

Box 4.1 (continued)

Table 4.1.2. Decomposing Commodity Prices into Demand and Supply Components by Type of Gross Capital Inflow, 2000–16

	(1) Total	(2) FDI	(3) Portfolio	(4) Other
VIX (log)	-0.830 (0.813)	0.103 (0.461)	-1.295*** (0.257)	0.219 (0.539)
G7 real GDP growth (year over year)	-0.776* (0.406)	-0.600 (0.356)	0.122* (0.067)	-0.374** (0.148)
U.S. short-term interest rates	0.341 (0.383)	0.278 (0.194)	-0.159* (0.088)	0.102 (0.159)
Real GDP growth differential (lagged)	0.435*** (0.107)	0.037 (0.067)	0.069 (0.040)	0.287*** (0.084)
Short-term interest rate differential (lagged)	-0.048 (0.056)	-0.011 (0.016)	-0.009 (0.009)	-0.030 (0.040)
Demand component of commodity price (log)	0.252*** (0.046)	0.088** (0.041)	0.050** (0.022)	0.119*** (0.020)
Supply component of commodity price (log)	2.989 (2.343)	1.963 (1.497)	-0.462 (1.039)	1.508 (0.958)
Observations	1,312	1,312	1,312	1,281
R-squared	0.135	0.048	0.168	0.169
Number of countries	22	22	22	22

Source: IMF staff calculations.

Note: These regressions are estimated by fixed effects. The dependent variable is gross capital inflows in column (1), gross FDI inflows in column (2), gross portfolio inflows in column (3), and gross other inflows in column (4). Robust standard errors appear in parentheses below each coefficient estimate. Countries include Argentina, Brazil, Chile, China, Colombia, Croatia, Egypt, Hungary, India, Indonesia, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, and Uruguay. FDI = foreign direct investment; G7 = Canada, France, Germany, Italy, Japan, United Kingdom, United States; VIX = Chicago Board Options Exchange Volatility Index.

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

to negative commodity supply shocks have a larger estimated association with capital flows (than those attributable to demand), but this effect is uncertain and thus not statistically significant.

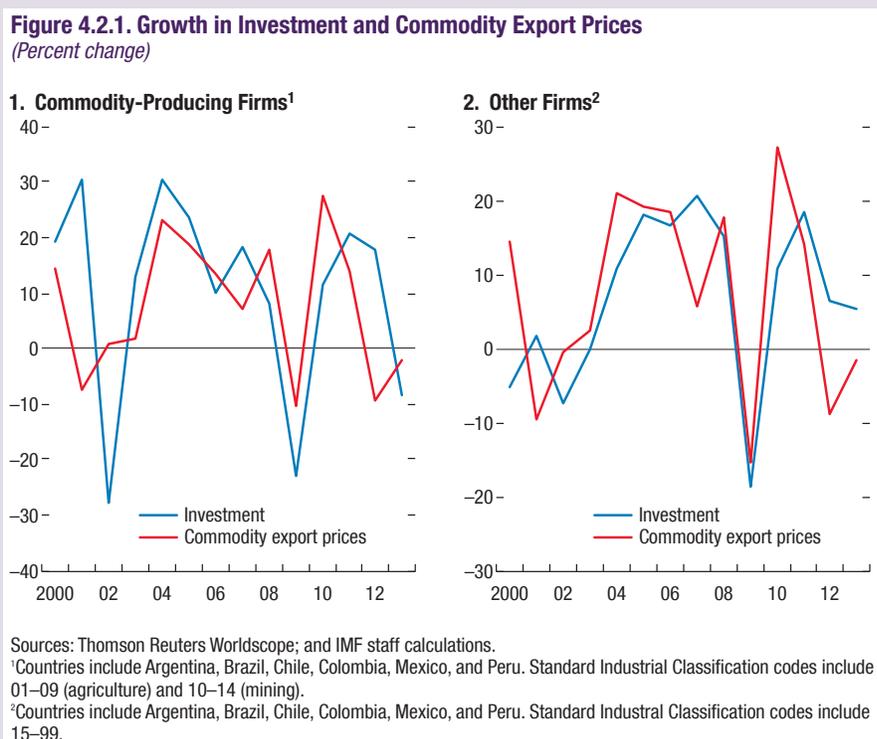
Upon disaggregating gross capital inflows into foreign direct investment, portfolio, and “other” flow components, the roles of global risk aversion and U.S. monetary policy become evident for portfolio flows specifically. The role for the demand component of commodity prices appears to be strongest for ‘other’ flows, which primarily reflect cross-border bank lending. It could be possible, therefore, that demand-related increases in commodity prices expand trade-related activities, and thus demand for external finance (for example, to finance investment, as seen in Box 4.2), at the same time that higher collateral values permit foreign banks to expand credit supply.

Therefore, there seems to be a cyclical pattern of capital flows to emerging market economies that is common between these economies. This cyclical pattern is highly correlated with global commodity prices, and evidence suggests two plausible, related interpretations of the importance of commodity prices. Commodity prices seem to behave in a way that reflects the global financial cycle, especially in the 2000s, and their role in explaining capital flows derives from their role as a high-frequency indicator of global aggregate demand.

Box 4.2. Commodity Prices and Investment in Commodity and Noncommodity Sectors

This box further explores possible underlying mechanisms through which commodity prices play an important role in determining capital flows to emerging market economies. In Latin America, the estimated effect of commodity prices appears so strong in the panel data analysis that it dominates other explanatory factors, including domestic growth. Turning to more disaggregated data, one can try to understand this finding better by examining whether sectors directly affected by changing commodity prices react similarly to or differently from other sectors. Specifically, it seems natural to ask whether the capital flows that accompany changes in commodity prices primarily affect capital accumulation in commodity-producing sectors. Or does capital accumulation respond similarly across other sectors to changes in commodity prices? This would help explain the role of *direct* effects (such as changes in firm profitability) versus more *indirect* or *spillover* effects (such as changes in market sentiment) that may accompany commodity price changes as they pertain to effects on capital flows.

Figure 4.2.1 provides clear evidence of comovement between firm-level investment growth and country-specific commodity export price changes for publicly listed firms in six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico, and Peru).¹ Panel 1 of Figure 4.2.1 shows that investment growth tracks the growth rate in export-related commodity prices for the median agricultural and mining firm. Panel 2 of Figure 4.2.1 shows a similar, albeit slightly less volatile, pattern in the investment growth of all other firms. Broadly speaking, investment in the two groups of firms seems to respond similarly to changes in commodity prices.



This box was prepared by Galen Sher.

¹Analogous charts for non-Latin American emerging markets, and for all emerging markets, show a similar degree of comovement between investment and commodity prices.

Box 4.2 (continued)

Table 4.2.1. Results from Estimating the Free Parameters in the Investment Equation 4.2.1 by Fixed Effects on Firms Domiciled in the LA6 Countries

Variable	Parameter	(1)	(2)
$Q_{i,t}$	α	1.56*** (0.310)	1.55*** (0.310)
$\frac{\pi_{i,t}}{K_{i,t-1}}$	β	0.58 (0.675)	0.58 (0.675)
$\frac{D_{i,t}}{E_{i,t}}$	λ	-4.43*** (0.706)	-4.42*** (0.705)
$\frac{IE_{i,t}}{D_{i,t-1}}$	ρ	3.88 (4.724)	3.98 (4.723)
$\frac{\Delta D_{i,t}}{K_{i,t-1}}$	δ	0.16 (0.142)	0.15 (0.141)
year t	θ	-0.17*** (0.060)	-0.16*** (0.059)
$P_{i,t}^x$	κ	0.05*** (0.013)	0.04*** (0.014)
$P_{i,t}^x X_i$	μ		0.04 (0.040)
Number of observations		4,651	4,650
Number of firms		763	762

Source: IMF staff calculations.

Note: Standard errors that are robust to within-firm heteroscedasticity and serial correlation appear in parentheses below each coefficient estimate.

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

To investigate the association between investment and commodity prices more systematically, we estimate the free parameters α , β , λ , ρ , δ , κ , μ and θ in the specification

$$100 \times \frac{I_{i,t}}{K_{i,t-1}} = \alpha Q_{i,t} + \beta \frac{\pi_{i,t}}{K_{i,t-1}} + \lambda \frac{D_{i,t}}{E_{i,t}} + \rho \frac{IE_{i,t}}{D_{i,t-1}} + \delta \frac{\Delta D_{i,t}}{K_{i,t-1}} + \kappa P_{i,t}^x + \mu P_{i,t}^x X_i + \theta t + c_i + u_{i,t} \quad (4.2.1)$$

for each firm-year observation (i, t) . In this specification, I denotes investment in fixed capital; K denotes the capital stock, Q denotes the ratio of market capitalization to book value of equity (a proxy for Tobin's q), π denotes net profit, D denotes the book value of debt, E denotes the book value of equity, IE denotes interest expense, P^x denotes the commodity export price in the firm's domicile country, X is an indicator variable equal to one if the firm is in the agriculture or mining industries and zero otherwise, θt allows for the possibility of a linear time trend, and $c_i + u_{i,t}$ is an error term that reflects firm-specific and idiosyncratic components. The parameter κ measures the extent of comovement between investment and commodity prices, while the parameter μ measures the difference in this comovement between commodity-producing firms and other firms.

Table 4.2.1 shows estimates of the parameters in equation (4.2.1) for firms in LA6 countries. Column (1) shows a version with the restriction $\mu = 0$. The estimates here are very similar to those obtained in Chapter 4 of the April 2015 *Regional Economic Outlook: Western Hemisphere* and Magud and Sosa (2015). In particular, we see a strong role for Tobin's q in explaining investment.

Allowing for different investment responses in commodity and noncommodity sectors, column (2) of Table 4.2.1 shows the estimation results when we allow μ to be unrestricted. Similar to Figure 4.2.1, we see evidence for a positive association between commodity prices and investment ($\kappa > 0$). This positive association also holds for noncommodity-producing firms, suggesting important spillover effects between

Box 4.2 *(continued)*

sectors. In addition, column (2) shows that the coefficient μ on the interaction term between commodity export prices and the indicator variable of commodity production is not statistically significant. This indicates that higher commodity prices lead to higher investment by both commodity producers and other firms in a similar fashion.

Annex 4.1. Technical Details

Investor Base and Domestic Financial Market Measures

In an attempt to quantify the characteristics of the investor base as well as those of the domestic financial markets, we use the variables defined below:

Foreign participation in domestic debt markets is defined as the share of domestic debt instruments held by nonresidents out of total domestic debt instruments, as computed by Arslanalp and Tsuda (2014).

Domestic market capitalization is defined as the ratio of total domestic market capitalization to the country's nominal GDP. This measure was obtained from the World Bank's Global Financial Development Database (GFDD), computed following Cihak and others (2012).

The presence of domestic pension funds is defined as the ratio of total assets under management of domestic pension funds to the country's total financial sector assets. This measure was also derived using the GFDD.

An *exchange rate flexibility* index, produced by Aizenman, Chinn, and Ito (2010), was used. A high score relates to a fixed exchange rate regime, and a low score relates to a more flexible exchange rate arrangement.

A *capital account openness* indicator, also derived by Aizenman, Chinn, and Ito (2010), takes the value of one for countries deemed to be relatively open and zero for those that are relatively closed.

