

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 adopt fixed exchange rates. An analysis of data on *de facto* exchange rate regimes and a newly available dataset on remittances for up to 74 developing countries from 1983 to 2004 provides strong support for these arguments; the results are robust to instrumental variable analysis and the inclusion of multiple economic and political control variables.

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Over the past two decades, migrant remittances have emerged as a significant source of external finance for developing countries. Remittances—which arise when migrants send money back home to their families—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. Indeed, the contrast between remittances and other capital flows is remarkable. Most sources of external finance, including international bank lending, sovereign bond investment, and FDI, are highly *procyclical* in their reaction to the state of the receiving economy. For example, bank lending will dry up if a country experiences a financial crisis, thereby exacerbating the subsequent economic contraction. Similarly, bond investors will withdraw their funds from countries experiencing high inflation and fiscal difficulties, while FDI will decline in reaction to a downturn in economic growth (Mosley 2000, 2003; Jensen 2006; Li and Resnick 2003). Scholars have these procyclical capital flows 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). On

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

the other hand, 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, migrants tend to increase their remittances when their countries of origin experience economic downturns. As a result, remittances smooth the incomes of families and shield policymakers from the vagaries of the global economy. In short, financial transfers from migrants 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 national policy choices. This article focuses 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 a fixed exchange rate precludes the use of the domestic interest rate as an economic adjustment mechanism (Bernhard and Leblang

1999; Cohen 1993; Leblang 1999; Broz 2002). However, the assumption that capital flows are uniformly constraining on national policymaking is not compelling for developing countries that are heavily dependent on remittances. This article argues 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 implementation 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 newly available World Bank data on annual remittances from 1983-2004 for up to 99 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; middle-income countries also appear to be highly influenced by remittances when setting exchange rate policy. I also account for possible endogeneity by using migrant flows to wealthy countries as an instrumental variable for remittances. The article concludes with a discussion of the broader implications of remittances for the political economy of national policymaking in a global economy.

Remittances: Definitions, Trends, and Consequences

International financial transfers from migrants 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).

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 external sources of capital flows in the developing world*. Even in Mexico, which is 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).

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 total remittances

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).

accrue 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 six 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. 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).

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 also facilitate 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 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.

To understand the consequences of remittances, it is helpful first to understand the motivation of remitters. 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.

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

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 here. 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).

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

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 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

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

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. 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 contractions 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 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). Moreover, notwithstanding current reports of a temporary downturn in remittances from the U.S. to Mexico, a recent IMF study demonstrates that remittances to Latin America are relatively insensitive to the U.S. business cycle, thereby underlining their role as a stable source of external finance (Roache and Gradzke 2007). 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).

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, many 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 political economy models should differentiate the impact of remittances from more conventional financial flows, such as sovereign lending or FDI. 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 (Mundell 1960; Fleming 1962). 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 and his colleagues, for example, argue that exporters and import-competers both value currency depreciation, and therefore oppose a rigidly fixed exchange rate, whereas foreign investors and creditors value the stability of a fixed rate (Blomberg, Frieden, and Stein 2005; 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 responsive to differential rates of return (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 standard argument is that financial closure allows governments to reap the benefits of fixed exchange rates without sacrificing domestic monetary policy autonomy (Bernhard and Leblang 1999; 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 chases the highest rate of return is reasonable for developed countries but questionable for many developing countries. In

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.

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 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 differential rates of return 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. Consider the impact of an increase in remittances during a recession in the receiving country. 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 exchange-rate models as applied by political economists are limited by their stylized 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. 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 99 developing countries during the 1983-2004 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).⁷ 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.⁸ 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

⁷ Data for the years 2002-2004 are from Eichengreen and Razo-Garcia 2006.

⁸ See Reinhart and Rogoff 2004; further details are available on Reinhart's website, <http://www.publicpolicy.umd.edu/faculty/reinhart/readme.txt>

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, are newly available from the World Bank's World Development Indicators (multiple years).⁹ I use these data 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. 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 simple baseline model (Model 1) that includes GDP (logged), GDP per capita (logged), and the measure of remittances (lagged one period). Model 2 includes a fuller complement of macroeconomic and political variables. I control for OCA considerations by including 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

⁹ The measure includes funds classified as "workers' remittances."

