short-term debt on a residual maturity basis (relative to other EMEs in the sample).
[7] Reserves in percent of M2 (relative to other EMEs in the sample).

(i) short-term (1-week) exchange rate movements;

(ii) the 30-day speed of appreciation, meant to capture more persistent pressures;[14]

(iii) the level of the real exchange rate (relative to an estimated equilibrium value);

(iv) the volatility of the exchange rate in the last week;[15] and

(v) two measures of reserve adequacy (ratios of reserves to short-term external debt and to M2), meant to capture possible precautionary motives for FXI.[16]

Results suggest that central banks have intervened for a number of reasons (Figure 3.9).[17] In particular, while many of them appear to have intervened on concerns over exchange rate misalignments—the main exceptions being Costa Rica, Uruguay, and Russia—few countries have responded to the speed of appreciation (Colombia, Costa Rica, and Russia). Several, within and outside the region, appear to have been quite reactive to short-term (1-week) appreciation movements. Within the region, Peru has shown a high sensitivity to such short-term movements, followed at a considerable distance by Colombia. At the same time, there is scant evidence that within-week volatility has triggered intervention (with the one exception of Brazil).[18] Evidence of precautionary motives is weak (with some coefficients taking

[14] Several measures are explored, including the simple 30-day change in the exchange rate as well as the 30-day slope of a (recursively estimated Hodrick-Prescott) trend.
[15] Alternative measures of volatility are also explored, including the standard deviation of daily exchange rate changes; and a measure of variance stripped of the variance generated by the trend (this entails computing the variance of the exchange rate with respect to the Hodrick-Prescott trend rather than the period average).
[16] Ratios are measured relative to other countries in the sample to emphasize the importance of relative, rather than absolute, ratios—as recently stressed by the literature on reserve accumulation.
[17] Results of the reaction function should be interpreted as reflecting the "average" behavior over the sample period, and thus may not reflect current preferences.
[18] Some countries display negative coefficients, possibly reflecting reverse causality (that is, intervention reduces volatility).

opposite signs).[19] In general—and possibly by construction—estimated reaction functions track trends relatively well, but do a poorer job of explaining high frequency spikes, often observed in the data.[20]

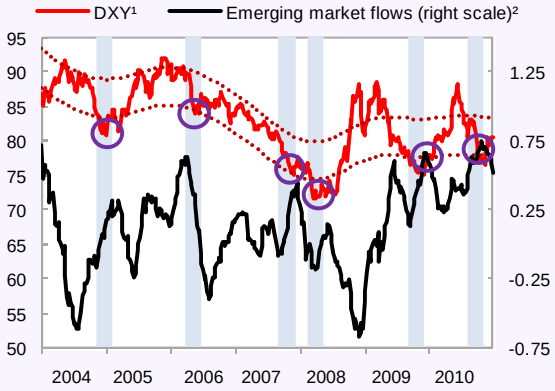
Effects of Intervention

To assess the effects of intervention, we estimate an equation linking movements in the exchange rate to central bank intervention.[21] To mitigate the endogeneity problem, the intervention variable is instrumented using the "shadow" intervention value obtained from the predicted values of the previous exercise.[22] The exchange rate equation incorporates a number of controls (interest rate differential, sovereign spreads, commodity price shocks, and the U.S. trade-weighted exchange rate), allowing for country-specific effects in a number of them. It is estimated in first and second differences in order to study possible effects on the rate (speed) and "pace" (acceleration) of appreciation. The methodology is discussed in depth in Annex 3.2.

The model is estimated in a panel setting, with a sample of 15 countries over six common 12-week episodes of interest (simultaneous to all countries); and 12 weekly observations per episode and country. The episodes are identified by apparent shifts in global financial conditions: sharp declines in the U.S. dollar's trade-weighted exchange rate (DXY) that take the index at least 1 standard deviation below its (Hodrick-Prescott filtered) trend (Figure 3.10). This measure is a good proxy for risk appetite (similar to the VIX)

Figure 3.10. We focus on six "shock" episodes of U.S. dollar weakening, coinciding with surges in flows to emerging market asset funds . . .

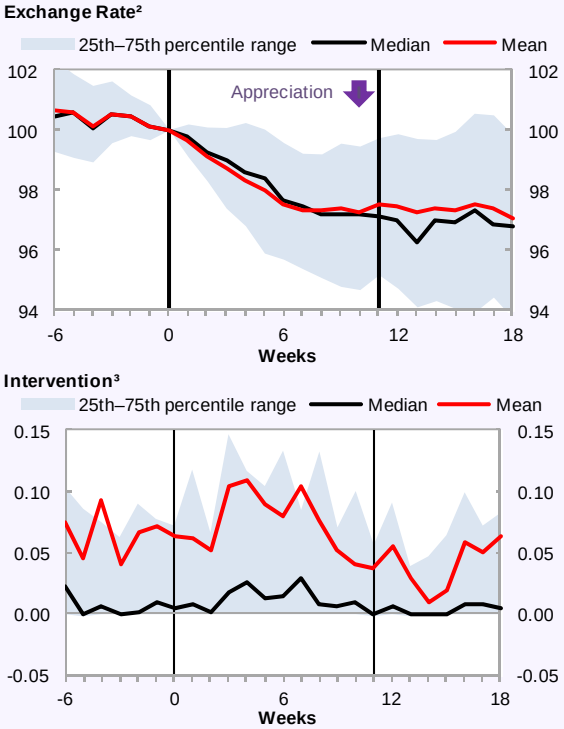
U.S. Trade-Weighted Exchange Rate and Flows to Emerging Market Economy Asset Funds



Sources: Bloomberg, L.P.; Haver Analytics; and IMF staff calculations.
[1] U.S. trade-weighted exchange rate, index 2000 = 100.
[2] Previous 12-week moving average, in percent of assets under management.

Figure 3.11. . . . these global shocks were accompanied by appreciation and increased intervention.

Intervention and Exchange Rate during Identified Episodes[1]



Source: IMF staff calculations.
[1] Episodes of global shocks indentified on the basis of movements in the U.S. trade-weighted exchange rate (DXY).
[2] Local currency per U.S. dollar, Index t_0 = 100.
[3] In percent of GDP.

[19] This may partly reflect low variability of the reserve ratios.
[20] This likely reflects that most variables included in the right-hand side of the regression move relatively slowly (except for lagged exchange rate and volatility). Such specification allows us to construct an instrumental variable for the exchange rate equation that is less correlated with contemporaneous exchange rate movements (by capturing motives for intervention that respond primarily to trends rather than high frequency shocks).
[21] Economic theory and past work provide limited guidance on how to model determinants of the exchange rate. We choose a simple specification, as described in Annex 3.2.
[22] For countries with preannounced quantity-based rules, actual intervention data are used (see further details in Annex 3.2).

Table 3.2. Effectiveness of Intervention[1]

	Base Model (without controls)[2]		Base Model (with controls)[3]	
	Dependent Variable			
	Appreciation[4]	Pace of Appreciation[5]	Appreciation[4]	Pace of Appreciation[5]
Sample of countries:	All countries			
Regressors	I	II	III	IV
Interest rate differential[6]				
First difference			0.24 *	0.35 *
			(1.73)	(1.77)
Country spread[7]				
First difference			-0.14 ***	-0.14 ***
			(6.41)	(4.36)
Intervention				
Amount[8]	0.16	-2.78 ***	0.08	-2.86 ***
	(0.30)	(-3.83)	(0.16)	(4.05)
R^2				
Within	0.00	0.01	0.20	0.15
Between	0.10	0.02	0.24	0.04
Overall	0.00	0.01	0.20	0.12
Number of observations	1024	1024	964	964
Number of countries	15	15	15	15
Probability > *F*	0.7678	0.7619	0.0000	0.0000

Source: IMF staff calculations.

[1] Results of fixed-effects panel estimation of the exchange rate equation. t-statistics reported in parenthesis. *** denotes signficance level at 1 percent; **, at 5 percent, and *, at 10 percent. See Annex 3.2 for details.

[2] No other controls in the regression.

[3] Other control variables (commodity prices and DXY) are also included in the regression but not reported in the table, as effects are allowed to be country specific.

[4] Dependent variable is the first difference of the level, or appreciation rate (positive values indicate appreciation).

[5] Second difference of the exchange rate or pace of appreciation.

[6] Domestic policy interest rate (or interbank rate) minus U.S. federal funds rate.

[7] 5-year sovereign CDS spread (or EMBI spread when CDS spread is not available).

[8] Intervention amount in percent of GDP.

and consequently identifies episodes that coincide roughly with periods when flows into emerging market asset funds were fairly high, in relation to recent past values, or were rising strongly. As expected, these episodes have been associated with stronger appreciation of the emerging market currencies in our sample (Figure 3.11). There is also evidence that countries responded with more FXI in these episodes, but the pattern is somewhat mixed.[23]

The econometric results do not detect an immediate impact of interventions on the rate of appreciation, but do find statistically significant effects on the "pace" (acceleration) of appreciation (Table 3.2). The coefficient point estimates suggest that an additional 0.1 percent of GDP in FXI (about the size of the average weekly intervention during the identified episodes) would deliver in that week a 0.3 percent slowdown in the pace of appreciation (relative to a country that is not intervening).[24]

A look at the effects of various modalities of intervention (Table 3.3) offers a number of additional insights:

[23] This reflects precisely the differences in behavior that allow us to identify the effect of intervention in the econometric exercise.

[24] This should be interpreted as an average effect. Possibly other country characteristics not included in this estimation (for example, FX market size) may also play a role in determining the degree of effectiveness.