Interacted Panel Vector Autoregression

An interacted panel vector autoregression (IPVAR) model is used to explore how the impulse response of capital inflows to external shocks depends on the characteristics of the investor base and of domestic financial markets.

Algebraically, a panel VAR estimation model can be written as

$$\begin{bmatrix} \mathbf{y} \\ \mathbf{X} \end{bmatrix}_{i,t} = \mathbf{A}_0 + \sum_{j=1}^L \mathbf{A}_j \begin{bmatrix} \mathbf{y} \\ \mathbf{X} \end{bmatrix}_{i,t-j} + \begin{bmatrix} \boldsymbol{\varepsilon}^y \\ \boldsymbol{\varepsilon}^X \end{bmatrix}_{i,t},$$

where vectors \mathbf{y} and \mathbf{X} contain the country-specific and global variables, respectively, for country i at time t ; the \mathbf{A}_j 's are (restricted) matrices of coefficients to be estimated;¹ and $\boldsymbol{\varepsilon}^y$ and $\boldsymbol{\varepsilon}^X$ are vectors containing the error terms.

In this model setup, \mathbf{y} includes the capital flow measure, in percent of trend GDP, and the differential between domestic growth and global growth. \mathbf{X} includes the measure of global commodity prices, the VIX, G7 real GDP growth, and the identified monetary shock to U.S. interest rates from Osorio Buitron and Vesperoni (2015). The variables in \mathbf{X} are exogenous in relation to the variables in \mathbf{y} (that is, the restriction in \mathbf{A}_j ensures the block exogeneity of the variables in \mathbf{X}). The shock identification relies on Cholesky decomposition.²

In a standard panel VAR setting, the coefficients in the \mathbf{A}_j 's matrices remain constant over time and across countries. By contrast, in the IPVAR setting, the coefficients in the \mathbf{A}_j 's are functions of country-specific characteristics (for example, the investor base and domestic market measures) that can also vary over time. More precisely, for each country i characterized by a vector of investor base measures $\mathbf{F}_{i,t}$ at time t , the coefficients inside the \mathbf{A}_j 's are defined by $a_{i,t} = c + \boldsymbol{\gamma}' \mathbf{F}_{i,t}$ where c and $\boldsymbol{\gamma}$ are parameters estimated by the IPVAR framework.

¹The coefficients in the \mathbf{A}_j 's corresponding to the effect of lags of \mathbf{y} on \mathbf{X} are set to zero to reflect the exogeneity of the variables included in \mathbf{X} .

²Broadly similar results are obtained using alternative ordering of the exogenous variables.

Annex Table 4.1. Estimation Results: Core Specification Model for Gross Inflows, 2000–16

	Core Model			
	LA5	LA7	OEM	EMs
First Stage: Cyclical Variables				
Global Factors				
VIX (log)	1.230 (0.862)	0.987 (1.077)	0.795 (1.359)	0.692 (0.946)
G7 real GDP growth (year over year)	0.509** (0.171)	0.368* (0.166)	-0.067 (0.442)	0.070 (0.297)
U.S. short-term interest rates	-0.083 (0.127)	0.214 (0.314)	1.129 (0.645)	0.799* (0.446)
Global commodity price (log)	4.182*** (0.387)	4.458** (1.354)	4.918*** (1.261)	4.434*** (0.973)
Country-Specific Factors				
Real GDP growth differential (lagged)	0.055 (0.116)	0.073 (0.096)	0.560*** (0.118)	0.419*** (0.116)
Short-term interest rate differential (lagged)	-0.070 (0.129)	-0.080 (0.079)	0.026 (0.071)	-0.018 (0.058)
Constant	-18.141** (4.352)	-19.244 (10.425)	-24.244** (9.338)	-20.458*** (7.024)
Second Stage: Structural Variables				
Country-Specific Factor				
Government effectiveness	1.253*** (0.037)	1.949*** (0.111)	3.192*** (0.215)	2.729*** (0.145)
Regulatory quality	1.412*** (0.031)	2.024*** (0.068)	4.743*** (0.164)	3.493*** (0.109)
Control of corruption	1.069*** (0.015)	1.596*** (0.061)	4.471*** (0.197)	2.593*** (0.112)
Rule of law	1.005*** (0.017)	1.578*** (0.068)	4.159*** (0.185)	2.785*** (0.113)
Law and order	0.554*** (0.018)	0.485*** (0.062)	1.728*** (0.111)	0.982*** (0.068)
Voice and accountability	1.380*** (0.055)	1.763*** (0.130)	3.054*** (0.122)	2.615*** (0.095)
Political stability	0.624*** (0.042)	0.650*** (0.082)	3.063*** (0.094)	2.209*** (0.075)
Political risk	0.070*** (0.004)	0.094*** (0.010)	0.253*** (0.011)	0.210*** (0.008)
Institutionalized democracy	0.011** (0.005)	0.016* (0.009)	0.137*** (0.016)	0.087*** (0.011)
Polity synthetic index	0.483*** (0.032)	0.781*** (0.056)	0.332*** (0.019)	0.317*** (0.016)
Corporate tax rate	-0.115*** (0.004)	-0.190*** (0.009)	-0.356*** (0.013)	-0.279*** (0.009)
Credit rating	0.494*** (0.037)	0.752*** (0.051)	0.571*** (0.110)	0.628*** (0.071)
Observations	322	440	872	1,312
R-squared (first stage)	0.480	0.385	0.141	0.151
R-squared interquartile range (second stage)	0.424–0.826	0.162–0.520	0.214–0.434	0.193–0.374
Number of countries	5	7	15	22

Source: IMF staff calculations.

Note: Robust standard errors in parentheses. The Polity synthetic index measures how democratic a country is. G7 = Canada, France, Germany, Italy, Japan, United Kingdom, United States; LA5 = Brazil, Chile, Colombia, Mexico, Peru; LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OEM (other emerging markets) = China, Croatia, Egypt, Hungary, India, Indonesia, Morocco, Malaysia, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey; EMs = emerging markets; VIX = Chicago Board Options Exchange Volatility Index.

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

Annex Table 4.2. Estimation Results: Alternative Specifications for Capital Inflows, Fixed Effects, 2000–16

Variables	Core Model		VIX		VIX and Commodity Prices		Domestic Growth Differential		Domestic Growth Differential and Commodity Prices	
	LA5 (1)	OEM (2)	LA5 (3)	OEM (4)	LA5 (5)	OEM (6)	LA5 (7)	OEM (8)	LA5 (9)	OEM (10)
Global Factors										
VIX (log)	1.230 (0.862)	0.795 (1.359)	-1.461** (0.518)	-1.025 (1.556)	-0.212 (0.650)	-0.374 (1.476)				
G7 real GDP growth (year over year)	0.509** (0.171)	20.067 (0.442)								
U.S. short-term interest rates	-0.083 (0.127)	1.129 (0.645)								
Global commodity price (log)	4.182*** (0.387)	4.918*** (1.261)			4.024*** (0.567)	2.566** (0.919)			3.989*** (0.410)	2.641*** (0.832)
Country-Specific Factor										
Real GDP growth differential (lagged)	0.055 (0.116)	0.560*** (0.118)					0.333** (0.100)	0.633*** (0.096)	0.032 (0.070)	0.634*** (0.119)
Short-term interest rate differential (lagged)	20.070 (0.129)	0.026 (0.071)								
Constant	-18.141** (4.352)	-24.244** (9.338)	9.968*** (1.535)	7.938 (4.594)	-12.733** (4.369)	-6.203 (5.220)	4.946*** (0.208)	3.110*** (0.272)	-13.261*** (1.959)	-9.469** (3.818)
Observations	322	872	328	872	328	872	328	872	328	872
R-squared	0.480	0.141	0.031	0.002	0.389	0.023	0.082	0.056	0.389	0.079
Number of countries	5	15	5	15	5	15	5	15	5	15

Source: IMF staff calculations.

Note: Robust standard errors in parentheses. G7 = Canada, France, Germany, Italy, Japan, United Kingdom, United States; LA5 = Brazil, Chile, Colombia, Mexico, Peru; OEM (other emerging markets) = China, Croatia, Egypt, Hungary, India, Indonesia, Morocco, Malaysia, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey; VIX = Chicago Board Options Exchange Volatility Index.

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

Annex Table 4.3. Estimation Results for Foreign Direct Investment and Portfolio Inflows, 2000–16

	Gross FDI Inflows			Gross Portfolio Inflows		
	LA5	LA7	OEM	LA5	LA7	OEM
First Stage: Cyclical Variables						
Global Factors						
VIX (log)	0.102 (0.560)	0.325 (0.399)	1.006 (0.980)	-0.338 (0.401)	-0.300 (0.525)	-0.938*** (0.227)
G7 real GDP growth (year over year)	0.001 (0.068)	-0.017 (0.064)	-0.444 (0.334)	0.282** (0.064)	0.264*** (0.049)	0.343*** (0.109)
U.S. short-term interest rates	0.022 (0.073)	0.134 (0.101)	0.647 (0.397)	-0.316** (0.109)	-0.030 (0.210)	-0.001 (0.093)
Global commodity price (log)	1.493* (0.594)	1.508** (0.527)	2.100 (1.196)	1.206* (0.446)	2.140** (0.711)	1.252*** (0.390)
Country-Specific Factors						
Real GDP growth differential (lagged)	0.006 (0.102)	0.034 (0.063)	0.035 (0.084)	0.051 (0.033)	-0.054 (0.055)	0.087* (0.049)
Short-term interest rate differential (lagged)	0.075 (0.078)	0.006 (0.020)	-0.005 (0.014)	-0.023 (0.083)	-0.017* (0.009)	0.017 (0.021)
Constant	-3.792 (3.094)	-4.600 (2.630)	-10.369 (8.444)	-2.933 (2.668)	-7.968 (4.673)	-2.889 (1.773)
Second Stage: Structural Variables						
Country-Specific Factor						
Government effectiveness	2.214*** (0.087)	2.351*** (0.084)	2.184*** (0.136)	0.400*** (0.025)	0.812*** (0.073)	1.304*** (0.044)
Regulatory quality	2.670*** (0.064)	2.140*** (0.052)	2.940*** (0.109)	0.521*** (0.021)	1.119*** (0.041)	1.278*** (0.040)
Control of corruption	1.965*** (0.043)	1.677*** (0.050)	2.609*** (0.132)	0.287*** (0.020)	0.639*** (0.047)	1.378*** (0.044)
Rule of law	1.825*** (0.047)	1.794*** (0.048)	2.734*** (0.116)	0.267*** (0.020)	0.628*** (0.049)	1.145*** (0.045)
Law and order	1.093*** (0.032)	0.990*** (0.044)	0.858*** (0.075)	0.210*** (0.010)	0.193*** (0.037)	-0.062* (0.032)
Voice and accountability	2.438*** (0.120)	1.925*** (0.118)	1.285*** (0.093)	0.315*** (0.036)	0.512*** (0.085)	0.947*** (0.026)
Political stability	1.062*** (0.085)	0.718*** (0.078)	1.820*** (0.065)	0.126*** (0.022)	0.104** (0.050)	0.638*** (0.029)
Political risk	0.121*** (0.009)	0.117*** (0.009)	0.160*** (0.007)	0.024*** (0.002)	0.035*** (0.006)	0.055*** (0.003)
Institutionalized democracy	0.015 (0.009)	0.014 (0.009)	0.048*** (0.011)	0.001 (0.002)	0.001 (0.005)	0.062*** (0.004)
Polity synthetic index	0.956*** (0.060)	0.806*** (0.053)	0.088*** (0.014)	0.184*** (0.014)	0.320*** (0.035)	0.113*** (0.004)
Corporate tax rate	-0.219*** (0.007)	-0.229*** (0.006)	-0.187*** (0.009)	-0.047*** (0.002)	-0.097*** (0.006)	-0.010** (0.005)
Credit rating	0.904*** (0.073)	0.788*** (0.048)	0.643*** (0.068)	0.223*** (0.015)	0.486*** (0.027)	0.233*** (0.028)
Observations	322	440	872	322	440	872
R-squared (first stage)	0.176	0.174	0.071	0.388	0.307	0.192
R-squared interquartile range (second stage)	0.350–0.796	0.331–0.728	0.122–0.382	0.271–0.489	0.073–0.327	0.191–0.515
Number of countries	5	7	15	5	7	15

Source: IMF staff calculations.

