The Migrant Financial Connection:

Remittances and the Size of Government in Developing Countries

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Abstract

This paper argues that migrant remittances can influence some of the most important economic policy choices of governments in developing countries. While remittances accrue directly to households, I argue that in the aggregate they can ease government access to capital, generate tax revenue through household consumption, and ultimately allow governments to increase their overall size. The paper offers three empirical tests. First, using data for 76 developing countries from 1980 to 2007, I find that remittances are associated with greater total government expenditures, whereas other forms of economic integration—especially trade—reflect the conventional view of the constraining influence of foreign economic actors. I then explore the possible causal mechanisms behind these results. In the second analysis, I find that remittances are associated with greater tax revenue, most likely due to the link between remittances, household consumption, and consumption taxes. These results are robust to using an instrumental variable approach based on exogenous variation in the wealth of migrant host countries. The third test explores the determinants of sovereign borrowing costs and finds that remittances are associated with lower sovereign spreads. The results suggest that private household financial flows can have important implications for the size of government in developing countries.

On September 26, 2009, Typhoon Ondoy made landfall in the Philippines and dropped nearly 18 inches of rain in Metro Manila in less than 24 hours. The resulting floods that spread throughout the country were catastrophic. Hundreds of people were killed and thousands were stranded on rooftops as floodwaters engulfed entire cities. Less than one week later, Typhoon Pepeng rolled in with torrential rains and winds gusting to over 140 miles per hour, causing further damage and loss of life, The World Bank estimated that the two typhoons caused $4.4 billion in damage in the Philippines, equivalent to roughly 2.7 percent of GDP (World Bank 2011).

For many countries, two substantial natural disasters in quick succession would be economically catastrophic, leading to a sudden drop in living standards and a prolonged recession. The Philippines, however, had an emergency support mechanism with financial resources that rivaled any foreign aid budget or public assistance program. Its sizeable diaspora of migrants—more than 11 million Filipinos living outside the country, including 3 million in the U.S.—reacted swiftly to the crisis by increasing their financial support to their families back home. Migrants' financial transfers—known as remittances—increased by nearly 7 percent in October 2009 on a year-on-year basis (Bangko Sentral ng Pilipinas 2009, 44). From October through December, migrants remitted nearly $4 billion to their families, helping to buoy consumption and facilitate rebuilding after the storms. Family members were not the sole beneficiaries of these funds: by spurring household consumption, the remittances also stabilized tax revenue via value-added sales and consumption taxes. The Philippine government was therefore in a better fiscal position to provide disaster relief and infrastructure spending. The combination of increased remittances and government expenditures enabled the country to post a

remarkable 1.8 percent *gain* in GDP in the fourth quarter of 2009 (Bangko Sentral ng Pilipinas 2009).

The Philippines is remarkable for the size of its migrant diaspora, but it is not alone among developing countries in its dependence on remittances. More than 215 million people live outside their country of birth, and many of them send money home to support their families. At more than $370 billion in 2011, remittances constitute the single largest source of external finance for the majority of developing countries today, far surpassing foreign aid, bank lending, and private portfolio investment (see Singer 2010). For some countries, including El Salvador, Honduras, Jordan, and Lebanon, remittances constitute a whopping 10 to 20 percent of GDP.

Remittance flows are the most distinct channel of financial globalization. Unlike other types of capital inflows that accrue to governments or businesses, remittances are sent directly to families by other family members. The characteristics of remittances therefore reflect the dynamics of the family rather than the calculus of investment. Migrants tend to send money home on a regular basis, in relatively small amounts, and often without regard to the economic ebb and flow of the host countries in which they reside. Moreover, when their home countries experience economic downturns, natural disasters, or financial crises, they tend to increase their remittances to help cushion their families. For the receiving family members, remittances are a form of insurance against income shocks and a steady source of financial support for basic necessities such as food, housing, and transportation. For the country as a whole, remittances can serve as insulation from the constraints of global financial markets (see Singer 2010).

This paper joins a small but growing literature that argues that remittances, in the aggregate, can influence some of the most important economic policy choices of governments in

developing countries.[1] I focus on overall government spending—in essence, the "size of government"—as a key outcome in a world of global finance. Indeed, policymakers in developing countries must often cope with restricted access to capital (Wibbels 2006). Bond investors, for example, are likely to demand higher interest rates from emerging-market countries compared to Western European countries to compensate them for higher default risk (Mosley 2003). Governments are likely to feel hamstrung in their efforts to use the public purse to smooth the economic cycle, because spending is associated with taxes, inflation, and other distortions that make investors flee for more hospitable environments. Even in stable times, policymakers are buffeted between citizens' demands for larger governments and the punishing reactions of global markets. Migrants, however, do not behave as investors do. Their decisions to send money home are generally not governed by a profit-seeking calculus, and they are unlikely to deprive their families of much-needed financial support as a result of the government's fiscal policies. The example of the Philippine typhoons suggests that migrant remittances—as an often underappreciated form of external finance—are likely to serve as a shield for governments against other international influences. Migrants, in short, can enable their home-country governments to spend even if footloose investors run for the exits.

This paper offers a new perspective on the tensions and complementarities between global markets and national policymaking with an empirical focus on migrant remittances and government spending in developing and emerging-market countries. I argue that the financial consequences of migration cannot be subsumed within conventional views of global market influences. The typical indicators of globalization, including trade in goods and services, flows of portfolio and direct investment, and capital account openness, are designed to capture either

[1] See, e.g., Adida and Girod 2011; Ahmed 2012; Kapur 2005, 2010; Leblang 2010; and Singer 2010. On the nexus between immigration policy and international finance and trade, see Peters 2012.

the vulnerability of governments to the threat of investor exit and lost revenue, or the volatility faced by households and businesses due to external shocks. Migrant remittances, on the other hand, reflect a risk-mitigation mechanism at the household level, and they constitute a stable financial resource for the aggregate economy. Unlike nearly all other forms of external finance, migrant remittances cannot be liquidated, repatriated, or withdrawn, and they tend to reduce economic volatility and insecurity (see Ratha 2005a, 2005b; Kapur 2005). We should therefore expect remittances, all else equal, to enable governments to maintain or increase their size even in the face of other global market constraints.