Table 3.3. Factors Affecting the Effectiveness of Intervention[1]

	Modalities of Intervention				Financial Integration		Regional Comparisons			Exchange Rate Misalignment		
	Dependent Variable											
	Pace of Appreciation[2]											
Sample of countries:	All						EM LA	EM Asia	Other EMEs	All	EM LA	EM Asia
Regressors	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Interest rate differential[3]												
First difference	0.36 *	0.35 *	0.35 *	0.37 *	0.38 *	0.37 *	0.16	1.31 **	0.69	0.33	0.26	1.35 **
	(1.79)	(1.74)	(1.77)	(1.86)	(1.89)	(1.85)	(0.67)	(2.48)	(1.44)	(1.63)	(0.80)	(2.56)
Country spread[4]												
First difference	-0.14 ***	-0.14 ***	-0.14 ***	-0.13 ***	-0.13 ***	-0.13	-0.27 ***	-0.03	-0.35 ***	-0.14 ***	-0.33 ***	-0.03
	(4.32)	(4.36)	(4.36)	(4.31)	(-4.24)	(-4.23)	(-5.06)	(-1.04)	(-2.84)	(4.42)	(5.84)	(-1.09)
Intervention												
Amount[5]	-2.98 ***	-4.13 **	-2.86 ***	-4.86 ***	-9.00 ***	-9.44	-1.81 **	-7.91 ***	-2.82	-2.13 ***	-1.52 *	-7.16 ***
	(3.88)	(-2.53)	(4.02)	(4.60)	(-4.41)	(3.50)	(-2.14)	(-5.44)	(-1.60)	(-3.18)	(-1.87)	(-4.54)
Dummy of intervention[6]	0.06											
	(0.37)											
Interaction with dummies of modalities												
Dummy of discretionary setting[7]		1.34										
		(0.86)										
Rules with preannounced amounts[8]			-0.02									
			(0.00)									
Transparency[9]				3.05 **		-0.89						
				(2.54)		(-0.25)						
Interaction with dummy of capital account openess[10]					7.74 ***	9.07						
					(3.20)	(1.57)						
Interaction with dummy of REER misalignment[11]										-1.58 *	-6.53 ***	-2.24
										(-1.72)	(2.54)	(-1.23)
R^2	0.15	0.15	0.15	0.15	0.16	0.16	0.13	0.31	0.16	0.15	0.17	0.31
Within	0.04	0.03	0.04	0.03	0.05	0.05	0.00	0.87	0.10	0.09	0.00	0.86
Between	0.12	0.12	0.12	0.11	0.11	0.12	0.11	0.21	0.16	0.11	0.15	0.21
Overall												
Number of observations	964	964	964	964	964	964	549	175	216	964	481	175
Number of countries	15	15	15	15	15	15	8	3	3	15	7	3
Probability > *F*	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0017	0.0000	0.0000	0.0000

Source: IMF staff calculations.

[1] Results of fixed-effects panel estimation of the exchange rate equation. *t*-statistics reported in parenthesis. *** denotes signficance level at 1 percent; **, at 5 percent; and *, at 10 percent. Other control variables (commodity prices and DXY) are also included in the regression but not reported in the table. See Annex 3.2 for more details.

[2] Second difference of the exchange rate or acceleration.

[3] Domestic policy interest rate (or interbank rate) minus U.S. federal funds rate.

[4] 5-year sovereign CDS spread (or EMBI spread when CDS spread is not available).

[5] Intervention amount in percent of GDP.

[6] Dummy that takes value 1 if intervention amount is positive.

[7] Dummy that takes value 1 if the framework allows for discretionary interventions.

[8] Dummy for framework with (preannounced) amount-based rule.

[9] Dummy based on whether interventions are preannounced or data are published (ex post) within a week.

[10] Based on Chinn & Ito's index of capital account openness (normalized to take value between 0 and 1).

[11] Dummy of REER misalignment is based on the difference between the level of the REER and its 5-year backward-looking moving average. Dummy takes value 1 if the overvaluation gap is greater than 10 percent.

- Amounts of intervention appear to matter more than the mere presence of the central bank in the FX market (column I). This result could suggest either that the signaling channel is weak or that small interventions may not be enough to signal policy intentions.
- The regressions do not find evidence that effectiveness of interventions depends on whether they are conducted under rule-based (including with preannounced amounts) or discretionary settings (columns II and III).[25]
- Transparency of FX operations (measured by whether intervention data are made publicly available within a week of the operations) seems to *weaken* the effect on the exchange rate (column IV); however, this result seems to reflect other country characteristics that are correlated with transparency, as discussed below.
- The effectiveness of interventions greatly depends on the degree of the country's financial integration with the rest of the world, as captured by the interaction with the Chinn-Ito index of capital account openness[26] (column V): greater financial integration seems to reduce the effectiveness of intervention. Interestingly, when we control for financial integration (column VI), the dummy on transparency loses significance, suggesting that there is high correlation between the degree of openness and the transparency of intervention operations. Still, the point estimate for capital account openness remains large, while the estimate for transparency decreases markedly.
- A breakdown by region points to significantly higher effects in Asia than in Latin America, which are consistent with a higher degree of financial integration in the latter (columns VII–IX).
- Interventions are more effective when there are signs that the currency may be becoming overvalued (more precisely, when it already has appreciated significantly relative to its recent history). This result is particularly pronounced in Latin America (columns X–XII).

[25] This result is consistent with previous findings in the literature showing that there is no clear evidence of a difference between discretionary and rule-based intervention in terms of their effectiveness (see Fatum and King, 2005).

[26] See Chinn and Ito, 2008.

Effectiveness––Event Analysis of Regime Shifts

Announcements of FX policy regime changes provide another opportunity to detect the effect of intervention on exchange rates, by looking at the behavior of the exchange rate within short intervals following the policy announcement.[27] The idea is to avoid the drawbacks of traditional econometric estimations, which can be blurred by endogeneity problems.[28] Moreover, if markets are forward looking, and if most interventions do not come entirely as a surprise to markets, then traditional estimations may fail to detect the true effect of intervention. Focusing on instances of (unexpected) policy announcements avoids that problem. With this in mind, we focus on policy shifts that entailed a sizable increase in ongoing amounts of intervention, or a clear and far-preceded change in FX policies, because marginal or recurrent policy changes are unlikely to produce significant impacts.

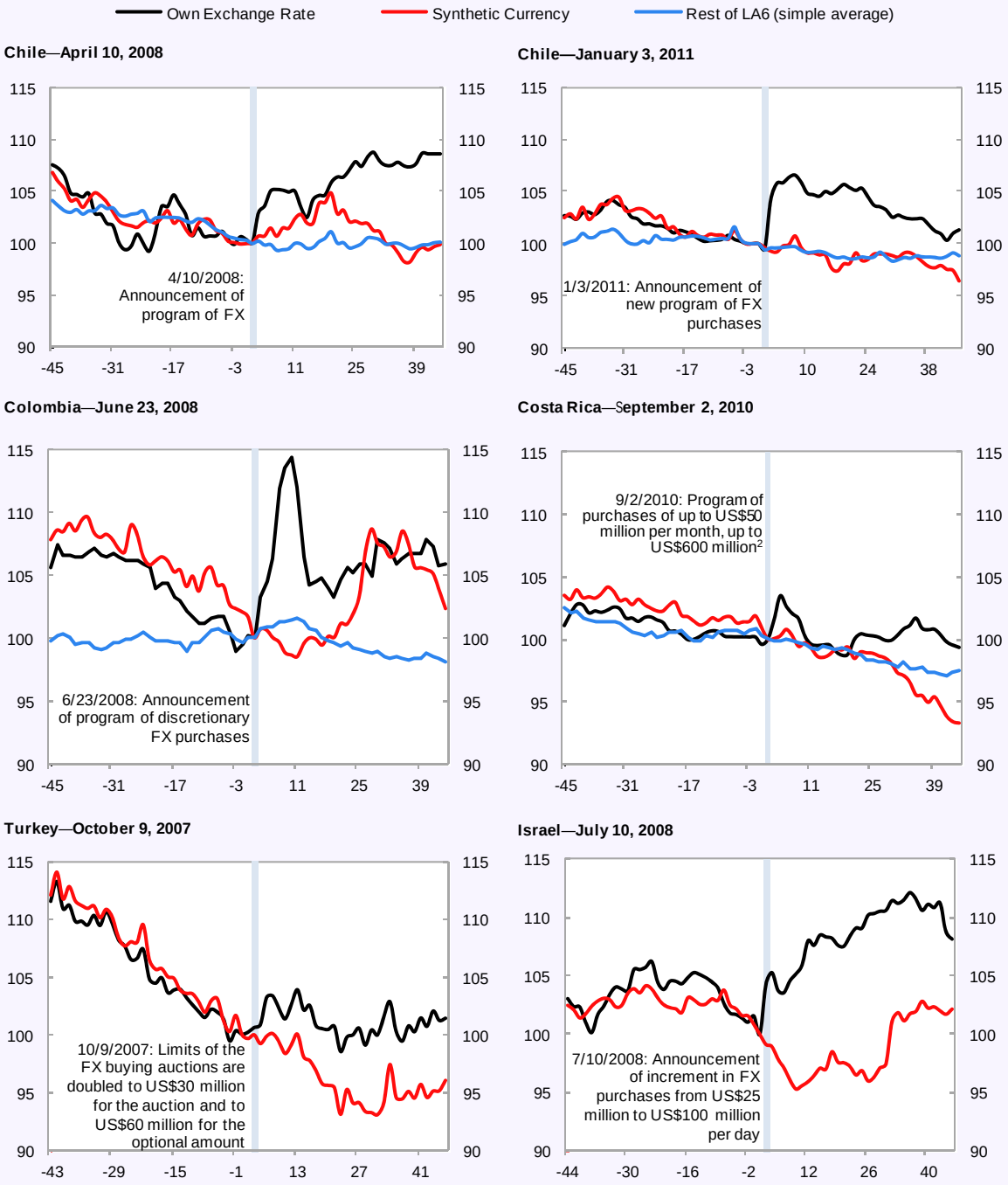
A first comparison of the behavior of the exchange rate against those of a peer country group around recent events of *significant* policy shifts suggests that these can have a noticeable impact on the currency, either depreciating it or leading to a shift in its trend. Examples of this are (Figure 3.12):

[27] The appropriate length of the interval remains an open issue. Although long intervals could provide more information on the persistence of the effects, short intervals provide more assurances that other factors (new idiosyncratic or global shocks) are not polluting the comparison.