Note: Robust standard errors in parentheses. The Polity synthetic index measures how democratic a country is. G7 = Canada, France, Germany, Italy, Japan, United Kingdom, United States; LA5 = Brazil, Chile, Colombia, Mexico, Peru; LA7 = Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay; OEM (other emerging markets) = China, Croatia, Egypt, Hungary, India, Indonesia, Morocco, Malaysia, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey; VIX = Chicago Board Options Exchange Volatility Index.

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

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5. Migration and Remittances in Latin America and the Caribbean: Macroeconomic Stabilizers and Engines of Growth?

Migration from and remittance flows to Latin America and the Caribbean (LAC)—usually with the United States as the host economy—have major economic and social ramifications for the migrants’ home countries. This chapter examines recent trends in outward migration from and remittances to LAC, as well as their costs and benefits. Outward migration in isolation may lower growth in home countries through reduced labor supply and productivity, but the remittances sent home by migrant workers serve as a mitigating factor, both by serving as a large and relatively stable source of external financing, notably in Central America and the Caribbean, and by helping cushion the impact of economic shocks. However, the region’s dependence on remittances primarily from the United States can pose risks to macroeconomic stability for cyclical reasons and, more importantly, from possible changes to immigration-related policies. Targeted reforms in home countries can help reduce outward migration and the attendant adverse consequences. In particular, structural reforms, aimed at leveraging the pool of high-skilled and highly educated workers to foster economic diversification at home would likely reduce “brain drain.” Similarly, given the key financing and stabilizing roles played by remittances, policies aimed at reducing transaction costs and promoting the use of formal channels of intermediation merit support.

Migration and remittances can have profound effects on human welfare and economic development. Economic migration reflects people’s desire to improve their own and their families’ wellbeing. As migrants find higher paying jobs abroad, productivity likely rises at a global level. Likewise, the remittances migrants send home can also improve the standard of living, health, and education of the often poor recipient households. However, for others in the home country, the impact of outward migration can be less benign because the departure of people of

This chapter was prepared by a team led by Jan Kees Martijn and comprised of Kimberly Beaton, Svetlana Cerovic, Misael Galda-mez, Metodij Hadzi-Vaskov, Franz Loyola, Zsoka Koczan, Bogdan Lissovolik, Yulia Ustyugova, and Joyce Wong. The analytical results presented in this chapter are described in greater detail in Beaton and others (forthcoming).

prime working age, who may be relatively well educated, can weaken the country’s economic base.

Outward migration has been an important phenomenon for countries in LAC, particularly those in Central America and the Caribbean. In these two subregions, emigrants account for about 10 percent or more of the population—compared with about 2 percent, on average, for the group of emerging market and developing economies as a whole—and they remit substantial funds, averaging about 8 percent of GDP, to support family members back home.

Given their importance for the region, this chapter examines recent trends in migration and remittances, as well as the costs and benefits of these flows. Does the loss in population associated with emigration hurt economic growth? Do remittances compensate for this loss and function as engines of growth? Are remittances macroeconomic stabilizers and do they help reduce poverty and inequality? This study offers qualified positive answers to each of these questions. The analysis focuses only on the consequences for countries in LAC from where the migrants originate and not on the effects on migrants’ host countries.

The results presented in this chapter underscore the profound and multifaceted implications of migration and remittances for the LAC region. While emigration may reduce real per capita economic growth (as a result of the decline in labor resources and productivity), remittances can support investment and education and foster commercial linkages. The analysis in this chapter indicates that the negative impact of emigration on real per capita growth seems to outweigh growth gains from remittances, notably for the Caribbean. However, on the positive side, in both Central America and the Caribbean, remittances are important macroeconomic stabilizers. They

are one of the most important sources of external financing, facilitate a smoothing of private consumption, and help boost financial sector soundness and fiscal performance. Since lower-income households are more likely to receive remittances, these flows also function as a channel for reducing poverty and inequality. Mexico stands out as a special case, as it is the largest source of immigrants into the United States and an important hub for migrants from Central America. In contrast, for most South American countries, emigration and remittances are less material and do not appear to act as macroeconomic stabilizers. Even for those countries in South America that have seen substantial outward migration, remittances tend to be relatively modest, and this analysis does not reveal significant macroeconomic effects. Labor market developments and changes to immigration and remittance policies in host countries can have a significant impact. Because the majority of emigrants from Central America, Mexico, and the Caribbean live in the United States, large shifts in its economic cycle and policies could have particularly far-reaching regional repercussions.

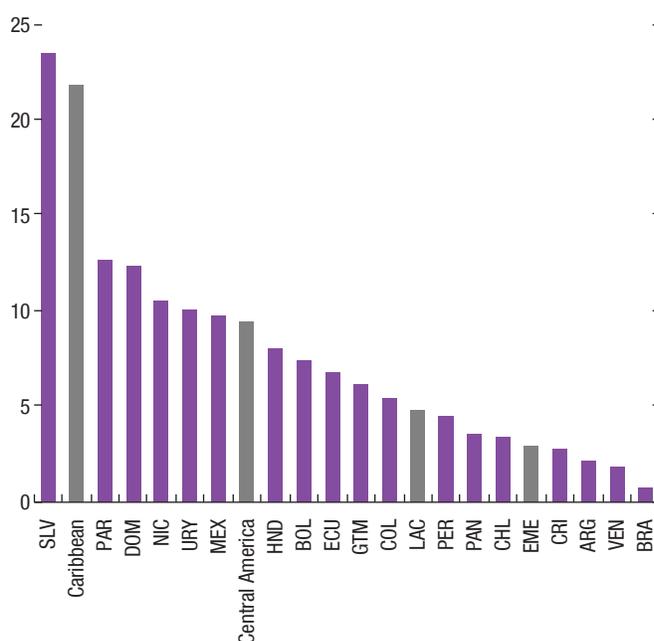
The chapter begins by reviewing the patterns of migration and remittances in LAC. The analysis leverages the U.S.-centric nature of the region's emigration patterns, and the availability of micro data for this country, to examine the characteristics of emigrants and remittance senders. This is followed by an analysis of the impact of emigration and remittances on per capita growth and macroeconomic stability. Finally, the chapter considers the risks of dependence on remittances and concludes with policy considerations.

Migration and Remittances at a Glance

The stock of LAC emigrants (as a share of the home country population) is among the highest globally (Figures 5.1 and 5.2).¹ Starting in the

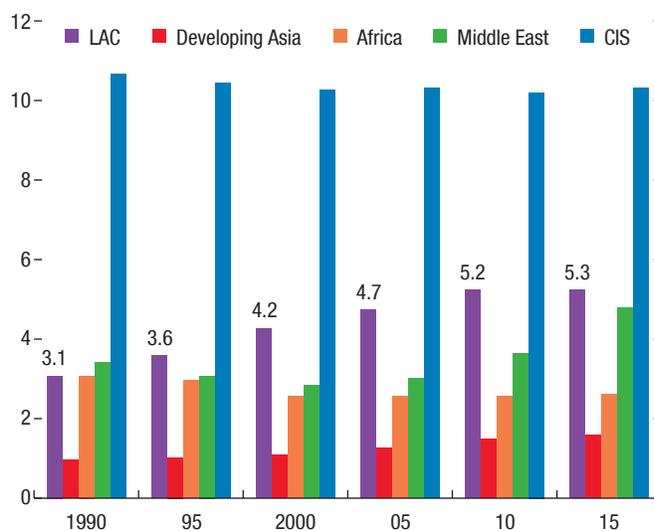
¹Data on migration is from the United Nations Population Division migration statistics. The data are based on migrant stock data collected from national population censuses. Although the

Figure 5.1. Emigrants, Latin America and the Caribbean and Emerging Market Economies, 2015
(Percent of total population)



Sources: United Nations Population Division, International Migrant Stock database; and IMF staff calculations.
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 137. EME = emerging market economies.

Figure 5.2. Emigrants, by World Region
(Percent of population)



Sources: United Nations Population Division, International Migrant Stock database; and IMF staff calculations.
Note: CIS = Commonwealth of Independent States; LAC = Latin America and the Caribbean.

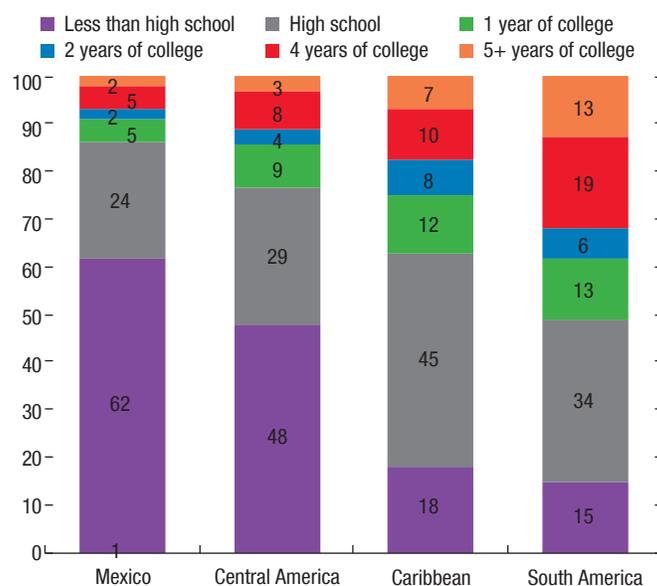
1960s, emigration to countries offering better economic opportunities has been an important phenomenon for LAC. Emigration has also resulted from violent conflict in several countries, in particular in Central America, through the 1990s and subsequent deterioration in the security situation. Emigration has been particularly significant for the Caribbean, where about one-fifth of the population lives abroad, as well as for countries in Central America, Panama, and the Dominican Republic (CAPDR) and Mexico, where emigrants represent about 10 percent of the population in both instances. Emigration from countries in South America, by contrast, has been more limited, averaging about 2½ percent of the subregion's population. However, some South American countries such as Paraguay and Uruguay have sizeable emigrant populations living abroad that represent more than 10 percent of their populations. Among other South American countries, Bolivia, Colombia, and Ecuador also have sizable emigrant populations.

