

Do Remittances Promote Financial Development? *
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Abstract

Workers' remittances to developing countries have become the second largest type of flows after foreign direct investment. This paper uses data on remittance flows to 109 developing countries during 1975-2007 to study the link between remittances and financial sector development. In particular, we examine the association between remittances and the aggregate level of deposits and credit intermediated by the local banking sector. This is an important question considering the extensive literature that has documented the growth-enhancing and poverty-reducing effects of financial development. We provide evidence of a positive, significant, and robust link between remittances and financial development in developing countries.

Keywords: remittances, financial development, financial institutions

JEL Classification: F37, G21, O16

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Do Remittances Promote Financial Development?

Remittances, funds received from migrants working abroad, to developing countries have grown dramatically in recent years from U.S. \$3.3 billion in 1975 to close to U.S. \$289.4 billion in 2007 (World Bank, 2009). They have become the second largest source of external finance for developing countries after foreign direct investment (FDI) and represent about twice the amount of official aid received, both in absolute terms and as a proportion of GDP (Figures 1 and 2). Relative to private capital flows, remittances tend to be stable and increase during periods of economic downturns and natural disasters (Yang, 2008a). Furthermore, while a surge in inflows, including aid flows, can erode a country's competitiveness, remittances do not seem to have this adverse effect (Rajan and Subramanian, 2005).

As researchers and policymakers have come to notice the increasing volume and stable nature of remittances to developing countries, a growing number of studies have analyzed their development impact along various dimensions, including: poverty, inequality, growth, education, infant mortality, and entrepreneurship.¹ However, surprisingly little attention has been paid to the question of whether remittances promote financial development across remittance-recipient countries.² Yet, this issue is important because financial systems perform a number of key economic functions and their development has been shown to foster growth and reduce poverty (see King and Levine, 1993; Beck, Levine and Loayza, 2000a,b; and Beck, Demirguc-Kunt, and Levine, 2007). Furthermore, this question is relevant since some argue that banking remittance

¹ A review of this literature can be found in Section 2.

² Using municipality-level data for Mexico in 2000, Demirguc-Kunt, Lopez-Cordova, Martinez Peria, and Woodruff (2010) show that remittances have a positive impact on the number of branches, number of accounts, and value of deposits and credit to GDP.

recipients will help multiply the development impact of remittance flows (Hinojosa-Ojeda, 2003; Terry and Wilson, 2005, and World Bank, 2006).

In this paper, we use balance of payments data on remittance flows received by 109 countries over the period 1975-2007 to study the link between workers' remittances and financial sector development. Specifically, we examine whether remittances contribute to the development of the financial sector by increasing the aggregate level of deposits and/or the amount of credit extended by the local banking sector to the private sector. We focus on these measures for two reasons. First, given that banks play a leading role in the supply of external finance in most developing countries, banking sector development in these countries is of key importance. Second, since remittances are small flows going primarily to poor individuals, we expect a direct link with capital market development to be less probable.

Whether and how remittances might affect financial, particularly banking, development is a priori unclear. The notion that remittances can lead to banking sector development in developing countries is based on the concept that money transferred through financial institutions can pave the way for recipients to demand and gain access to other financial products and services, which they might not have otherwise (Orozco and Fedewa, 2007). At the same time, providing remittance transfer services allows banks to "get to know" and reach out to unbanked recipients or recipients with limited financial intermediation. For example, remittances might have a positive impact on credit market development if banks become more willing to extend credit to remittance recipients because the transfers they receive from abroad are perceived to be significant and stable (i.e., serve as collateral, at least informally). However, even if bank lending to remittance recipients does not materialize, overall credit in the economy might increase if banks' loanable funds surge as a result of deposits linked to remittance flows.

Furthermore, because remittances are typically lumpy, recipients might have a need for financial products that allow for the safe storage of these funds, even if most of these funds are not received through banks. In the case of households that receive their remittances through banks, the potential to learn about and demand other bank products is even larger.

On the other hand, because remittances can help relax individuals' financing constraints, they might lead to a lower demand for credit and have a dampening effect on credit market development. Also, a rise in remittances might not translate itself into an increase in credit to the private sector if these flows are instead channeled to finance the government or if banks are reluctant to lend and prefer to hold liquid assets. Finally, remittances might not increase bank deposits if they are immediately consumed or if remittance recipients distrust financial institutions and prefer other ways to save these funds.

An important complication in empirically studying the impact of remittances on financial development is the potential for endogeneity biases as a result of measurement error, reverse causation, and omitted variables. Officially recorded remittances are known to be measured with error.³ In particular, balance of payments data on remittances tend to record more accurately remittances sent via banks and in some cases ignore those sent via non-bank institutions (since these are typically not regulated) and informal channels such as relatives, friends, and Hawala-type operators.⁴ Estimates of unrecorded remittances range from 50 to 250 percent of official statistics on remittances (Freund and Spatafora, 2008). Another problem associated with aggregate remittance data is the fact that the concepts and methodologies used are not applied

³ For a good discussion of the measurement problems associated with remittances data see Reinke (2007)

⁴ Surveying central banks in 77 remittance-receiving countries, Irving, Mohapatra, and Ratha (2010) find that statistics produced by developing countries typically under-report remittances paid directly by non-banking institutions – such as money transfer companies, exchange bureaus, post offices, etc. While over 91 percent of the countries collect remittance data from commercial banks, 75 percent of countries gather statistics from at least one type of non-bank source. In particular, 56 percent collect data from money transfer companies, 22 percent of countries gather statistics from exchange bureaus, and 26 percent do so from post offices.

uniformly across all countries. Data sourcing and compilation is better in some countries than others (see Reinke, 2007).

Reverse causality is also a concern when examining the link between remittances and financial development, since greater financial development might lead to larger measured remittances either because financial development enables remittance flows or because a larger percentage of remittances are measured when those remittances are channeled through formal financial institutions. In addition, financial development might lower the cost of transmitting remittances, leading to an increase in such flows. Finally, omitted factors can explain both the evolution of remittances and of financial development, also leading to biases in the estimated impact of remittances on financial development.

We try to address the concerns mentioned above, using several different empirical approaches to examine the relationship between remittance flows and financial development. First, we conduct country fixed effects estimations to account for unobserved country characteristics. Second, we present estimations including time dummies to control for time effects or common shocks and trends across countries. Third, to mitigate the concern that the link between remittances and banking sector development might be tautological - because balance of payments data on remittances primarily capture flows intermediated by banks -, we run our estimations on a sample (albeit smaller) of countries for which we know, based on a survey of central banks (see Irving, Mohapatra, and Ratha 2010), that official remittances data encompass flows transmitted through at least some non-bank entities (such as money transfer operators, exchange bureaus, credit unions, etc.) and/or informal mechanisms, as well as by banks.⁵ Fourth,

⁵ Also, as a way to mitigate concerns about the quality of the remittance data, we obtain estimates over the last decade to account for the fact that recent remittances data are likely to be more accurate relative to statistics from the beginning of the sample, when less attention was given to the measurement of these kinds of flows. These results,

to try to address biases due to reverse causality, we run regressions lagging all regressors one period and we conduct dynamic system Generalized Method of Moments (GMM) estimations à la Arellano and Bover (1995), using lagged regressors as instruments. Finally, we perform instrumental variables (IV) estimations to try to address, in a more direct manner, the potential endogeneity of remittances arising from measurement error, omitted factors, and/or reverse causation. We use two sets of instruments based on characteristics of the top five remittance-sending countries (i.e., the countries where migrants sending remittances reside) for each country in our sample: (a) measures of economic conditions in remittance-sending countries and (b) variables that capture the views held and the policies pursued by policy-makers in remittance-sending countries with respect to international immigration.

Among the economic conditions in remittance-sending countries, we use GDP per capita and unemployment rates in the top five remittance-sending countries, for each country in our sample, to instrument for remittances, while controlling for the main alternative channels through which economic conditions abroad can affect remittance-receiving economies (e.g., exports, different forms of capital flows, GDP per capita). We weight economic conditions by the share of remittances received from each of the five countries that we identify, for each country in our sample, as one of the main sources of remittances. We argue that better economic conditions in remittance-sending countries, which are likely to improve the welfare of migrants working in these countries, should result in larger remittances.

Among the second set of instruments, for each country in our sample, we use their corresponding top five remittance-sending countries' views about international immigration and policies regarding international immigration obtained from the *World Population Policies*, a

which are similar to those for the complete sample period, are not reported in the paper, but are available upon request.

report published since 1976 by the United Nations Department of Economic and Social Affairs Population Division. Among other issues, this report surveys policy-makers responsible for population policies in each country to measure: (1) their views on the current levels of international immigration in their countries and (2) the objectives pursued by their current policies towards international immigration. In particular, regarding the views on international immigration, policy-makers are asked whether they believe that immigration is “too high”, “satisfactory”, or “too low”. Based on these responses, we create a variable that takes higher values when policy-makers perceive that immigration should increase. In terms of the policies towards international immigration, policy-makers are asked to report whether their goal is to “lower,” “maintain,” or “raise” the level of immigration. We code this variable so that higher values represent more welcoming policies vis-a-vis immigrants. We weight the variables on the views and, separately, the policies regarding migration in the top five remittance-sending countries by the share of remittances received from each of the corresponding top five remittance-sending countries.

Because the policies and views on migration are determined by policy-makers in migrant-receiving/remittance-sending countries according to the needs and goals of these countries, we see no reason why these variables would be correlated with financial development in remittance-receiving countries (other than through their impact on remittances). Furthermore, we conjecture that, other things equal, in countries where immigration is perceived as satisfactory or low and where policy-makers intend to maintain or raise the level of immigration, migrants would be more welcomed, would have an easier time finding employment, and sending remittances back home.