The paper begins with a brief review of the existing scholarship on international economic integration and national policymaking. In the empirical section, I first outline the cross-national and temporal trends in the size of government in the developing world since the 1980s. I then introduce the phenomenon of migrant remittances into a political economy model of government spending. Using data for 76 developing countries from 1980 to 2007, I find that remittances are associated with greater total government expenditures, whereas other forms of economic integration—especially trade—reflect the conventional view of the constraining influence of foreign economic actors. I then explore the possible causal mechanisms behind these results. In the second analysis, I analyze the association between remittances and tax revenues. The particular characteristics of remittances, including the tendency for receiving families to spend the funds on food, housing, and basic necessities, imply that they can increase government revenue by way of sales and value-added taxes which are common in developing countries. A statistical analysis confirms this association, and the results are robust to using an instrumental variable approach based on exogenous variation in the wealth of migrant host countries weighted by the distance to the home country. And finally, I explore the influence of

remittances on the relative ease of raising capital on international bond markets. I find a clear association between remittances and lower sovereign spreads for emerging-market countries, indicating that remittance-dependent countries benefit from lower borrowing costs. These results suggest that foreign creditors recognize the salutary effects of remittances on national economies and reward governments with lower interest rates. I also provide anecdotal evidence of the securitization of future remittances as a tool for issuing lower-cost bonds.

Of Wrath and Volatility: Prevailing Views on Global Markets and Developing Countries

In academic circles, it is common to conduct an analytical horse race between various metaphors—such as "race to the bottom" versus "race to the top," or "efficiency" versus "compensation"—to see which best describes the contemporary political economy. This paper will not engage in such an exercise. Indeed, the purpose of this section is to demonstrate that all of the ostensibly competing arguments about globalization have more in common than their advocates acknowledge. Moreover, the political influences of remittances are not comfortably subsumed within any of these arguments. This section reviews the key assumptions of the prevailing views on global markets, and then address the particular features of remittances that make them distinct from other forms of economic integration.

The concept of a race to the bottom is familiar to anyone who studies the political economy of globalization. The logic is *prima facie* simple and compelling: international investors and traders make decisions based on cost and efficiency, and they will refrain from doing business with countries that choose market-unfriendly policies. Governments, fearing capital flight or forgone export revenue, will choose lower taxes, weaker labor standards, laxer

environmental protections, and less public spending as their degree of global economic integration increases. The bulk of the scholarship in this area focuses on the advanced industrial countries, but recent empirical work also brings the developing-country welfare regimes under scrutiny.

Governments must balance their desire for commerce—namely foreign capital and competitive exports—with the need to provide services and protections for their citizens. Scholars who posit efficiency arguments, however, place particular emphasis on the ability of foreign investors to exit—or to refrain from investing in the first place—as the driving force behind key national policy decisions. Investors' preferences for cheap inputs, lower taxes, and anything else that could enhance their profits, outweigh any other voices in the national polity. Governments that choose policies that run counter to those demanded by the international market will be punished with capital flight and a loss of competitiveness.[2]

Decisions over public expenditures are particularly vulnerable to the punishing forces of global markets. Government spending on pensions, health care, bureaucracies, and public employment is generally associated with expansionary fiscal policy, which in turn leads to expectations of higher inflation. Global markets are quick to respond by raising the interest rates that governments must pay to borrow, and by shifting investments and capital projects to lower cost destinations.[3]

The efficiency hypothesis receives substantial empirical support in studies of developing countries, especially in relation to social spending. In an analysis of Latin American countries from 1973 to 1997, Kaufman and Segura-Ubiergo find that trade integration is associated with lower aggregate social spending, although the race to the bottom seems to occur primarily in

[2] See Mosley 2003 and Garrett 2001.
[3] Kurzer 1993; Mosley 2003.

social security rather than in other categories of spending.[4] In a rigorous study of welfare regimes in developing countries, Rudra finds that exposure to the global economy (as measured by trade flows, portfolio investment, and foreign direct investment) is associated with lower spending on social security and welfare, but this effect is conditional upon the relative power of labor groups to resist spending cuts.[5] The efficiency argument also receives tentative empirical support based on interviews with people who actually make investment decisions. A survey conducted by Mosley (2003) finds that mutual fund managers demand greater returns on sovereign investment (i.e., higher interest rates) as fiscal deficits, debts, and public sector employment increase.[6] On the other hand, a large-sample study by Rodrik including both developing and developed countries finds that exposure to the global economy is associated with increased government consumption.[7] A similar study that focuses exclusively on middle-income countries finds modest support for Rodrik's finding.[8]

There are, of course, additional political and institutional factors that can militate against the pressures of global markets. For example, democratically elected leaders might have strong political incentives to protect health and education programs; similarly, labor groups can exert enough influence on leaders to protect certain social programs, even if such programs trigger a negative response by international investors.[9] Indeed, scholars of developed democracies have countered efficiency-based arguments with by invoking the concept of "compensation."[10] International economic integration, these scholars argue, causes domestic insecurity and volatility, which in turn prompts governments to provide social safety nets and other forms of

[4] Kaufman and Segura-Ubiergo 2001.
[5] Rudra 2008. Empirical support for the influence of trade openness is stronger than for portfolio investment or FDI.
[6] Mosley 2003.
[7] Rodrik 1997. Note that consumption includes governmental purchases of goods and services such as health and education, but does not include transfer payments or insurance schemes.
[8] Garrett and Nickerson 2005. (From Glatzer and Rueschemeyer, eds. 2005).
[9] See Kaufman and Segura-Ubiergo 2001 and Rudra 2008.
[10] See Burgoon 2001 for a review.

compensation. Rather than enacting ostensibly market-friendly policies, governments react to global integration by providing a greater level of insulation for their citizens. Whereas the compensation hypothesis receives substantial empirical support in developed countries (as evidenced in part by the striking correlation between openness to global markets and total government spending), it does not fare well in explaining LDC policy choices. As Wibbels (2006) notes, developing countries are credit-constrained in times of economic downturns and simply cannot afford the government programs that might be preferred by both policymakers and citizens.[11]

The efficiency and compensation arguments have more in common than scholars acknowledge. Indeed, in much of the literature, scholars conceive of globalization as monolithic influence. In the empirical literature, various measures of openness to global markets are lumped together to capture either the vulnerability of governments to the profit-driven calculus of foreign actors, or the insecurity among households and businesses that invariably accompanies exposure to such volatile markets. In response, governments either succumb to global markets or they militate against them. Even in more nuanced empirical studies, the agency ascribed to foreign economic actors always involves punishment, volatility, and control.[12]

Migration and remittances do not fit comfortably within the efficiency or compensation frameworks. By allowing households to diversify their incomes and manage risk, migration helps to fulfill the early promises of global markets: diversification, income smoothing, and risk mitigation. This is no trivial point. Remittances are the largest source of external finance for the majority of developing countries. If they can effectively shield governments from other forms of

[11] Quinn (1997) finds that capital account liberalization is associated with greater government spending in a large cross-sectional analysis, but he notes that the results of his 38-observation regressions are not robust to changes in model specification.