Emigration from LAC has featured both South-North migration and, especially within South America, intraregional migration. About two-thirds of all LAC migrants reside in the United States, although Canada has the highest share of LAC immigrants as part of its population. Almost all emigrants from Mexico and four out of five emigrants from CAPDR live in the United States, while the profile of Caribbean migrants is more diverse (with slightly more than half residing in the United States) given the importance of their emigration to Canada and Europe. Within South America, important destinations for migrants have been Argentina (in particular, from Bolivia, Chile, Paraguay, and Uruguay) and, especially during the 1970s, Venezuela (notably, from Colombia). Since the economic crisis of the 1980s, migration from South America to other regions has become more important—in particular to the United States and—reflecting historical and linguistic ties—to Spain.² In addition, in recent years, Chile and Colombia have become notable destinations.

methodology may differ to some extent across countries, in principle the data include both legal and illegal migrants.

²See OAS (2011) for an overview of these migration patterns.

Figure 5.3. Migrant Educational Attainment on Entry to the United States
(Percent of migrants with educational level)



Sources: 2008 American Community Survey; and IMF staff calculations.

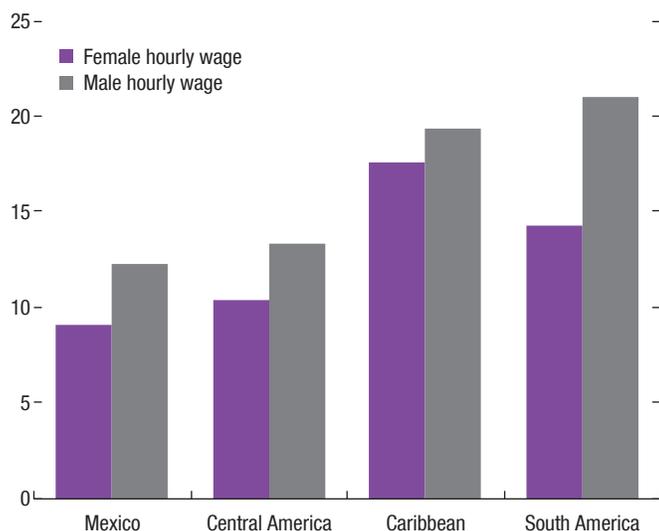
Who are these emigrants? Micro data from the American Community Survey provide a profile of LAC immigrants in the United States (Annex 5.1).³ While immigrants typically enter the United States in their early 20s, immigrants from Mexico and CAPDR countries tend to be younger and have lower levels of education compared with those from South America and the Caribbean (Figure 5.3). Of the latter groups, 40 percent or more have attended college (or beyond). Brain drain is a particular challenge for the Caribbean (Box 5.1). Emigrants from Mexico and CAPDR are also more likely to be undocumented, and much less likely to become U.S. citizens than those from the Caribbean and South America.⁴ There is evidence of family reunification for emigrants into the United States from CAPDR and Mexico.⁵

³For South American, and to a lesser extent Caribbean, migrants, these data may not be fully reflective of their characteristics given the more diverse destination pattern.

⁴For more detail, see Beaton and others (forthcoming).

⁵Evidenced by the finding that the proportion of households in which the head is married but the head's spouse is absent declines with the age of the head of the household. See Beaton and others (forthcoming).

Figure 5.4. Average Migrant Wages in the United States
(In 2014 U.S. dollars; migrants who entered after age 22)

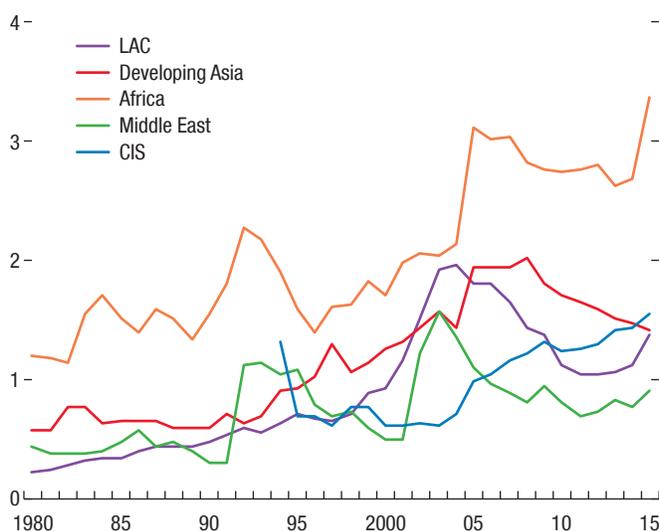


Sources: 2008 American Community Survey; and IMF staff calculations.

With lower levels of education on average, emigrants from Mexico and CAPDR tend to work in lower-skilled occupations. Their employment is concentrated in construction, maintenance, transportation, production, and food preparation, while emigrants from South America and the Caribbean tend to be employed in office and administration, sales, management, and health-related occupations. The higher-skilled immigrants from South America and the Caribbean also earn more: their hourly wages are almost 60 percent higher, on average, than those of immigrants from Mexico and CAPDR (Figure 5.4).

LAC emigrants have maintained strong connections with their home countries, sending home sizable remittances, reaching 1.4 percent of regional output in 2015 (Figure 5.5). As a share of GDP, remittance flows to CAPDR and Caribbean countries dwarf those received by their South American neighbors, consistent with their larger migrant stocks, and also far exceed those received by Mexico (one of the largest recipients worldwide in nominal terms) and

Figure 5.5. Remittances, by World Region
(Percent of regional GDP)



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

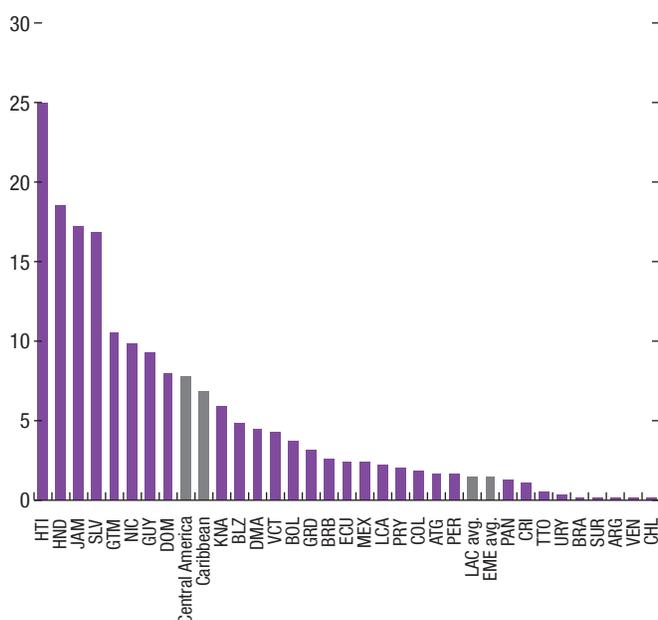
Note: CIS = Commonwealth of Independent States; LAC = Latin America and the Caribbean.

emerging market economies on average.⁶ In four countries—El Salvador, Haiti, Honduras, and Jamaica—remittances exceed 15 percent of GDP (Figure 5.6).

The remitting behavior of LAC immigrants in the United States varies with their demographic characteristics. About a third of LAC immigrants send remittances to their home countries. This share is somewhat higher for CAPDR and falls with age. The likelihood of remitting does not appear to relate to the immigrant's income. Not surprisingly, immigrants who are married but with an absent spouse are the most likely to remit. On average, LAC immigrants who remit send about US\$2,500 to their families on an annual basis. Conditional on remitting, immigrants in the United States with lower levels of education and income tend to remit more as a share of their income, while immigrants from the Caribbean

⁶Even for South American countries that have sizable emigrant populations, remittances are very low compared to CAPDR countries with comparable emigrant populations.

Figure 5.6. Remittances, Latin America and the Caribbean and Emerging Market Economies, 2015
(Percent of GDP)



Source: IMF, World Economic Outlook database; World Bank Development Indicators database; and IMF staff calculations.

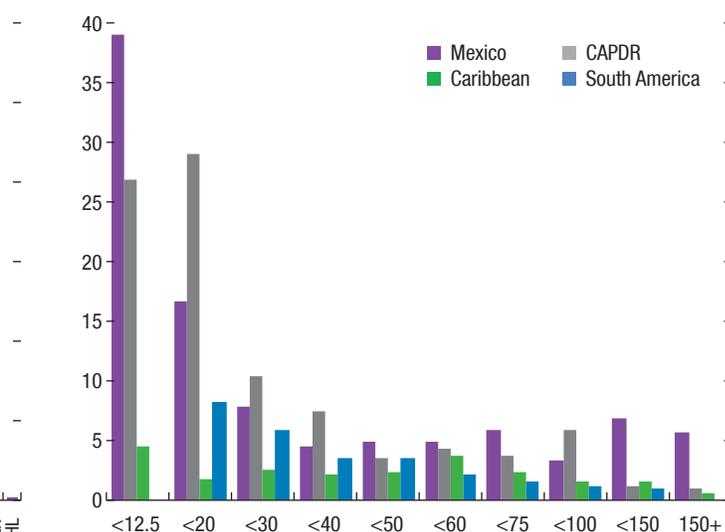
Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 137. LAC = Latin America and the Caribbean; EME = emerging market economy.

send home much less than those from Central America (Figure 5.7).

Remittances to the region peaked at about 2 percent of regional output before the global financial crisis. With LAC migrants residing mainly in the United States, the epicenter of the crisis, remittances fell precipitously during and in the aftermath of the crisis—more so than in other parts of the world. Emigrants from Mexico and CAPDR were particularly hard hit by the global financial crisis because the crisis had a notably profound effect on the industries in which they have traditionally been employed, sharply lowering remittances into these countries. Remittances to the region have subsequently begun to recover but still remain well below their precrisis peak.

The fees for sending remittances are substantial, reducing the amount of money received by emigrants' families (Box 5.2). Most remittances

Figure 5.7. Amounts Remitted by Migrants in the United States as a Percent of Income
(Conditional on remitting; income in 2000 U.S. dollars)



Sources: 2008 American Community Survey; and IMF staff calculations.

Note: CAPDR = Central America, Panama, and the Dominican Republic.

are deposited and received in cash through either money or value transfer service operators or banks. Money transfer operators, of which the largest are Western Union and MoneyGram, provide the dominant channel through which migrants send remittances, with a market share of more than 80 percent of remittances channels in LAC.⁷

Estimating the Impact of Migration and Remittances on Growth

What is the impact of emigration and the associated receipt of remittances on the population remaining in the home country? Overall, the empirical results detailed below suggest that outward migration has a negative effect on per capita growth in LAC countries, while remittances seem to pull in the other

⁷However, these data from the World Bank's global data set, the Remittance Prices Worldwide database, do not take into consideration the amount of remittances transacted on each channel, which would better reflect the relative usage.

direction. The net effect of migration and remittances on growth tends to be negative for the Caribbean, but the impact is less clear-cut for other country groupings. On the one hand, emigration is likely to have a negative effect on growth in the home country because the departure of people of working age reduces the labor force. This loss could be significant if there is brain drain given that the loss of high-skilled workers could impose negative externalities for the broader economy, including less scope for innovation. Accordingly, the negative effects of emigration would likely be most pronounced in the Caribbean and South America, which tend to have relatively large shares of high-skilled emigrants. The receipt of remittances could also aggravate the decline in labor supply as recipients substitute labor income with remittance income. On the other hand, remittances could have a positive effect on growth by providing financial resources for investment and education and through migrant networks that can foster trade and investment.⁸ Such positive effects would likely be largest in Mexico and CAPDR, which receive the most remittances as a share of GDP.

