

**Migrant Remittances and Exchange Rate Regimes
in the Developing World**

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Abstract

This article argues that the international financial consequences of immigration exert a strong influence on the choice of exchange rate regimes in the developing world. Over the past two decades, migrant remittances have emerged as a significant source of external finance for developing countries, often exceeding conventional sources of capital such as foreign direct investment and bank lending. Remittances are unlike nearly all other capital flows in that they are stable and move countercyclically relative to the recipient country's economy. As a result, they mitigate the costs of forgone domestic monetary policy autonomy and also serve as the "risk-sharing" mechanism required by standard political economy models of currency unions. The observable implication of these arguments is that remittances increase the likelihood that policymakers will adopt fixed exchange rates. An analysis of data on *de facto* exchange rate regimes and a newly available dataset on remittances for 59 developing countries from 1990 to 2004 provides strong support for these arguments.

Over the past two decades, migrant remittances have emerged as a significant source of external finance for developing countries. Remittances—which arise when migrant workers send money back home to their families—constitute a steady stream of foreign exchange that helps to alleviate poverty and stimulate economic growth in migrants’ countries of origin. Remittances are an important lifeline for some of the poorest countries in the world, but also constitute a sizable share of GDP for emerging-market countries. In countries such as El Salvador, Haiti, Honduras, and Jordan, inflows of remittances exceed 15 percent of GDP. In 2004, a total of 34 developing countries had remittances inflows greater than 5 percent of GDP. The World Bank estimates that total recorded flows of remittances reached \$167 billion in 2005; this is a staggering sum that dwarfs other financial sources, such as official development assistance, bank lending, and private investment. Annual flows of remittances even exceed foreign direct investment (FDI) for the majority of developing countries.¹

The rise of remittances challenges our understanding of the influence of global finance on national policy choices in the developing world. Remittances are “unrequited”: they do not result in claims on assets, debt service obligations, or other contractual obligations (Brown 2006; Kapur 2005). In contrast to purchases of financial or productive assets, which can be liquidated and repatriated, remittances cannot be withdrawn from a country *ex post*. Moreover, flows of remittances tend to increase during economic downturns as migrants send more funds back home to cushion their families. The contrast between remittances and other capital flows is remarkable. International bank lending, sovereign bond investment, and FDI are highly *procyclical* in their reaction to the state of the domestic economy. For example, bank lending will dry

¹ All data from World Bank 2006 based on observations from 2004 unless otherwise noted.

up if a country experiences a financial crisis, thereby exacerbating the subsequent recession. Similarly, bond investors will withdraw their funds from countries experiencing high inflation and fiscal difficulties, while FDI will decline sharply in reaction to a downturn in economic growth (Mosley 2000, 2003; Jensen 2006). It is these types of capital flows that scholars have in mind when they argue that financial globalization generates insecurity and income volatility for domestic businesses and individual citizens (e.g., Garrett 1998; Scheve and Slaughter 2004). Remittances, in contrast, actually smooth the incomes of domestic residents and shield policymakers from the vagaries of the global economy. In short, financial transfers from migrant workers are a form of insurance for developing countries against exogenous shocks (Kapur 2005; Lopez-Cordova and Olmedo 2005; Lucas and Stark 1985; Rapoport and Docquier 2005; Yang and Choi 2007).

What are the implications for national policymaking when cross-border financial transfers *within families* emerge as a prominent force in the global economy? The rise of remittances has potentially profound implications for a variety of financial policy domains, including welfare state spending, taxation, and borrowing from international financial institutions. In this article, I focus on exchange rate policy, which is arguably the most important macroeconomic policy domain for governments in developing countries (Cooper 1999). Indeed, the exchange rate is the most important price in an open economy, as it affects the price of all other goods and services. More importantly, the choice of exchange rate regime—whether fixed, floating, or somewhere in between—has important ramifications for inflation, private investment, trading relationships, currency crises, and economic growth. Past scholarship has considered financial openness

(broadly construed) as a constraint on exchange rate policy: countries with more open capital accounts are more likely to float their currencies, because to do otherwise implies a loss of domestic monetary policy autonomy (Cohen 1993; Leblang 1999; Broz 2002). I confront this conventional wisdom with the international financial consequences of immigration. I argue that remittances mitigate the costs of lost monetary policy autonomy because they react countercyclically to economic downturns and otherwise insulate policymakers from the ups and downs of the economic cycle. In essence, remittances have the capacity to substitute (albeit imperfectly) for domestic monetary policy autonomy in the developing world. Therefore, I expect inflows of remittances to be positively associated with the adoption of fixed exchange rates. I develop this argument using conventional macroeconomic models in unconventional ways. Using Robert Mundell's (1961) optimum currency area framework, I argue that migrant remittances serve a similar function as centralized fiscal transfers (or other supraregional risk-sharing mechanisms) in allowing the domestic economy to adjust to a fixed exchange rate.

The article proceeds as follows. I begin with an overview of the increasing prominence of remittances in the global economy, including a discussion of geographic variation in flows to the developing world. I also discuss the causes of remittances—namely, migration to wealthier countries and technological factors—and their economic and political effects on receiving countries. I pay careful attention to the ample evidence of remittances' countercyclical impact on recipient countries. I then provide an empirical test of the hypothesis that remittances are associated with fixed exchange rate regimes in the developing world. Using a newly available World Bank dataset on annual remittances from 1990-2004 for 114 countries, I demonstrate that countries for which remittances

constitute a substantial share of GDP are more likely to adopt fixed exchange rates. This finding is of particular significance given the recent ideological shift against fixed rates: it appears that remittances encourage policymakers to go against the tide. Moreover, the statistical findings are not driven primarily by the poorest countries; low- and middle-income countries appear to be highly influenced by remittances when setting exchange rate policy. The article concludes with a discussion of the broader implications of remittances for the political economy of international finance.

Remittances: Definitions, Trends, and Consequences

International financial transfers from migrant workers to family members in their home countries are known as remittances. A typical remittance transaction contains two parts: first, the migrant contracts with an agent—either a money service business such as Western Union, a bank, or an informal agent—and transmits the money to the agent via cash, check, credit card, or other debit instruction; and second, the agent instructs its own affiliate in the receiving country to deliver the remittance to the beneficiary (Ratha 2005a).