We find evidence of a positive and significant link between financial development and remittances, irrespective of the different control variables and estimation techniques used. Furthermore, our findings are robust to measuring financial development by the ratio of credit or deposits to GDP. Though it is difficult to ensure that all the potential biases associated with measurement error, reverse causality, and omitted factors are successfully addressed, overall the results in this paper make a compelling case for the notion that remittances can help foster financial development in developing countries.

The rest of the paper is organized as follows. Section 2 summarizes the main findings from the research on financial development and reviews the literature on the development impact of remittances. Section 3 discusses the data used and the methodology pursued to study the link between remittances and financial development. Section 4 presents the empirical results and Section 5 concludes.

2. Literature Review

The determinants of financial development and its impact on country and firm growth have been studied extensively. The main findings from the literature on the determinants of financial development can be summarized as follows. First, the level of inflation has a negative impact on financial sector development (Boyd, Levine, and Smith, 2001). Second, the degree of capital account openness and the liberalization of domestic financial systems help develop the financial sector (Chinn and Ito, 2002,6; Demirguc-Kunt and Detragiache, 1998). Third, national legal origin (i.e., English, French, German, Socialist or Scandinavian) affects both creditor rights and private credit, and the extent of creditor rights protection also has an independent effect on financial sector development (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1997, 1998;

Beck, Levine, and Loayza, 2000a; Beck, Demirguc-Kunt, and Levine, 2003; Djankov, McLish, Shleifer, 2007). Fourth, a country's geography and initial endowment also influence the extent of financial sector development (see Acemoglu, Johnson, and Robinson, 2001, 2002).⁶

In terms of the economic impact of financial development, King and Levine (1993), Levine and Zervos (1998) and Beck, Levine, and Loayza (2000a,b), among others, document how financial development is associated with greater growth across countries. Similar evidence also exists at the firm and industry levels (Demirguc-Kunt and Maksimovic, 1998 and Rajan and Zingales, 1998). More recently, Beck, Demirguc-Kunt and Levine (2007) have shown that in addition to the impact on growth, financial development also leads to lower levels of poverty and inequality.

Until now, most studies on the development impact of remittances focused mainly on issues such as poverty, inequality, education, entrepreneurial activity, and health.⁷ Household level research on the impact of remittances on poverty suggests that these transfers help reduce the level of poverty, but have an even greater influence on its severity, as measured by the poverty gap (e.g., Adams, 2005, on Guatemala; Lopez-Córdova, 2005, and Taylor, Mora, and Adams, 2005, on Mexico). The finding that remittances help reduce poverty is also confirmed in cross-country studies (Adams and Page, 2005, IMF 2005, and Maimbo and Ratha, 2005)

The evidence on the impact of remittances on inequality is fairly mixed and depends on whether remittances are treated as exogenous. While Stark, Taylor, and Yitzahki (1986, 1988), and Taylor and Wyatt (1996) provide evidence that remittances can in certain cases reduce

⁶ Other country characteristics like the degree of ethnic diversity (Easterly and Levine, 1997) and the type of religion practiced by the majority of the population (Stulz and Williamson, 2003) affect the level of financial development, but their impact is less robust (Beck, Demirguc-Kunt, and Levine, 2003). However, investigating determinants of property rights protection Ayyagari, Demirguc-Kunt and Maksimovic (2008) show that the results on legal origin are sensitive to inclusion of transition economies in the sample.

inequality, Milanovic (1987), Adams (1989), and Barham and Boucher (1998) report findings to the contrary.

Studies that analyze the impact of remittances on education such as Cox-Edwards and Ureta (2003), for the case of El Salvador, Yang (2008b), for the case of Philippines, and Hanson and Woodruff (2003) and López-Córdova (2005), for Mexico, find that by helping to relax household constraints, remittances are associated with improved schooling outcomes for children. Remittances have also been shown to promote entrepreneurship (Massey and Parrado, 1998; Woodruff and Zenteno, 2007; Maimbo and Ratha, 2005; Yang, 2008b). Furthermore, a number of studies on infant mortality and birth weight have documented that, at least in the Mexican case, migration and remittances help lower infant mortality and are associated with higher birth weight among children in households that receive remittances (Kanaiaupuni and Donato, 1999; Hildebrandt and McKenzie, 2005; Duryea et al., 2005; and López-Córdova, 2005).

Only recently, some studies have examined the impact of remittances on growth and their interaction with financial development. Yet, these studies have neglected to analyze how remittances affect financial development. Using a panel of 113 countries over almost three decades, Chami et al. (2005) find that remittances are negatively associated with economic growth. This result is consistent with their model in which remittances weaken recipients' incentives to work and, therefore, lead to poor economic performance. Solimano (2003), on the other hand, finds a positive association between remittances and growth for a panel of Andean countries, while the IMF's 2005 World Economic Outlook highlights the lack of direct correlation between these variables, at least at the country level.

⁷ Other studies such as Knowles and Anker (1981), Banerjee (1984), Lucas, and Stark (1985), Stark and Lucas (1988), Rosenzweig (1988), Cox, Eser, and Jimenez (1998), de la Brière, Sadoulet, de Janvry, and Lambert (2002),

Two recent studies by Giuliano and Ruiz-Arranz (2009) and Mundaca (2005) show that the impact of remittances on growth can depend on the level of financial development in a country. However, these studies reach very different conclusions. Using a panel of more than 100 countries for the period 1975-2003, Giuliano and Ruiz-Arranz (2009) show that remittances help promote growth in less financially developed countries. This study argues that this is evidence that agents compensate for the lack of development of local financial markets using remittances to ease liquidity constraints and to channel resources towards productive uses that foster economic growth. Mundaca (2005) analyzes the effect of workers' remittances on growth in countries in Central America, Mexico, and the Dominican Republic using a panel data set over 1970 to 2003. This study finds that controlling for financial development in the analysis strengthens the positive impact of remittances on growth and concludes that financial development potentially leads to better use of remittances, thus boosting growth. Neither study, however, investigates the direct impact of remittances on financial development.

In contrast, Demirguc-Kunt, Lopez Cordova, Martinez Peria, and Woodruff (2010) is to our knowledge the first study to show that remittances have a direct positive impact on the breadth and depth of the banking sector. Using municipality-level data for Mexico for 2000, the authors show that in municipalities where a larger share of the population receives remittances, the number of branches, number of accounts, and value of deposits to GDP is higher. Our paper adds to this study by showing that the contribution of remittances to financial development is not specific to Mexico, but persists across countries and over a longer time period.

have examined what motivates a migrant to remit.

3. Empirical methodology and data

We empirically examine the link between financial development and remittances by estimating a number of variants of equation (1)

$$FD_{i,t} = \beta_1 Rem_{i,t-1} + \beta_2 X_{i,t-1} + \alpha_i + u_{i,t} \quad (1)$$

where i refers to the country and t refers to the time period from 1975 to 2007. However, data for the complete time period are not available for all countries and countries are only included if at least five years of data are available. A complete list of countries and time periods is given in Appendix Table 1. Appendix Table 2 provides definitions and sources for each of the variables in our estimations. Table 1 presents descriptive statistics and Table 2 shows correlations among the variables.

FD , financial development, refers either to the share of bank deposits or the ratio of bank credit to the private sector expressed as a percentage of GDP. These are the standard measures of financial depth used in the literature (e.g., King and Levine, 1993). Data to construct these ratios come from the *International Financial Statistics* (IMF) and the *World Development Indicators* (World Bank). As shown in Table 1, the average ratio of deposit (credit) to GDP is 31.4 percent (25.5), but the standard deviation of 23.4(20.7) indicates that there is significant heterogeneity across countries.

Rem refers to the ratio of remittances to GDP. The data on remittances are obtained from the World Economic Outlook (IMF) and from World Development Indicators (World Bank). These data are constructed as the sum of three items in the *Balance of Payment Statistics Yearbook* (IMF): *workers' remittances* (current transfers made by migrants who are employed

and resident in another economy); *compensation of employees* (wages, salaries and other benefits earned by nonresident workers for work performed for resident of other countries); and *migrant transfers* (financial items that arise from the migration or change of residence of individuals from one economy to another). Figures 3 and 4 show the top ten remittance recipient countries in our sample based on averages for the period 1975-2007, measured both in U.S. billion dollars and as a proportion of GDP. India (\$U.S. 7.99 billion), Mexico (\$U.S. 7.08 billion), China (\$US 5.68 billion), Philippines (\$U.S. 4.54 billion), and Egypt (\$U.S. 3.54 billion), are among the largest recipients of remittances in absolute terms as shown in Figure 3. Relative to the size of the economy, remittances are especially high among low-income, small economies such as Lesotho (58.03%) Samoa (24.45%), Tonga (23.28%), Jordan (19.72%), and Moldova (17.63%). as shown in Figure 4.

The matrix X in equation (1) refers to a set of variables that the literature has found to affect financial development. In all estimations we control for country size, defined as the log of GDP in constant dollars, and the level of economic development, as measured by GDP per capita. These variables are included on the grounds that financial sector development requires paying fixed costs that become less important the larger the size of the economy and the richer the country (Djankov, McLiesh, and Shleifer, 2007). Also, GDP per capita can proxy for the quality of legal institutions in the country, which have been shown to have a positive impact on financial development (e.g., La Porta, Lopes-de-Silanes, Shleifer, and Vishny 1997, 1998; Beck, Levine, and Loayza, 2000a; Beck, Demirguc-Kunt, and Levine 2003; and Djankov, McLiesh, and Shleifer, 2007).

In all models, we also control for inflation, measured as the annual percentage change in the GDP deflator. Studies have shown that inflation distorts economic agents' decision-making

regarding nominal magnitudes, discouraging financial intermediation, and promoting saving in real assets (Boyd, Levine, and Smith, 2001).