It is difficult to empirically estimate the effect of migration and remittances on per capita growth. The existing literature has mostly focused on the role of remittances, and is inconclusive.⁹ This chapter, in contrast, aims to estimate the net effect of both emigration and remittances on growth. In any case, two-way causality poses a serious problem. Emigration and remittances could respond to economic conditions as well as affect them (in line with the channels described above). Simple ordinary least squares panel regressions would overlook this two-way causality. To mitigate such concerns, the impact of migration and remittances on real per capita GDP growth is

⁸For example, Edwards and Ureta (2003) find that remittances have a significant positive impact on schooling retention in El Salvador.

⁹For earlier studies on the impact of migration or remittances on growth, see, for example, Barajas and others (2008).

also estimated using an instrumental variables approach.^{10,11}

As expected, the estimation results suggest that outward migration, taken separately, has a negative effect on growth, and this impact seems most pronounced in the subregions experiencing brain drain (Annex Table 5.2.1). Remittances seem to have positive (though not always statistically significant) growth effects, which are largest in the high-remittance-receiving subregions. However, these separate effects are difficult to quantify with precision given that migration and remittances are highly correlated (in particular, remittances cannot occur without migration). Furthermore, estimates for South America conceal a large degree of heterogeneity within this subregion: while emigration and remittances have limited importance for some countries, Paraguay and Uruguay have large stocks of emigrants, and remittances are significant for Bolivia and Ecuador. However, restricting the sample to these four countries does not materially change the estimation results (not shown).

¹⁰A similar approach is followed in all subsequent sections, with the exception of the section on consumption risk-sharing.

¹¹Regressions are estimated on the period 1980–2015 (unbalanced sample). The ordinary least squares regressions include country fixed effects to account for any time-invariant unobservable country characteristics (as well as to mitigate concerns related to nonrandom missing data in the unbalanced panel, to the extent that this is related to time-invariant or slow-moving country characteristics). Regressions control for external conditions such as real GDP growth in the United States, other factors affecting growth such as foreign direct investment as a share of GDP, export growth, change in the terms of trade, and country risk and the stock of emigrants as a share of the home population. Results are robust to controlling for investment and lagged real GDP per capita. The endogenous variables here are remittances and migration, as well as government spending and money supply (M2) as a share of GDP. These are instrumented using their regional averages (excluding the country in question), the share of rural population, and unemployment in the destination countries. Although the instruments based on regional averages may not be strictly exogenous if the country itself is large relative to the region, this is unlikely to be a concern for most countries in the sample. Instrumental variables regressions are implemented using two-stage least squares and include country fixed effects but not time fixed effects as they include controls such as growth in the United States. First-stage F statistics exceed 10 for all specifications except the Caribbean, where sample sizes are particularly small. Specifications pass the test of overidentifying restrictions. Unfortunately, information on ages and skill levels of emigrants is not available for sufficiently long periods to be included in the regressions; cross-sectional variation in these factors would be mopped up by country fixed effects.

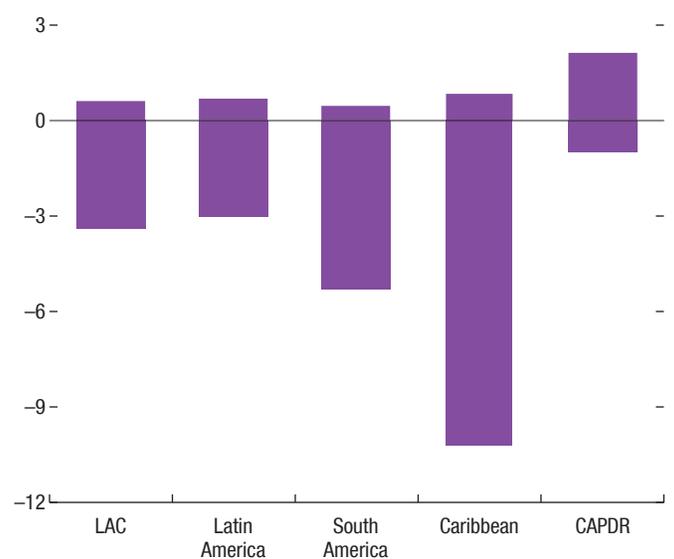
Emigration and remittances together appear to have had a small and ambiguous effect on real per capita GDP growth in the LAC region as a whole, but the effect has varied across subregions, likely reflecting the different characteristics of migrants. Figure 5.8 shows the estimated cumulative *joint* impact on growth of the actual increases in the stock of emigrants and in remittances over 2003–13, using the estimated coefficients and actual increases in the stocks of emigrants and in remittances for each of the subregions over this period. Given the complications from two-way causality, Figure 5.8 shows ranges rather than point estimates.¹² This joint or net effect has likely been negative for the Caribbean and South America, with the former experiencing large emigrant outflows and both regions characterized by brain drain and relatively smaller remittances receipts. However, the net impact appears small and possibly positive for CAPDR countries, which receive much higher remittances.¹³

To examine the net effect of emigration and remittances over the longer term, the same specification is estimated using five-year averages

¹²The “true” joint effect of migration and remittances on per capita GDP growth is likely somewhere between the instrumented effects (which try to remove all reverse causality effects, but only pick up variation in the instruments) shown in Figure 5.8 as the bottom of the range and the ordinary least squares effects (which confound some of the true effect with reverse causality) corresponding to the top of the range.

¹³The effect is about zero for Mexico, but this result is not strictly comparable to other results because it is estimated purely from time series variation and the data sample is particularly small (see Beaton and others forthcoming). Effects are typically less significant for subregions than for LAC as a whole as sample sizes are smaller and subregions have less variation within them. The empirical literature is inconclusive on the effects of remittances on growth: Catrinescu and others (2006), AFD (2007), and World Bank (2005) found positive effects, while Giuliano and Ruiz-Arranz (2005) looked at longer-term effects and found significant positive effects only in countries with small financial sectors where presumably credit constraints would be more pervasive. The April 2005 *World Economic Outlook* found no statistically significant effect and Barajas and others (2008) found a positive and significant effect only when the estimation excluded investment and was in the absence of country fixed effects. The empirical approach used here is closest to that in Barajas and others (2008) and Abdih and others (2009), though with the crucial distinction that they do not control for migration stocks or migration flows. The positive effect of remittances on growth in this chapter is estimated while controlling for migrant stocks and migration flows, and is thus relative to the counterfactual of “migration without remittances.” The positive effect of remittances on growth also holds up when examining GNI instead of GDP.

Figure 5.8. Cumulative Net Effect of Migration and Remittances on Growth, 2003–13
(Percentage points of GDP)



Source: IMF staff calculations.

Notes: The net effect is based on coefficient estimates from fixed effects and instrumental variable regressions on changes in migrant stocks and remittances as a percent of GDP during 2003–13. LAC = Latin America and the Caribbean; CAPDR = Central America, Panama, and the Dominican Republic.

to allow for lag times and dynamic effects (Annex Table 5.2.2). These results suggest that although the ordering of the subregions remains similar, the net effect is more negative in the longer term. Accordingly, remittances (and migration) appear unlikely to act as drivers of durable growth.

The Stabilizing Role of Remittances

Remittances are often seen as a source of economic stabilization, and this feature could offer important benefits for migrants’ home countries even if emigration and remittances may, on balance, have unclear or negative net implications for growth. The analysis in this section suggests that remittances have indeed contributed to macroeconomic stabilization within the LAC region. Statistically significant beneficial effects are found especially for the Caribbean and CAPDR (Table 5.1), where they typically increase consumption smoothing, help generate fiscal revenues, and support financial stability, while

Table 5.1. Macroeconomic Stabilizing Effect of Remittances

Effect on	Priors	Result
Fiscal revenues	+	Yes, significant for CAPDR and the Caribbean.
Nonperforming loans	–	Yes, significant for CAPDR.
Real exchange rate	+ (appreciation)	Results generally insignificant and not strong.
Inflation	+	Yes, significant for the Caribbean and CAPDR.

Source: IMF staff calculations.

Note: For country group information, see page 137. CAPDR = Central America, Panama, and the Dominican Republic.

there appears to be little evidence of possible adverse “Dutch disease” effects given that their impact on the real exchange rate and inflation tends to be minor. In addition, evidence from Mexico confirms that remittances can also help lower poverty as well as inequality—and all the more so in the wake of negative shocks (Box 5.3).

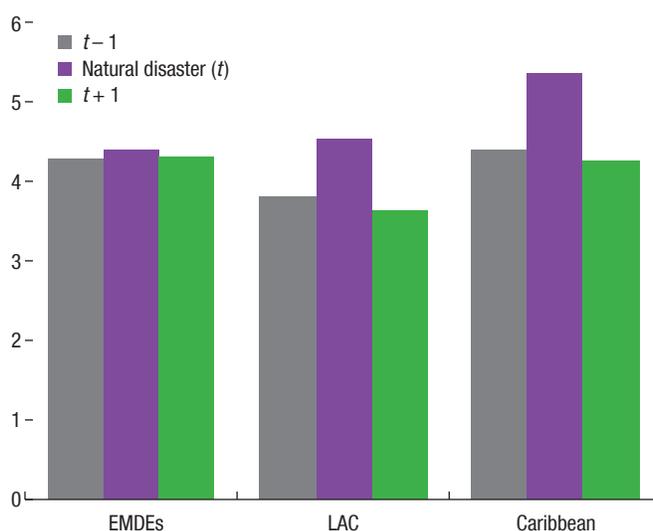
This stabilizing role is especially strong when remittances are countercyclical, and rise in response to adverse domestic shocks. Remittances are an important and relatively reliable source of external financing for many emerging market and developing economies.¹⁴ They are larger than any other external inflow for CAPDR and the Caribbean. For South America, private capital inflows (excluding foreign direct investment) have typically been larger than remittances, but remittances flows have been a more stable source of external financing for all subregions in LAC.

Consumption Smoothing

Receiving remittances can help smooth consumption in the home country as emigrants send home additional funds to cushion economic shocks. This stabilizing property of remittances is illustrated in Figure 5.9, which shows that remittances (as a share of GDP) jump when a natural disaster hits the remittance-recipient country.¹⁵ This effect appears to be stronger for LAC than for emerging market and developing economies in general, and seems to be especially important for the Caribbean—the country group that is particularly susceptible to large natural

¹⁴For instance, Barajas and others (2008) and Balli and Rana (2015) argue that remittances are resilient and less volatile compared with other sources of external financing.

¹⁵For example, remittances in Grenada increased from 2 percent of GDP in 2003 to 4 percent of GDP in 2004, the year Hurricane Ivan hit the island, and then normalized to the 2003 level in the following years.

Figure 5.9. Remittances and Natural Disasters
(Remittances as a percent of GDP)

Sources: Emergency Events Database; and IMF staff calculations.