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.¹⁰ The index has a mean of zero and ranges from -2.66 (full capital controls) to 2.66 (complete liberalization). Based on prior scholarship, capital account openness should be negatively associated with the adoption of fixed rates. However, OCA theory suggests that countries with more open capital accounts should be more likely to adopt fixed exchange rates, as high levels of financial integration can generate strong domestic support for stable cross-border financial relationships.

Model 2 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 (e.g., Klein and Marion 1997). 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 three 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). Finally, Model 2 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. Given the ordinal nature of the dependent variable, I estimate the models using ordered probit with standard errors clustered on country. I do not include a lagged dependent variable;

¹⁰ For a detailed description of this measure, see Chinn and Ito 2006.

however, the result for remittances remains statistically significant in all models with its inclusion. Summary statistics for all variables are presented in Table 1.¹¹ Table 2 presents the regression results.

Table 1 and Table 2 here

The results from Models 1 and 2 support the hypothesis that inward remittances are associated with fixed exchange rate regimes 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. The two measures of exposure to the international economy, KAOPEN and trade openness, are both negative and significant as expected by OCA theory. Note, however, that simpler measures of capital controls have been shown to be positively associated with floating exchange rates in prior scholarship (e.g., Broz 2002; Leblang 1999). 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 GDP and GDP per capita are significant in Model 1, they lose significance in Model 2. The coefficient for terms of trade volatility is positive as expected, but it is just shy of conventional levels of significance. In addition, the coefficient for Polity is positive and significant, which supports the idea that democracies can sustain floating exchange rates by using domestic institutions to credibly commit to price stability.

¹¹ I exclude the countries in the CFA Franc zones in Africa, as their inclusion as independent observations is questionable in light of the prominent role of French central bank in their monetary affairs. See, e.g., Stasavage 1997. Moreover, their inclusion in the sample could bias the results in favor of my argument, as they are coded as fixed exchange rate regimes with relatively high levels of remittances.

In the third model, I incorporate two additional political variables that may be relevant to exchange rate regime choice. First, political instability may be associated with floating if policymakers 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 reneging on an exchange rate commitment in the future. I use a measure of adverse regime changes from the Political Instability Task Force (PITF). The variable “Political Crisis” is the percentage of the prior five years in which the 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 (PITF 2001).¹²

Second, 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. The number 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.

¹² The PITF database records the beginning and ending years of the adverse regime change. The variable “Political Crisis” can therefore range from 0 to 100 percent, depending on the status of the country in the prior five years.

The results for Model 3, presented in the third column in Table 2, show that the initial finding for the effect of remittances remains negative and significant with the inclusion of the additional political variables, neither of which is significant. The other results are largely unchanged; however, note that the inclusion of these variables reduces the sample size substantially due to limited data availability.

Since the substantive interpretation of ordered probit coefficients is not straightforward, I provide simulations with estimates from Model 2 in Figure 3.¹³ 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 20 percent, although a few countries in the sample have remittances in excess of this level.¹⁴ When remittances increase by one standard deviation from the sample mean—i.e., from approximately 4 percent to 14 percent—the probability of fixing the exchange rate increases from 18 percent to 39 percent.

Figure 3 here

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

¹³ Simulations conducted using CLARIFY (Tomz *et al* 2003).

¹⁴ Lesotho receives remittances in excess of 80 percent in certain years; the results are robust to dropping Lesotho from the sample.

with a similar measure of agricultural production. Manufacturing was in fact statistically significant, although its sign was negative, indicating an association with fixed exchange rates. Agricultural production was not statistically significant. A annual measure of the percentage of countries in the world under fixed rates—as a means to capture the ideological bias in favor of (or against) fixed exchange rates—was also not significant (Collins 1996; Frieden *et al* 2001; Broz 2002). Finally, 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 Model 2. Not surprisingly, it was not significant. 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.