[12] Even foreign aid is driven by profit-seeking or ideological factors, reflecting domestic politics in the donor countries rather than the needs of recipient countries. See, e.g., Milner and Tingley 2011.

economic integration, then their absence in empirical studies leads to a lopsided and misleading view of the impact of globalization on national policymaking.

Migrant Remittances and Government Spending

Remittances do not flow directly into government hands.[13] Studies of nontax revenue—such as oil revenue from state-owned enterprises and foreign aid—are not particularly helpful in explaining the policy influences of remittances, because these nontax revenues are directly controlled by government leaders.[14] If remittances affect fiscal policy, they must do so indirectly through the activities of remittance-receiving families or through their overall impact on receiving economies.[15]

Remittances have many peculiar characteristics as a form of external finance. The most important characteristic is that they are used by families for consumption and to smooth out shocks to household income. It has become conventional wisdom among scholars of migration that remittances tend to increase when the home country experiences an economic downturn. If a receiving household experiences economic hardship, an overseas migrant can increase her remittances by a relatively small amount without causing herself inordinate financial harm. In the aggregate, such financial flows offer a powerful buffer against economic contractions in the receiving country, especially compared to other capital flows (with the possible exception of foreign aid) which are likely to decline in response to adversity. In stable times, remittances are likely to serve as a buffer against competing external influences. With these facts in mind, it

[13] For an opposing argument that views remittances as a form of "unearned income" for governments, see Ahmed 2012.
[14] See Morrison 2009 and Remmer 2004.
[15] On the macroeconomic consequences of remittance inflows, see Chami *et al* 2008.

seems plausible that remittances could push in an opposite direction as other forms of economic integration—including trade and investment flows—that are usually thought to contribute to a straitjacket effect on government policymaking.

I begin the empirical analysis by exploring the association between remittances and government spending in a relatively large sample of emerging-market and developing countries. The goal of this first analysis is to take recent scholarship on its own terms. Several studies have examined the influence of trade and capital openness on national policy choices, using time-series cross-sectional data with country-year observations. I expect that a similar analysis will demonstrate that remittances are associated with greater government spending. Subsequent analyses will explore the various causal mechanisms that link remittances to public spending.

I assemble annual data for up to 76 developing countries in an unbalanced panel covering the years 1980 to 2007. This sample is substantially larger than the typical sample used in previous studies, many of which hone in on Latin American countries or other specific regions. For this study, the countries are drawn from the following World Bank categories: Latin America and the Caribbean; East Asia and Pacific; Middle East and North Africa; Europe and Central Asia; and South Asia. Because my focus is the impact of remittances on developing countries, I exclude early members of the Organization for Economic Cooperation and Development (OECD) with the exception of Turkey, whose relatively low GDP per capita places it squarely within the "emerging market" category. The sample includes Czech Republic, Hungary, Mexico, South Korea, all of which have recently joined the OECD but which are generally not considered to be part of the club of fully industrialized countries during the three decades under study. The empirical results do not hinge on these sample choices.

The dependent variable is final government consumption expenditure as a percentage of GDP. Government consumption is the broadest measure of the public sector's involvement in the economy. It captures total spending by the central government on goods and services, including housing, health, education, recreation, and wages for public sector employees. I selected this measure as the primary dependent variable because the analysis is agnostic as to the influence of remittances on the composition of spending. It is possible that the shielding effects of remittances could enable governments to provide more jobs for their residents, expand health care and educational opportunities, or enrich themselves and their supporters with clientelistic spending. I explore alternative policy outcomes such as welfare spending and its specific components later in the paper.

For the sample of developing countries analyzed below, consumption expenditure ranges from a low of 3 percent of GDP and a high of 53 percent, with a mean of 15 percent. Since 1980, expenditures have generally trended downward across all income categories (See Figure 1). Countries in the lowest income category experienced the steepest decline in spending, while lower-middle income countries experience a more gradual, if volatile, decline. Average spending in the Eastern Europe and Central Asian region jumped in the early 1990s after the dissolution of the Soviet Union and the emergence of newly independent countries—such as Latvia and Uzbekistan—in the data set. Spending in this region began a slight downward trend in the mid-1990s.

[Figure 1 here]

There is, of course, substantial variation in government spending within these regions. For example, India's government spends more than twice as much as Bangladesh's government as a percentage of GDP. However, the regional patterns in Figure 2 are suggestive of the argument of this chapter. Over the past decade, the countries in the Middle East and North Africa have sustained the largest governments. The region also has the distinction of being the largest beneficiary of remittances. On the other hand, the countries in the South Asia region have relatively small governments; perhaps tellingly, this region receives the lowest levels of remittances as a share of GDP.

[Figure 2 here]

The hypothesis of this paper is that remittances are one of many possible influences on government spending decisions in developing countries. The empirical analysis clearly calls for a multivariate model that includes a range of political and economic determinants. Moreover, in light of the stark variation in levels of spending across countries—even within particular regions of the world—the model must control for unobserved sources of variation at the country level.

I construct a baseline model using variables culled from earlier studies of government spending (e.g., Kaufman and Segura-Ubiergo 2001; Garrett 2001; Rodrik 1997). The goal of these previous studies is to explore the impact of economic openness on national policy choices. The most prominent explanatory variable in these studies is trade openness, measured as the share of imports and exports in GDP. Indeed, this is the most commonly used measure of economic globalization in the IPE literature. For developing countries in particular, this measure is designed to capture the extent of external competitive pressures for efficient policies, usually

construed to mean small governments and low taxes, or the severity of national volatility and household insecurity emanating from global markets. If the efficiency argument is accurate, relatively closed economies such as Brazil and India will face less downward pressure on spending than more open economies such as Malaysia and Panama.

Trade openness and remittances are positively but weakly correlated. Jordan, for example, is highly dependent on both remittances (20 percent of GDP) and trade (over 100 percent of GDP), as are Honduras and Jamaica. On the other hand, Jordan's neighbor Lebanon routinely receives remittances in excess of 20 percent of its total economic output, yet its level of trade openness (approximately 65 percent in recent years) is well below the developing country average. Ecuador is another example of a country with high remittance inflows but relatively low trade dependence, whereas Costa Rica is highly open to trade but receives relatively low amounts of remittances. In short, it is highly unlikely that measures of trade dependence can adequately account for cross-national or temporal variation in remittance inflows.