Note: EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean.

disasters—and, to a lesser extent, for CAPDR (not shown).¹⁶

More generally, the analysis finds that remittances lower income volatility in the home country. This effect is shown in Annex Figure 5.2.1, which demonstrates that for most countries in the LAC region, overall income, including remittances, is less volatile than domestic income (measured using international prices). Beyond the above-mentioned countercyclicity of remittances, this stabilizing effect also reflects the finding that remittances to LAC are typically set in U.S. dollars.

¹⁶See Beaton and others (forthcoming) for a formal analysis of the drivers of remittances to LAC, which confirms the importance of natural disasters.

Hence, while, for example, a sharp depreciation would reduce the value of domestic income in international prices, remittance income would cushion this effect even if it is not increased in U.S. dollars.

Remittances can foster consumption smoothing not only through their direct countercyclicality, but also by supporting financial inclusion and access to credit. Remittances allow recipients to save in good times and tap into these resources when domestic income contracts. They also facilitate access to credit by strengthening borrowers' capacity to repay. In addition, households receiving remittances can vary the share of their receipts used for consumption. An analysis of the overall effect of remittances on the stabilization of private consumption shows that higher remittances (as a share of GDP) are associated with more consumption smoothing across countries in the face of idiosyncratic shocks to output. Specifically, remittances help delink country-specific consumption growth from country-specific output growth.¹⁷ Annex Figure 5.2.2 shows that consumption-growth correlations are lower for countries with higher levels of remittances. Again, these effects seem relatively pronounced for LAC and, in particular, for the Caribbean.¹⁸ Besides the high remittances-to-GDP ratios, the strong effects found for the Caribbean countries likely reflect their susceptibility to natural disasters as well as the countercyclical response of remittances to such events.

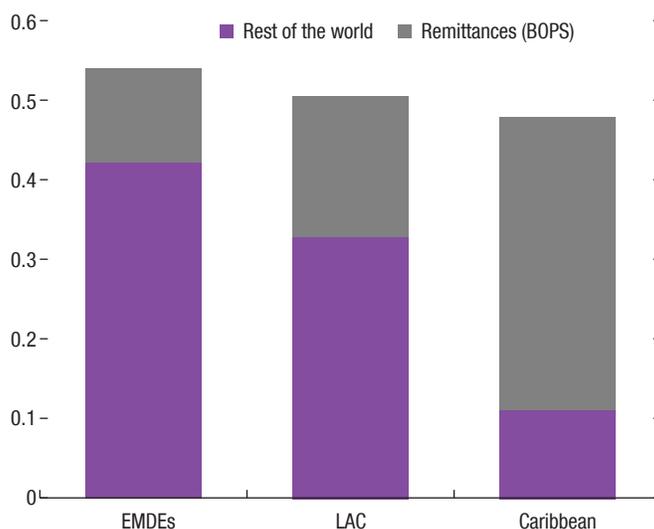
Finally, Figure 5.10 and Annex Table 5.2.3 summarize the results of a more formal analysis of the latter effect.¹⁹ Whereas emerging market and developing economies typically seem to smooth consumption in the face of output shocks through financial and other linkages, remittances appear to be a relatively important

¹⁷See Hadzi-Vaskov (2006), Balli and Rana (2015), World Bank (2015), and De and others (2016) for the role of remittances in improving such cross-country consumption risk sharing.

¹⁸The samples are quite limited and the relationships are not statistically significant.

¹⁹See Annex 5.2 for details about the specification.

Figure 5.10. Portion of Total Risks Shared



Source: IMF staff calculations.

Note: Estimates of the portion of total risks shared are based on region-specific coefficients obtained from panel regressions of idiosyncratic consumption growth on idiosyncratic output growth and its interactions with indicators for remittances, the capital account openness index (Chinn and Ito 2006), and de facto financial integration measures (Lane and Milesi-Ferretti 2007). BOPS = IMF Balance of Payments Statistics; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean.

channel for LAC.²⁰ In particular, most of the cushioning of consumption risk that takes place in the Caribbean seems to be associated with remittances. Further analysis sheds light on the consumption-smoothing impact of remittances taking into account the fiscal stance and finds that this impact occurs mainly during periods of fiscal consolidation and fiscal shocks, suggesting that remittances and fiscal policy may act as substitutes (Beaton, Cevik, and Yousefi forthcoming).

Bolstering Financial Sector Stability

The positive impact of remittances for financial sector development can go beyond the associated increase in deposits and access to credit (Fajnzylber and Lopez 2008). Remittances may also alter credit quality and affect financial stability. In theory, the impact of remittances on

²⁰Among emerging market and developing economies there are subgroups of countries, such as those from the Commonwealth of Independent States, where remittances are also an important channel for risk sharing.

Table 5.2. Effects of Remittances-to-GDP Ratio on Selected Macroeconomic Variables

	Key coefficients in instrumental variable regressions		
	LAC	Caribbean	CAPDR
Real exchange rate	0.027 (0.03)	0.003 (0.016)	0.061*** (0.02)
Revenue-to-GDP ratio	0.44 (0.31)	1.16** (0.56)	0.39** (0.16)
Inflation ¹	21 (20.34)	2.52** (1.27)	3.37* (1.97)
Nonperforming loan ratio	-0.48 (0.46)	n.a. n.a.	-0.45** (0.22)

Source: IMF staff calculations.

Note: Standard errors in parentheses. Standard deviation is in parentheses below the coefficients. CAPDR = Central America, Panama, and the Dominican Republic; LAC = Latin America and the Caribbean; n.a. = not applicable.

¹Specification with lagged change in the remittances-to-GDP ratio.

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

credit quality is ambiguous. On the one hand, remittances could fuel excessive private credit growth, which can diminish credit quality. On the other hand, by strengthening borrowers' capacity to repay, remittances can improve credit quality. The results shown in Table 5.2, which control for reverse causality, indicate that the latter effect seems to dominate in LAC as higher remittances are associated with lower nonperforming loans (NPLs), though the effect is only significant for CAPDR.²¹

Based on these results, an increase in the remittances-to-GDP ratio for CAPDR by 1 percentage point would cause a drop in the NPL ratio by almost 0.5 percentage point. It follows that the increase in the remittances-to-GDP ratio since 2000 has contributed to the fall in the area's NPL ratio by 1 percentage point. Sufficient observations were not available for the Caribbean. In South America other determinants (terms-of-trade shocks and cyclical factors) seem to be more important NPL drivers than remittances (which are small in most countries and restricting the sample to a country subgroup with relatively larger flows still did not reveal significant effects).

Boosting Fiscal Revenues

Apart from the smoothing of private consumption, remittances can foster economic stabilization through the fiscal accounts.

²¹See Ebeke, Loko, and Viseth (2014) for similar results for a group of global emerging market economies.

Remittances can help raise fiscal revenues even though they are typically not taxed directly, given that spending out of remittances is part of the base for indirect taxation.²² The associated increase in fiscal space, in turn, enhances the scope for stabilization through countercyclical fiscal policies. Although empirical studies have found evidence for remittances' revenue-raising role in the Middle East and North Africa region and Central Asia, this aspect of remittances has not been explored for countries in LAC.²³ Controlling for different determinants of fiscal revenue and possible endogeneity, remittances are found to help mobilize fiscal revenues, and this effect is particularly strong and significant for CAPDR and the Caribbean (Table 5.2).²⁴

These estimates imply that, for example, the actual increase in the remittance-to-GDP ratio since 2000 in CAPDR, which reflected continued substantial emigration from the region to the United States, accounted for an increase in fiscal revenues of 1 percent of GDP. Incidentally, the increase in the region's revenue-to-GDP ratio since 2000 is fully concentrated in the group

²²The few countries that tried to tax remittances directly later repealed these taxes. Examples include Vietnam, Tajikistan, and the Philippines.

²³For instance, see Ebeke (2010) and Abdih and others (2009).

²⁴See Beaton and others (forthcoming) for the empirical specifications. As with the above regressions on the determinants of growth, numerical estimates of the coefficients differ somewhat between the ordinary least squares and instrumental variables regressions. While estimates of the effect of remittances are positive and statistically significant in all specifications, they fall within a relatively narrow range for CAPDR, but are more widely dispersed for the Caribbean.

of five countries that are receiving significant remittances (for example, excluding Costa Rica and Panama).²⁵ Further regressions (not shown) indicate that in the Caribbean higher remittances have been associated with improved fiscal balances, while in CAPDR they are associated with higher expenditures and no significant effect on fiscal balances. This finding suggests that in CAPDR, revenues generated by remittances have helped create scope for additional spending.

Limited Impact on Competitiveness and Inflation

Although remittances support stability through the above channels, these benefits may be counteracted by risks to competitiveness and inflation. Remittance inflows are expected to boost household spending, which in turn may put pressure on nontradable prices and interest rates, leading to real exchange rate appreciation. The existing empirical literature typically finds that remittances tend to appreciate the real exchange rate, though some studies do not detect such an effect or find it to be very small (Amuedo-Dorantes and Pozo 2004; Fajnzylber and Lopez 2008; Hassan and Holmes 2013; Izquierdo and Montiel 2006; Barajas and others 2010). Similarly, remittances inflows may exert generalized pressures on domestic prices, and empirical studies have typically detected such effects (Mishra, Narayan, and Narayan 2011; Ball and others 2010; Caceres and Saca 2006; Balderas and Nath 2008).

The estimates in this chapter generally do not reveal a significant impact of remittances on the real effective exchange rate in LAC. This outcome reflects large leakages of remittance inflows through imports given the small size and relatively high openness of many countries. A significant (but small) effect is found only for CAPDR, the subregion with the highest level of remittances in LAC (Table 5.2). Regarding inflation effects,

²⁵Obviously, the cumulative increase in revenues reflected diverse, often country-specific, factors, including revenue measures implemented by the authorities at various times. Still, the evidence of a link between remittances and fiscal revenues in most CAPDR countries is extensive and includes high-frequency correlations in country-level time-series regressions (not shown).

the lagged change in the remittances-to-GDP ratio is found to be associated with somewhat higher inflation in the Caribbean and CAPDR (Table 5.2). This result may also reflect the prevalence of fixed or stabilized exchange rate regimes in many countries in these subregions. The contemporaneous effect of the remittances-to-GDP ratio on inflation appears to be significant only for the Caribbean.

The Perils of Dependence on Remittances

Extensive reliance on remittances can be risky, especially when most migrants reside in a single country. If a negative economic shock hits a host country and propels unemployment among migrant workers, a drop in remittances will amplify the negative spillovers to the home countries. Thus, with the United States hosting most LAC emigrants, large shifts in the U.S. economic cycle and policies could have far-reaching repercussions for the region.

Such repercussions occurred during the global financial crisis of 2007–09, when a rise in Hispanic unemployment in the United States of 5½ percentage points was followed by a decline in remittances, with detrimental effects on incomes, external positions, and fiscal revenues in Latin America. In CAPDR, for example, remittances as a share of GDP declined by more than 1 percentage point and the ratio of fiscal revenue to GDP fell by more than 1 percentage point in 2008–10 compared with 2007. Econometric estimates attribute about half of this revenue decline to the contraction in remittance flows (Figure 5.11).²⁶ Furthermore, Spain—the second-largest destination for LAC migrants—was also hit especially hard by the crisis, mainly affecting earnings and remittances for South American migrants.