Although the basic remittance transaction sounds straightforward, there are substantial challenges in defining and measuring remittances for financial accounting purposes. The international financial institutions, including the International Monetary Fund and the World Bank, have adopted a broad definition that includes three components: workers' remittances, compensation of employees, and migrant transfers (IMF 2005; World Bank 2006). Workers' remittances consist of private transfers from

migrants who have lived in the host country for at least one year. Compensation of employees includes all compensation paid to migrants who have lived in the host country for less than one year. And finally, migrant transfers—which are generally the smallest of the three components—are measured as the net worth of migrants at the time of migration who reside in the host country for at least one year. The proper measurement of all three of these components depends on a clear understanding of each migrant’s residency status. Financial flows from temporary workers—such as Indian residents who travel to Dubai for short-term employment—should fall under the second category, whereas remittances from long-term residents should fall under the first category. In reality, countries face considerable difficulties in ascertaining a migrant’s residency status, and are therefore inconsistent in their categorization of remittances (IMF 2005; World Bank 2006).

A more severe problem is that many poor countries are not adequately equipped to track and record remittances. Some countries only collect data from banks and overlook financial flows through money transfer businesses, post offices, and informal channels (de Luna Martinez 2005). Other countries employ a crude formula of multiplying the number of emigrants by an estimated average remittance amount, rather than attempting to compile the data more accurately (World Bank 2006). To remedy these problems, the World Bank has adopted a data collection methodology whereby it relies on member countries’ balance-of-payments reporting supplemented by surveys of central banks and estimates from its own country desks (World Bank 2006). Nevertheless, informal remittance flows are virtually impossible to quantify.

By all accounts, remittances have experienced tremendous growth over the past two decades. Recorded remittances to developing countries increased from \$31.2 billion

in 1990 to \$160 billion in 2004. The rate of growth was fastest for “lower middle income countries” (with approximate GDP per capita between \$1,000 and \$3,500), a category that includes countries such as El Salvador, Indonesia, and Tunisia. The dramatic growth in remittances is particularly striking in comparison to other capital flows (Figure 1). Private debt and portfolio equity investment in developing countries, for example, declined by 20 percent between 1995 and 2004, whereas official development assistance increased by a modest 34 percent over the same period. The result of these trends is that *remittances currently exceed nearly all other sources of capital flows in the developing world*. Even in Mexico, a recent member of the Organization for Economic Cooperation and Development (OECD) known for attracting investment from U.S. corporations, inflows of remittances have been nearly equal to FDI inflows since 2003. In fact, remittances were larger than the total of all public and private capital inflows—including FDI, foreign aid, and private debt and equity investment—for 36 countries in 2004.²

Figure 1 about here

Migrants in the United States remitted nearly \$39 billion to their countries of origin in 2004, making it the largest source country for remittances (World Bank 2006). The other significant source countries include many of the large continental European economies (Germany, France, Switzerland, and Italy) as well as four Middle Eastern countries (Saudi Arabia, Israel, Kuwait, and Oman) (Kapur 2005). Remittances naturally

² World Bank (2006) states (p.88) that remittances currently exceed FDI in Mexico. In 2003 and 2004, total FDI as a percentage of GDP was 2.4 percent and 2.8 percent, respectively, whereas remittances were 2.3 percent and 2.7 percent, respectively. Other data from World Bank (2006) and *World Development Indicators* (multiple years).

tend to flow from wealthier countries to poorer ones, given that the majority of individuals migrate to richer countries. However, 30 to 45 percent of remittances to developing countries come from other developing countries (World Bank 2006).

It is a myth that remittances flow only to very poor countries. Perhaps surprisingly, in 2004, France, Spain, and Belgium were among the ten largest recipients of remittances. Among developing countries, more than 70 percent of remittances flow to those in the “middle-income” bracket, including China, Honduras, and Peru. Nevertheless, for poor countries such as Moldova, Lesotho, and Haiti, remittances constitute more than 25 percent of GDP and thus are a critical lifeline for the resident population (see Figures 2a and 2b).

Figures 2a and 2b about here

Causes and Consequences

Remittances are the international financial consequence of immigration, which has been steadily increasing in recent times. The total stock of migrants—estimated at 175 million in 2000—increases by approximately 6 million annually, which is appreciably faster than the growth of world population (ILO 2004). Between 1970 and 2000, the number of migrants in North America increased from 13 million to 41 million, or approximately 3.7 percent annually; for Europe, the number of migrants increased from 19 million to 33 million over the same period. In 2000, one out of every 35 people in the world was an international migrant. Approximately 50 percent of all migrants are considered economically active—that is, they are gainfully employed in the host

country—whereas the other half consist of students studying abroad, those accompanying economically active family members, and refugees (IOM 2005). The increase in world migration is attributable to the wage gaps between developed and developing countries, the falling costs of migration relative to the low incomes in developing countries, and the increasing size of the migrant stock—and the consequent density of familial networks—in host countries (Hatton and Williamson 2002).

Although migration has been steadily increasing, it is certainly not a new phenomenon, and it alone cannot explain the rapid increase in the flow of remittances. Other factors, such as technological developments in financial infrastructure, have reduced the costs of transmitting funds across countries. Money transfer businesses—especially Western Union—have experienced tremendous growth; there are now more than seven times as many Western Union agents worldwide (over 310,000 locations in 200 countries) than McDonalds and Starbucks locations combined.³ Capital account liberalization, including the relaxation of restrictions on foreign exchange deposits, has no doubt facilitated the international reach of these businesses (IMF 2005). Domestic financial institutions have also matured as countries have liberalized capital flows and embraced (in varying degrees) the global economy. Banks throughout the developing world have adopted modern risk-management techniques and improved their lending portfolios, and in the process they have reeled in many more citizens as customers. Kapur (2005) notes that banks in developed countries have also facilitated the flow of remittances by competing with money transfer agents for migrants' business. Migrants in developed and emerging-market countries now have several options for sending money

³ Data compiled from corporate websites: www.mcdonalds.com, www.starbucks.com, and www.westernunion.com.

back home. The transaction costs of remitting funds will continue to decline as developing-country financial infrastructure improves and new transfer agents enter the market.