A second but equally important measure of international economic integration is an index of financial liberalization derived from four indicators reported in the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions:* the existence of multiple exchange rates, restrictions on capital account transactions, restrictions on current account transactions, and requirements to surrender export proceeds.[16] The index has a mean of zero and ranges from -2.66 (full capital controls) to 2.66 (complete liberalization). Like trade openness, financial liberalization is only weakly correlated with remittances.

In many developing countries, governments gradually relaxed various restrictions on capital mobility from the 1980s to the present. Countries such as Egypt and Uruguay had substantial restrictions on capital flows in the 1980s but steadily relaxed those restrictions over

[16] The index is from Chinn and Ito (2006).

the next two decades. However, unlike trade openness, which is based on actual flows of goods and services, capital account openness is a policy outcome under the control of the government. Capital controls can therefore rise and fall with changes in political leadership and exogenous shocks. Argentina, for example, attained its most liberal policies toward capital flows in the years before its 2001 political crisis and sovereign default. In the years since the crisis, the country's degree of financial liberalization has been much lower than the emerging-market average.

The model includes two other control variables to isolate the effect of remittances on government spending. First, to control for differences in country wealth and degree of economic development, I include GDP per capita in all models. According to "Wagner's Law," the demand for government-provided goods and services is income-elastic, meaning that wealthier countries are expected to have larger governments. However, Rodrik (1998) found a consistently negative and sometimes significant relationship between GDP per capita and government spending in a large panel study. Second, I include a 21-point index of democracy from the Polity IV database. Higher values of the index indicate greater levels of democracy, with 10 being the highest score. The sample analyzed here covers the full range of this variable. Countries such as Costa Rica, Slovenia, and Uruguay are classified as full democracies for at least the most recent years in the dataset, whereas Jordan and Oman are classified as full autocracies in the early years of the dataset. Many countries moved, if incrementally, from autocratic rule to democratic representation during the period under study, resulting in substantial temporal variation within countries on the democracy index.

For statistical estimation, I use an error correction model (ECM) which takes the following form:

$$\Delta \text{Government Expenditure}_{it} = \beta_0 + \beta_1(\text{Government Expenditure})_{it-1} + \beta_2(\text{Remittances})_{it-1} + \beta_3 (\Delta\text{Remittances})_{it} + \gamma X_{it-1} + \lambda\Delta X_{it} + \varepsilon_{it}.$$

where X represents a vector of controls, Δ represents the first difference operator, and the subscripts i and t index country and year, respectively. The model includes both country and year fixed effects.

The ECM is a significant improvement over earlier empirical models of globalization and national policymaking, which tend to rely solely on levels of the explanatory variables in a framework limited to short-term associations between variables. In contrast, the ECM includes changes *and* lags of the explanatory variables to capture the transitory effects and the longer term effects of each variable. This setup is especially useful in explaining policy decisions over fiscal policy and the size of government. [17] Decisions over the allocation of resources depend not only on short term fluctuations in resources, but also on enduring structural constraints. The lagged level of the dependent variable, whose coefficient will range between 0 and -1, indicates the model's equilibrium properties: the effect of a shock to an exogenous variable will diminish over time. For my purposes, the key coefficient of interest is on the lagged value of remittances, which captures its long-term effects on government spending. The coefficient on the first difference of remittances will indicate whether short-term changes in remittance inflows have immediate, if transitory, impacts on government spending decisions. The error correction model also provides consistent estimates if the dependent variable (if measured in levels) is nonstationary. Government spending is often found to exhibit a temporal trend—implying that

[17] See, e.g., Kaufmann and Segura 2001; Morrison 2009; Remmer 2004; Rickard 2006; and Rodden 2003.

its mean varies as a function of time—and therefore the model specification used here is especially warranted.

The inclusion of lagged levels and year-to-year changes in the model helps to minimize concerns about endogeneity. To be sure, one would expect that if there were a problem with reverse causation, the causal arrows would go in the opposite direction: an increase in government spending would mitigate household income volatility, increase the supply of public-sector jobs, and lead to less outward migration and lower levels of remittance inflows. The fact that my findings run counter to these expectations makes them more striking and worthy of further investigation.

The results, presented in Table 1, Model 1, suggest a positive association between remittances and government expenditures. The coefficient for the lag of remittances is positive and significant. Substantively, for each percentage point increase in remittances, the long-term target equilibrium for government spending increases by approximately 0.2 percent. The coefficient for the change in remittances is also positive and significant, indicating a transitory association between year-to-year changes in remittances and changes in spending. On the other hand, the coefficient for the first difference of trade openness is negative and significant, reflecting the short-term efficiency rationale of the race to the bottom (e.g., Kaufman and Segura-Ubiergo 2001). In addition, the coefficient for the lag of capital account openness is positive and significant. This finding is difficult to square with efficiency arguments, but it is reasonable to expect that countries that allow domestic access to international credit markets and foreign access to domestic investment opportunities will have greater financial resources available for public spending. As a robustness check, Model 2 adds the first difference and the lag of the dependency ratio (the proportion of the population under 15 and over 65). The

coefficient for the first difference is positively associated with spending, but the lag is not significant. The other coefficients are not substantively changed.

[Table 1 here]

To see whether remittance inflows have an association with public spending on welfare expenditures specifically, I reran the analyses using (separately) total social security and welfare, health spending, and education spending (each as a percentage of GDP or as a percentage of total expenditures). The limited availability of data on these measures resulted in a loss of many observations from the dataset, and the models performed poorly with none of the explanatory variables yielding substantive results. At this point, I have no evidence to suggest that remittances are associated with a change in the composition of spending.

Remittances and Spending: The Taxation Channel

To hone in on the causal mechanisms that link remittances to government expenditures, I take careful note of the statistical findings from the previous section. The error correction model indicated that remittances have a short-term and a long-term association with spending. The short term association is particularly interesting, because remittances accrue to households, not governments. If inflows of remittances translate into more public spending in the short term, then the causal mechanism is likely to involve household behavior.