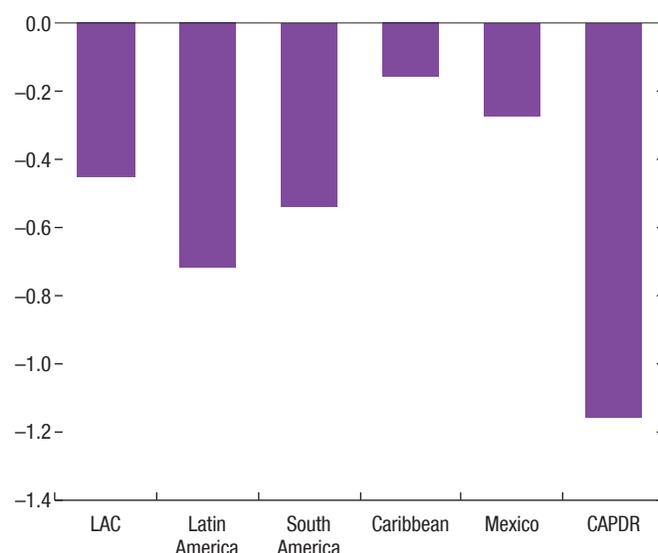
Shocks of a noneconomic nature, including major shifts in immigration and remittance policies, can also have important economic consequences for

²⁶For details, see Beaton and others (forthcoming).

the recipient countries. For example, deportations of aliens from the United States significantly increased during the past decade, totaling 3.7 million between 2006 and 2015. They peaked at 434,000 in 2013, but have declined since then as prosecutorial guidelines were refocused on those deemed to pose a threat to national security, border security, and public safety. There are about 2 million aliens that risk being deported because of their criminal record. A majority of these people have been lawfully present in the United States (as either green-card holders or noncitizens on temporary visas), but could be deported based on their criminal record. The unauthorized immigrant population in the United States is estimated to have been stable since 2009 at about 11 million. Close to 80 percent of unauthorized immigrants in the United States are from Latin America, mostly from Mexico. About half of the stock of immigrants originating from Mexico and two-thirds of immigrants originating from CAPDR were estimated to be unauthorized in 2015. Preempting potential shifts in U.S. immigration policy, and in the treatment of remittance outflows, remittances to some Latin America countries, such as El Salvador and Mexico, have recently increased (Figure 5.12).

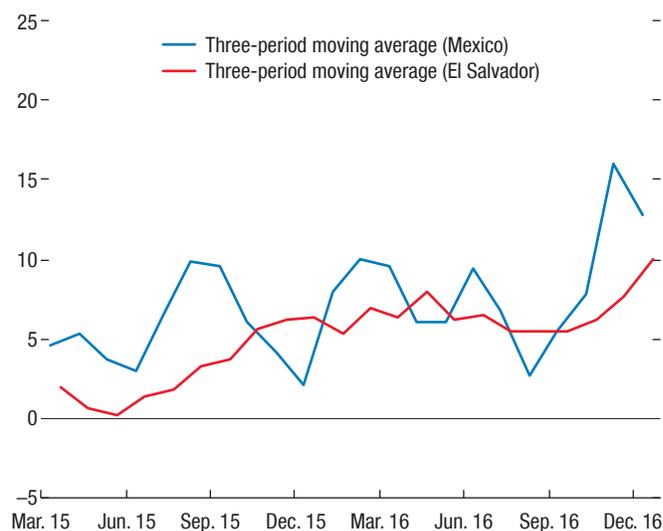
Quantifying the impact on home countries of a surge in return migration is subject to much uncertainty. Box 2.1 in Chapter 2 underscores that its magnitude would depend on various factors including the degree to which returning workers join the labor force. The empirical estimates presented above suggest the impact on per capita growth from an intensification of the recent trends in deportations could range from positive to negative across LAC subregions and be particularly tilted to the negative side for CAPDR. However, this approach implicitly assumes that the effects of past migration apply in a symmetric manner to abrupt return migration and, hence, that a significant share of the returning immigrants would be employed in their home countries. The actual effects could be more negative still, given the disruptive nature of a sudden increase in return migration, with possible

Figure 5.11. Change in Remittance Flows, 2008–2010
Relative to 2007
(Percentage points of GDP)



Sources: IMF, World Economic Outlook database; and World Bank.
Note: LAC = Latin America and the Caribbean; CAPDR = Central America, Panama, and the Dominican Republic.

Figure 5.12. Remittances to Mexico and El Salvador
(Year-over-year percent change)



Sources: Banco Central de Reserva de El Salvador; Bank of Mexico; and IMF staff calculations.

adverse effects on fiscal accounts, poverty, financial sector stability, and crime rates.

Taxing wire transfers to some LAC countries has also been mentioned as a possible U.S. policy measure. Taxing wire transfers could somewhat reduce remittances and force them to nonwire systems, such as banks or credit unions, or informal channels. Using Bitcoin and sending gift cards are also viable ways to remit funds outside of the wire system.

Policy Priorities

In light of the range of beneficial and adverse effects of emigration and remittances, country policies should aim to tilt the balance in a favorable direction.

Remittances merit policy support given their key financing and stabilizing roles. Policy measures should focus on reducing the cost of remittances and facilitating formal intermediation. Given the recent challenges to correspondent banking relationships, strengthening anti-money laundering/combating the financing of terrorism frameworks, and exploring regional solutions for cooperation can help improve LAC countries' regulatory environment and keep formal financial channels open. Development and enhancement of payments systems (including through new solutions like mobile money) and ensuring that remittance-service providers have access to them would help foster competition and drive prices down. At the same time, policy support should help control risks arising from the large dependence on remittances, including via measures to enhance the financial sector's resilience to volatility and potential sudden stops of remittances. Educating consumers about the costs of remittances can also help users make informed decisions and allow them to choose their best option. Improving transparency about the cost of remittances, as the World Bank has done with its Remittance Price Worldwide database, can help in this regard.

In the short term, steps to curb brain drain could ameliorate negative effects from emigration. Because the type of emigration linked to brain drain typically generates relatively little remittances, the net effect for these countries can be especially negative (despite being beneficial for the individual). These findings support the case for long-term measures to retain potential emigrants, either through structural reforms that foster job opportunities for the highly educated (for example, the development of a medical tourism industry) or through shorter-term measures to limit the subsidization of brain drain with public funds (for example, through bonding schemes whereby people who have benefited from public funding for education must remain in the home country for a number of years).

More generally, improvements in the business environment and strong institutions can help raise productivity and thereby limit incentives for outward migration. Productivity can also benefit from steps to promote return migration by skilled workers, for example through the recognition of foreign qualifications and experience in professional regulations and public sector hiring, or the provision of portable social security benefits. Effective policies to improve the security situation in many Central American and some Caribbean countries may also relieve key bottlenecks to productive use of remittances, including their greater use for investment. Countries could also seek to leverage economic ties with diasporas, which could bolster foreign direct investment and tourism receipts. Furthermore, policies can aim at boosting labor supply, in particular by raising female labor market participation, to offset the impact of emigration. The adverse impact of a real currency appreciation as a result of a spike in remittance inflows could be cushioned by steps to reduce labor and product market rigidities and to support the provision of credit to firms.

Significant changes in immigration and remittance policies in the United States can have an important impact, especially on smaller countries in Central America. Fiscal revenues could fall,

poverty and inequality could increase, and financial stability could be affected. Countries with flexible exchange rates will find it important to allow exchange rate adjustments to act as a shock absorber, at least in the short term. In the

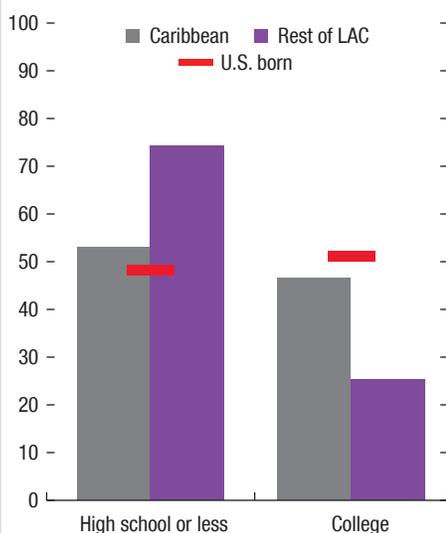
long term, fiscal discipline in conjunction with prioritizing social assistance expenditures will be important to limit adverse effects on poverty and inequality.

Box 5.1. “Brain Drain” in Jamaica

Nearly half of the Caribbean emigrants residing in the United States have at least a college education, a ratio comparable to the U.S. Native-born population (Figure 5.1.1). In contrast, only one-quarter of other Latin American and Caribbean emigrants in the United States have at least a college education.¹ However, to truly examine brain drain from the home country, educational levels of immigrants in the host country are not sufficient—attainment levels in the home country are necessary for comparisons. Very few countries in the Caribbean publish household data that include detailed educational attainment; Jamaica, however, does.

In Jamaica, there is evidence of significant brain drain, especially among women. Among Jamaican-born women living in the United States, 50 percent have at least a college education (Figure 5.1.2); this is double the attainment rate in the home country, where only one-quarter of women have a college education.² A simple calculation implies that nearly one-third of all women with at least a college education in Jamaica have emigrated, compared with about 13 percent of those with high school or less. These patterns reflect the significant numbers of Jamaican nurses and health care practitioners—65 percent of Jamaican immigrants are in these sectors versus 7 percent in the United States–born population. For men, the statistics are not as striking, but there is nevertheless evidence of brain drain—while 21 percent of men in Jamaica are college educated, 37 percent of Jamaican men in the United States have at least a college education.

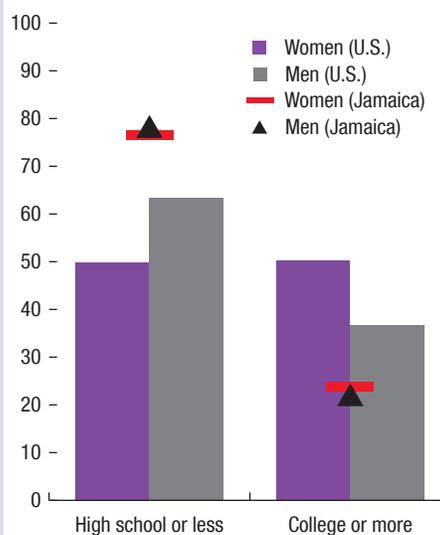
Figure 5.1.1. Educational Attainment
(Percent of total population residing in the United States)



Sources: 2008 American Community Survey; and IMF staff calculations.

Note: LAC = Latin America and the Caribbean.

Figure 5.1.2. Educational Attainment of Jamaicans: Living in the United States versus Living in Jamaica
(United States data for 2012; Jamaica data for 2011)



Sources: Filmer 2010; 2008 American Community Survey; and IMF staff calculations.

Note: LAC = Latin America and the Caribbean.

This box was prepared by Joyce Wong.