[28] Infrequent regime changes, by definition, do not depend on contemporaneous shocks and therefore endogeneity problems are unlikely.

Figure 3.12. Events of policy shifts suggest that intervention can have a noticeable impact on the currency.

Event Analysis: Exchange Rates Before and After Policy Shift Announcements[1]
(Bilateral against U.S. dollar, Index t_0 = 100)



Sources: IMF, *International Financial Statistics*; and IMF staff calculations.
[1] Synthetic currency refers to the predicted value of the exchange rate from an OLS-estimated econometric model regressing the country's own exchange rate against the exchange rates of the other emerging market/advanced market countries in the sample (based on daily data). See Annex 3.3 for a test of statistical significance.
[2] In November, 2010, FX purchases were increased to US$75 million (and to US$100 million for the months of November–December 2010).

- The announcement of a reserve-building program of FX purchases by the central bank of Chile, in April 2008—after a prolonged period with no presence in the FX market.[29]
- Colombia's announcement of a new program of discretionary FX purchases, in June 2008.
- Other identified cases of significant policy shifts, within and outside the region, show similar patterns. Mexico's new program of FX option auction, launched in February 2010, seems to be an exception (possibly reflecting the choice of put options as main instrument—not shown).
- On the other hand, marginal and frequent policy changes (not shown) do not have a discernible economic impact on the exchange rate.

The analysis is refined by comparing the country's own exchange rate to a counterfactual or "synthetic" currency—a weighted average of other currencies—with weights resulting from a regression of the country's own exchange rate against a set of exchange rates of other emerging market/advanced economies.[30] This approach helps to find a more informative "synthetic" comparator—than the average of the neighbors used above—thus providing an arguably better counterfactual. It also allows to capture the information embedded in other exchange rates regarding unobservable global shocks that could affect the country under study following the event, leading to incorrect conclusions about the effects of the policy shift. The synthetic currency model is estimated with ordinary least squares for each event over a time span of 180 days prior to it. The estimated coefficients as well as the observed exchange rates of other countries are used to predict (conditional forecast) the country's own exchange rate following the event.[31] The difference between the predicted and the actual exchange rate is interpreted as the effect of the policy change, although the horizon at which this should be assessed remains an open issue.

The results of this comparison (also shown in Figure 3.12) confirm that currencies tend to depreciate (that is, relative to their predicted values) following regime change announcements that introduce new FXI. Annex 3.3 describes a bootstrapping exercise that confirms the statistical significance of the results.

3.5. Quasi-Fiscal Costs of FXI

To ensure consistency with other objectives of monetary policy, central banks that undertook large FX interventions sterilized them by issuing significant amounts of domestic interest-bearing liabilities (as indicated by reductions in their net domestic asset (NDA) positions).[32] This was particularly marked in emerging Asia, reflecting a higher degree of intervention during the sample period. Within Latin America, Brazil, Peru, and Uruguay stand out for the sizable expansion of their central banks' domestic liabilities (Figure 3.13).[33] In contrast, FX interventions were smaller in Chile, Colombia, and Mexico, and so the expansions of the money supply that arose from them were, for the most part, able to fit inside monetary expansion paths consistent with inflation targets.

[29] Chile, like other EMEs, accumulated significant foreign assets in recent years. However, unlike most other EMEs, this was achieved via fiscal saving rather than central bank intervention, thus preventing the accumulation of domestic liabilities observed in other countries (see also section on quasi-fiscal costs).

[30] The sample includes Australia, Brazil, Chile, Colombia, Costa Rica, Guatemala, India, Indonesia, Israel, Mexico, Peru, Russia, Thailand, Turkey, and Uruguay.

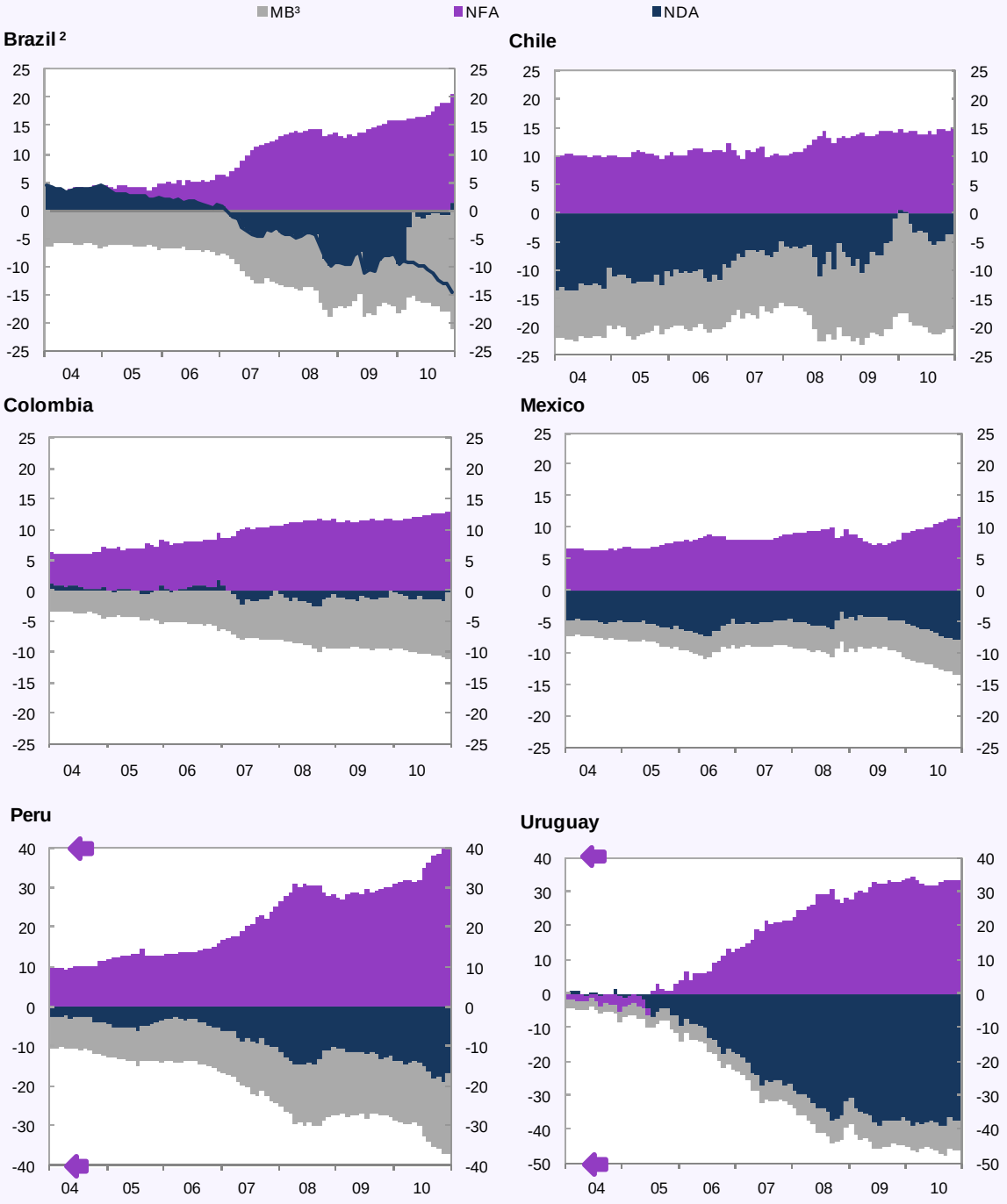
[31] In most cases, the fit of the model on the 180 days prior to the event is good, confirming that significant information on global shocks is available in the behavior of other currencies. Furthermore, this finding suggests that most short-term movements of emerging market currencies against the U.S. dollar are driven by external shocks, rather than by shocks specific to themselves. This fact is also exploited in the full-fledged panel approach to identify the effect of intervention.

[32] Sterilization can be defined as a policy that insulates the *desired* monetary policy stance from FXI; in quantity terms, this is often thought of simply as insulating the normal path of the monetary base from changes in the central bank's net FX position. In practice, this can be gauged by comparing the dynamics of the central bank's NFAs (a proxy of the FX position) and NDAs.

[33] In Brazil and Uruguay, this may have reflected, at least initially, a deliberate policy of rebuilding reserve buffers, as these countries started the period with low NFA positions (a legacy of financial crises earlier in the decade).

Figure 3.13. Central banks' balance sheets expanded rapidly along with heavy intervention.

Main Central Bank Balance Sheet Components—Selected Latin American Economies[1]
(*Percent of GDP*)



Sources: IMF, *International Financial Statistics*; and IMF staff calculations.
[1] In percent of 2006–07 average GDP. NFA figures are based on local currency reported items, adjusted for exchange rate effects. In the cases of Peru and Uruguay, NFA and NDA figures may overstate the degree of intervention and sterilization, respectively, to the extent that they include operations between domestic financial institutions and the central bank in foreign currency (banks increasing holdings of FX-denominated assets at the central bank). Arrows on the axis denote that the scale has been changed relative to previous panels.
[2] Line denotes NDA adjusted for increases in reserve requirements during 2010 meant to partially replace repo operations as an instrument of sterilization.
[3] Monetary base as defined by *International Financial Statistics* (includes reserve requirements).

In most cases, central bank debt and deposits from the banking system were the main instruments for sterilization, with Brazil and Colombia being exceptions (as these central banks undertake open market operations with the Treasury's debt instruments). Rapid increases in such interest-bearing liabilities are one clear sign of the quasi-fiscal costs associated with FX intervention; looking at the interest paid on those liabilities would capture the "book" costs of intervention. We estimate a broader measure of the *economic (opportunity)* cost of intervention as the deviation from interest rate parity multiplied by the changes in net foreign assets arising from FXIs. This measure may exceed the book costs of FXI.[34]

Our measure reflects the drain from sterilizing FX operations with domestic currency-denominated liabilities, net of the gains resulting from higher holdings of FX assets of similar maturity. Ex ante deviations from covered interest rate parity—which in normal circumstances mainly reflect country risk premiums—have been relatively low in most cases. Thus, our discussion focuses on ex post costs.[35]

Estimated ex post costs have been significant in the region and across EMEs, as deviations from interest rate parity have been substantial, not only because of high interest rate differentials but also because of sizable exchange rate appreciation over this period (only partially offset by the depreciation that followed the collapse of Lehman Brothers in 2008). Latin America stands out primarily for its higher extent of appreciation during this period, although interest rate differentials have also been particularly high in Brazil, indeed the highest in the sample (Figure 3.14).