Current and capital account openness have also been found to have a positive effect on financial development (see Chinn and Ito, 2002, 2006).⁸ We include a number of variables to control for the degree of capital and current account openness. First, we include a dummy for the presence of dual exchange rate regimes – a measure of current account and capital account restrictions. Second, we control for the share of exports to GDP.⁹ Third, we also control for different capital inflow ratios, most notably: foreign direct investment flows to GDP, aid flows to GDP, and portfolio flows to GDP. Because this last variable is available for fewer countries, in most tables we include regressions with and without this variable.

We first examine the relationship between financial development and remittances by running estimations with country fixed effects to control for unobserved country characteristics.¹⁰ We also conduct estimations adding time dummies to control for common shocks and trends across countries. Both sets of estimations should lessen concerns about endogeneity due to relevant omitted factors.

To address the criticism that the link between remittances and banking development might be tautological, because balance of payments data on remittances capture primarily flows intermediated by banks, we run our estimations on a smaller sample of countries for which we know that official remittances data encompass flows transmitted through banks but also non-bank entities (such as money transfer operators, exchange bureaus, credit unions, post offices,

⁸ Chinn and Ito (2002, 2006) focus primarily on how openness affects equity market development.

⁹ We control for the share of exports to GDP instead of the ratio of exports plus imports because we are concerned primarily with how trade openness can result in an increase in reserves and, hence, in a potential inflow of funds into the financial sector. While exports can lead to such an increase in reserves, we do not expect imports to do so.

¹⁰ We conducted a Hausmann test to determine that a fixed effects model was more appropriate than a random effects one.

etc.) and/or informal mechanisms (hawala operators, friends and relatives). In particular, based on a survey of central banks in 77 countries detailed in Irving, Mohapatra, and Ratha (2010), we identify 42 countries in our sample for which remittances data is put together taking into account information provided by non-bank institutions, as well as banks.¹¹

To tackle the potential bias due to reverse causality, we conduct estimations lagging regressors one period (following equation 1) and, separately, we use lagged values of the regressors as instruments in a GMM dynamic framework à la Arellano and Bover (1995). In particular, (2) and (3), are estimated as part of the dynamic system GMM estimates

$$FD_{i,t} = \gamma FD_{i,t-1} + \beta_1 Rem_{i,t} + \beta_2 X_{i,t} + \alpha_i + u_{i,t} \quad (2)$$

$$FD_{i,t} - FD_{i,t-1} = \gamma(FD_{i,t-1} - FD_{i,t-2}) + \beta_1(Rem_{i,t} - Rem_{i,t-1}) + \beta_2(X_{i,t} - X_{i,t-1}) + u_{i,t} - u_{i,t-1} \quad (3)$$

In equations (2) and (3), the use of instruments is required to deal with the likely endogeneity of the explanatory variables (most notably, remittances) and with the fact that in both equations the error term is correlated with the lagged dependent variable. Assuming that (a) the error terms are not serially correlated, (b) the explanatory variables are weakly exogenous (i.e., explanatory variables are uncorrelated with future realization of the error terms), and (c) there is no correlation between the changes in the right hand side variables and the country specific effects, α_i , then the following moment conditions can be applied to obtain unbiased estimates of the regressors:

$$E[FD_{i,t-s} (u_{i,t} - u_{i,t-1})] = 0 \text{ for } s \geq 2; t=3, \dots, T \quad (4)$$

¹¹ The aforementioned 42 countries for which we know from Irving, Mohapatra, and Ratha (2010) that remittances

$$E[Rem_{i,t-s} (u_{i,t} - u_{i,t-1})] = 0 \text{ for } s \geq 2; t=3, \dots, T \quad (5)$$

$$E[X_{i,t-s} (u_{i,t} - u_{i,t-1})] = 0 \text{ for } s \geq 2; t = 3, \dots, T \quad (6)$$

$$E[(FD_{i,t-s} - FD_{i,t-s-1})(\alpha_i + u_{i,t})] = 0 \text{ for } s = 1 \quad (7)$$

$$E[(Rem_{i,t-s} - Rem_{i,t-s-1})(\alpha_i + u_{i,t})] = 0 \text{ for } s = 1 \quad (8)$$

$$E[(X_{i,t-s} - X_{i,t-s-1})(\alpha_i + u_{i,t})] = 0 \text{ for } s = 1 \quad (9)$$

Hence, lagged values of the difference of regressors can be used as instruments to estimate the equation in levels (i.e., equation 2), and lagged values of the level of regressors can be used as instruments for the regressors in the equation in first differences (i.e., equation 3).

While using lagged values of the regressors as instruments can help deal with the problem of reverse causality, it does not address biases arising due to measurement error, since lagged values of the regressors (in particular, remittances) are likely to suffer from this problem as well. Therefore, we also present Instrumental Variables (IV) estimations where we use external as opposed to internal instruments. In particular, we conduct two set of instrumental variable estimations using, for each country in our sample, characteristics of the top five remittance-sending countries. We conjecture that variables associated with remittance-sending as opposed to remittance-receiving countries (our unit of observation) are more likely to be exogenous to financial development in the latter set of countries.

First, we use two-period lagged economic conditions such as GDP per capita and unemployment in remittance-sending countries as instruments for the remittances flows received by the countries in our sample. Economic conditions in the remittance-sending countries are likely to affect the volume of remittance flows that migrants are able to send, but are not

data capture flows transmitted through banks and non-banks are shown with an asterisk next to their name in

expected to affect financial development in the remittance-receiving countries directly, after we control for other variables that are also affected by economic conditions abroad such as exports to GDP, private capital flows to GDP, aid flows to GDP, and local GDP per capita.¹²

We identify the top five remittance-sending countries for each country in our sample, using a new bilateral remittances data collected by The World Bank (see Ratha and Shaw 2007).¹³ The new dataset covers most countries in the world so it adequately takes into account the importance of South-South flows. On average, the top five countries account for 80 percent of the remittances received by the countries in our sample.¹⁴ We construct two instruments by multiplying, respectively, the GDP per capita, and the unemployment rate in each of the top five remittance-sending countries by the share of remittances sent by each of these five countries. Because the bilateral remittance data is only available for one year, 2005, variation in the instrument is driven by changes in economic conditions.

For the second set of instruments, we use data on top five remittance-sending countries' (1) views and (2) policies regarding international immigration obtained from the *World Population Policies*, a report published since 1976 by the United Nations Department of Economic and Social Affairs Population Division. In particular, policy-makers responsible for migration policies in each country are asked to comment on their views as to whether immigration is "too high", "satisfactory", or "too low". Based on these responses, we create a variable that takes values -1, when policy-makers view immigration as being too high, 0, when immigration is considered satisfactory and 1, when it is deemed to be too low. Hence, higher

Appendix Table 1.

¹² IMF (2005) finds that stronger economic activity in migrant's host countries increases the remittances sent to their home country.

¹³ Appendix Table 4 shows the top five remittance-sending countries for each country in our sample.

¹⁴ In constructing the instruments, we renormalize the share of each of these five countries so that the sum over the top five countries adds to 1.

values of this variable indicate that policy-makers perceive that immigration should increase. In terms of the policies towards international immigration, policy-makers are asked to report whether their goal is to “lower,” “maintain,” or “raise” the level of immigration. We code this variable -1, 0, or +1 respectively, so that higher values represent more welcoming policies vis-a-vis immigrants. Finally, we weight the variables we constructed on the views and, separately, the policies regarding migration in the top five remittance-sending countries, for each country in our sample, by the share of remittances received from each of the corresponding top five remittance-sending countries.

Because the policies and views on migration in remittance-sending countries are determined by the needs and goals of these countries, we see no reason why these variables would be correlated with financial development in remittance-receiving countries (other than through their impact on remittances). Furthermore, we expect that, other things equal, in countries where immigration is perceived as satisfactory or low and where policy-makers intend to maintain or raise the level of immigration, migrants would be more welcomed, would have an easier time finding employment, and sending remittances back home.

4. Empirical Results

Table 3 reports estimates of equation (1) with (a) country fixed effects (columns 1-2 and 5-6) and (b) country and time fixed effects (columns 3-4 and 7-8) for the share of deposits and credit to GDP, assuming that remittances are adequately measured.¹⁵ To lessen concerns about endogeneity, we lag all regressors one period. In all regressions we control for the log of GDP, the level of GDP per capita, the inflation rate, the presence of dual exchange rates, the ratio of

¹⁵ We also ran regressions including regional fixed effects, but the results do not change significantly. Hence, these results are available upon request.

exports to GDP, the share of foreign direct investment (FDI) inflows to GDP, and the percentage of aid flows to GDP. Because the variable capturing portfolio inflows to GDP is available for fewer countries, we report estimations with and without this variable.

Across all estimations, we find that remittances are positively related to the measures of financial sector development, but the size of the coefficient in the bank deposits to GDP regressions is substantially larger than the coefficient in bank credit to GDP regressions. Assuming a causal relationship, a one percentage point increase in the share of remittances to GDP suggests between a 0.35 and a 0.49 percentage point increase in the ratio of deposits to GDP, depending on the specification and the controls, while it leads to at most a 0.3 percentage point rise in the share of credit to GDP. This suggests that the demand for store of value and savings instruments arising from remittances might be larger than the demand for credit and/or banks' willingness to lend to remittance recipients.