Rapoport and Docquier (2005, 10) note that migration should be viewed as “an informal familial arrangement, with benefits in the realms of risk diversification, consumption smoothing, and intergenerational financing of investments.” This definition captures the altruistic as well as self-interested motivations for remittances. Altruism within the context of family relationships is perhaps the most obvious motivation: migrant workers wish to support their family members who remain behind, and their transfers of funds do not lead to promises of future compensation. Indeed, family members use remittances primarily to finance consumption, including food, shelter, health care, and basic necessities (Brown 2006; Chami, Fullenkamp, and Jahjah 2005; Durrand and Massey 1992; Glytsos 1993). Migrants might also send money back home for self-interested reasons, such as to provide for the maintenance or expansion of existing investments (businesses, land, etc.) that they left behind, or the repayment of loans. Some scholars have argued that ostensibly self-interested motivations can be subsumed under the rubrics of “enlightened selfishness” or “impure altruism” because remittances are transmitted between individuals with strong familial (i.e., non-financial) ties (Lucas and Stark 1985; Andreoni 1989). It is indeed difficult to argue that remittances follow the profit-seeking calculus of other financial flows, as the discussion below on countercyclical remittance flows will demonstrate.

There is a substantial literature on the poverty-reducing impact of remittances, which is largely beyond the scope of this article.⁴ However, the “multiplier effects” of remittances deserve special mention in this short summary. Inflows of remittances generally contribute more than their initial value to the receiving economy (Orozco 2004; Ratha 2005b). One study of the Mexican economy found that each remitted dollar generates four dollars in demand for goods and services (Durrand, Parrado, and Massey 1986). An important implication of the multiplier effect is that households that do not receive remittances still benefit from remittances to other households. For example, construction workers, timber producers, and day laborers benefit if remittances are used for home building (Kapur 2005). Even remittances to rural and remote areas have a broader economic impact, as the secondary beneficiaries of these capital inflows include goods and labor markets in urban areas (Zarate-Hoyos 2004).

Countercyclical Remittance Inflows

Remittances are transfers between families that tend to flow countercyclically relative to the recipient country’s economy (World Bank 2006). Migrants send more money to their families when their home countries experience economic downturns, financial crises, or natural disasters. Moreover, adverse circumstances often trigger more migration, which then results in greater remittance inflows. As Stuart Brown (2006, 60) notes, remittances serve as “transnational intra-family or intra-community safety nets, cushioning societies from the disruption attending more volatile financial flows.” Several empirical studies, including Chami *et al* (2005), IMF (2005), and Kapur (2005), find a strong relationship between economic contractions and subsequent increases in

⁴ See Brown (2006) and Rapoport and Docquier (2005) for surveys of the literature.

remittances for developing countries. Indeed, Kapur (2005) finds that the average share of remittances in private consumption for 14 developing countries more than tripled in the three years after an economic shock.⁵ An IMF study (IMF 2005) reports that countries such as Mexico, Indonesia, and Thailand experienced a significant increase in remittances in the two years immediately after their respective financial crises in the 1990s; similarly, Bangladesh, Dominican Republic, Haiti, and Honduras experienced increases after natural disasters. The same study reports that home-country output has a statistically significant and negative impact on remittances for a panel of 87 countries.

Among the most compelling studies of the countercyclicality of remittances are Yang (2007) and Yang and Choi (2007). Yang (2007) finds that remittances increase substantially in the wake of hurricanes in a panel of more than 70 developing countries between 1970 and 2002. Clarke and Wallsten (2003) find similar results for the responsiveness of remittances to hurricane Gilbert in Jamaica in 1988. Given these articles' focus on natural disasters as the trigger for remittances, there is no concern over endogeneity (i.e., it is highly unlikely that remittances cause hurricanes). Yang and Choi (2007) are also sensitive to endogeneity in examining how remittances respond to household income shocks in the Philippines. Using rainfall shocks as an instrumental variable, they find that 60 percent of household income declines are replaced by remittance inflows.

Whereas most capital flows exacerbate the booms and busts of developing economies, remittances are unique in their tendency to mitigate volatility. A large-sample study conducted by the IMF found that remittances substantially reduce the volatility of output, consumption, and investment (IMF 2005). On the other hand, in periods of stable

⁵ Kapur (2005, 343) defines an economic shock as a decline in GDP of 2 percent or greater.

economic growth, remittances are far less volatile than other capital flows; even foreign aid was more volatile than remittances from 1980 to 2003 (IMF 2005). It is therefore becoming increasingly common for scholars to tout the “insurance” function of remittances for the developing world (Kapur 2005; Lopez-Cordova and Olmedo 2005; Yang and Choi 2007).

Financial market confidence in the continued inflow of remittances is evident by the increasing securitization of future remittances in emerging-market bond markets. Banks that wish to issue bonds can use expected remittances as collateral, along with conventional receivables such as commodity export revenues (Ratha 2005b). Ketkar and Ratha (2001) report that Banco do Brasil issued \$300 million of five-year bonds in 2001 using future yen remittances from Brazilian migrants in Japan as collateral. As a result, Standard and Poors gave the bonds a BBB+ rating, which was substantially higher than the rating for Brazil’s sovereign bonds.

It is unconventional to assert that capital flows could lead to an increase in macroeconomic stability, or that they could *counteract* rather than exacerbate the vicissitudes of the global economy. Indeed, the majority of scholars believe that countries require some form of insulation from global financial markets, such as welfare state spending, a larger government, or some other form of redistribution (Garrett 1998; Katzenstein 1985; Rodrik 1998; Ruggie 1982; Scheve and Slaughter 2007). If, however, we assume that remittances can serve as a form of insulation rather than a source of insecurity, then extant political economy models require careful re-evaluation. This is no more apparent than for the study of exchange rate regimes, in which political scientists conventionally assume that financial openness is a uniformly constraining force that

pushes decision makers into an uncomfortable trade-off between international stability and domestic autonomy. Given that remittances constitute a substantial share of capital flows to the developing world, the theoretical impact of financial openness on exchange rate politics should be unpacked and re-examined.

Remittances and Exchange Rates: Mundell-Fleming in the Developing World

The analytical heart of the literature on the political economy of exchange rates is the Mundell-Fleming model and its famous implication that countries must choose to forgo one of three policy goals: exchange rate stability, full capital mobility, or domestic monetary policy autonomy. In today's world of highly integrated financial markets, a discrepancy between the domestic and world interest rates causes capital to flow in the direction of the higher return. If the exchange rate is allowed to float, it will adjust accordingly—appreciating with capital inflows and depreciating with capital outflows. However, if the exchange rate is fixed, then the interest-rate differential is quickly arbitrated away by the capital flows. The result is that the combination of mobile capital and a fixed exchange rate renders monetary policy ineffective as a policy tool. The Mundell-Fleming conditions imply a trade-off between stability and flexibility (Bernhard, Broz, and Clark 2002; Frieden and Stein 2001; Bearce 2007). Stability arises from the fixed exchange rate, which decreases transaction costs for investors, traders, and other groups with ties to the global economy, and also leads to monetary stability by tying the hands of monetary policymakers. On the other hand, flexibility is associated with

floating exchange rates, which provide monetary policymakers with the capacity to adjust interest rates to changing domestic economic circumstances.