The combination of *early* sizable interventions—leading to substantial net FX positions at central banks in the region—and the exchange rate appreciations that eventually followed such interventions, implied marked capital losses. This highlights the costs of intervening "too early" to fight appreciation (that is, when the likelihood that the currency will appreciate further, notwithstanding resistance from the central bank, is high). For the group of LA6 countries, the cost of interventions that took place during the period 2004–10 (that is, excluding operations in previous years) averaged about ½ percent of GDP. Within the region, however, there are marked differences, with estimates for Brazil, Peru, and Uruguay significantly higher than for Chile, Colombia, and Mexico (Figure 3.15).[36]

3.6. Takeaways and Policy Considerations

Over the past seven years, many central banks in Latin America have had a regular, and at times large, presence in FX markets. In most instances, this intervention was in one direction only, and coincided with easing of global financial conditions that put appreciation pressures on many emerging

[34] The extent of *book* costs depends on the degree of sterilization and the instruments used, as these determine the actual amount of interest payments arising from central bank liabilities. In contrast, the *economic* cost of FX interventions is determined only by the changes in net foreign assets arising from operations in the FX market. Expansions of the monetary base conducted through (the unsterilized part of) FX operations still carry the opportunity cost of the central bank's domestic liabilities (that is, the monetary expansion alternatively could have been done by purchasing local currency debt instruments). Similarly, the use of certain sterilization instruments, such as reserve requirements remunerated at below-market rates, or sterilization through fiscal surpluses, can reduce book costs. Such approaches, however, can be considered as separate policy decisions that could have been taken irrespective of the FX intervention policies.

[35] It is also worth mentioning that the cost of intervention is different from the cost of holding reserves. While intervention can be defined as an operation that changes central banks' net FX position, a reserve accumulation operation can be thought of as a portfolio reallocation (toward more liquid instruments) within FX assets. Thus, the cost of intervention can be measured by the deviations from interest rate parity, and the costs of reserve accumulation can be measured as the risk-adjusted return differential between reserve assets and other (nonliquid) FX assets. For a discussion on how to measure the costs of holding reserves, see Levy Yeyati, 2008; and Jeanne and Ranciere, 2009.

[36] These estimates may overstate the costs of intervention for some countries to the extent that the "cycle" of exchange rate fluctuations has not been completed. For example, in cases of overvalued currencies, valuation losses can be expected to be offset by eventual gains that could arise from the adjustment of the exchange rate toward its equilibrium value—provided that these are also accompanied by similar deviations from interest rate parity.

(continued)

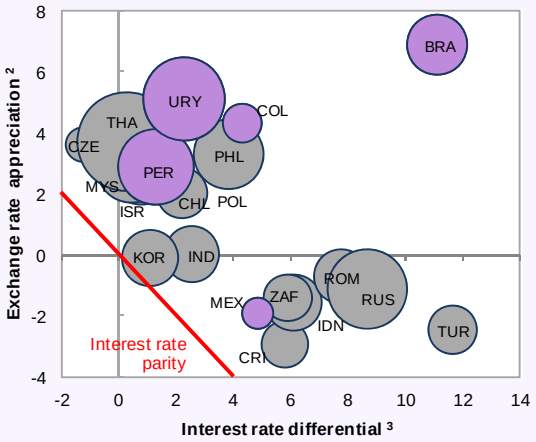
market currencies. Although central banks have stated various (nonexclusive) motives for their interventions, their nature and timing often suggest an effort to mitigate currency appreciation pressures. Whether these efforts have been successful is an empirical question that is inherently difficult to answer—precisely because intervention often takes place at the same time that other forces are acting to strengthen the currency. Our panel regression analysis is able to detect an effect of intervention on the pace of exchange rate appreciation. This effect turns out to be smaller where there is a greater degree of capital account openness, and larger when the currency already has appreciated substantially (a situation in which the currency is less likely to be undervalued). Clear effects are also found in cases of significant FX policy "regime change" (for example, when a large program of FX purchases is first announced) although these appear to fade away when policy shifts become too frequent.

At the same time, estimates of quasi-fiscal costs point to sizable losses associated with intervention policies. In practice, much of these losses have come from valuation losses (as interventions often did not reverse appreciation). This pattern of losses and limited effectiveness of intervention, particularly when the currency is undervalued, highlights the perils of intervening "too early" against appreciation pressures.

Heavy interventions frequently impose additional nonfinancial costs, some of which may have arisen in Latin America. Increasing central bank liabilities can pose constraints on monetary policy, by raising the fiscal costs of hiking interest rates, particularly when automatic mechanisms to cover operating losses of the central bank are not in place. Most countries in the region do not have such arrangements (although Brazil is an exception). Heavy FXIs may also send conflicting signals to the markets, and may be perceived as inconsistent with other policy objectives—particularly at times when the cyclical position of the economy calls for monetary tightening. It would be especially problematic if intervention were to lead to a perception that there are competing nominal anchors in the economy.

Figure 3.14. Deviations from interest rate parity have been substantial.

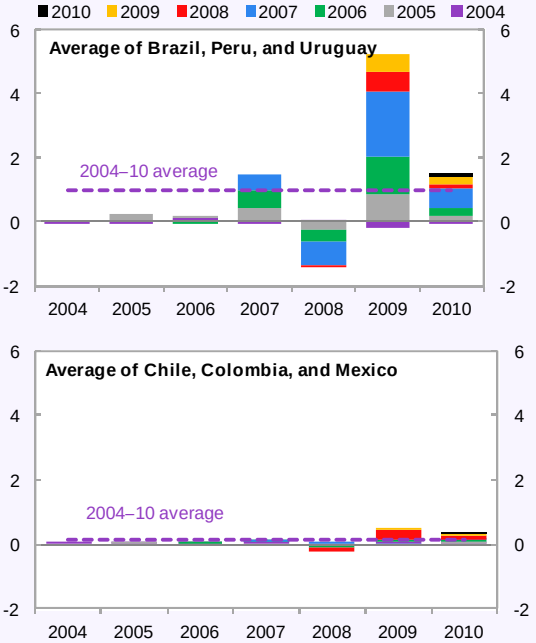
Interest Rate Differential, Exchange Rate Appreciation, and NFA Accumulation, 2004–10[1]



Sources: Haver Analytics; IMF, *International Financial Statistics;* and IMF staff calculations.
[1] Sizes of bubbles are proportional to the NFA accumulation during the period (in percent of 2006–07 average GDP).
[2] Average annual nominal appreciation rate, against U.S. dollar.
[3] Average interest rate differential (between domestic policy—or interbank—rate and U.S. federal funds rate).

Figure 3.15. The costs of intervention since 2004 are sizable in Brazil, Peru, and Uruguay.

Costs of Cumulative Foreign Exchange Intervention by Vintage Year, 2004–10[1]
(*Percent of GDP*)



Sources: Haver Analytics; IMF, *International Financial Statistics;* and IMF staff calculations.
[1] Estimated cumulative costs since 2004. In percent of 2006–07 average GDP. Simple averages per group. Bars denote economic costs (interest rate differential plus exchange rate appreciation) on the cumulative stock of NFA since 2004 (decomposed by vintage year of NFA accumulation). Dotted line denotes the average for the 2004–10 period.

Although it is unclear from our evidence that a rule-based approach to intervention (rather than a fully discretionary approach) makes intervention more effective in influencing the exchange rate, the use of rules may have other advantages. Rules (and clear communication) can help assure markets that interventions are conducted in a manner that is consistent with other policy objectives, including appropriate flotation of the exchange rate. Quantity-based intervention rules can be particularly useful to minimize side effects—especially when the main objective of FXI is to increase reserve buffers—because they retain exchange rate flexibility and make clearest that no specific level of the exchange rate is being targeted. This helps prevent incentivizing one-sided bets, and attracts further capital inflows. Exchange rate-based rules, on the other hand, might be useful instruments to prevent excessive volatility, but their design needs to avoid excessive interference with necessary adjustments of the exchange rate toward its equilibrium—that otherwise could lead to "too early" interventions—and to preserve some healthy degree of volatility—that would encourage investors to internalize the costs of unhedged positions. Similarly, the choice of instrument would depend on the primary objective of interventions. Spot market operations would be preferred when the objective is to accumulate reserves—so as to avoid interfering with exchange rate flotation—while put options would be more suitable when the objective is to mitigate volatility or the speed of appreciation—although other considerations, including the impact on the central bank's balance sheet and secondary objectives, may also need to be taken into account.

Overall, the desirability of FX interventions as one part of the broader toolkit to confront "easy external financial conditions" needs to be individually assessed, taking into consideration the specific conditions of each country, including whether the exchange rate is overvalued or not, the extent of financial integration with the rest of the world—which appears to constrain the effectiveness of interventions, as well as other structural features such as the degree of dollarization. Moreover, exchange rate policies should be designed within a comprehensive strategy considering the pros and cons of different instruments available in authorities' policy toolkit. In particular, and given their uncertain effects, FX policies should not be deployed too early (that is, before other, arguably more effective, instruments). In some instances, intervention may also need to be complemented with macroprudential tools, to mitigate other effects of "easy external financing conditions" and, as well, dampen some of the fiscal costs associated with FXI.[37]

[37] See footnote 1 on page 46.