As expected, the results on Table 3 also confirm that financial development is positively affected by a country's size and level of income, but negatively influenced by inflation and the adoption of multiple exchange rate regimes (this last result appear to only hold for deposits). While the share of exports to GDP and the percentage of FDI inflows to GDP have a positive influence on financial development, aid flows and portfolio flows do not appear to have a consistent effect.¹⁶

To verify the robustness of the results obtained thus far we conduct a number of additional estimations. First, to mitigate concerns that the link between remittances and banking development might be tautological and driven by the fact that remittances data primarily capture

¹⁶ Capital flows might not have a significant impact in our estimations because our measure of financial sector development is a purely bank based measure and capital flows might be mostly channeled through the capital markets instead of being intermediated by banks. Also, this result is consistent with Chinn and Ito (2002) who find

flows intermediated by banks, we repeat the estimations in Table 3 for a sample of 42 countries for which we know that balance of payments statistics also encompass remittances received via non-bank institutions or informal sources (see Table 4). Second, though our baseline estimations in Table 3 include one period lagged regressors, to further address the potential for reverse causation we report dynamic system GMM estimations à la Arellano and Bover (1995), where multiple lags of the regressors are used as instruments for the variables in the model (see Table 5). The problem with estimations including lagged regressors (either directly or as instruments like in the GMM case) is that they cannot correct for biases arising from measurement error, since these would also affect lags of the questionable variable/s. Hence, finally, in order to try to correct for endogeneity biases that might arise due to measurement error, we also present instrumental variables regressions using economic conditions in remittance-sending countries and, separately, the views and policies towards immigration in remittance-sending countries as instruments for remittances (see Table 6-9).

Limiting our sample to those countries for which we know that remittance statistics include flows that were not only transferred by banks does not change our results, even though the sample of countries and observations is cut in more than half. Table 4 shows that remittances continue to have a positive effect on both credit and deposits. If anything, in this sample, the economic significance of remittances is even larger than before.

GMM estimations, reported in Table 5, show remittances having a smaller impact on financial development. In this case, a one percentage point increase in remittances leads to at most a 0.17 percentage point rise in deposits and a 0.13 percentage point increase in credit.

that bank credit indicators do not appear to be affected by financial openness when focusing exclusively on developing countries.

Furthermore, in the case of the credit estimations, once we control for portfolio inflows to GDP, remittances are no longer significant, perhaps due to the smaller number of observations.

While lagging regressors or using lags as instrument might help deal with the problem of reverse causation, it does not address the concern that the estimates reported so far might be biased due to measurement error. To try to address this issue directly, we conduct instrumental variable estimations. We present results using two sets of instruments. First, we report results using economic conditions in remittance-sending countries as instruments. In particular, we report separate estimations where (a) GDP per capita in the top five remittance-sending countries, (b) unemployment in the top five remittance-sending countries, and (c) both variables combined are used as instruments for remittances. Second, we use remittance-sending countries' views and policies towards immigration as instruments. In particular, we report estimations where each of these variables is used separately as an instrument (since the correlation between these variables is above 0.85), but also in order to conduct a test for over-identifying restrictions we report an estimation where we include both variables together as instruments. Table 6 and 7 show the first stage results of the instrumental variable estimations, while Table 8 and 9 present the second stage results of these estimations.¹⁷ All estimations include country and time fixed effects.

Table 6 shows that economic conditions in remittance-sending countries have a significant impact on remittances. In particular, GDP per capita in remittance-sending countries has a positive impact on the percentage of remittances countries receive, while, as expected, higher unemployment in remittance-sending countries has a negative effect on remittances received. Table 7 shows that, as stipulated above, more positive views and welcoming policies

¹⁷ We obtain very similar results if we focus on the 42 countries for which we know that remittance statistics were gathered from non-bank sources as well as from banks. These results are available upon request.

towards immigration in remittance-sending countries are associated with higher levels of remittances received by developing countries.

Tables 8 and 9 show the second stage results from the instrumental variables estimations using economic conditions in remittance-sending countries and policies and views on immigration in these countries, respectively. To show the validity of our instruments, for those estimations that include more than one instrument (columns 3 and 6), we report Hansen's test of over-identifying restrictions. The joint null hypothesis is that the instruments are uncorrelated with the error term and that excluded instruments are correctly excluded from the estimated equation. These tests confirm the validity of both sets of instruments.

As for the impact of remittances on financial development, we continue to find a positive association between remittances and both credit and deposits to GDP. Though the coefficients from the instrumental variable estimations are larger than those obtained in previous estimations, they are within a range that can be justified by the presence of measurement error in the remittance series.¹⁸ These results help to confirm that the positive impact of remittances on financial development is not due to endogeneity biases.

IV. Conclusions

Workers' remittances, flows received from migrant workers residing abroad, have become the second largest source of external finance for developing countries in recent years. In addition to their increasing size, the stability of these flows despite financial crises and economic

¹⁸ Assuming that remittances are measured with error, it can be shown that the variance of the measurement error will be equal to the product of one minus the ratio of the biased estimate obtained from OLS regressions to the unbiased estimate of remittances obtained from IV estimations, multiplied by the variance of remittances (see Greene, 1993). Plugging our estimates in this formula, we obtain numbers well within the existing estimates of the size of informal remittances, which range between 50 and 250% of formal remittances (see Freund and Spatafora, 2008). Hence, we believe that the size of the IV coefficients is justified, given what they imply about the degree of measurement error in existing remittances data.

downturns make them a reliable source of funds for developing countries. While the development potential of remittance flows is increasingly being recognized by researchers and policymakers, the effect of remittances on financial development remains largely unexplored. Better understanding the impact of remittances on financial development is important given the extensive literature on the growth enhancing and poverty reducing effects of financial development.

This paper tries to fill the gap in the literature. Using balance of payments data on remittance flows to 109 countries for the period 1975-2007, we investigate the link between remittances and financial development, focusing specifically on bank deposits, as well as on bank credit to the private sector. We find a strong positive and significant association between remittances and bank deposits and credit to GDP. This result is robust to using different estimation techniques and accounting for endogeneity biases arising from omitted factors, reverse causation, and measurement error. Overall, by finding that remittances can foster bank deposits and credit, this paper highlights another channel through which remittances can have a positive influence on recipient countries' development.

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Table 1: Descriptive statistics

Variable	Observations	Mean	Median	Standard deviation
Bank deposits to GDP (%)	2162	31.373	24.334	23.367
Bank credit to GDP (%)	2164	25.506	19.782	20.740
Remittances to GDP (%)	2164	3.496	1.546	5.038
GDP per capita (in thousands US\$)	2164	1.728	1.120	1.767
Log of GDP (in constant US\$)	2164	22.636	22.532	1.903
Inflation (%)	2164	14.862	7.542	34.062
Dual exchange rate	2164	0.180	0.000	0.384
Exports to GDP (%)	2164	34.435	30.344	19.399
Foreign direct investment inflows to GDP (%)	2164	2.423	1.352	3.622
Aid inflows to GDP (%)	2164	6.431	3.537	7.712
Portfolio inflows to GDP (%)	2038	0.293	0.000	1.506

Table 2: Correlation matrix

Variables	Bank deposits to GDP	Bank credit to GDP	Remittances to GDP	GDP per capita	Log of GDP	Inflation	Dual exchange rate	Exports to GDP	FDI inflows to GDP	Aid flows to GDP	Portfolio inflows to GDP
Bank deposits to GDP	1										
Bank credit to GDP	0.8037*	1									
Remittances to GDP	0.2319*	0.0916*	1								
GDP per capita	0.3505*	0.3270*	-0.1223*	1							
Log of GDP	0.0147	0.1671*	-0.2212*	0.1479*	1						
Inflation	-0.1824*	-0.1749*	-0.1059*	-0.008	0.1456*	1					
Dual exchange rate	-0.1736*	-0.1674*	-0.1195*	-0.0747*	0.1356*	0.1829*	1				
Exports to GDP	0.4187*	0.3849*	0.0349	0.4044*	-0.2626*	-0.1237*	-0.1930*	1			
FDI inflows to GDP	0.3214*	0.2478*	0.1675*	0.1892*	-0.1779*	-0.1245*	-0.1391*	0.3626*	1		
Aid inflows to GDP	-0.1396*	-0.2480*	0.1841*	-0.4168*	-0.5669*	-0.0228	-0.0722*	-0.1192*	0.0007	1	
Portfolio inflows to GDP	0.1583*	0.1864*	-0.0664*	0.2114*	0.1039*	-0.037	-0.0579*	0.0738*	0.1362*	-0.1313*	1

Table 3: Fixed effect results of the impact of remittances on financial development