With this fundamental trade-off between stability and flexibility in mind, scholars have employed several analytical approaches to explain governments' exchange rate regime choices. Frieden, for example, argues that exporters and import-competers both value currency depreciation, and therefore oppose a rigidly fixed exchange rate, while foreign investors and creditors value the stability of a fixed rate (Frieden 2002; Frieden, Ghezzi, and Stein 2001). Broz takes an institutional approach and argues that fixed exchange rates are more common in opaque (i.e., non-democratic) political systems as a means of fighting inflation; alternative institutional remedies, such as central bank independence, are ineffective without the monitoring and accountability found in democracies. Other scholars examine the relative costs of domestic adjustment to fixed exchange rates, which are arguably lower in stable governments and those with small numbers of veto players (Edwards 1999; Simmons 1994; Keefer and Stasavage 2002). In regard to industrial democracies, Bernhard and Leblang (1999) argue that governments will float their currencies when the exigencies of electoral competition demand the use of domestic interest rate adjustments. And finally, studies such as Clark (2002), Clark and Hallerberg (2000), and Hallerberg (2002) examine the trade-off between fiscal and monetary policy discretion within the Mundell-Fleming framework, noting that fixed exchange rates enhance the power of fiscal policy when capital is fully mobile. Governments are therefore more likely to adopt fixed exchange rates when fiscal policy, rather than monetary policy, is the most effective tool for electoral gain, as in OECD

multiparty coalition states where targeted spending can be rewarded by voters (Hallerberg 2002).

The disparate studies discussed above conceive of capital mobility as the sensitivity of capital flows to domestic interest rates, in line with the Mundell-Fleming model. Scholars generally measure capital mobility as a policy choice: if governments impose no restrictions on capital flows, then capital is assumed to be fully responsive to interest-rate differentials (e.g., Oatley 1999). In empirical studies of exchange rate regimes, an index of financial policy openness from Quinn (1997) or Chinn and Ito (2006), or a simple dichotomous variable based on capital controls surveys from the IMF, are frequently the only included measures of a country's relationship with international financial markets. The conventional argument is simple: financial closure allows governments to reap the benefits of fixed exchange rates without sacrificing domestic monetary policy autonomy (Leblang 1997, 1999; Broz 2002). Financial openness, on the other hand, makes the adoption of fixed exchange rates less attractive and therefore less likely.⁶

The assumption that international capital inexorably chases the highest rate of return is applicable for developed countries but questionable for many developing countries. In developed economies, the dominant forms of capital flows are FDI, private and sovereign bond investment, equity investment, and bank lending, all of which are responsive to differential rates of return. However, in developing countries, the international financial consequences of immigration must also enter the equation. Migrant remittances, which constitute a substantial share of capital inflows for the

⁶ In addition, economists argue that the speculative pressures enabled by capital mobility increase the difficulty of maintaining fixed rates; see Agenor 2001; Eichengreen 1999; and Obstfeld and Rogoff 1995.

majority of developing countries, respond primarily to the needs of families rather than interest rates. The times in which remittances increase—such as economic downturns—are precisely the times in which other capital inflows would normally dry up as investors steer their funds toward more profitable venues.

Introducing remittances into the political economy model of exchange rates does not imply an abandonment of the Mundell-Fleming conditions. Indeed, mobile capital will respond to interest-rate differentials even in countries that are heavily dependent on remittances. However, I argue that such countries will be less concerned about forgoing domestic monetary policy autonomy. In the event of an economic downturn, remittances tend to increase and thereby smooth out the business cycle. Consider the impact of an increase in remittances during a recession. Households use the funds to bolster their consumption of food and basic necessities, and to maintain existing small businesses and other investments. Such spending and investment has a multiplier effect on the economy, triggering additional investment and consumer spending. In short, remittances—when sufficiently large in relation to the economy—constitute an automatic stabilizer that performs a similar function to countercyclical monetary policy. As such, remittances stand apart from other capital flows in that they do *not* exacerbate the trade-off between fixed exchange rates and domestic monetary policy autonomy. In fact, high remittance inflows make it less costly for countries to adopt fixed rates.

Although the Mundell-Fleming model as applied by political economists comes up short in its simplistic view of capital mobility, Mundell's optimum currency area (OCA) criteria in fact provide a useful, if inadvertent, perspective on the importance of remittances (Mundell 1961). The OCA framework, elaborated by McKinnon (1963) and

others, argues that countries that choose to share a common currency should respond similarly to economic shocks, such as sudden changes in the prices of commodities. The logic is straightforward: a single currency implies a single monetary policy. If economic conditions vary substantially across different regions of the currency area, a single monetary policy will prove woefully inadequate in stabilizing the economy. However, because asymmetric shocks are always possible even in the most economically homogeneous of currency unions, countries must somehow adjust their own domestic economies to fit the prevailing monetary policy. The OCA literature has focused on two adjustment mechanisms: first, labor mobility within the union should be high enough to allow workers in adversely affected regions to relocate to more favorable employment environments; and second, the currency union itself should have a system of “risk sharing”—usually defined as fiscal transfers—to respond to local shocks, just as the U.S. federal government sends emergency funds to States in times of crisis. The OCA criteria are rarely realized in practice, especially for developing countries that anchor their currencies to the Euro, the U.S. dollar, or some other developed-country currency. Shocks to developed and developing economies are likely to be asymmetric, and labor mobility is rarely high enough to be an effective short-term stabilizer. On the issue of risk sharing, however, many developing countries depend on remittances to offset economic downturns that are not experienced by the anchor country. Remittances are not “fiscal transfers” *per se*, as no central government has the power to direct them to countries in need. Yet they do enable countries to cede some of the risks of forgone monetary policy autonomy to migrant workers, who in turn remit funds to their families in countercyclical fashion.