Annex 3.1. Foreign Exchange Intervention and International Reserves: Data Availability

	Data Availability						Data Used in the Chapter	
	Foreign Exchange Intervention			Stock of International Reserves			Section on Modalities of Intervention	Econometric Section
	Daily	Weekly	Monthly	Daily	Weekly	Monthly	Daily	Weekly
Brazil	♦		✓	✓		✓	●	✓
Chile	✓				✓	✓	✓	✓
Colombia	*		✓		✓	✓	✓	✓
Costa Rica	♦			✓		✓	✓	✓
Czech Republic			✓			✓		
Guatemala	✓			✓		✓	✓	✓
Honduras						✓		
India					✓	✓	●	✓
Indonesia					✓[1]	✓	●	✓
Israel	✓		✓			✓	●	✓
Korea						✓		
Malaysia						✓		
Mexico	✓				✓	✓	✓	✓
Peru	✓			✓		✓	✓	✓
Philippines						✓		
Poland						✓		
Romania						✓		
Russia			✓[2]		✓	✓	●	✓
South Africa						✓		
Thailand					✓	✓	●	✓
Turkey	✓				✓	✓	●	✓
Uruguay	*			✓		✓	✓	✓
Australia	✓[3]				✓	✓	●	✓
Canada	✓					✓		
New Zeland			✓			✓		
Norway		✓[4]				✓		

Note: "●" indicates that data are only used to describe qualitative information (for example, motives, rules, instruments, transparency). "*" indicates that data are (or for some period were) confidential or were facilitated for the purpose of this study. "♦" indicates data have recently become publicly available.

[1] Weekly reserves data stop in 2007.

[2] Information starts in 2008.

[3] Not available for 2010.

[4] Information starts in 2005.

Annex 3.2. Methodological Strategy for the Panel Approach

The econometric approach entails identifying episodes of global shocks leading to appreciation pressures in emerging market (and 'small' advanced market) economies, and estimating the effect of intervention in a panel setting by exploiting the heterogeneous reactions of different central banks to such shocks. This approach helps to mitigate well-known endogeneity problems described in the literature by focusing on short time spans during which unobservable country-specific shocks are unlikely to be large (in relation to the identified global shock). The chapter follows the same approach taken in other studies on the effectiveness of foreign exchange intervention by undertaking a two-step instrumental variable estimation aimed at overcoming endogeneity problems. At the same time, it offers a methodological innovation by estimating the effect of intervention in a panel approach (most other studies focus on individual countries).

The sample of countries include Australia, Brazil, Chile, Colombia, Costa Rica, Guatemala, India, Indonesia, Israel, Mexico, Peru, Russia, Thailand, Turkey, and Uruguay, which are chosen on the basis of availability of weekly data on intervention or international reserves. All forms of intervention are included in the analysis, provided data are available.

First Stage: Central Bank Reaction Function

The first stage entails estimating individual central bank reaction functions—for countries in the sample that display sufficient variability in their interventions[38]—to create an instrumented variable for the main exchange rate equation. Reaction functions are modeled as a censored variable and estimated with a Tobit model, on a country-by-country basis to allow for all coefficients to be country specific (as different central banks may have different preferences). The model is estimated with weekly data over the period 2004–10 (excluding the period September 2008–June 2009 of the global financial crisis). The reaction function takes the following form:

$$I_{i,t} = max\{0, \alpha_{0,i} + \beta_{0,i} e_{i,t-1} + \beta_{1,i}\left(re_{i,t} - re_{i,t}^{eq}\right) + \beta_{2,i}\Delta_{i,t} + \beta_{3,i}\sigma_{i,t} + \beta_{4,i}R_{i,t}^{M2} + \beta_{5,i}R_{i,t}^{STD}\}$$

$I_{i,t}$ denotes country *i*'s amount of intervention (scaled by GDP) during week *t*. When available, actual intervention data are used. Otherwise, this variable is proxied by the change in the stock of international reserves adjusted for the estimated effect of changes in the value of reserve currencies.[39] $e_{i,t-1}$denotes the lagged change in the nominal (U.S. bilateral) exchange rate; $re_{i,t}$ is an estimate of the real effective exchange rate; $re_{i,t}^{eq}$ is an estimate of the equilibrium real exchange rate (based on the history of assessments by the IMF's Consultative Group on Exchange Rates—CGER); $\Delta_{i,t}$ denotes the four-week speed of exchange rate appreciation (measured either on the exchange rate

[38] Cases of preannounced amount-based rules (Chile, Israel, Mexico, and Turkey) do not show sufficient variability, for the most part, in their interventions series in order to estimate a reaction function.

(continued)

[39] The valuation adjustment is based in the shares of the different currencies in the stock of international reserves of the average EM country as reported by the Currency Composition of Official Foreign Exchange Reserves (COFER) database. Individual country data are not available (owing to confidentiality restrictions). See http://www.imf.org/external/np/sta/cofer/eng/index.htm for details.

level in itself, or a Hodrick-Prescott (HP) trend estimated recursively to capture the information available to the central bank at that point in time); $\sigma_{i,t}$ is a measure of intra-week exchange rate volatility (simple variance of the exchange rate, or a similar measure that strips the volatility arising simply from moving along the trend—computed as the sum of square values of deviations of the exchange rate from its HP trend); $R^{M2}_{i,t-1}$ and $R^{STD}_{i,t-1}$ denote the ratios of reserves to M2 and reserves to short-term debt *relative to the average of emerging market countries in the sample.* These two terms seek to capture possible precautionary motives.

Second Stage: Exchange Rate Equation

The second step is the estimation of the exchange rate equation, using the predicted value of the first model as an instrument for the intervention variable. For countries with preannounced amount-based rules, actual intervention data are used.[40] The model is estimated as a fixed-effects panel of 15 countries, with six episodes per country; and 12 weekly observations per episode and country. The episodes are selected on the basis of global (easy financing conditions) shocks that would normally lead to appreciation pressures on emerging market currencies. Such shocks are identified by looking at sharp movements in the U.S. dollar trade-weighted exchange rate (DXY) that take this variable at least 1 standard deviation below its long-term (HP) trend.

Focusing only on short episodes (t = 12 weeks) of global shocks allows us to mitigate endogeneity problems by ensuring that the main source of disturbances is the global shock and that unobservable country fundamentals do not change significantly over the episode window.

[40] While lack of instrumentation in these cases could, in principle, introduce a source of bias, this is unlikely to be significant as interventions of this form only change sporadically (that is, they do not react to contemporaneous shocks), and therefore suffer less of the endogeneity problem.

In the absence of guidance, either from theory or previous work, on how to model the short-term determinants of exchange rates, we choose a simple specification for the exchange rate equation, of the following form:

$$e_{i,t} = \gamma_1 + \gamma_2\left(i_{i,t} - i^*_t\right) + \gamma_3 S_{i,t} + \gamma_{4,i} P^M_t + \gamma_{5,i} P^E_t + \gamma_{6,i} P^F_t + \gamma_7 \hat{I}_{i,t} + \gamma_{8,i} DXY_t$$

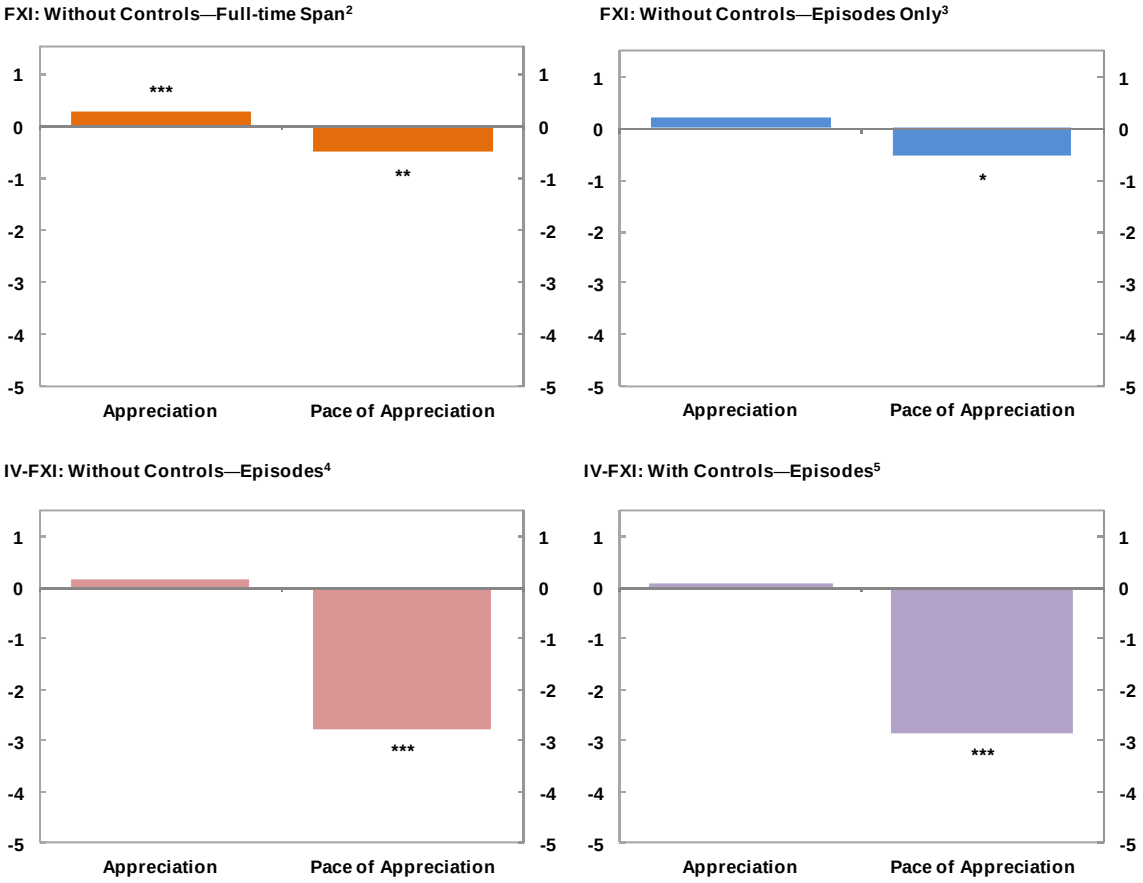
$e_{i,t}$ denotes the log of the nominal exchange rate (against the U.S. dollar) for country *i* at time *t*; $i_{i,t}$ is the domestic policy interest rate or interbank rate; i^*_t is the U.S. Federal Funds interest rate; $S_{i,t}$ denotes the EMBI spread (or CDS spread when EMBI is not available); P^M_t, P^E_t, P^F_t are the logs of indices of metal, energy, and food commodity prices, which are introduced as a way to control for high frequency movements in terms of trade. DXY denotes the U.S. trade-weighted exchange rate and is introduced as a measure of market sentiment (similar to the VIX, this measure correlates closely with flows to EMEs); $\hat{I}_{i,t}$ denotes the predicted intervention amount estimated in the first step. Note that the effect of commodity prices and the DXY are allowed to be country specific, as different countries in the sample may have different trade structures and sensitivities to global financial shocks. Ideally, one would control also for other policy measures that could affect the exchange rate (for example, changes in reserve requirements, capital controls, and so on). Although their omission—owing to lack of data availability—could potentially introduce a bias in the estimation, we argue that such bias is likely to be small because these policy measures tend to be less frequent than—and so show low correlation with—FX interventions. Building a database of relevant policy measures is part of our research agenda.