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 classified by the World Bank as “low income.” The truncation results in a loss of 269 country-years, but the finding for remittances remains largely unchanged. The impact of remittances is similarly robust to dropping all countries in the middle-income category.¹⁵

Finally, because the ordered probit model is limited in its ability to account for cross-country heterogeneity¹⁶, I transformed the dependent variable into a binary measure

¹⁵ The World Bank defines “low income” as GNI under \$905, and “middle income” as GNI between \$906 and \$11,115.

¹⁶ Fixed-effects ordered probit and ordered logit models do not provide consistent estimates.

and estimated a logit model with country fixed effects.¹⁷ This conditional logit model accounts for unobserved cross-country variation, including *inter alia* the degree of correlation between the economic cycles of the remitting and receiving countries, the cultural motivations for remitting, and other time-invariant characteristics of countries.¹⁸ It should be noted that remittance levels *as a share of GDP* are relatively slow to change over time for many countries, and therefore the fixed effects model provides a particularly strenuous test. Nevertheless, results on the variables of interest remain substantively unchanged from the ordered probit analysis, although the sample size is reduced to 24 countries (383 observations) due to the fixed effects estimator. Results are presented in Table 3, Model 4.

Table 3 here

Instrumental Variable Analysis

If migrants take into account exchange-rate instability when deciding whether or not to remit, then the models presented above may be biased due to endogeneity. To be clear, there is little reason to expect that fixed exchange rates themselves cause a greater inflow of remittances as a share of GDP.¹⁹ Nevertheless, to address the possibility of endogeneity, I employ an instrumental variable analysis using the five-year rolling average annual emigration to 15 advanced industrial countries, scaled by the sending country's population.²⁰ This variable, labeled "emigration," is a suitable instrument

¹⁷ Country-years higher than 6 on the Reinhart and Rogoff fine scale were coded as 1 (floating), with 14 and 15 discarded.

¹⁸ On the *insensitivity* of remittances to the sending country's business cycle, see Roache and Gradzka 2007.

¹⁹ It is possible that migrants take into account the level of the exchange rate when deciding when, not whether, to remit.

²⁰ Data from United Nations 2006. I thank Dean Yang and Jessica Hoel for graciously compiling and sharing the data. A five-year rolling average was also used in Esteves and Khoudour Casteras 2008. The 15

because it is clearly correlated with remittances (one would expect that countries with high levels of emigration to wealthy countries would experience high levels of remittances), but it satisfies the exclusion restriction—namely that there is no theoretical reason for it to be causally related to the country’s exchange rate regime. The analysis proceeds in two stages. In the first stage, the remittances variable is regressed on the instrument and the other control variables in Model 3 (Table 3).²¹ The predicted value of remittances from the first stage is then included as a regressor in a second-stage probit model, using the dichotomous measure of exchange rate regime as the dependent variable. This “two stage probit least squares” model has been shown to produce consistent estimates (Alvarez and Glasgow 1999). The results of the second stage are included as Model 5 in Table 4. Similar results are obtained by using a linear two-stage least squares model using the original ordered (1-4) dependent variable.²² The coefficient on instrumented remittances in all models is negative and statistically significant. However, the results should be interpreted with caution, as the instrument is considered weak by standard diagnostics.²³

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 government policymaking. Indeed, the evolution of financial globalization is taking an

countries are Australia, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Netherlands, New Zealand, Norway, Spain, Sweden, United Kingdom, and United States.

²¹ In the first stage, the instrument is positive and significant at the 99 percent level.

²² Results obtained using Stata’s `xtivreg` command with random effects.

²³ The F-statistic on the instrument is approximately 6.0. Please see Reviewers’ Appendix.

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 74 developing countries from 1983 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. 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 (e.g., Bernhard and Leblang 2006). 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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Table 1: Summary Data

Variable	Mean	Standard Deviation	Minimum	Maximum
Exchange Rate Regime	2.243	0.862	1	4
Remittances (%GDP)	4.640	10.073	0	90.421
GDP (log)	23.603	1.849	19.177	28.131
GDP per capita (log)	7.085	1.012	5.022	9.897
Trade Openness	67.407	39.460	5.314	280.36
Capital Account Openness	-0.070	1.382	-1.752	2.623
Reserves	4.217	3.477	0.167	27.083
Terms of Trade Volatility	6.704	7.886	0	71.522
Polity	2.460	6.699	-10	10
Political Crisis	0.010	0.050	0	0.40
Political Constraints	0.338	0.214	0	0.691