The equation estimated is of the form $FD_{i,t} = b_1 Rem_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{it}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP in country i at time t . *Remittances to GDP* is the share of remittances as a % of GDP in country i at period $t-1$. X is a matrix of controls for each country i at time $t-1$ including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP; *FDI inflows to GDP*, foreign direct investment expressed as % of GDP; *Aid inflows to GDP*, official development assistance and official aid as % of GDP; *Portfolio inflows to GDP*, portfolio investment liabilities as % of GDP. t -statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Bank Deposits to GDP				Bank Credit to GDP			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances to GDP	0.489*** [6.599]	0.497*** [6.177]	0.367*** [4.594]	0.354*** [4.064]	0.148** [2.018]	0.092 [1.158]	0.299*** [3.784]	0.240*** [2.793]
GDP Per Capita	4.710*** [8.005]	5.932*** [9.168]	5.039*** [8.134]	6.690*** [9.727]	6.489*** [11.147]	7.785*** [12.237]	5.945*** [9.727]	7.340*** [10.828]
Log of GDP	13.908*** [14.544]	12.826*** [12.962]	9.678*** [5.890]	6.748*** [3.807]	9.096*** [9.617]	8.146*** [8.377]	16.052*** [9.913]	13.853*** [7.944]
Inflation	-0.030*** [-4.580]	-0.035*** [-4.850]	-0.026*** [-3.852]	-0.030*** [-4.034]	-0.018*** [-2.729]	-0.021*** [-2.917]	-0.019*** [-2.856]	-0.023*** [-3.105]
Dual exchange rate	-2.632*** [-3.958]	-2.264*** [-3.339]	-2.646*** [-3.958]	-2.181*** [-3.204]	-1.048 [-1.586]	-0.907 [-1.356]	-1.179* [-1.777]	-1.06 [-1.573]
Exports to GDP	0.028 [1.053]	0.047* [1.721]	0.032 [1.208]	0.059** [2.122]	0.067** [2.575]	0.091*** [3.373]	0.059** [2.224]	0.085*** [3.108]
FDI inflows to GDP	0.160** [2.142]	0.12 [1.546]	0.168** [2.209]	0.132* [1.674]	0.224*** [3.032]	0.210*** [2.750]	0.237*** [3.157]	0.222*** [2.850]
Aid inflows to GDP	0.02 [0.393]	0.026 [0.483]	0.011 [0.210]	0.005 [0.089]	-0.090* [-1.825]	-0.054 [-1.016]	-0.009 [-0.179]	0.014 [0.248]
Portfolio inflows to GDP		0.244* [1.682]		0.229 [1.573]		0.076 [0.536]		0.123 [0.854]
Constant	-293.960*** [-14.123]	-273.423*** [-12.677]	-196.553*** [-5.281]	-134.484*** [-3.340]	-193.944*** [-9.424]	-176.030*** [-8.307]	-354.715*** [-9.674]	-309.435*** [-7.813]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	No	No	Yes	Yes	No	No	Yes	Yes
Observations	2162	2038	2162	2038	2164	2037	2164	2037
Number of countries	109	105	109	105	109	105	109	105
R-squared	0.372	0.385	0.385	0.401	0.317	0.337	0.333	0.351

Table 4: Fixed effects results for countries where remittances statistics include non-bank flows

The equation estimated is of the form $FD_{i,t} = b_1 Rem_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{i,t}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP in country *i* at time *t*. *Remittances to GDP* is the share of remittances as a % of GDP in country *i* at period *t-1*. *X* is a matrix of controls for each country *i* at time *t-1* including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP; *FDI inflows to GDP*, foreign direct investment expressed as % of GDP; *Aid inflows to GDP*, official development assistance and official aid as % of GDP; *Portfolio inflows to GDP*, portfolio investment liabilities as % of GDP. Only countries for which a survey of central banks (Irving, Mohapatra and Ratha, 2010) has determined that data on remittances include remittances transferred by at least some type of non-banking institution (money transfer operator, credit union, currency exchange bureau, post office etc.) or informal mechanism are included. These countries are indicated with an asterisk in [Appendix Table 2](#). t-statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Bank Deposits to GDP				Bank Credit to GDP			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Remittances to GDP	0.618*** [7.795]	0.677*** [7.965]	0.466*** [5.300]	0.568*** [6.001]	0.232*** [3.269]	0.230*** [3.017]	0.169** [2.134]	0.201** [2.340]
GDP Per Capita	3.662*** [4.341]	3.408*** [3.978]	3.753*** [4.400]	3.557*** [4.114]	2.631*** [3.488]	2.279*** [2.976]	2.346*** [3.045]	2.023*** [2.584]
Log of GDP	10.119*** [8.396]	9.847*** [8.085]	3.269* [1.671]	3.473* [1.707]	4.934*** [4.577]	4.336*** [3.977]	3.151* [1.774]	3.124* [1.686]
Inflation	-0.016 [-1.306]	-0.015 [-1.164]	-0.003 [-0.271]	-0.003 [-0.233]	-0.023** [-2.038]	-0.023** [-1.985]	-0.015 [-1.325]	-0.017 [-1.370]
Dual exchange rate	-1.242 [-1.414]	-1.22 [-1.372]	-1.044 [-1.179]	-0.84 [-0.942]	-2.113*** [-2.660]	-2.277*** [-2.832]	-2.147*** [-2.658]	-2.260*** [-2.768]
Exports to GDP	0.041 [1.099]	0.042 [1.105]	0.037 [0.950]	0.034 [0.869]	0.042 [1.259]	0.045 [1.322]	0.029 [0.823]	0.03 [0.834]
FDI inflows to GDP	0.325** [2.336]	0.316** [2.219]	0.369** [2.572]	0.356** [2.421]	0.565*** [4.579]	0.588*** [4.655]	0.546*** [4.249]	0.560*** [4.235]
Aid inflows to GDP	0.146** [2.452]	0.131** [2.092]	0.079 [1.204]	0.062 [0.905]	-0.199*** [-3.778]	-0.166*** [-2.970]	-0.186*** [-3.152]	-0.150** [-2.427]
Portfolio inflows to GDP		0.318 [1.038]		0.332 [1.064]		0.542** [1.980]		0.560** [1.983]
Constant	-212.082*** [-8.050]	-207.265*** [-7.745]	-52.413 [-1.171]	-59.875 [-1.280]	-95.902*** [-4.074]	-82.860*** [-3.463]	-52.022 [-1.282]	-53.207 [-1.250]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	No	No	Yes	Yes	No	No	Yes	Yes
Observations	897	847	897	847	895	845	895	845
Number of countries	42	41	42	41	42	41	42	41
R-squared	0.355	0.367	0.383	0.401	0.26	0.256	0.278	0.278

Table 5: GMM dynamic system estimates of the impact of remittances on financial development

Results reported below are obtained by estimating the following system of equations $FD_{i,t} = b_1 FD_{i,t-1} + b_2 Rem_{i,t} + b_3 X_{i,t} + a_i + u_{i,t}$ and $FD_{i,t} - FD_{i,t-1} = b_1 (FD_{i,t-1} - FD_{i,t-2}) + b_2 (Rem_{i,t} - Rem_{i,t-1}) + b_3 (X_{i,t} - X_{i,t-1}) + u_{i,t} - u_{i,t-1}$. To compute the system estimator, variables in differences are instrumented with lags of their own levels, while variables in levels are instrumented with lags of their own differences. FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP. *Remittances to GDP* is the share of remittances as a % of GDP. X is a matrix of controls including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP; *FDI inflows to GDP*, foreign direct investment expressed as % of GDP; *Aid inflows to GDP*, official development assistance and official aid as % of GDP; *Portfolio inflows to GDP*, portfolio investment liabilities as % of GDP. t-statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Bank deposits to GDP		Bank credit to GDP	
	(1)	(2)	(3)	(4)
Remittances to GDP	0.174** [2.247]	0.167** [2.133]	0.133* [1.853]	0.1 [1.224]
GDP Per Capita	0.193 [0.634]	0.166 [0.372]	0.238 [0.755]	-0.039 [-0.095]
Log of GDP	0.64 [1.248]	0.848 [1.095]	1.328** [2.181]	1.047 [1.155]
Inflation	-0.042*** [-2.673]	-0.042** [-2.288]	-0.033** [-2.103]	-0.032* [-1.897]
Dual exchange rate	-0.776 [-1.048]	-0.605 [-0.819]	0.04 [0.059]	0.053 [0.070]
Exports to GDP	-0.003 [-0.096]	-0.006 [-0.177]	-0.056 [-1.408]	-0.041 [-0.990]
FDI inflows to GDP	-0.022 [-0.189]	-0.065 [-0.405]	0.139 [1.305]	0.172 [1.536]
Aid inflows to GDP	-0.042 [-0.439]	-0.056 [-0.402]	-0.028 [-0.385]	-0.023 [-0.247]
Portfolio inflows to GDP		0.208 [0.508]		0.728* [1.702]
Lag 1 of deposits to GDP	1.299*** [26.859]	1.299*** [22.077]		
Lag 2 of deposits to GDP	-0.513*** [-4.566]	-0.529*** [-3.951]		
Lag 3 of deposits to GDP	0.167 [1.148]	0.198 [1.290]		
Lag 1 of credit to GDP			1.265*** [10.047]	1.267*** [9.538]
Lag 2 of credit to GDP			-0.252 [-1.040]	-0.253 [-1.013]
Lag 3 of credit to GDP			0.006 [0.043]	0.019 [0.142]
Constant	-14.067 [-1.123]	-19.231 [-1.083]	-29.026** [-2.093]	-23.378 [-1.141]
Time dummies	Yes	Yes	Yes	Yes
Observations	1867	1768	1862	1770
Number of countries	89	87	89	88
Hansen test for overidentifying restrictions	51.12	59.46	52.24	44.76
P-value Hansen test	0.185	0.124	0.158	0.607
Test for 2nd order autocorrelation	1.621	1.608	0.476	0.895
P-value for test for 2nd order autocorrelation	0.105	0.108	0.634	0.371

Table 6: First stage IV estimations using economic conditions in remittance-sending countries as instruments for remittances