Empirical Analysis

The discussion thus far suggests that the flexibility of a country's exchange rate regime will be inversely related to its level of inward remittances. In other words, remittance inflows increase the probability that a country will choose to fix its exchange rate. I use time-series cross-sectional data to test this hypothesis. The dataset contains annual observations on as many as 59 developing countries during the 1990-2004 time period. The dependent variable is the *de facto* exchange rate regime, coded as a four-category ordinal variable based on data from Reinhart and Rogoff (2004). Higher values indicate greater degrees of exchange rate flexibility. The categories are as follows: 1 = fixed, including traditional peg, currency board, no separate legal tender, and pre-announced horizontal band of less than +/- 2 percent; 2 = crawling peg or band; 3 = managed floating, including crawling bands wider than +/- 2 percent; and 4 = free floating.⁷ I discard observations classified as "freely falling" and dual markets with missing parallel market data. Unlike *de jure* classifications based on official government policy, these *de facto* measures of exchange rate regimes are derived from a combination of foreign reserve activity, parallel market exchange rates, and extensive country chronologies (Reinhart and Rogoff 2004). They therefore capture the actual operation of the exchange rate regime over time.

Data on the key explanatory variable, inward remittances as a share of GDP, come from a newly available dataset from a special World Bank study on the

⁷ See Reinhart and Rogoff 2004; further details are available on Reinhart's website, <http://www.publicpolicy.umd.edu/faculty/reinhart/readme.txt>

development implications of remittances (World Bank 2006). The measure includes funds classified as workers' remittances, compensation of employees, and migrant transfers. The World Bank dataset, which extends from 1990 to 2004, is currently the most extensive source of remittances data for a large number of countries. However, I use the dataset with a degree of caution. World Bank researchers are able to estimate only the officially recorded inward remittances for each country-year, not the flows through unofficial channels, such as the *hawala* system and other informal value transfer systems (Kapur 2005). As discussed earlier, recorded flows have risen dramatically in recent times, and a portion of this increase may be attributable to a shift from unofficial to official transmission channels, rather than an increase in remittances *per se*. The World Bank attempts to mitigate this problem by using estimates from its own country desks or from national central banks when official balance-of-payments statistics are missing or of questionable construction. Nevertheless, unofficial flows remain outside the scope of the dataset.

In the initial specification, I construct a baseline model (Model 1) that includes a standard battery of macroeconomic controls, along with the measure of remittances (lagged one period). GDP per capita captures variation in the level of economic development, which has been found to be positively associated with the propensity to fix the exchange rate (Broz 2002). I control for OCA considerations by including GDP (logged) and trade openness (the share of imports plus exports in GDP, lagged one period), given that smaller, more open economies are generally more likely to adopt fixed exchange rates. Also included is the "KAOPEN" index of capital account openness from Chinn and Ito (2006). It is based on the binary coding of restrictions in the IMF's *Annual*

Report on Exchange Arrangements and Exchange Restrictions, and focuses on four dimensions of restrictions: the existence of multiple exchange rates, restrictions on the current and capital accounts (where the latter are measured as the proportion of the last five years without controls), and requirements to surrender export proceeds.⁸ The index has a mean of zero and ranges from -2.66 (full capital controls) to 2.66 (complete liberalization). Based on the logic of the “impossible trinity,” capital account openness should be negatively associated with the adoption of fixed rates.

The baseline model also includes the size of a country’s foreign exchange reserves measured in months of exports, with the expectation that a larger stock of foreign currency facilitates the maintenance of a fixed rate. Terms of trade volatility captures the susceptibility of an economy to external shocks emanating from changes in the price of traded goods. It is measured as the standard deviation of the terms of trade index over the prior five years. Higher volatility is expected to be associated with floating rates, as countries require the flexibility to adjust quickly to the external shocks (Frieden, Ghezzi, and Stein 2001). Given the ordinal nature of the dependent variable, I estimate the model using ordered probit with standard errors clustered on country. All regressions include a lagged dependent variable. Summary statistics for all variables are presented in Table 1. Table 2 presents the regression results.

The results from the baseline model support the hypothesis that inward remittances increase the probability of fixing the exchange rate in developing countries. The coefficient for remittances is negative and highly statistically significant. (Recall that lower values of the dependent variable imply greater degrees of exchange rate fixity.) Moreover, this result is robust to the inclusion of OCA-related macroeconomic variables.

⁸ For a detailed description of this measure, see Chinn and Ito 2006.

Not surprisingly, the lagged dependent variable has a large and significant coefficient, indicating that exchange rate regimes are slow to change. The coefficient for capital account openness is positive and significant, indicating that countries with open capital accounts (represented by higher values of the KAOPEN index) are more likely to float. Note that capital account openness and remittances pull in opposite directions, which supports the argument that remittances require special consideration in studies of the impact of mobile capital on government policymaking. As expected, countries with larger holdings of foreign exchange are better able to maintain a fixed rate, as indicated by the negative and significant coefficient for reserves, while countries with larger economies are more likely to float. While trade openness and GDP per capita are not significant, the coefficient for terms of trade volatility is negative and significant, contrary to expectations—but in line with the findings in Frieden, Ghezzi, and Stein (2001). It is possible that developing countries that are subject to frequent external price shocks are more in need of the stability of a fixed exchange rate. More research is clearly needed to explain this counterintuitive but apparently consistent finding.

In the second model, I incorporate three political variables that may be relevant to exchange rate regime choice. First, political instability may be associated with floating if decision makers with short time horizons and precarious political support are hesitant to commit to a fixed rate (Edwards 1996; Broz 2002). However, as Edwards (1996) notes, political instability could have dueling influences on exchange rate policy. Greater instability increases the costs of abandoning a peg and therefore reduces the *ex ante* probability that a peg will be chosen; on the other hand, instability makes decision makers less concerned about the costs of renegeing on an exchange rate commitment in

the future. I use a measure of adverse regime changes from the Political Instability Task Force (PITF). A country-year observation is coded as 1 if there was 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 (PITF 2001). The PITF database records the beginning and ending years of the adverse regime change; countries are therefore coded as “1” for the duration of the change.⁹ In addition, the second model includes a measure of democracy based on the Polity IV database (Gurr, Jagers, and Moore 2006). The variable ranges from -10 (most autocratic) to 10 (most democratic). Following Broz (2002), I expect this variable to be positively associated with floating, as transparent political systems do not require a transparent anchor for monetary policy. Finally, I include a measure of political constraints on government decision making based on Henisz (2002). The construction of this variable begins by identifying the number of effective branches of government—including the executive, the legislative body or bodies, the judiciary, and any other sub-national units—with veto power over policy change. This initial measure is modified to reflect whether these veto points are controlled by different political parties, and the degree of preference heterogeneity within each branch. Higher values represent “stronger,” or less constrained, governments. I therefore expect a negative coefficient for this variable, implying an association between strong governments and fixing the exchange rate.