Table 2: Ordered Probit Results

Dep. variable: Exchange Rate Regime (1=fixed; 4=floating)	Model 1	Model 2	Model 3
Remittances/GDP (lagged)	-0.037*** (0.014)	-0.068*** (0.020)	-0.057* (0.030)
GDP (log)	0.168*** (0.060)	-0.074 (0.078)	-0.115 (0.103)
GDP per capita (log)	-0.223** (0.099)	-0.073 (0.156)	0.190 (0.195)
Trade Openness (lagged)		-0.006** (0.003)	-0.009 (0.005)
Capital Account Openness (KAOPEN)		-0.148** (0.066)	-0.226** (0.102)
Reserves (in months of exports)		-0.036** (0.018)	-0.027 (0.052)
Terms of Trade Volatility		0.012 (0.008)	0.006 (0.014)
Polity		0.039*** (0.015)	0.050** (0.025)
Political Crisis			-0.023 (3.566)
Political Constraints			-1.059 (0.744)
Cut 1	1.595 (1.097)	-3.817 (1.513)	-3.088 (2.226)
Cut 2	2.603 (1.108)	-2.525 (1.519)	-1.983 (2.226)
Cut 3	3.959 (1.125)	-1.151 (1.545)	-0.188 (2.286)
Observations	1618	802	401
Countries	99	74	36
Pseudo R-squared	0.070	0.120	0.148
Prob > chi-squared	0.00	0.00	0.00

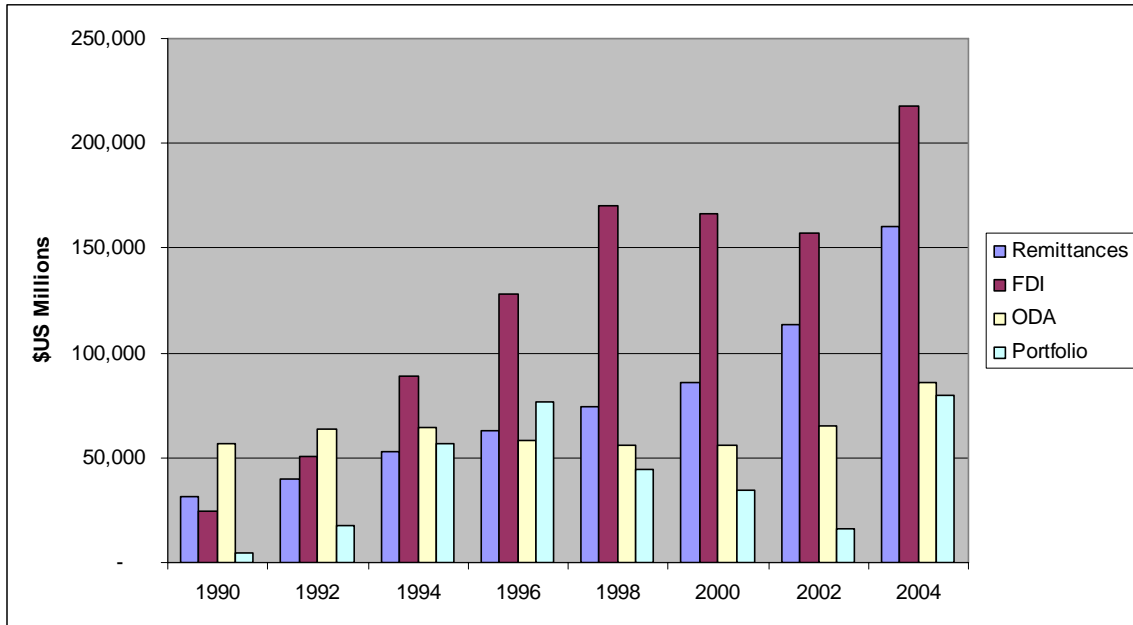
Note: Ordered probit coefficients; standard errors (clustered on country) in parentheses.
 *p<=.10; **p<=.05; ***p<=.01.