Results are first-stage estimates of the equation $FD_{i,t} = b_1 Rem_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{i,t}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP in country i at time t. *Remittances to GDP* is the share of remittances as a % of GDP in country i at period t-1. X is a matrix of controls for each country i at time t-1 including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP; *FDI inflows to GDP*, foreign direct investment expressed as % of GDP; *Aid inflows to GDP*, official development assistance and official aid as % of GDP; *Portfolio inflows to GDP*, portfolio investment liabilities as % of GDP. First-stage estimates are obtained by running $Rem_{i,t-1} = d_1 Z_{i,t-2} + d_2 X_{i,t-1} + a_i + e_{i,t}$ where Z is a matrix of instruments including GDP per capita and unemployment rate in the top five remittance-sending countries, weighted by the share of remittances sent from each of the top five remittance-sending countries, are used as instruments. t-statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Dependent variable: Remittances					
	Bank Deposits to GDP			Bank Credit to GDP		
	(1)	(2)	(3)	(4)	(5)	(6)
GDP per capita in remittance-sending country	0.473*** [11.594]		0.493*** [9.167]	0.479*** [11.791]		0.501*** [9.358]
Unemployment in remittance-sending country		-0.153*** [-5.961]	-0.049* [-1.788]		-0.154*** [-6.012]	-0.048* [-1.748]
GDP Per Capita	-1.188*** [-5.942]	-0.385* [-1.881]	-0.997*** [-4.734]	-1.195*** [-6.008]	-0.395* [-1.940]	-1.006*** [-4.808]
Log of GDP	-1.744*** [-3.491]	-3.397*** [-5.892]	-2.181*** [-3.772]	-1.701*** [-3.426]	-3.332*** [-5.817]	-2.141*** [-3.736]
Inflation	0.002 [1.022]	0.002 [0.823]	0.002 [1.046]	0.002 [1.072]	0.002 [0.851]	0.002 [1.105]
Dual exchange rate	-0.645*** [-3.505]	-0.582*** [-2.838]	-0.517** [-2.577]	-0.639*** [-3.462]	-0.591*** [-2.874]	-0.517** [-2.576]
Exports to GDP	-0.009 [-1.208]	0.002 [0.272]	-0.011 [-1.324]	-0.01 [-1.295]	0.002 [0.250]	-0.012 [-1.418]
FDI inflows to GDP	0.065*** [3.034]	0.069*** [3.005]	0.063*** [2.815]	0.064*** [2.983]	0.067*** [2.920]	0.061*** [2.757]
Aid inflows to GDP	-0.02 [-1.372]	-0.028* [-1.788]	-0.033** [-2.126]	-0.017 [-1.168]	-0.025 [-1.599]	-0.029* [-1.902]
Constant	32.167*** [3.377]	91.358*** [5.931]	48.826*** [3.102]	31.957*** [3.530]	67.775*** [6.472]	39.991*** [3.759]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2027	1835	1835	2029	1837	1837
Number of countries	102	102	102	102	102	102
R-squared	0.802	0.798	0.807	0.806	0.801	0.811

Table 7: First stage IV estimations using migration views and policies in remittance-sending countries on remittances to GDP

Results reported below are first-stage estimates of the equation $FD_{i,t} = b_1 \text{Rem}_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{i,t}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP in country i at time t . *Remittances to GDP* is the share of remittances as a % of GDP in country i at period $t-1$. X is a matrix of controls for each country i at time $t-1$ including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP; *FDI inflows to GDP*, foreign direct investment expressed as % of GDP; *Aid inflows to GDP*, official development assistance and official aid as % of GDP; *Portfolio inflows to GDP*, portfolio investment liabilities as % of GDP. First-stage estimates are obtained by running $\text{Rem}_{i,t-1} = d_1 Z_{i,t-2} + d_2 X_{i,t-1} + a_i + e_{i,t}$ where Z is a matrix of instruments including views and policies on migration in the top five remittance-sending countries, weighted by the share of remittances sent from each of the top five remittance-sending countries, are as instruments. t -statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Dependent variable: Remittances					
	Bank Deposits to GDP			Bank Credit to GDP		
	(1)	(2)	(3)	(4)	(5)	(6)
View on immigration	1.447*** [5.024]		1.838*** [3.691]	1.489*** [5.166]		1.920*** [3.850]
Policy on immigration		1.104*** [3.531]	-0.519 [-0.962]		1.119*** [3.591]	-0.569 [-1.060]
GDP Per Capita	-0.506** [-2.566]	-0.452** [-2.290]	-0.521*** [-2.633]	-0.522*** [-2.654]	-0.466** [-2.368]	-0.537*** [-2.725]
Log of GDP	-3.928*** [-7.944]	-3.899*** [-7.843]	-3.899*** [-7.870]	-3.859*** [-7.840]	-3.833*** [-7.747]	-3.828*** [-7.765]
Inflation	0.002 [1.284]	0.002 [1.243]	0.002 [1.259]	0.003 [1.335]	0.002 [1.285]	0.002 [1.308]
Dual exchange rate	-0.542*** [-2.837]	-0.585*** [-3.054]	-0.545*** [-2.850]	-0.539*** [-2.810]	-0.585*** [-3.043]	-0.542*** [-2.823]
Exports to GDP	0.008 [0.975]	0.007 [0.937]	0.008 [1.008]	0.008 [0.957]	0.007 [0.934]	0.008 [0.989]
FDI inflows to GDP	0.084*** [3.836]	0.083*** [3.771]	0.085*** [3.844]	0.083*** [3.785]	0.082*** [3.722]	0.083*** [3.790]
Aid inflows to GDP	-0.019 [-1.317]	-0.02 [-1.336]	-0.019 [-1.257]	-0.017 [-1.150]	-0.018 [-1.194]	-0.016 [-1.075]
Constant	100.157*** [8.014]	99.371*** [7.911]	99.471*** [7.946]	98.407*** [7.911]	97.726*** [7.816]	97.691*** [7.842]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1999	1999	1999	2001	2001	2001
Number of countries	102	102	102	102	102	102
R-squared	0.792	0.791	0.793	0.795	0.794	0.796

Table 8: Second stage IV estimations using economic conditions in remittance-sending countries as instruments

The regression equation estimated is of the form $FD_{i,t} = b_1 \text{Rem}_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{i,t}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP. *Remittances to GDP* is the share of remittances as a % of GDP. X is matrix of controls including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP. GDP per capita and the unemployment rate in the top five remittance-sending countries, weighted by the share of remittances sent from each of the top five remittance-sending countries, are used as instruments. t-statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Bank Deposits to GDP			Bank Credit to GDP		
	(1)	(2)	(3)	(4)	(5)	(6)
Remittances to GDP	2.042*** [5.975]	1.915*** [3.089]	2.002*** [5.772]	2.802*** [7.700]	3.332*** [4.625]	2.451*** [7.043]
GDP Per Capita	4.884*** [6.307]	4.145*** [5.235]	4.178*** [5.398]	6.599*** [7.897]	5.600*** [6.041]	5.254*** [6.673]
Log of GDP	17.425*** [7.730]	21.989*** [6.806]	22.332*** [8.839]	25.396*** [10.538]	33.212*** [8.921]	29.782*** [11.718]
Inflation	-0.030*** [-4.154]	-0.031*** [-4.381]	-0.031*** [-4.424]	-0.026*** [-3.310]	-0.029*** [-3.455]	-0.027*** [-3.711]
Dual exchange rate	-1.479* [-1.929]	-2.217** [-2.523]	-2.153*** [-2.689]	0.553 [0.666]	0.204 [0.198]	-0.448 [-0.548]
Exports to GDP	0.04 [1.299]	0.005 [0.144]	0.004 [0.132]	0.065** [1.994]	0.001 [0.033]	0.005 [0.155]
FDI inflows to GDP	0.025 [0.280]	-0.036 [-0.370]	-0.043 [-0.480]	0.024 [0.245]	-0.123 [-1.087]	-0.055 [-0.608]
Aid inflows to GDP	0.035 [0.626]	0.158*** [2.622]	0.160*** [2.708]	-0.007 [-0.120]	0.095 [1.358]	0.074 [1.224]
Constant	-256.543*** [-5.635]	-343.386*** [-5.084]	-350.925*** [-6.903]	-496.677*** [-10.214]	-650.327*** [-8.356]	-574.635*** [-11.244]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2027	1835	1835	2029	1837	1837
Number of countries	102	102	102	102	102	102
R-squared	0.837	0.86	0.857	0.761	0.762	0.816
F-statistic for weak instruments	134.4	35.54	60.66	139	36.15	62.78
Sargan test of over-identifying restrictions			0.0276			2.778
P-value for Sargan test			0.868			0.0956

Table 9: Second stage IV estimations using policies and views about migration in remittance-sending countries as instruments

The regression equation estimated is of the form $FD_{i,t} = b_1 Rem_{i,t-1} + b_2 X_{i,t-1} + a_i + u_{i,t}$ where FD refers to financial development measured as the % of bank deposits and, separately, bank credit to GDP. *Remittances to GDP* is the share of remittances as a % of GDP. X is matrix of controls including: *GDP per capita*, measured in constant dollars; *Log of GDP*, stated in constant dollars; *Inflation*, defined as the % change in the GDP deflator; *Dual exchange rates*, a dummy capturing periods when multiple exchange rates were in effect; *Exports to GDP*, the share of total exports as a % of GDP. Views and policies on migration in the top five remittance-sending countries, weighted by the share of remittances sent by each country, are used as instruments. t-statistics are in brackets. *, **, and *** denote significance at the 10, 5, and 1 percent level, respectively.