The results for the second model, presented in the second column in Table 2, show that the initial finding for the effect of remittances remains unchanged with the

⁹ As an alternative, an observation was coded as “1” if there was an adverse event in any of the previous three years. The results were unchanged.

inclusion of various political variables. Of the three added variables, only the Polity measure of democracy is statistically significant. Its positive coefficient supports the argument by Broz (2002) that increasing the degree of democracy also increases the probability of floating.¹⁰ The other findings remain largely unchanged from the first model, with the exception that GDP per capita is now statistically significant. However, its impact on the dependent variable is substantively trivial.

Since the substantive interpretation of ordered probit coefficients is not straightforward, I provide simulations with estimates from the baseline model in Figure 3.¹¹ The solid line demonstrates how the probability of fixing the exchange rate changes as remittances increase while the other variables are held at their means. The dotted lines represent 95 percent confidence intervals. I limit the range of remittances (the X axis) to 0 to 30 percent because only three countries in the sample have remittances in excess of this range.¹² When remittances increase by one standard deviation from the sample mean—i.e., from 4 percent to 11 percent—the probability of fixing the exchange rate increases from 19 percent to 25 percent. An additional standard deviation increase in remittances results in a 32 percent probability of fixing. The confidence intervals widen considerably—and the degree of confidence in the findings declines—after remittances exceed 15 percent.

¹⁰ Note that the dependent variable in Broz's (2002) study is the *de jure* exchange rate regime; the findings here indicate that Broz's argument is robust to changing the dependent variable to the *de facto* regime, at least for developing countries.

¹¹ Simulations conducted using CLARIFY (Tomz *et al* 2003). Results based on Model 2 are essentially identical.

¹² The three countries are Cote d'Ivoire, Guinea Bissau, and Lesotho, representing 11 country-years in the sample.

Robustness Checks

There are, of course, a number of additional variables whose inclusion in the model could be theoretically justified. Frieden (2002) and Frieden, Ghezzi, and Stein (2001), for example, place special emphasis on the influence of tradables producers on exchange rate politics. I included a measure of manufacturing production as a percentage of GDP, which was found to be of particular significance in Frieden *et al* (2001), along with a similar measure of agricultural production; neither was statistically significant, and the other results were left largely unchanged. It has also become common to include a systemic measure of the ideological bias in favor of (or against) fixed exchange rates, usually measured as a time trend or as the percentage of countries in the world under fixed rates (Collins 1996; Frieden *et al* 2001; Broz 2002). When the period under investigation dates back to the 1970s and 1980s, the inclusion of such a measure is critical in light of the dramatic decline in the number of countries with *de jure* fixed rates over the past 30 years. I choose not to include a time trend or feasibility measure because my dependent variable is the *de facto* exchange rate regime, which does not always reflect the government's officially declared policy. As Calvo and Reinhart (2002) note, countries that declare a floating exchange rate may actually be using interest rate policy or even foreign exchange intervention to maintain exchange rate stability. The trend away from fixed exchange rates does not appear to apply to *de facto* exchange rate regimes, at least for the duration of the present study (1990-2004). In 1990, approximately 30 percent of the countries in the sample had *de facto* fixed exchange rates (ER=1); that number fell slightly in the early 1990s, but reached 36 percent by 2004.¹³

¹³ Note that some newly independent countries, such as the former Soviet satellites, first enter the dataset in the early 1990s.

In light of this article’s focus on remittances as a counterweight to lost monetary policy autonomy, it is natural to ask if other factors could have a similar countercyclical effect. It is possible that official development assistance, commonly known as foreign aid, could condition the choice of exchange rate regime if policymakers feel that it is a reliable source of foreign exchange, especially in times of economic downturn. To test this hypothesis, I included a measure of foreign aid as a percentage of GDP in the baseline model. Its coefficient was negative—indicating an association between foreign aid and fixed rates—but it was shy of the conventional threshold for statistical significance. Foreign aid is not a reliable capital inflow for most countries, and it is frequently tied to policy adjustments and other conditions. It is therefore not surprising that it does not have the same impact on exchange rate regime choices as remittances.

Finally, to ensure that the baseline results are not unduly biased by the relationship between remittances and exchange rate regimes in very poor countries, I reran the model excluding all countries with average GDP per capita below \$400. The truncation results in a loss of 138 country-years, but the finding for remittances actually strengthens, both substantively and statistically.¹⁴ The impact of remittances is similarly robust to dropping all countries with average GDP per capita greater than \$4,000 from the sample.

Conclusion

The rise of remittances has profound implications for the study of international financial relations. As families extend beyond national boundaries through migration, the resulting flow of funds is changing the character of financial market influence on

¹⁴ After the sample truncation, capital account openness and GDP are no longer statistically significant.

government policymaking. Indeed, the evolution of financial globalization is taking an interesting turn in the developing world. While their developed-country counterparts react to the increasing integration of asset markets and the spread of the multinational corporation, developing countries are also adapting to the international financial consequences of immigration. Remittances from overseas migrants constitute a major source of capital for the majority of developing countries, and some countries rely almost exclusively on remittances for foreign exchange. Unlike nearly all other types of capital flows, remittances respond primarily to the needs of families and not the profit-seeking motives of investors.

This article introduced the flow of remittances into the study of the political economy of exchange rate regimes, and challenged the notion of financial market openness as an undifferentiated influence on economic policymaking. Prior scholarship views the free movement of capital as a constraint on policymakers that decreases the probability of selecting a fixed exchange rate. In contrast, this article has argued that remittances mitigate the costs of forgone domestic monetary policy autonomy and therefore increase the probability of choosing to fix the exchange rate. An analysis of data for 59 developing countries from 1990 to 2004 supports this argument. As noted earlier, the newly available data on remittances from the World Bank have many drawbacks, most notably the fact that they only account for recorded flows. One should therefore assume that the empirical tests in this article are tentative, pending the availability of more accurate and comprehensive data on remittances.

The introductory section of this article alluded to the many policy areas in which remittances could have an important influence. For example, remittances could substitute

for welfare-state spending by lessening the need for governmental subsidization of health care or government-sponsored employment programs. Governments that would otherwise feel compelled to insulate their citizens from the forces of the global economy—for example, by increasing the size of the government in line with Rodrik (1998) and Garrett (1998)—might scale back their spending priorities in response to remittance inflows (Kapur and Singer 2006). In addition, to the extent that remittances help to stave off balance-of-payments difficulties, developing countries with substantial remittance inflows might be less likely to engage the services of the International Monetary Fund and the World Bank. These speculations should form the basis for future research.