Again, in the absence of theoretical guidance, the equation is estimated in first and second differences, in order to study possible effects on the rate and pace of appreciation.

The figure below highlights how the methodological approach helps to unveil the effect of intervention on exchange rates. In particular, it shows how the use of episodes rather than the full sample helps to eliminate the significance of the positive (wrong sign) coefficient in the equation in first difference (likely biased by endogeneity); and how the use of instruments rather than the actual intervention variable significantly increases the importance of the estimated effect. Finally, the introduction of controls in the regression does not appear to add much to the estimation, suggesting that the use of episode windows, rather than the full sample, usefully mitigates the effect of global and idiosyncratic shocks on the exchange rate.

This basic specification is subsequently modified by introducing dummy variables (related to modalities of intervention) that interact with the intervention variable. These alternative specifications allow us to answer some related questions such as: (i) is intervention more/less effective when the currency is undervalued? (ii) are rule-based interventions more or less effective than discretionary interventions? or (iii) does transparency enhance effectiveness?

Unveiling the Effect of FX Intervention—Results of Panel Approach under Different Specifications[1]
(Coefficient of intervention variable in exchange rate equation)

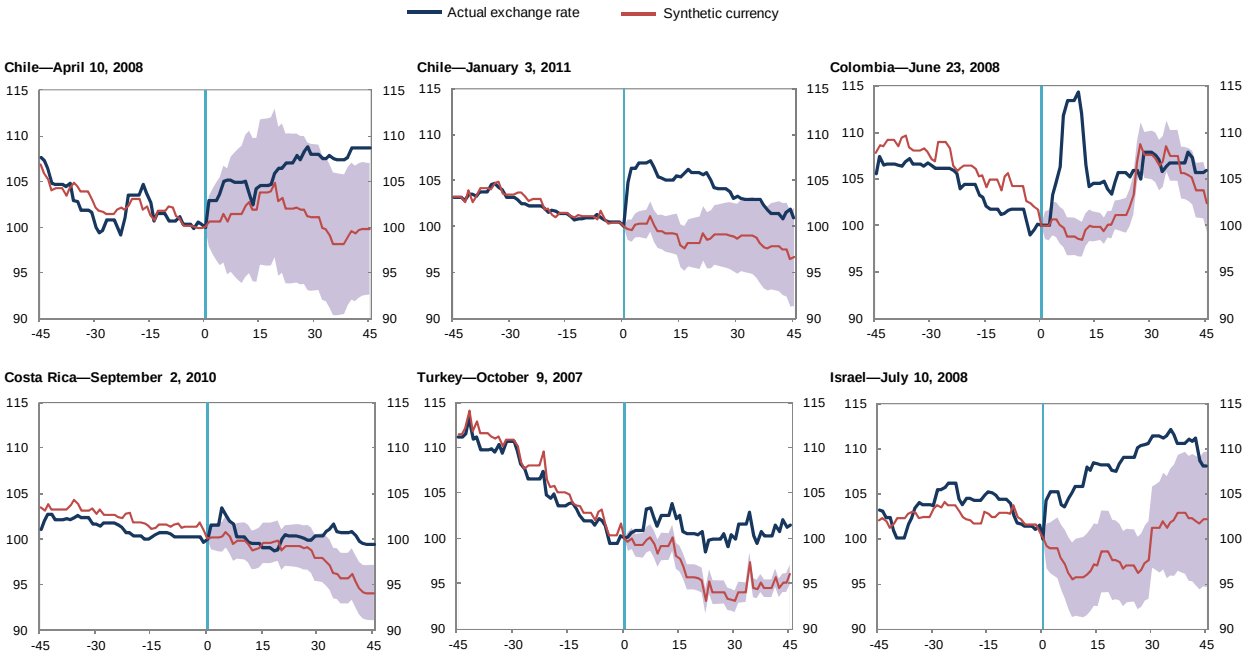


Source: IMF staff calculations.
[1] Appreciation rate and pace of appreciation indicate first and second difference of the exchange rate.
[2] ***FXI: Without Controls–Full-time Span*** denotes model estimated with intervention variable (not instrument), without controls, and over the full period 2004–10 (excluding the 2008–09 financial crisis).
[3] ***FXI: Without Controls–Episodes*** denotes model estimated with intervention variable (not instrument), without controls, and over identified episodes only.
[4] ***IV- FXI: Without Controls–Episodes*** denotes model estimated with instrumented intervention variable, without controls, and over identified episodes only.
[5] ***IV- FXI: With Controls–Episodes*** denotes model estimated with instrumented intervention variable, with controls, and over identified episodes only.

Annex 3.3. Confidence Intervals for the Synthetic Currency

The synthetic currency approach discussed in the main text entails estimating the relationship between the value of a given country's currency and those of the other emerging market/advanced market economies included in the sample—all of them measured relative to the U.S. dollar—before the policy shift takes place, as a way to construct a counterfactual. The model is estimated using ordinary least square over a 180-day window immediately preceding the event. The estimated model is then used to predict (out-of-sample conditional forecast) the value of the currency after the policy announcement. The difference (gap) between the predicted and the actual exchange rate is interpreted as a measure of the effect of the policy shift. By construction, however, the model provides a good fit up to the event, but a less accurate fit afterward, as the latter includes the out-of-sample forecast error. As a result, there could be a natural divergence of the actual and the predicted values, following but unrelated to the event. To ensure that the gap actually reflects the effect of the policy announcement, we check whether it is statistically significant by estimating the distribution of out-of-sample forecast errors at different horizons (1 day to 45 days after the end of the sample). This entails a bootstrapping exercise with 100 estimations identical to the one described above but shifting the estimation sample period so that the end point ranges from 150 days to 50 days before the policy shift announcement. Results confirm the significance of the gaps, at some point in the reported 45-day time windows (see figure below).

Bootstrap-Based Confidence Intervals for Synthetic Exchange Rates[1]



Source: IMF staff calculations.
[1] Confidence intervals represent 1 standard-deviation bands based on bootstraped forecast errors.

Western Hemisphere

Main Economic Indicators[1]