Table 3: Logit and Instrumental Variable Probit Results

Dep. variable: Exchange Rate Regime (0=fixed; 1=floating)	Model 4 (fixed effects logit)	Model 5 (IV Probit)
Remittances/GDP (lagged)	-0.165** (0.071)	-0.100*** (0.038)
GDP (log)	4.047** (1.813)	-0.173*** (0.049)
GDP per capita (log)	-9.314*** (2.352)	-0.163** (0.075)
Trade Openness (lagged)	0.006 (0.008)	-0.003 (0.004)
Capital Account Openness (KAOPEN)	-0.117 (0.184)	-0.097** (0.040)
Reserves (in months of exports)	-0.238** (0.105)	-0.010 (0.015)
Terms of Trade Volatility	0.006 (0.028)	0.002 (0.008)
Polity	0.646*** (0.107)	0.035** (0.016)
Observations	383	802
Countries	24	74
Log Likelihood	-104.578	-3311.422
Prob > chi-squared	0.000	0.000

Note: Model 4 presents conditional logit coefficients (country fixed effects); Model 5 presents the second-stage results of an instrumental probit model (see text for discussion). Standard errors in parentheses.
*p<=.10; **p<=.05; ***p<=.01.

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



Source: World Bank (2006)

Figure 2a: Top 20 Recipients of Remittances, 2004

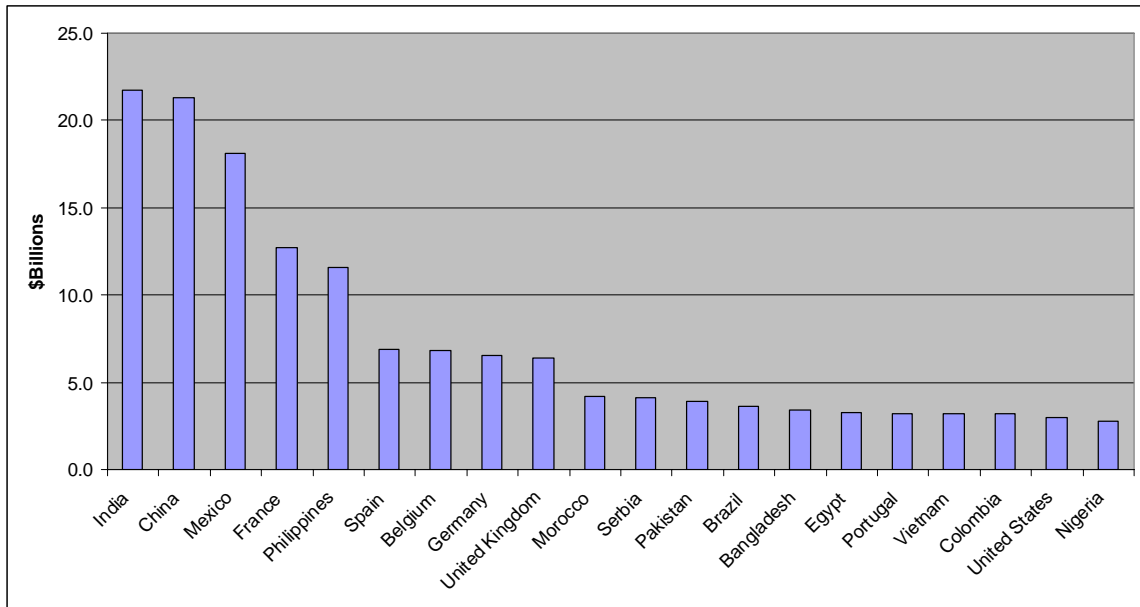
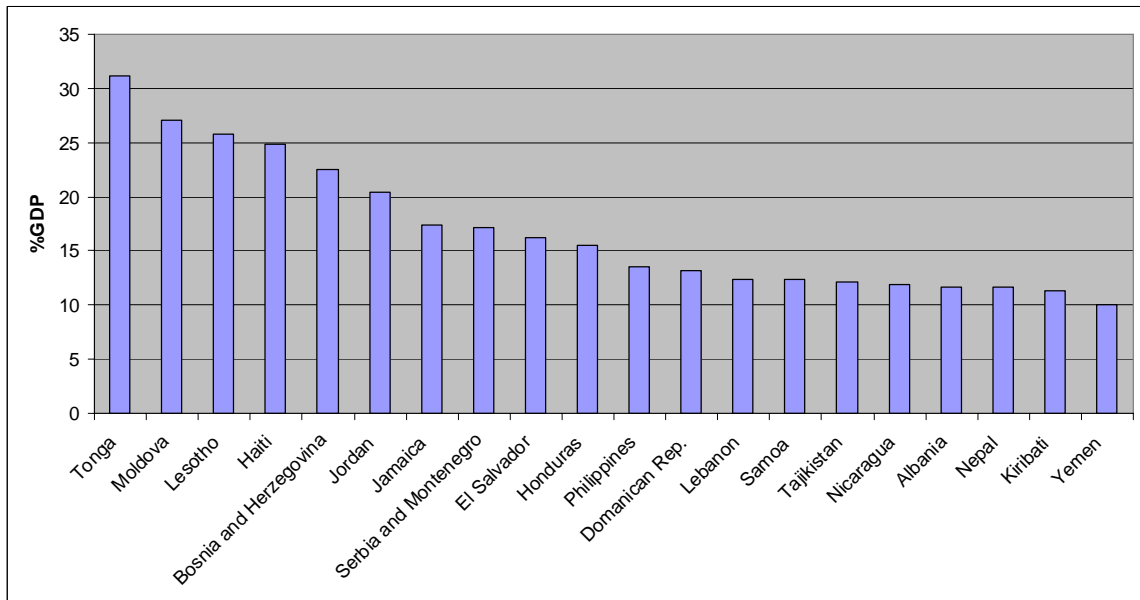
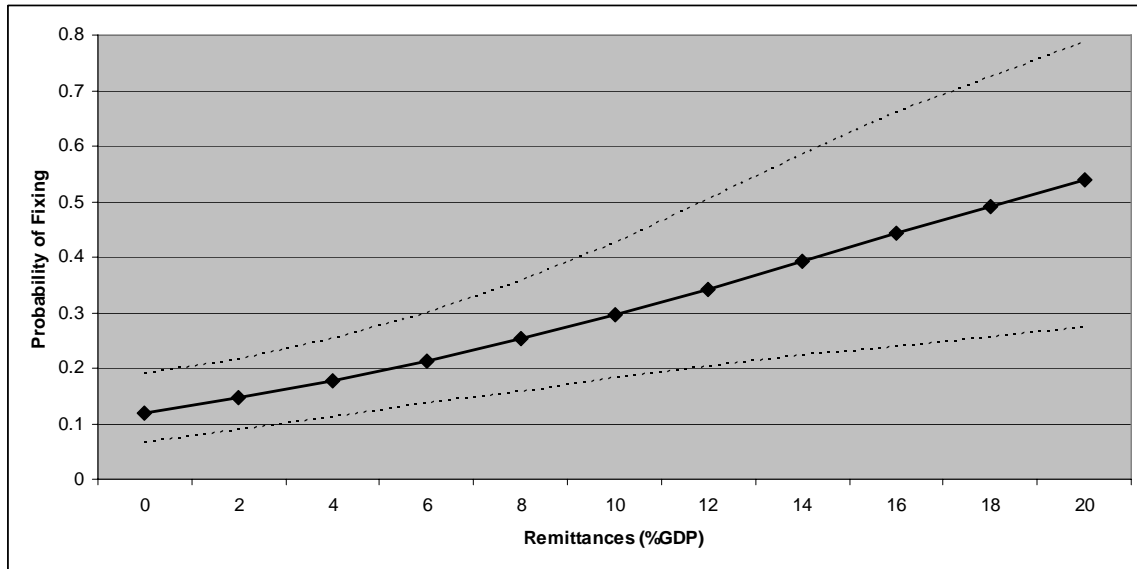


Figure 2b: Top 20 Recipients of Remittances as Percentage of GDP, 2004



Source: World Bank (2006)

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



Note: Results based on Model 1. All other variables held at their means. Dotted lines represent 95 percent confidence intervals. Simulations conducted using CLARIFY (Tomz *et al* 2003).