As a final note, this article contributes to a small but growing literature that seeks to unpack the components of financial globalization and gauge their varying (and often contradictory) impacts on economic policymaking. The literature contains several careful studies that isolate the political and institutional determinants of specific types of capital flows, including foreign direct investment (e.g., Jensen 2003, 2006; Li and Resnick 2003), sovereign bonds (e.g., Mosley 2000, 2003; Sobel 1999), foreign exchange (Bernhard and Leblang 2002b; Freeman *et al* 2000; Moore and Mukherjee 2006), and equity investment (Bernhard and Leblang 2006; Mosley and Singer 2008). The disparate findings in these studies should encourage future scholarship to avoid generalizations about the impact of global finance on economic policymaking. The popular metaphor of global finance as a “golden straitjacket” (Friedman 2000) might be more appropriately revised as a tug of war with various capital flows pulling policymakers in different directions.

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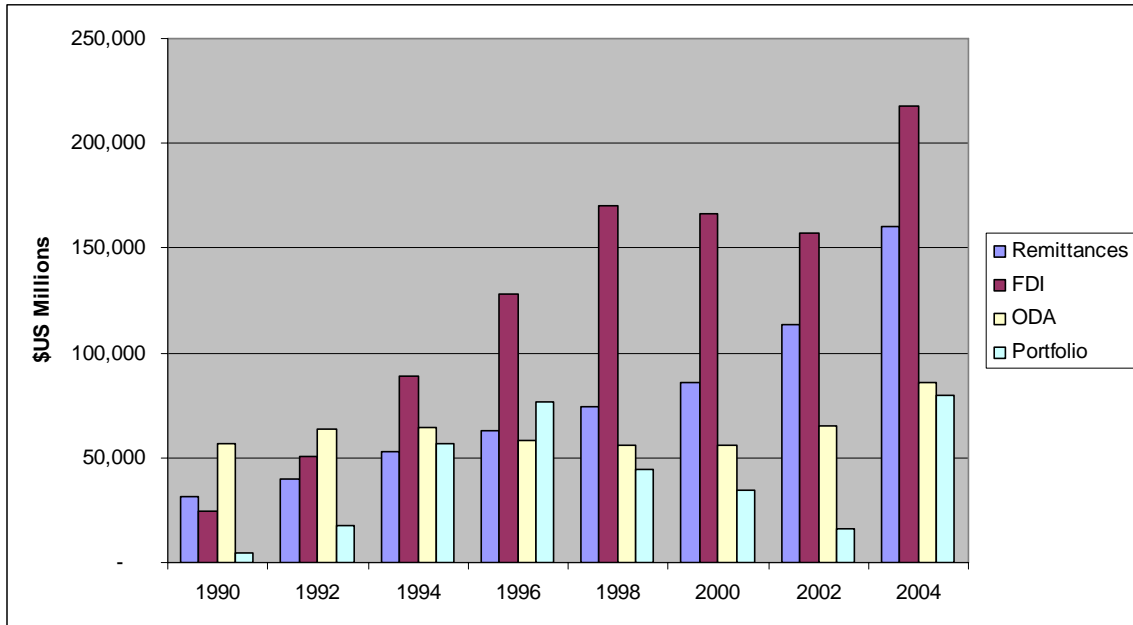
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Table 1: Summary Data

Variable	Mean	Standard Deviation	Minimum	Maximum
Exchange Rate Regime	2.02	0.91	1	4
Remittances (%GDP)	4.14	6.77	0	63.88
GDP (log)	23.46	1.93	17.60	28.17
GDP per capita	1693.20	1640.00	135.07	8212.90
Trade Openness	71.08	37.54	16.22	228.86
Capital Account Openness	0.08	1.33	-1.75	2.62
Reserves	4.47	3.59	0.06	27.08
Terms of Trade Volatility	8.51	7.04	0	45.01
Polity	3.55	5.73	-9	10
Regime Change	0.09	0.28	0	1
Political Constraints	0.32	0.20	0	0.69

Figure 1: Capital Inflows, by Type, to Developing Countries (1990-2004)



Source: World Bank (2006)