	Output Growth (Percent)							Inflation (End-of-period, percent) [2]							External Current Account Balance (Percent of GDP)						
	1997–2006 Avg.	2007	2008	2009	2010	2011 Proj.	2012 Proj.	1997–2006 Avg.	2007	2008	2009	2010	2011 Proj.	2012 Proj.	1997–2006 Avg.	2007	2008	2009	2010	2011 Proj.	2012 Proj.
North America																					
Canada	3.5	2.2	0.5	-2.5	3.1	2.8	2.6	2.0	2.5	1.8	0.8	2.2	2.0	2.0	1.1	0.8	0.4	-2.8	-3.1	-2.8	-2.6
Mexico	3.5	3.2	1.5	-6.1	5.5	4.6	4.0	8.2	3.8	6.5	3.6	4.4	3.5	3.0	-1.7	-0.9	-1.5	-0.7	-0.5	-0.9	-1.1
United States	3.2	1.9	0.0	-2.6	2.8	2.8	2.9	2.5	4.1	0.7	1.9	1.4	2.1	1.4	-4.2	-5.1	-4.7	-2.7	-3.2	-3.2	-2.8
South America																					
Argentina [3]	2.8	8.6	6.8	0.8	9.2	6.0	4.6	7.0	8.5	7.2	7.7	10.9	11.0	11.0	0.5	2.3	1.3	1.8	0.9	0.1	-0.5
Bolivia	3.3	4.6	6.1	3.4	4.2	4.5	4.5	3.9	11.7	11.8	0.3	7.2	7.9	5.0	-1.1	12.0	12.1	4.7	4.8	3.8	4.4
Brazil	2.6	6.1	5.2	-0.6	7.5	4.5	4.1	6.8	4.5	5.9	4.3	5.9	5.9	4.5	-1.6	0.1	-1.7	-1.5	-2.3	-2.6	-3.0
Chile	4.0	4.6	3.7	-1.7	5.3	5.9	4.9	3.3	7.8	7.1	-1.4	3.0	4.5	3.2	-0.6	4.5	-1.9	1.6	1.9	0.5	-1.3
Colombia	2.8	6.9	3.5	1.5	4.3	4.6	4.5	8.8	5.7	7.7	2.0	3.2	3.2	3.1	-1.5	-2.9	-3.0	-2.2	-3.1	-2.1	-2.2
Ecuador	3.5	2.0	7.2	0.4	3.2	3.2	2.8	27.2	3.3	8.8	4.3	3.3	3.4	3.1	-0.8	3.6	2.2	-0.7	-4.4	-4.0	-4.0
Guyana	1.4	7.0	2.0	3.3	3.6	4.7	5.9	5.4	14.0	6.4	3.7	4.5	6.9	5.4	-8.3	-11.1	-13.1	-9.2	-9.8	-11.9	-22.9
Paraguay	1.6	6.8	5.8	-3.8	15.3	5.6	4.5	9.2	5.9	7.5	1.9	7.2	10.7	7.5	-1.0	1.5	-1.8	0.6	-3.2	-4.1	-3.7
Peru	3.9	8.9	9.8	0.9	8.8	7.5	5.8	3.0	3.9	6.7	0.2	2.1	3.5	3.0	-1.8	1.4	-4.2	0.2	-1.5	-2.1	-2.8
Suriname	3.7	5.1	4.7	3.1	4.4	5.0	5.0	30.7	8.4	9.3	1.3	10.3	19.9	7.5	-12.8	10.7	9.6	-1.1	1.0	0.4	-0.2
Uruguay	1.2	7.3	8.6	2.6	8.5	5.0	4.2	9.2	8.5	9.2	5.9	6.9	6.8	6.5	-1.0	-0.9	-4.7	0.6	0.5	-1.0	-1.6
Venezuela	3.0	8.2	4.8	-3.3	-1.9	1.8	1.6	22.2	22.5	30.9	25.1	27.2	32.4	30.1	8.2	8.8	12.0	2.6	4.9	7.0	6.3
Central America																					
Belize	6.1	1.2	3.8	0.0	2.0	2.3	2.5	1.5	4.1	4.4	-0.4	1.3	4.4	2.5	-12.8	-4.1	-9.8	-8.4	-2.7	-8.1	-6.7
Costa Rica	5.3	7.9	2.7	-1.3	4.2	4.3	4.4	11.1	10.8	13.9	4.0	5.8	6.0	5.5	-4.3	-6.3	-9.3	-2.0	-3.6	-4.5	-4.7
El Salvador	2.9	4.3	2.4	-3.5	0.7	2.5	3.0	3.1	4.9	5.5	0.0	2.1	4.8	2.8	-2.7	-6.0	-7.6	-1.8	-2.1	-3.8	-3.6
Guatemala	3.6	6.3	3.3	0.5	2.6	3.0	3.2	7.3	8.7	9.4	-0.3	5.4	6.3	5.5	-5.4	-5.2	-4.3	0.0	-2.1	-3.3	-4.0
Honduras	4.2	6.2	4.1	-2.1	2.8	3.5	4.0	9.5	8.9	10.8	3.0	6.5	8.0	6.5	-4.7	-9.0	-15.4	-3.7	-6.2	-7.3	-7.1
Nicaragua	3.9	3.1	2.8	-1.5	4.5	3.5	3.7	8.0	16.9	13.8	0.9	9.2	8.6	7.3	-18.4	-16.6	-23.3	-11.9	-14.1	-17.6	-16.5
Panama	5.1	12.1	10.1	3.2	7.5	7.4	7.2	1.2	6.4	6.8	1.9	4.9	4.4	3.3	-5.3	-7.2	-11.9	-0.2	-11.2	-12.5	-12.6
The Caribbean																					
Antigua and Barbuda	5.0	6.5	1.8	-8.9	-4.1	3.1	2.5	1.5	5.2	0.7	2.4	2.9	3.0	3.1	-13.5	-34.3	-30.5	-22.5	-13.9	-18.6	-18.2
The Bahamas	3.7	1.9	-1.7	-4.3	0.5	1.3	2.3	1.8	2.9	4.5	1.3	1.7	2.0	1.7	-10.9	-17.8	-15.9	-11.7	-12.4	-15.0	-14.3
Barbados	2.3	3.8	-0.2	-4.7	-0.5	2.0	2.5	3.1	4.8	7.2	4.3	5.1	7.0	2.3	-5.6	-4.5	-9.6	-5.5	-7.4	-6.7	-6.0
Dominica	1.0	2.5	3.2	-0.3	1.0	1.6	2.5	1.4	6.0	2.1	3.2	2.4	3.5	1.3	-18.5	-25.0	-31.8	-28.1	-28.0	-29.2	-27.5
Dominican Republic	5.6	8.5	5.3	3.5	7.8	5.5	5.5	12.9	8.9	4.5	5.8	6.2	6.0	5.5	-1.0	-5.3	-9.9	-5.0	-8.6	-8.3	-5.4
Grenada	4.2	4.9	2.2	-7.6	-1.4	1.0	2.8	2.0	7.4	5.2	-2.4	6.3	5.0	4.0	-21.1	-43.2	-38.7	-33.2	-27.1	-25.3	-27.1
Haiti [4]	0.8	3.3	0.8	2.9	-5.1	8.6	8.8	16.0	7.9	19.8	-4.7	4.7	9.1	6.5	-0.7	-1.5	-4.4	-3.4	-2.3	-4.0	-4.6
Jamaica	1.1	1.4	-0.9	-3.0	-1.1	1.6	2.4	9.1	16.8	16.8	10.2	11.7	7.4	5.7	-6.8	-16.5	-17.8	-10.9	-8.1	-8.3	-7.7
St. Kitts and Nevis	3.4	4.2	4.6	-9.6	-1.5	1.5	1.5	4.0	2.1	7.6	1.0	2.2	3.8	2.9	-24.8	-24.3	-33.2	-34.0	-27.5	-30.5	-28.9
St. Lucia	2.1	1.5	0.7	-3.6	0.8	4.2	3.9	2.7	6.8	3.8	1.0	-0.6	5.2	1.9	-15.6	-31.3	-27.8	-14.4	-16.7	-29.1	-20.8
St. Vincent and Grenadines	3.7	8.0	-0.6	-1.1	-2.3	2.5	2.5	2.0	8.3	8.7	-1.6	2.0	5.9	1.9	-19.7	-34.6	-35.2	-35.0	-33.6	-37.5	-34.3
Trinidad and Tobago	8.5	4.8	2.4	-3.5	0.0	2.2	2.4	5.0	7.6	14.5	1.3	13.4	9.5	5.5	7.5	24.8	31.3	9.0	17.6	18.7	19.2
Memorandum:																					
Latin America and the Caribbean	3.1	5.7	4.3	-1.7	6.1	4.7	4.2	8.0	6.2	8.1	4.8	6.6	6.8	5.8	-1.2	0.4	-0.7	-0.6	-1.2	-1.4	-1.8
(Simple average)	3.4	5.4	3.6	-1.4	3.0	3.9	3.9	7.8	7.9	8.9	2.8	5.9	7.2	5.3	-6.5	-7.5	-9.4	-7.1	-6.9	-8.4	-8.2
LA-7 [5]	3.0	5.8	4.3	-2.0	6.3	4.7	4.2	8.0	6.1	8.1	5.2	6.8	7.0	6.0	-0.9	0.6	-0.5	-0.5	-1.0	-1.2	-1.6
Eastern Caribbean Currency Union [6]	3.3	5.6	1.9	-6.8	-1.7	2.6	2.8	2.2	5.8	4.2	0.6	2.4	4.4	2.7	-19.1	-35.6	-36.9	-26.5	-26.4	-31.2	-28.5

Source: IMF staff calculations.
[1] Regional aggregates calculated as PPP GDP-weighted averages, unless otherwise noted.
[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] Private analysts estimate that consumer price inflation has been considerably higher than the official estimates from 2007 onward. The Argentine authorities have announced that they are developing a national CPI to replace the Greater Buenos Aires CPI currently in use. At the request of the authorities, the IMF is providing technical assistance in this effort. Private analysts are also of the view that real GDP growth was significantly lower than the official estimates in 2008 and 2009, although the discrepancy between private and official estimates of real GDP growth has narrowed in 2010.
[4] Fiscal year data.
[5] Includes Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. These comprise the seven largest economies in Latin America and the Caribbean.
[6] Includes 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.

Latin America and the Caribbean

Main Fiscal Indicators[1]