Variables	Bank Deposits to GDP			Bank Credit to GDP		
	(1)	(2)	(3)	(4)	(5)	(6)
Remittances to GDP	4.012*** [4.061]	5.337*** [3.180]	3.713*** [3.989]	4.688*** [4.463]	5.999*** [3.341]	4.376*** [4.444]
GDP Per Capita	5.591*** [5.203]	6.191*** [4.437]	5.456*** [5.308]	7.185*** [6.137]	7.793*** [5.134]	7.041*** [6.306]
Log of GDP	25.437*** [5.771]	30.357*** [4.409]	24.329*** [5.824]	33.160*** [7.089]	37.959*** [5.200]	32.020*** [7.252]
Inflation	-0.034*** [-3.606]	-0.037*** [-3.175]	-0.034*** [-3.695]	-0.030*** [-2.888]	-0.033*** [-2.583]	-0.029*** [-2.955]
Dual exchange rate	-0.336 [-0.294]	0.533 [0.338]	-0.531 [-0.487]	1.598 [1.286]	2.46 [1.442]	1.394 [1.178]
Exports to GDP	0.01 [0.252]	-0.001 [-0.021]	0.013 [0.328]	0.034 [0.773]	0.023 [0.429]	0.036 [0.870]
FDI inflows to GDP	-0.145 [-1.063]	-0.254 [-1.335]	-0.12 [-0.925]	-0.137 [-0.938]	-0.243 [-1.198]	-0.112 [-0.805]
Aid inflows to GDP	0.093 [1.240]	0.114 [1.244]	0.088 [1.226]	0.042 [0.522]	0.061 [0.614]	0.038 [0.490]
Constant	-431.311*** [-4.601]	-540.059*** [-3.629]	-406.813*** [-4.584]	-665.457*** [-6.695]	-771.731*** [-4.889]	-640.209*** [-6.832]
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1999	1999	1999	2001	2001	2001
Number of countries	102	102	102	102	102	102
R-squared	0.735	0.619	0.756	0.603	0.436	0.636
F-statistic for weak instruments	25.25	12.47	13.09	26.69	12.89	13.91
Sargan test of over-identifying restrictions			2.803			2.378
P-value for Sargan test			0.0941			0.123

Figure 1
Inflows to developing countries (billions of USD)
1975-2007

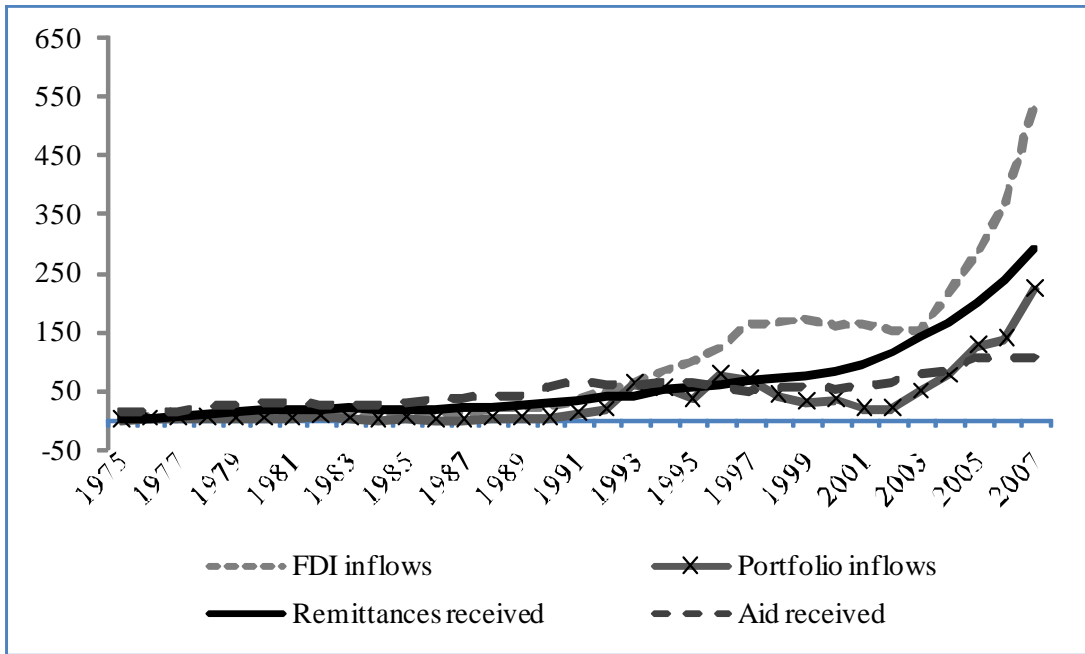


Figure 2
Inflows to developing countries (% of GDP)
1975-2007

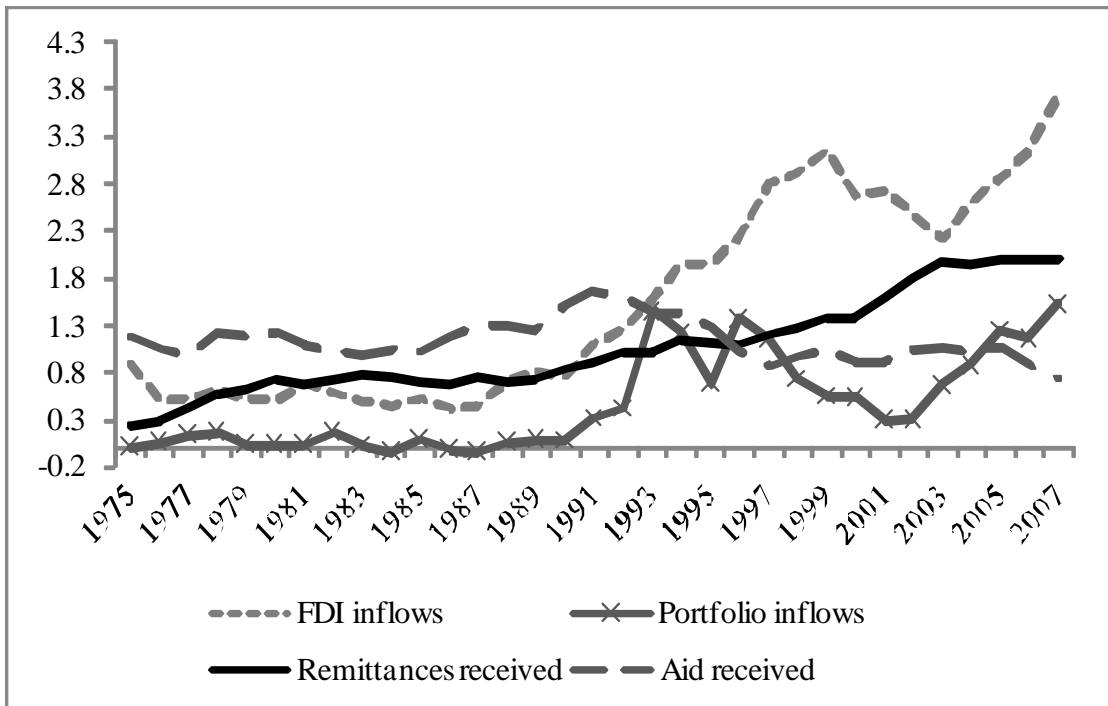


Figure 3
10 Largest recipients of remittances (in billions of USD)
1975-2007 (Average)

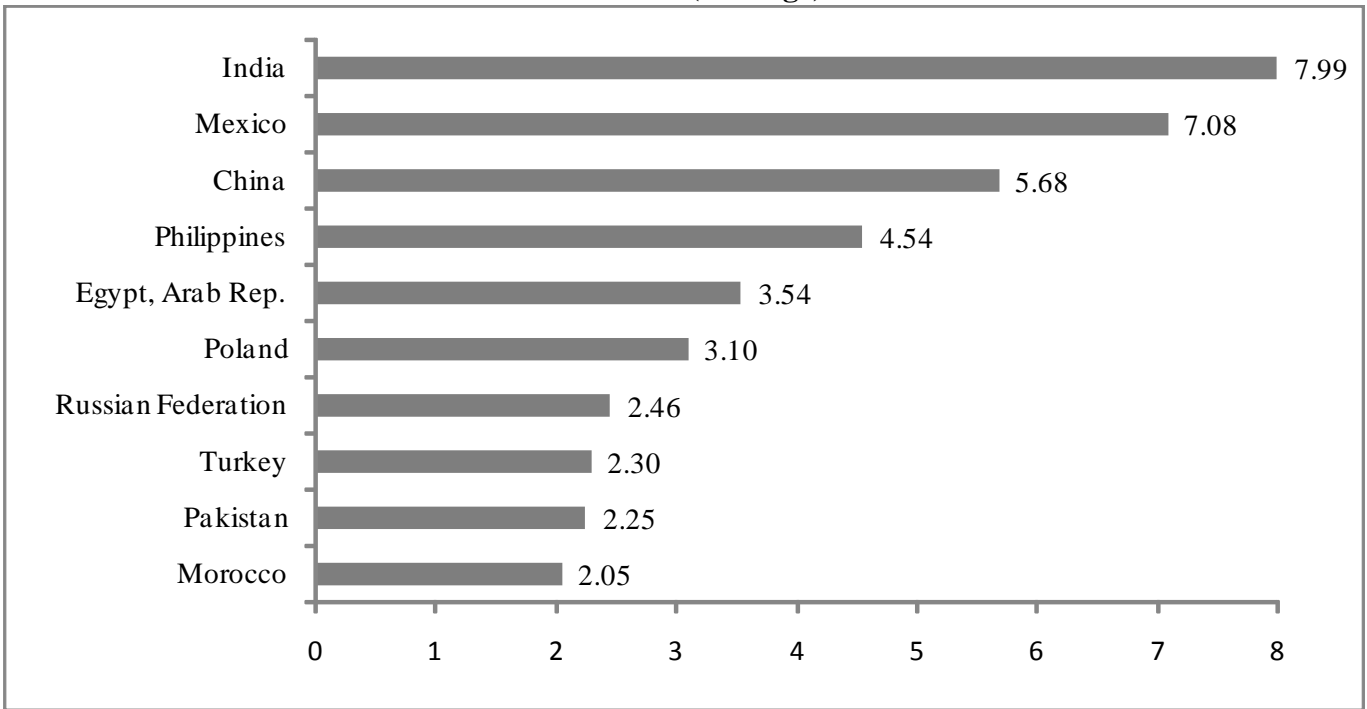
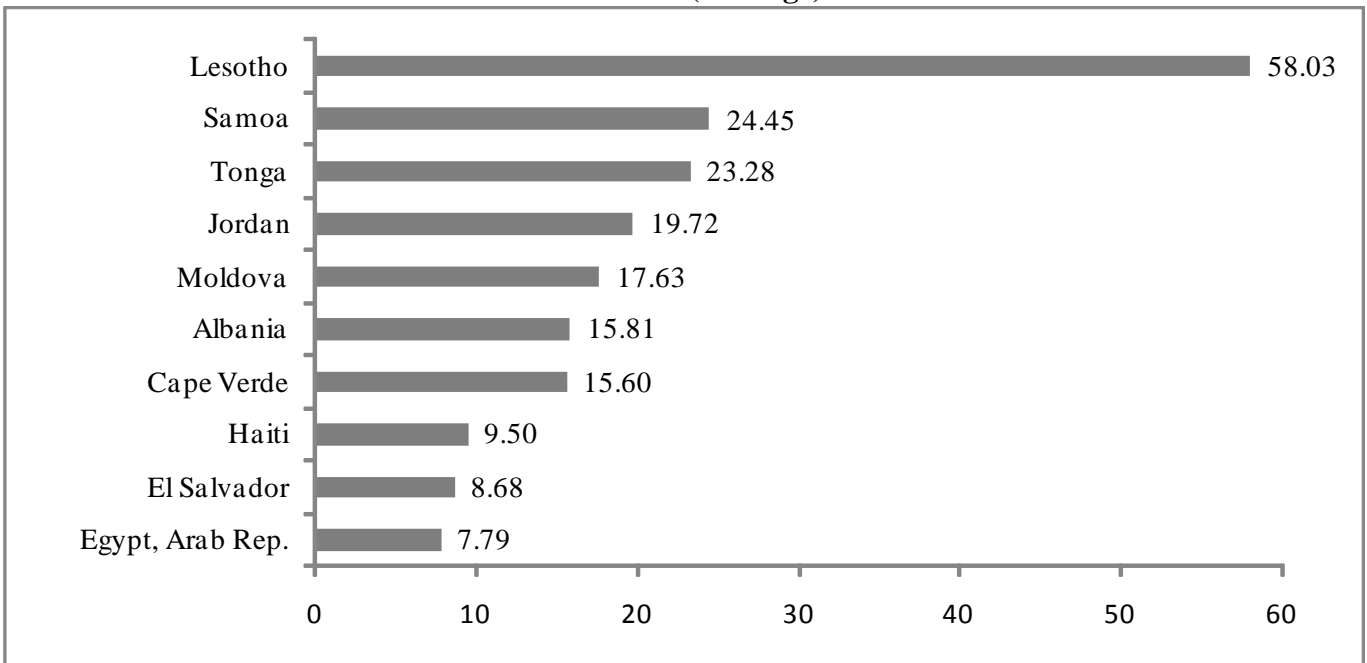