I posit that there is a complementarity between a structural change in government revenue collection in developing countries and the concurrent rise in migration and remittances. For centuries, tariffs have been the primary source of taxation revenue for many countries, and they remain substantial even in today's world of integrated markets for trade and finance. However, with the wide-scale dismantling of trade barriers and the rise of international institutions such as the General Agreement on Tariffs and Trade (GATT), the World Trade Organization (WTO), and various regional and bilateral treaties, developing countries have been forced to become less reliant on trade taxes to finance government programs. Because most countries do not have the bureaucratic sophistication to collect income taxes, they generally implement consumption-based taxes as a viable alternative (Gordon 2010). As noted earlier, households use remittances to finance basic necessities, including food, shelter, and transportation. Some families use remittances to send their children to school or to provide liquidity for small businesses. Remittances, in short, enhance consumption and trigger a variety of transactions within the domestic economy. These are precisely the sorts of transactions that provide revenue for the government through sales taxes. Aside from enhancing the overall tax base, remittances also ease the political and financial costs of regressive sales taxes. The highly uneven distribution of income that exists in most developing countries translates into a heavy tax burden for the poor and middle classes. The degree of state success in extracting revenue will therefore reflect the consumption patterns of these groups—and, of course, these are the groups that are most likely to have overseas household members who send money home on a regular basis.

It is counterintuitive to posit a connection between remittance inflows and tax revenues, because remittances do not accrue directly to governments. However, if remittances trigger

household consumption which in turn provides revenues from sales taxes, then governments will be able to maintain or enhance their spending even as other sources of tax revenue continue to decline.

Empirical Analysis of Remittances and Taxation

To explore the relationship between remittances and tax revenue, I construct a baseline model using country-year observations from developing and emerging-market countries, using the same sample criteria as for the previous analysis. Data are available from 1991 to 2007 for up to 63 countries, but the limited data availability for many of the covariates necessitates an unbalanced panel.

The dependent variable is total tax revenue as a percentage of GDP. For the countries in the sample, this variable has a mean of 15.5 percent and ranges from a low of under 3 percent (for China in 1993) and a high of just under 40 percent (for Algeria in 2000). The purpose of the empirical analysis is to explore the determinants of tax revenue while allowing for the fact that every country has its own idiosyncratic institutions, tax collection systems, and degrees of public acquiescence to taxation. I am moot on issues of "tax effort" or "optimal taxation," which question whether a country's tax revenue is above or below a normative baseline expectation, usually in comparison with other countries.

As expected remittances and tax revenues are positively correlated, but as with government spending, the correlation is weak. The empirical analysis clearly calls for a multivariate model that includes a range of political and economic determinants. Moreover, in

light of the substantial variation in tax revenue across countries—even within particular regions of the world—the model must control for unobserved sources of variation at the country level.

The first model uses the same small battery of political and economic control variables from the previous analysis. First, I include the degree of democracy as indicated by the Polity score. There is a large literature that suggests that democratic institutions are associated with greater tax extraction.[18] The relationship is a *quid pro quo* of sorts: authoritarian leaders yield power to elected representatives in exchange for the right to impose taxes on income, property, or transactions. The most prominent studies of the connection between taxation and democracy focus on political development in early modern Europe and colonial America, but there is evidence of a positive relationship in the contemporary period.[19] Democratic countries are better able to penetrate their societies and extract tax revenue from a variety of sources, including personal and corporate income, property, inheritance, and sales transactions. Indeed, democratic countries extract more than twice as much revenue (as a share of GDP) in the form of income taxes than authoritarian countries, even after controlling for the level of economic development.[20] For the purposes of this study, the main point is that the level of democracy should be positively associated with total tax revenue, regardless of its components.

As with the previous models, I include GDP per capita, trade openness, and capital account openness. Tax revenue generally increases as a function of the level of economic development, because the demand for public services increases more than proportionally with national income.[21] Trade and capital account openness reflect the conventional metrics of exposure to global economic pressures. However, both measures have potentially competing

[18] See, e.g., North and Weingast; Ross 2004.
[19] Ross 2004.
[20] Winer, Kenny, and Hettich, p.13.
[21] Fuest and Riedel

effects on taxation. A standard race-to-the-bottom argument would suggest that both capital and trade openness would be exert downward pressure on taxation due to the exigencies of competition. However, international trade can be a potential source of tax revenue through tariffs, and capital openness could increase the financial resources available to governments through international credit and foreign direct investment.

All explanatory variables are lagged on year to minimize concerns about endogeneity. I also include country fixed effects to account for unobserved heterogeneity across countries. Finally, I add a lagged dependent variable to account for temporal persistence in the dependent variable.[22] Given the relatively small sample size and short time series, this model offers a particularly strenuous test of the data.

Results

I estimate the model using OLS with country fixed effects and standard errors clustered on country. The results are presented in the first column of Table 2. As expected, the level of remittances is positive and highly statistically significant. A one standard deviation increase in remittances is associated with an approximate half percentage point increase in tax revenue. GDP per capita is also positively associated with tax revenue, in line with previous studies.

[Table 2 here]

[22] If the lagged dependent variable is dropped, remittances becomes more highly statistically significant with little change in the size of its coefficient.

Scholars of taxation have commonly noted that agriculture is a particularly difficult sector to tax due to the prevalence of small farms, informal workers, and inadequate bookkeeping. Countries whose economies are highly dependent on farming tend to have lower levels of tax revenue. I included a measure of the size of the agricultural sector as a percentage of GDP in the main model, but it was not statistically significant and it did not alter the results for the other variables. A simple explanation for this non-finding is that the importance of agriculture in the economy is highly correlated (negatively) with GDP per capita, which is also included in the model.

As an additional robustness check, I subject the data to the more rigorous error correction model used in the analysis of government spending. The ECM includes changes and lags of the explanatory variables to capture the transitory effects and the longer term effects of each variable. I also include country and year fixed effects with standard errors robust to heteroscedasticity. The results (available upon request) are largely consistent with the simpler model, even in this extremely demanding model. Remittances are positively associated, in the short and long term, with tax revenue. Also significant is the share of trade in GDP, with short and long term associations. This finding could reflect the tariff revenue associated with trade, especially during the 1990s when tariffs were still fairly widespread.

Instrumental Variable Analysis

If migrants take tax policy into consideration when deciding whether to migrate or whether to remit money to their families, then the results of the taxation models could be biased

due to endogeneity. The structure of the error correction model helps to mitigate the possibility of reverse causality by including lagged levels and year-over-year changes in all of the explanatory variables. However, a more strenuous test is to employ an instrumental variable analysis. For this analysis, the instrument must be correlated with remittances, but there should be no theoretical reason for it to be associated with the dependent variable.