Figure 2a: Top 20 Recipients of Remittances, 2004

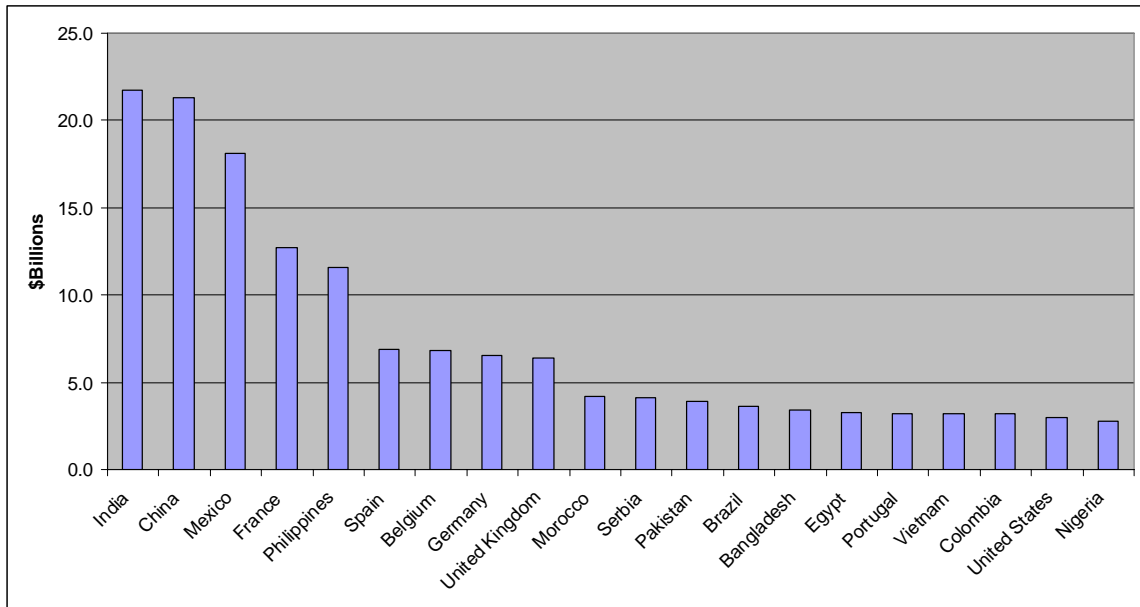
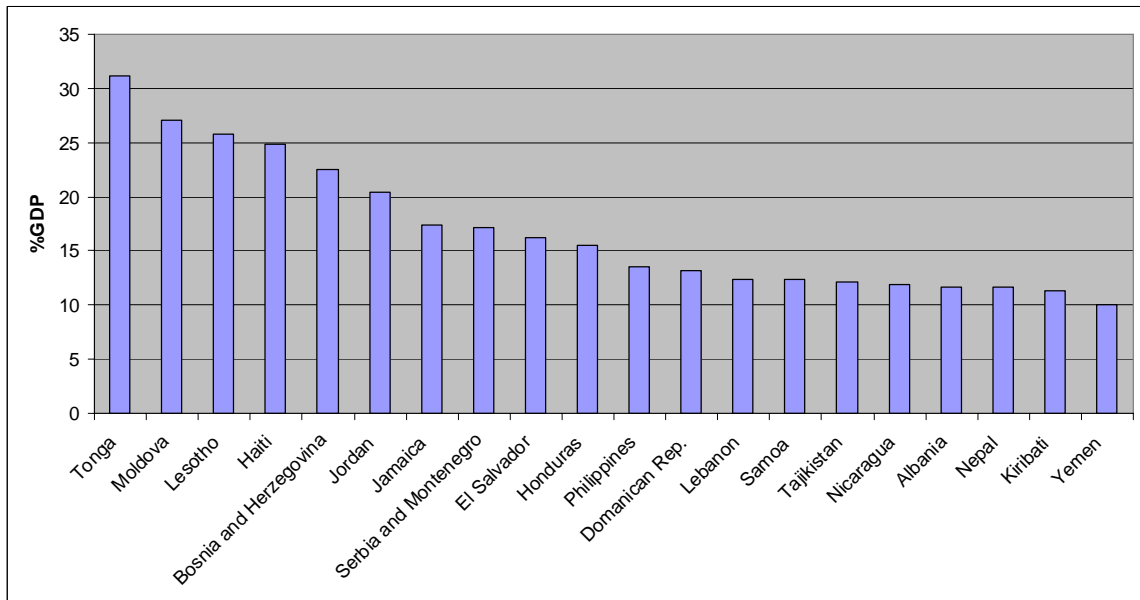


Figure 2b: Top 20 Recipients of Remittances as Percentage of GDP, 2004



Source: World Bank (2006)

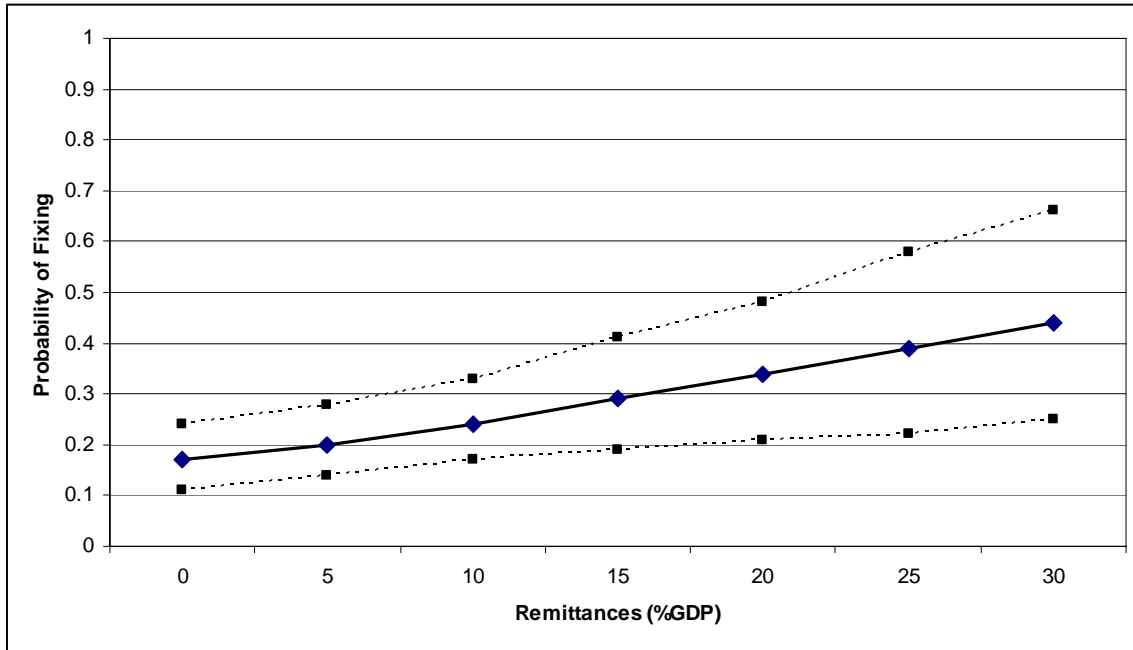
Table 2: Regression Results

Dependent variable: Exchange Rate Regime (1=fixed; 4=floating)	Model 1	Model 2
Exchange Rate Regime (lag)	1.43*** (0.17)	1.41*** (0.17)
Remittances (%GDP)	-0.03*** (0.01)	-0.03*** (0.01)
GDP (log)	0.07* (0.04)	0.08** (0.04)
GDP per capita	0.00 (0.00)	0.00** (0.00)
Trade Openness	0.00 (0.00)	0.00 (0.00)
Capital Account Openness (KAOPEN)	0.08*** (0.03)	0.07** (0.03)
Reserves (in months of exports)	-0.02** (0.01)	-0.02** (0.01)
Terms of Trade Volatility	-0.04*** (0.01)	-0.04*** (0.01)
Polity		0.03*** (0.01)
Regime Change		-0.17 (0.27)
Political Constraints		-0.02 (0.33)
Observations	618	617
Countries	59	59
Pseudo R-squared	0.45	0.45
Prob > chi-squared	0.00	0.00

Note: Ordered probit; standard errors (clustered on country) in parentheses.

*p<=.10; **p<=.05; ***p<=.01.

Figure 3:
Predicted Probability of Fixing the Exchange Rate by Level of Remittances



Note: Dotted lines represent 95 percent confidence intervals. Simulations conducted using CLARIFY (Tomz *et al* 2003).