	Public Sector Revenue (Percent of GDP)					Public Sector Primary Expenditure (Percent of GDP)					Public Sector Overall Balance (Percent of GDP)					Public Sector Primary Balance [2] (Percent of GDP)					Public Sector Gross Debt (Percent of GDP)				
	2008	2009	2010	2011 Proj.	2012 Proj.	2008	2009	2010	2011 Proj.	2012 Proj.	2008	2009	2010	2011 Proj.	2012 Proj.	2008	2009	2010	2011 Proj.	2012 Proj.	2008	2009	2010	2011 Proj.	2012 Proj.
North America																									
Canada	39.8	38.3	38.0	37.4	38.6	35.7	40.0	39.9	38.4	37.9	0.1	-5.5	-5.5	-4.6	-2.8	4.0	-1.7	-1.8	-1.0	0.7	71.3	83.4	84.0	84.2	83.1
Mexico	22.7	22.0	22.1	23.0	23.2	21.4	24.3	23.9	22.3	23.1	-1.3	-4.8	-4.1	-1.8	-2.4	1.4	-2.3	-1.8	0.8	0.2	43.0	44.6	42.7	42.3	42.1
United States	32.6	30.8	30.5	30.5	32.3	36.2	40.9	38.5	38.6	37.1	-6.5	-12.7	-10.6	-10.8	-7.5	-3.7	-10.0	-8.0	-8.1	-4.8	71.2	84.6	91.6	99.5	102.9
South America																									
Argentina [3]	33.4	36.1	38.9	38.7	38.6	30.7	36.0	37.4	38.4	38.5	-0.8	-3.8	-1.7	-3.1	-3.1	2.7	0.1	1.5	0.3	0.1	58.1	57.6	47.8	40.7	36.7
Bolivia	38.9	36.1	33.9	34.8	35.0	32.6	33.8	30.4	32.8	32.8	4.3	0.6	2.0	0.7	1.0	6.3	2.3	3.6	2.0	2.3	37.5	40.5	37.4	34.3	32.8
Brazil	36.3	35.6	37.4	36.3	36.2	32.3	33.5	35.0	33.3	33.2	-1.4	-3.1	-2.9	-2.4	-2.6	4.0	2.1	2.4	3.0	3.0	70.7	67.9	66.1	65.7	65.0
Chile	27.2	22.0	25.1	24.4	25.5	22.3	25.9	25.0	24.2	24.8	4.3	-4.4	-0.4	-0.4	0.4	4.8	-3.8	0.1	0.2	0.7	5.2	6.2	8.8	10.9	10.2
Colombia [4]	26.5	26.8	24.7	25.1	25.8	22.9	26.0	24.4	25.3	23.7	0.0	-2.6	-2.8	-3.5	-1.1	3.5	0.8	0.3	-0.2	2.0	31.0	36.2	36.5	36.3	35.4
Ecuador	33.7	29.8	34.9	37.6	36.9	33.2	33.8	34.7	36.7	36.7	-0.8	-4.7	-0.6	-0.7	-1.1	0.5	-4.0	0.2	0.9	0.2	26.3	24.7	20.4	20.4	19.8
Guyana [5]	27.7	29.3	28.3	30.6	29.9	29.6	31.2	29.7	32.1	31.6	-3.6	-3.5	-3.2	-3.1	-3.3	-1.9	-1.9	-1.4	-1.5	-1.6	61.6	61.5	61.3	62.3	61.8
Paraguay	20.9	23.2	22.5	23.1	22.8	17.3	22.1	21.2	23.0	24.1	3.0	0.5	0.9	-0.4	-1.7	3.6	1.2	1.4	0.1	-1.3	19.1	18.0	15.0	12.8	12.3
Peru	21.1	18.9	20.1	20.6	20.3	17.4	19.8	19.5	19.9	19.3	2.2	-2.1	-0.6	-0.5	-0.1	3.8	-0.8	0.6	0.7	1.0	25.0	26.6	24.3	22.5	20.7
Suriname [6]	27.5	29.9	26.2	25.8	24.4	25.0	31.6	28.8	26.3	24.7	1.8	-3.0	-3.6	-1.7	-1.5	2.5	-1.6	-2.6	-0.5	-0.3	18.0	18.5	21.6	20.0	18.6
Uruguay [7]	28.9	30.5	31.5	31.3	31.4	27.6	29.5	29.7	29.3	29.3	-1.5	-1.7	-1.2	-1.1	-1.0	1.3	1.1	1.7	2.0	2.1	61.7	61.0	55.3	52.8	50.2
Venezuela	31.6	24.9	31.2	34.9	33.5	32.8	31.5	33.9	35.0	34.5	-2.7	-8.2	-6.0	-1.5	-2.0	-1.2	-6.7	-2.7	-0.1	-1.0	24.6	32.7	38.7	40.2	42.1
Central America																									
Belize [8]	28.7	27.0	26.6	27.1	27.0	24.4	24.6	24.9	25.4	25.3	0.4	-1.2	-2.4	-2.1	-2.6	4.2	2.4	1.7	1.7	1.7	78.2	80.3	81.7	79.7	78.2
Costa Rica [5]	23.6	22.5	22.2	22.4	24.6	20.9	24.2	25.5	25.4	25.5	0.2	-4.0	-5.6	-5.6	-3.9	2.6	-1.7	-3.3	-3.0	-0.9	36.0	38.4	39.4	42.0	42.8
El Salvador [7]	16.0	15.4	16.6	17.4	17.9	16.3	18.5	18.7	18.9	18.2	-2.6	-5.6	-4.4	-4.0	-2.4	-0.3	-3.1	-2.1	-1.5	-0.3	39.7	49.0	50.8	50.6	50.4
Guatemala [8]	12.0	11.1	11.2	11.8	11.7	12.3	12.8	13.0	13.1	12.5	-1.6	-3.1	-3.3	-3.1	-2.7	-0.3	-1.7	-1.8	-1.3	-0.8	20.0	23.0	24.0	25.1	26.1
Honduras	26.4	25.1	24.8	23.1	23.7	27.4	29.0	26.8	25.0	24.3	-1.7	-4.7	-2.9	-3.1	-2.0	-1.0	-4.0	-2.0	-1.8	-0.6	19.9	24.1	26.3	26.5	26.4
Nicaragua [7]	28.7	28.5	30.1	30.3	29.6	27.6	29.2	28.5	29.1	28.0	0.0	-2.1	0.2	-0.4	0.0	1.1	-0.7	1.6	1.2	1.6	77.4	82.9	82.3	79.6	75.1
Panama [10]	25.0	24.5	24.6	26.8	26.4	21.4	22.5	23.9	26.2	25.2	0.5	-0.9	-2.0	-1.8	-0.9	3.6	2.0	0.7	0.6	1.2	41.5	40.4	40.9	38.3	35.5
The Caribbean																									
Antigua and Barbuda [9]	22.9	20.2	23.1	22.9	24.0	26.8	31.9	21.1	20.0	19.4	-7.0	-19.5	-0.3	-0.4	1.7	-3.9	-11.7	2.0	2.9	4.6	86.5	110.5	93.3	90.3	87.7
The Bahamas [8]	19.4	18.0	17.5	17.6	18.5	19.5	20.9	19.6	20.3	20.5	-2.1	-4.9	-4.6	-5.3	-4.8	-0.1	-2.8	-2.2	-2.7	-2.0	36.8	41.4	47.1	50.7	53.4
Barbados [11]	40.6	38.0	38.0	38.3	39.6	43.0	40.1	39.2	37.3	37.3	-7.2	-7.3	-6.6	-4.4	-3.3	-2.3	-2.1	-1.2	1.0	2.3	97.3	110.7	113.7	114.2	114.2
Dominica [9]	46.2	47.6	45.7	44.3	43.0	43.0	45.9	45.5	42.5	39.9	0.9	-0.1	-1.6	-0.1	1.2	3.2	1.7	0.3	1.8	3.1	85.7	85.9	85.5	83.4	79.6
Dominican Republic	15.9	13.7	13.6	13.7	15.1	17.2	15.3	14.0	12.9	13.5	-3.0	-3.5	-2.3	-1.6	-0.6	-1.4	-1.6	-0.4	0.8	1.6	25.3	28.5	29.0	25.5	25.4
Grenada [9]	29.4	27.2	28.2	25.8	25.8	32.4	30.8	29.3	25.5	23.1	-5.1	-6.3	-3.6	-2.4	-0.7	-3.0	-3.6	-1.1	0.4	2.7	102.2	115.0	114.6	110.6	104.7
Haiti [8]	15.0	17.7	29.4	27.6	23.9	17.4	21.2	26.9	32.9	29.6	-3.1	-4.4	2.2	-5.7	-6.2	-2.4	-3.5	2.5	-5.3	-5.8	37.6	24.7	15.7	12.3	16.8
Jamaica [9]	26.9	27.0	26.5	25.7	26.0	22.0	20.9	21.9	20.1	19.0	-7.4	-10.9	-5.8	-3.5	-2.3	4.9	6.1	4.6	5.6	7.0	126.1	141.1	139.7	137.1	129.5
St. Kitts and Nevis [9]	37.2	42.7	39.2	41.5	39.6	33.9	37.9	39.3	38.6	38.3	-5.0	-3.8	-8.9	-6.3	-7.6	3.3	4.9	-0.1	2.9	1.2	170.0	195.6	200.4	191.9	190.0
St. Lucia [9]	30.6	31.0	32.0	32.1	30.3	28.3	31.9	34.2	34.8	31.0	-1.0	-4.3	-5.8	-6.7	-4.8	2.3	-0.8	-2.3	-2.7	-0.7	66.4	73.9	77.2	79.6	79.9
St. Vincent and Grenadines [9]	34.5	35.2	33.7	35.0	35.5	33.1	35.7	36.8	36.9	36.5	-1.7	-3.8	-6.6	-5.3	-4.0	1.4	-0.5	-3.1	-1.9	-0.9	67.6	74.9	82.2	87.1	85.9
Trinidad and Tobago	39.6	30.6	36.1	34.7	35.2	29.6	37.0	37.8	38.6	38.3	8.2	-9.0	-4.1	-6.5	-5.8	10.0	-6.4	-1.7	-3.9	-3.1	25.4	34.4	39.8	49.3	49.8
ECCU [12]	30.8	30.8	31.8	31.9	31.0	30.9	34.2	32.0	30.9	29.0	-3.4	-8.0	-3.6	-2.7	-1.6	-0.1	-3.4	-0.2	1.0	2.0	85.2	99.6	97.8	96.4	93.8
Latin America and the Caribbean																									
PPP GDP-weighted average	**23.8**	**23.0**	**23.4**	**23.2**	**23.9**	**21.6**	**24.3**	**24.3**	**23.8**	**23.6**	**-0.1**	**-3.5**	**-2.9**	**-2.6**	**-1.8**	**2.1**	**-1.3**	**-0.8**	**-0.6**	**0.2**	**40.5**	**45.9**	**45.4**	**45.1**	**44.3**
Simple average	**28.5**	**27.7**	**28.5**	**28.7**	**28.7**	**27.0**	**29.3**	**28.9**	**28.8**	**28.2**	**-1.3**	**-4.7**	**-3.2**	**-3.0**	**-2.3**	**1.5**	**-1.6**	**-0.4**	**-0.2**	**0.5**	**55.7**	**61.1**	**60.9**	**60.4**	**59.4**

Source: IMF staff calculations.

[1] Figures for overall public sector, including general government and public enterprises. 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 IMF staff. All indicators reported on fiscal year basis. Regional aggregates are PPP GDP-weighted averages unless otherwise noted.

[2] Primary balance defined as total revenues less primary expenditures (thus interest received is included in total revenues).

[3] Federal government and provinces, includes interest payments on accrual basis.

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

[5] Includes central government and national insurance scheme. Gross debt is for the nonfinancial public sector.

[6] Primary expenditures for Suriname exclude net lending.

[7] General government only; data for El Salvador include operations of pension trust funds.

[8] Central government only. Gross debt for Belize includes both public and publicly guaranteed debt.

[9] Central government for revenue, expenditure, and balance accounts; public sector for gross debt.

[10] Fiscal data cover the nonfinancial public sector excluding the Panama Canal Authority.

[11] Overall and primary balances include off-budget and public-private partnership activities for Barbados and the nonfinancial public sector. Revenue and expenditure components of these items are not available and not included in the revenue and primary expenditure estimates.

[12] Eastern Caribbean Currency Union includes Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Central government for revenue, expenditure, and balance accounts; public sector for gross debt.

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