I employ an instrument based on the per capita GDP of the ten top migrant-receiving countries of the world, weighted by the inverse of the distance of each country to the remittance-receiving countries in my sample.[23] The intuition behind this instrument—which I label *Big 10 Distance*—is that migrants tend to send more money home to their families when their adopted countries of residence are relatively wealthy. Moreover, migrants are more likely to settle in otherwise attractive destinations that are close to the home country. Great distances are an impediment to migration and are therefore associated with lower remittance flows. The ten largest host countries for migrants are Australia, Canada, China, France, Germany, India, Pakistan, Saudi Arabia, United Kingdom, and United States. The instrument is certainly not perfect, as migrants often reside in far-flung destinations due to familial and cultural connections or historical legacies. The large number of Filipino migrants in the United States—a distance of nearly 14,000 miles—is but one example. However, the instrument in general performs admirably in predicting remittance inflows across developing countries. A simple fixed-effects regression of remittances as a share of GDP on *Big 10 Distance* demonstrates that the instrument is a highly statistically significant predictor of remittances. The countries that receive the lowest levels of *Big 10 Distance* include Argentina, Chile, Indonesia, Malaysia, Thailand, and Uruguay, and all of them—with the exception of Indonesia—receive remittances far below 1 percent of GDP.

[23] Acosta *et al* 2008. I thank Pablo Acosta for graciously sharing these data with me.

Results from the second stage of a two-stage least squares instrumental variable model are presented in column 2 of Table 2. The first stage results confirm that the instrument is relevant; it is statistically significant at over the 99 percent confidence level with an F-statistic of over 81. The second stage results confirm the main results from the previous analyses. The coefficient for remittances remains positive and significant. GDP per capita is also positively associated with tax revenue, in line with the previous results.

Remittances and Spending: The Borrowing Channel

History demonstrates that sovereign borrowing is a critical driver of government spending for many developing countries. When governments face funding shortfalls, they must either reduce their expenditures to balance their budgets or access credit on international markets. Lebanon, for example, routinely issues public debt to cover its annual budget shortfall equivalent to 9 to 10 percent of GDP. Similarly, the industrializing countries of Latin America borrowed heavily from western banks during the 1970s to offset persistent fiscal deficits. The availability of foreign credit allowed these countries to sustain costly government programs, including the development of new manufacturing sectors, even as tax revenues failed to keep up with demands on public spending.

Investors face substantial risks when engaging in sovereign lending. In the event that a country is unable or unwilling to repay a loan, investors generally cannot seize collateral or otherwise recoup their losses. Indeed, there is no international legal mechanism to protect

lenders, and gunboat diplomacy is rare, at least in modern times.[24] Banks in New York and London learned this lesson the hard way in the early 1980s, as the debtor countries in Latin America defaulted on their obligations due to the wide-scale failure of state-directed development projects. National judicial systems are powerless to enforce contracts across borders, and investors rarely have enough clout with their home governments to dispatch gunboats to the offending country's borders. The onus is therefore on investors *ex ante* to demand an interest rate from the borrowing government that is commensurate with the risks of default or breach of contract. In the market for sovereign bonds, interest rates are lower when investors believe the borrowing government is stable and creditworthy, and when the borrowing country has the economic capacity to weather exogenous shocks.

The purpose of this third empirical analysis is to demonstrate that remittances factor into investors' decisions when engaging in sovereign lending. I argue that remittance inflows help to ease sovereign borrowing costs by enhancing a country's creditworthiness.[25] If remittance inflows are large enough relative to the national economy, their relative stability helps to ensure that the government has adequate foreign exchange in times of crisis. Moreover, the insurance-like characteristics of remittances assuage foreign investors' concerns about a country's ability to repay its debts. If households deposit some or all of their remittances in bank accounts—or more generally, if migrants use the formal banking sector for their money transfers—then the result could be an expansion in both public and private sector credit provision. Increases in private savings can also positively affect foreign investors' assessment of national debt sustainability. All of these relationships suggest that remittance-dependent economies have an automatic

[24] Tomz 2007.
[25] See Chami *et al* 2008 for a formal model of remittances and fiscal sustainability.

stabilizer and a stable source of external finance that could, *ceteris paribus*, facilitate access to affordable international credit.

Spreads—usually measured as the difference between developing-country bond interest rate and the yield on the U.S. Treasury bond—vary widely both across countries and across time. To test the hypothesis that remittance inflows are associated with lower spreads, I assemble data on sovereign borrowing costs for 32 developing countries using the J.P. Morgan EMBI Global and EMBI Global Diversified bond indexes, covering the period from 1994 to 2005. J.P. Morgan's EMBIG series incorporates yields on U.S. dollar-denominated Brady bonds, loans, and Eurobonds with an outstanding face value of at least $500 million and which are traded on secondary markets. While countries were steadily added to the dataset, four countries were dropped over the period: Algeria, Croatia, the Republic of Korea, and Morocco. Table 3 provides a full list of covered countries and entry and exit dates during the 1994 to 2005 period.

[Table 3 here]

J.P. Morgan publishes both a blended and stripped spread, with the latter removing credit enhancements such as principal and/or interest collateral. I use the blended spread but find similar results with the stripped spread. Following convention, I assume a log-linear relationship between the spread and issuer characteristics in the following form:

$$\log(\text{spread}) = \beta X + u$$

where the dependent variable is the logarithm of the spread against U.S. Treasury Bond yields and X is a vector of issuer characteristics and macroeconomic conditions.[26] All explanatory variables are lagged one year. Included in this vector are a measure of remittances scaled to GDP, a continuous measure of democracy from the Polity IV project, annual growth in GDP per capita, inflation (measured as the square root of the consumer price deflator), and the magnitude of external debt (measured as a percentage of GNI).[27] Also included is a dichotomous indicator of government instability that takes the value of 1 if a country experienced an "adverse shift in the pattern of governance," including a major shift toward authoritarianism, a revolution in the political elite, contested dissolution of federal states, or the collapse of central authority, within the previous five years (Political Instability Task Force, various years). Finally, I include a dichotomous indicator of "rescheduling history" that takes the value of 1 if the IMF's Global Development Finance database notes a prior incident of debt rescheduling and 0 otherwise.[28] Debt rescheduling is likely to be associated with higher borrowing costs as countries pay a long-term penalty for reneging on their contractual obligations.