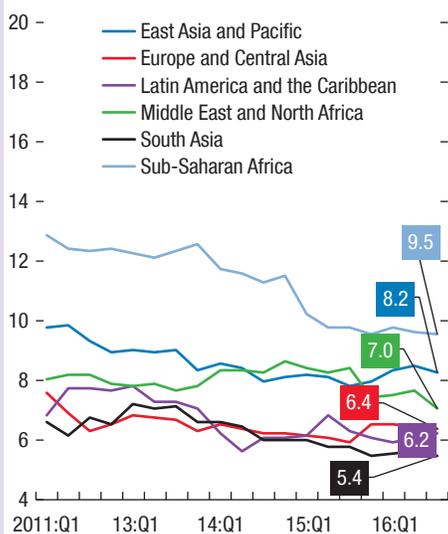
¹This difference is statistically significant at 99 percent.

²This difference is statistically significant at 95 percent.

Box 5.2. Sending Remittances Is Costly

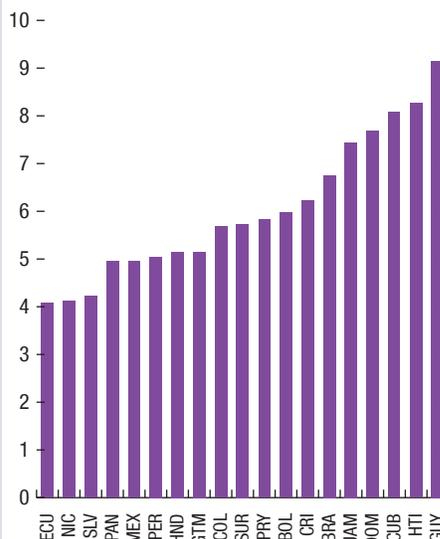
The cost of sending remittances to Latin America and the Caribbean (LAC) is lower than to other regions with the exception of South Asia, but, at 6.2 percent for a US\$200 transaction, it remains substantial (Figure 5.2.1).¹ These costs have declined significantly over the past decades—for example, by about 40 percent for flows to El Salvador, Colombia, and Guatemala, and by 15 percent to Jamaica over 2001–15 (Orozco, Porras, and Yansura 2016). Within LAC, the region’s largest recipients of remittances benefit from lower transaction costs as do the dollarized economies, with dollarization eliminating the cost of currency conversion (Figure 5.2.2). Costs remain relatively elevated for Caribbean countries compared with those in Latin America. Remittances from the United States are the most cost effective, likely reflecting competition among remittance-service providers in the region’s most important remittances corridors.

Figure 5.2.1. Cost of Sending US\$200 in Remittances: Regional Averages
(Percent of remittance amount)



Source: World Bank Remittances Prices Worldwide database.

Figure 5.2.2. Cost of Sending US\$200 in Remittances: Latin America and the Caribbean, 2016:Q3
(Percent of remittance amount, by destination)



Source: World Bank Remittances Prices Worldwide database.

Note: For International Organization for Standardization (ISO) country codes used in data labels, see page 137.

The cost of remitting has come under upward pressure from the global withdrawal of correspondent banking relationships (CBRs; see also Box 2.3). The withdrawal of CBRs has disproportionately affected money transfer operators (MTOs)—the primary channel through which LAC migrants send remittances—given the increased challenges they face in meeting the stringent know-your-customer and anti-money laundering/

This box was prepared by Kimberly Beaton.

¹Based on World Bank Remittance Prices Worldwide data.

Box 5.2 *(continued)*

combating the financing of terrorism standards.² According to a survey by the World Bank (2015), global banks have closed the correspondent bank accounts of MTOs, particularly smaller MTOs, on a widespread basis, curtailing their ability to transmit remittances. Coming under similar pressure, local banks in some countries and regions have also faced challenges in maintaining their CBRs, with 60 percent of members of the Asociación de Supervisores Bancarios de las Américas reporting that remittances to LAC have been affected.

The high transaction costs of remittances reduce the money received by migrants' families. Based on the US\$68 billion in officially recorded remittances to LAC in 2015, lowering the cost of remittances could significantly increase the funds received by migrants' families back home. The United Nations has made lowering these transaction costs a priority—reducing them to less than 3 percent and eliminating remittances corridors with transaction costs higher than 5 percent by 2030 is a UN Sustainable Development Goal. Existing efforts to lower remittances transaction costs have focused on enhancing competition in the market for remittances-service providers, which continues to be dominated by MTOs, and promoting the use of new payment technologies for sending remittances. Enhanced use of online and mobile remittances channels offers particular promise to further lower the cost of remittances; mobile remittances-service providers are the most cost effective at 3.5 percent for a US\$200 transaction.

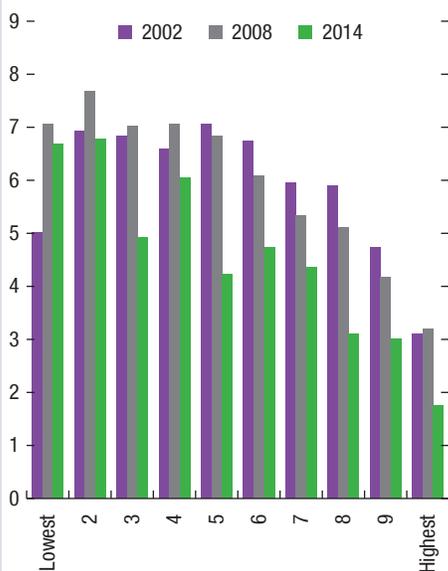
²The withdrawal of global banks from CBRs has been linked to their cost-benefit analysis in response to more rigorous prudential requirements and anti-money laundering/combating the financing of terrorism and tax transparency standards (Erbenová and others 2016).

Box 5.3. How Do Migration and Remittances Affect Inequality? A Case Study of Mexico

Although the effect of migration and remittances on poverty reduction has been well documented, the literature is inconclusive with regard to the effects on inequality.¹

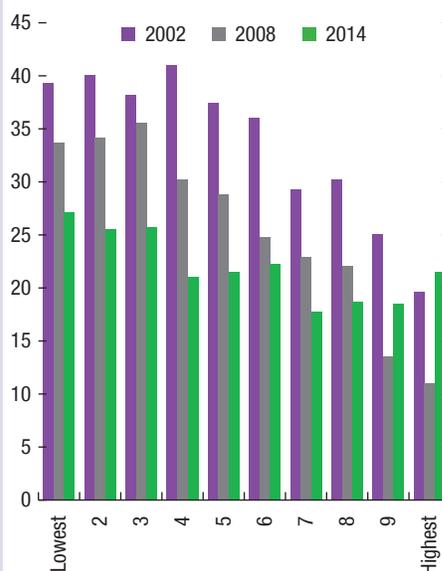
Micro-level evidence for Mexico suggests that migration and remittances can reduce both poverty and inequality. About 5 percent of Mexican households received remittances in 2014, on average about US\$290 per month (US\$140 median).² Poorer households were much more likely to receive remittances: remittances-receiving households were poorer than non-remittances-receiving households even when including remittances in household income (Figure 5.3.1), and for these poorer households remittances constituted a larger share of income (Figure 5.3.2). This pattern became even more pronounced during the global financial crisis, with the likelihood of receiving remittances increasing for poorer households and falling for

Figure 5.3.1. Share of Households Receiving Remittances, by Income Decile (Percent)



Sources: Instituto Nacional de Estadística y Geografía (INEGI); and IMF staff calculations.

Figure 5.3.2. Remittances as a Share of Household Income, by Income Decile (Percent)



Sources: Instituto Nacional de Estadística y Geografía (INEGI); and IMF staff calculations.

This box was prepared by Zsoka Koczan and Franz Loyola.

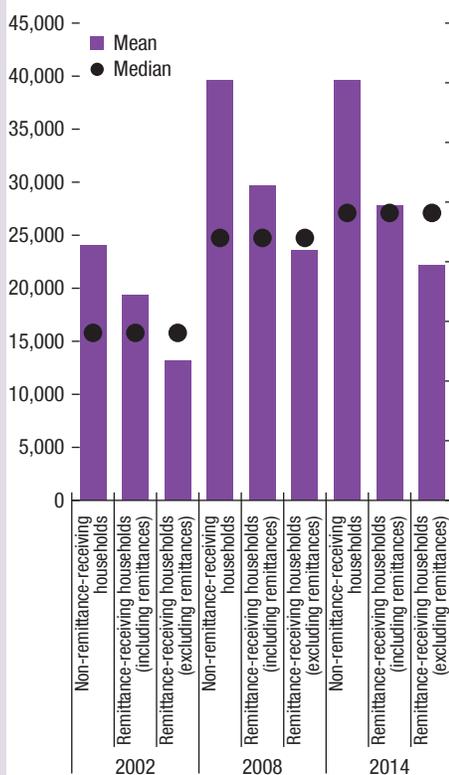
¹See Acharyaa and Leon-Gonzalez (2013); Acosta and others (2008); Adams (2006); Adams, Cuecuecha, and Page (2008); Barham and Boucher (1998); Beyene (2014); Bouoiyour and Miftah (2014); Brown and Jiménez (2007); Gubert, Lassourd, and Mesplé-Somps (2010); Loritz (2008); Margolis and others (2013); Möllers and Meyer (2014); Mughal and Anwar (2012); Stark and Lucas (1988); and Taylor and others (2005).

²Although this data set cannot be used to examine whether households with children are more likely to receive remittances, there is a large literature on the effect of children on remittance behavior. Lowell and de la Garza (2000), for instance, find that households with minor children present are approximately 25 percent less likely to remit than households without minor children present, while those immigrants who reported having minor children who were not residents in the household were more than twice as likely to remit as those who did not.

Box 5.3 (continued)

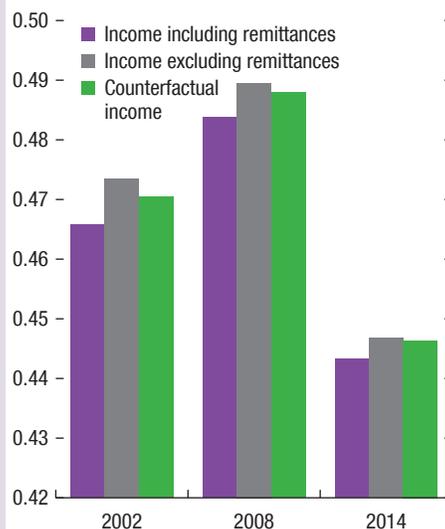
richer households (Figure 5.3.3), likely reflecting an increase in the insurance role of remittances and a fall in investment motives. This pro-poor pattern of remittances appears to translate into lower inequality at the macro level as well. Comparing actual Gini coefficients with those based on constructed counterfactual incomes for remittances-receiving households suggests that inequality would be higher in the absence of remittances, even when taking the behavioral response into account (Figure 5.3.4).³

Figure 5.3.3. Average Household Income
(Nominal Mexican pesos in given year)



Sources: Instituto Nacional de Estadística y Geografía (INEGI); and IMF staff calculations.

Figure 5.3.4. Gini Coefficients



Sources: Instituto Nacional de Estadística y Geografía (INEGI); and IMF staff calculations.

Note: Counterfactual income uses actual income for non-remittance-receiving households and an estimated counterfactual income for remittance-receiving households based on propensity score matching.

³For details see Koczan and Loyola (forthcoming).