I estimate the model using country fixed effects and panel corrected standard errors. This specification is particularly taxing, especially given the relatively small sample size. By calculating a "unit-specific" or "idiosyncratic" error term, the fixed-effects estimator controls for unobserved unit heterogeneity, but does so at a triple cost: the loss of efficiency in the calculation of standard errors, the danger of excluding time-invariant or rarely changing

[26] Cantor and Packer 2009; Eichengreen and Mody 1998; and Cady 2005. The log-linear relationship curtails the influence of a handful of outlying observations, namely the Russian Federation and Argentina both of which have experienced spreads six times greater than the mean (532) for the period.
[27] Data from World Development Indicators 2008.
[28] The Global Development Finance dataset includes rescheduling events starting from 1989. Missing data for Hungary are appended from Georgievska *et al*. 2008.

variables, and the artifice of out-of-sample predictions.[29] Results are presented in Table 4, Model 1.

[Table 4 here]

As expected, the coefficient for remittances is negative and significant, indicating an inverse association between remittances and spreads. The other results are mostly in line with previous scholarship. Unsurprisingly, the most robust determinant of sovereign borrowing costs across the different model specifications is the size of a country's external debt relative to gross national income. Higher inflation also correlates with higher borrowing costs, whereas economic growth is associated with lower spreads.

Model 2 adds foreign currency reserves (measured in months of imports) to control for a possible mechanism through which remittances influence sovereign borrowing costs. The coefficient for reserves is indeed negative and significant, reflecting bond investors' preferences for ample foreign exchange as a prerequisite for accessing international credit. However, the coefficient for remittances is virtually unchanged, although its statistical significance falls slightly. These results suggest that remittances influence borrowing costs through the mechanisms described in this chapter rather than through the level of foreign currency.

In addition to these quantitative results, there are many examples of developing countries using remittances to facilitate access to international credit.[30] The process works as follows. A bank that is regular conduit for remittances establishes an offshore "Special Purpose Vehicle" (SPV) and pledges its future remittance receivables to the SPV. The SPV then issues debt.

[29] See Plümper and Troeger 2007.
[30] See Ratha 2005.

Foreign branches of the bank (located in regions of migrant settlement) or designated correspondent banks channel their remittance inflows directly to the SPV's collection agent, which then makes principal and interest payments to investors. Borrowing costs are lower in this scenario because the remittances are securitized: they do not enter the home country, and therefore there is a substantially reduced risk that the bank would fail to use the remittance receipts to cover its debts or that the bank itself would become insolvent. Moreover, currency convertibility risk is much lower than if the remittances were first converted into domestic currency in the home country and then exchanged for foreign currency to pay off the creditors. The result is that banks can access international credit at much lower interest rates. Countries that have securitized remittance inflows in this manner include Brazil, Egypt, El Salvador, Kazakhstan, Mexico, Peru, and Turkey.

Conclusion

This chapter has established the relevance of migrant remittances in the ongoing debate over the effects of global economic integration on the size of government in developing countries. Whereas trade and investment might push in the direction of fiscal retrenchment—the so-called race to the bottom—there is evidence that remittances push in an opposing direction.

This chapter has established the relevance of migrant remittances in the ongoing debate over the effects of global economic integration on national policymaking. In particular, the chapter established an empirical link between inflows of migrant remittances and total government expenditures. Whereas trade and investment might push in the direction of fiscal retrenchment, there is evidence that remittances push in an opposing direction. I posit two

possible mechanisms for this relationship. First, remittance inflows are associated with larger tax revenues. This relationship likely reflects the natural affinity between household consumption and consumption-based (or value-added) taxes, which have become common in developing countries as trade-based taxes have declined in prevalence. Second, remittances seem to have salutary effects on sovereign borrowing. An analysis of sovereign bond markets suggests that remittances are associated with lower sovereign spreads, and further anecdotal evidence confirms that remittances can help poor countries to access international credit at relatively favorable interest rates.

Each of the empirical analyses presented in this chapter has important limitations in terms of method, causal identification, country coverage, or data availability. Taken together, the analyses constitute suggestive evidence that remittances help to ease the fiscal constraints that global markets—especially international trade—generally impose on developing-country governments. But nevertheless, an important question is left for future research: is the fiscal expansion associated with remittances geared toward the enrichment of the ruling elites at the expense of the common citizen, or do citizens benefit directly from the spending? My statistical analyses did not reveal a pattern of retrenchment in total welfare spending (or any of its components) as a consequence of remittance inflows. Future research, potentially focusing on particular regions with more fine-grained data, will help determine the welfare benefits of government spending associated with remittance inflows.

Figure 1: Government Expenditure by Income Category

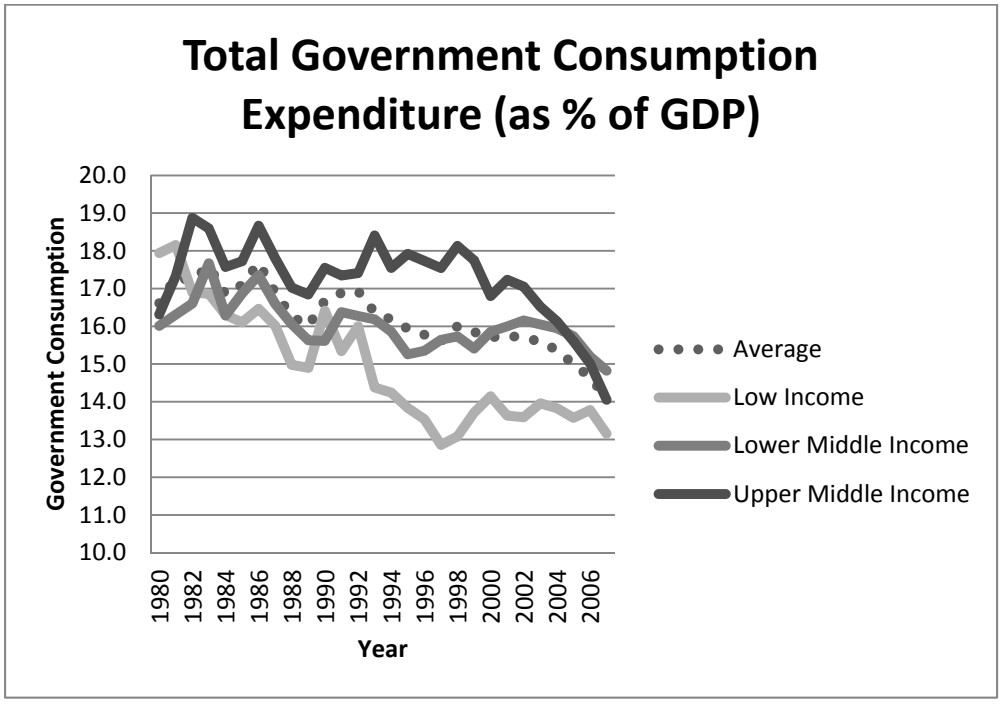

Figure 2: Government Expenditure by Region

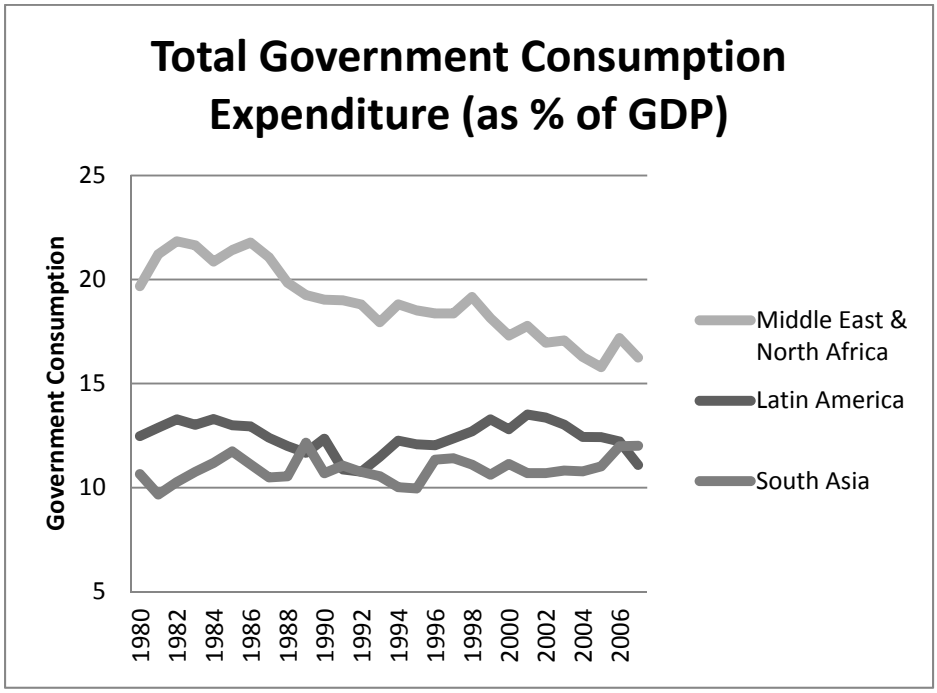

Table 1: Determinants of Total Government Expenditures

Dependent Variable:	(1) ΔGovernment Expenditures/GDP	(2) ΔGovernment Expenditures/GDP
Gov Expenditures $_{t-1}$	-.175***	-.181***
	(.025)	(.025)
Remittances/GDP $_{t-1}$	.039**	.035**
	(.018)	(.018)
Δ Remittances/GDP	.045*	.049*
	(.027)	(.026)
GDP per capita $_{t-1}$	.000	.000
	(.000)	(.000)
ΔGDP per capita	-.001*	-.001*
	(.000)	(.000)
Trade/GDP $_{t-1}$	.000	.000
	(.005)	(.005)
ΔTrade/GDP	-.016**	-.016**
	(.007)	(.007)
Cap. Account Openness $_{t-1}$	.131**	.123**
	(.058)	(.058)
ΔCap. Account Openness	.143	.137
	(.126)	(.125)
Democracy $_{t-1}$	.020	.018
	(.014)	(.014)
ΔDemocracy	.0187	.017
	(.021)	(.020)
Dependency Ratio $_{t-1}$		.246
		(1.012)
ΔDependency Ratio		16.699**
		(7.340)
Constant	2.746614	6.137***
	(2.070)	(2.208)
Obs	1333	1333
Number of Countries	76	76
R-Squared	0.174	0.178

OLS regression coefficients; robust standard errors in parentheses. Both models include country and year fixed effects (not shown). *p<=.10; **p<=.05; ***p<=.01.

Table 2: Determinants of Tax Revenue

Dependent Variable:	(1) Tax Revenue/GDP	(2) Tax Revenue/GDP (IV Model)
Tax Revenue (lagged)	0.632***	0.584***
	(0.057)	(0.042)
Remittances (%GDP)	0.082*	0.124*
	(0.046)	(0.069)
GDP per capita	0.001*	0.001**
	(0.000)	(0.000)
Trade (%GDP)	0.007	0.001
	(0.010)	(0.008)
Capital Account Openness	-0.072	0.088
	(0.088)	(0.132)
Polity	0.020	0.008
	(0.039)	(0.043)
Constant	3.755***	4.814
	(1.090)	(0.961)
Obs	530	372
Number of Countries	63	44
R-Squared	0.870	0.811

OLS regression coefficients; standard errors clustered by country in parentheses. Both models include country fixed effects. Model (2) shows the second stage results of an instrumental variable analysis. *p<=.10; **p<=.05; ***p<=.01.

Table 3: JP Morgan EMBIG Coverage, 1994 to 2005

Country	Entry Year
Argentina	1994
China	1994
Korea, Rep.	1994
Nigeria	1994
Venezuela, RB	1994
Brazil	1995
Bulgaria	1995
Ecuador	1995
Poland	1995
South Africa	1995
Colombia	1997
Croatia	1997
Malaysia	1997
Panama	1997
Peru	1997
Turkey	1997
Mexico	1998
Morocco	1998
Philippines	1998
Russian Federation	1998
Thailand	1998
Algeria	1999
Costa Rica	1999
Hungary	1999
Lebanon	1999
Chile	2000
Ukraine	2001
Dominican Republic	2002
Egypt, Arab Rep.	2002
Pakistan	2002
Uruguay	2002
El Salvador	2003
Tunisia	2003
Indonesia	2005

Table 4: Remittances and Sovereign Spreads

Dependent Variable:	(1) Sovereign Bond Spread (logged)	(2) Sovereign Bond Spread (logged)
Remittances (%GDP)	-.040**	-.043*
	(.020)	(.024)
Polity	-.048***	-.033***
	(.014)	(.013)
Political Crisis	.191	.260**
	(.121)	(.132)
Inflation	.020***	.021***
	(.008)	(.008)
Debt (%GNI)	1.375***	1.263***
	(.124)	(.137)
Reschedule History (0/1)	-.124	-.083
	(.278)	(.275)
GDP Growth	-.049***	-.047***
	(.010)	(.010)
Foreign Reserves		-.044***
		(.018)
Constant	1.043***	1.877***
	(.359)	(.444)
Obs	294	277
Number of Countries	32	31
R-Squared	0.815	0.805

OLS regression coefficients; panel corrected standard errors in parentheses. Both models include country fixed effects. *p<=.10; **p<=.05; ***p<=.01.

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