Figure 4
10 Largest recipients of remittances (in % of GDP)
1975-2007 (Average)



Appendix Table 1: Countries and periods included

Table shows the countries and periods included in our estimations. Countries with an asterisk next to their name are those for which Irving, Mohapatra, and Ratha (2010) confirm that data on remittances include funds transferred by banks as well as non-banking institutions (e.g., money transfer operators, exchange bureaus, credit unions, etc.).

Country	Years	Country	Years	Country	Years
Albania*	1995 - 2007	Guatemala	1978 - 2007	Pakistan	1977 - 2007
Armenia*	1996 - 2007	Guinea-Bissau*	1990 - 2003	Papua New Guinea	1977 - 2006
Bangladesh	1994 - 2007	Guyana	1995 - 2006	Paraguay*	1976 - 2007
Barbados*	1976 - 2003	Haiti*	1977 - 2007	Peru*	1992 - 2007
Belarus	1996 - 2003	Honduras*	1976 - 2007	Philippines*	1978 - 2007
Belize	1985 - 2007	Hungary	1996 - 2005	Poland*	1995 - 2005
Benin	1992 - 2006	India*	1976 - 2007	Romania*	1997 - 2005
Bolivia	1977 - 2007	Indonesia*	1984 - 2007	Russian Federation	1995 - 2005
Botswana	1976 - 2007	Iran, Islamic Rep.	1990 - 2001	Rwanda*	1977 - 2005
Brazil	1980 - 2007	Jamaica*	1977 - 1998	Samoa*	1995 - 2004
Bulgaria	1992 - 2005	Jordan	1977 - 2007	Senegal*	1976 - 2007
Burkina Faso*	1976 - 2002	Kazakhstan	1996 - 2007	Seychelles	1990 - 2007
Cambodia	1996 - 2007	Kenya*	1976 - 2007	Sierra Leone*	1981 - 2007
Cameroon	1980 - 2007	Kyrgyz Republic*	1996 - 2007	Slovak Republic	1994 - 2005
Cape Verde*	1988 - 2007	Lao PDR	1990 - 2007	Solomon Islands	2000 - 2007
Central African Republic	1982 - 1994	Latvia	1997 - 2005	South Africa	1994 - 2007
Chad	1986 - 1995	Lesotho	2000 - 2007	Sri Lanka	1976 - 2007
Chile*	1984 - 2007	Lithuania*	1995 - 2005	St. Lucia	1984 - 2007
China	1987 - 2003	Macedonia, FYR	1997 - 2007	St. Vincent and the Grenadines	1987 - 2006
Colombia*	1976 - 2007	Madagascar	1976 - 2006	Sudan	1978 - 2001
Congo, Rep.	1996 - 2007	Malawi	1995 - 2003	Suriname	1979 - 2006
Costa Rica	1978 - 2007	Malaysia	1976 - 2007	Swaziland*	1976 - 2006
Cote d'Ivoire	1976 - 2007	Maldives	1998 - 2005	Syrian Arab Republic*	1978 - 2006
Croatia	1995 - 2007	Mali*	1988 - 2007	Tanzania*	1996 - 2007
Dominica	1987 - 2007	Mauritania	1986 - 1999	Thailand	1976 - 2007
Dominican Republic	1976 - 2007	Mauritius	1982 - 2007	Togo	1976 - 2007
Ecuador	1977 - 2007	Mexico*	1980 - 2007	Tonga	1987 - 2007
Egypt, Arab Rep.	1978 - 2007	Moldova*	1996 - 2007	Trinidad and Tobago	1976 - 2007
El Salvador*	1977 - 2007	Mongolia	1999 - 2007	Tunisia*	1988 - 2007
Estonia	1995 - 2005	Morocco*	1976 - 2007	Turkey	1981 - 2007
Ethiopia	1983 - 2007	Mozambique	1995 - 2006	Uganda*	2000 - 2007
Fiji*	1980 - 2006	Namibia	1991 - 2001	Ukraine	1997 - 2003
Gabon	1979 - 2006	Nepal*	1992 - 2007	Uruguay*	1980 - 2007
Gambia, The	1979 - 2006	Nicaragua*	1978 - 2005	Vanuatu*	1983 - 2007
Georgia	1998 - 2007	Niger*	1976 - 2006	Zimbabwe	1981 - 1995
Ghana*	1980 - 2006	Nigeria	1978 - 2007		
Grenada	1987 - 2007	Oman	1992 - 2006		

Appendix Table 2: Variable definitions

Variable	Definition	Source
Bank deposits to GDP (%)	Deposit money banks' deposits expressed as a percentage of GDP.	International Financial Statistics, IMF
Bank credit to GDP (%)	Deposit money banks' credit extended to the private sector expressed as a percentage of GDP.	Idem
Remittances to GDP (%)	Sum of remittances + migrant transefers + workers compensation. Variable is expressed as a percentage of GDP.	World Economic Outlook, 2005, IMF & World Development Indicators (WDI), World Bank
GDP per capita (in thousands US\$)	GDP per capita in thousand of constant 2000 US\$	WDI
Log of GDP (in constant US\$)	Log of GDP in constant 2000 US\$	Idem
Inflation (%)	GDP deflator (annual %)	Idem
Dual Exchange Rate	Dummy equals to 1 indicates the presence of multiple exchange rates.	Annual Report on Exchange Arrangements and Exchange Restrictions (IMF)
Exports to GDP (%)	Total exports expressed as percentage of GDP.	WDI
FDI inflows to GDP (%)	Foreign direct investment flows as a percentage of GDP	Balance of Payments Statistics (IMF)
Aid inflows to GDP (%)	Official Development Assistance and official aid expressed as percentage of GDP.	Idem
Portfolio inflow sto GDP (%)	Portfolio Investment Liabilities expressed as percentage of GDP	Idem
GDP per capita in remittance-sending countries (in thousands)	GDP per capita of the five principal remittance-sending countries for each country in our sample, weighted by their share of remittances sent to these countries. Focusing on remittance-receiving country Z, and assuming that the top five remittance-sending countries to Z are countries A, B, C, D and E, the weighted GDP per capita is constructed as: $\text{Sum over } i[\text{GDP per capita for } i * (\text{remittances from } i \text{ to } Z) / (\text{sum of remittances received by } Z \text{ from } A \text{ through } E)]$, where $i=A$ to E .	Bilateral remittance data from Ratha and Shaw (2007). GDP per capita form World Development Indicators (World Bank)
Unemployment in remittance-sending countries	Unemployment rate of the five principal remittance-sending countries for each country in our sample, weighted by their share of remittances sent to these countries. Focusing on remittance-receiving country Z, and assuming that the top five remittance-sending countries to Z are countries A, B, C, D and E, the weighted Unemployment is constructed as: $\text{Sum over } i[\text{Unemployment for } i * (\text{remittances from } i \text{ to } Z) / (\text{sum of remittances received by } Z \text{ from } A \text{ through } E)]$, where $i=A$ to E .	Bilateral remittance data from Ratha and Shaw (2007). Unemployment form World Development Indicators (World Bank)
Views on immigration	Views on the immigration situation of the five principal remittance-sending countries for each country in our sample, weighted by their share of remittances sent to these countries. Focusing on remittance-receiving country Z, and assuming that the top five remittance-sending countries to Z are countries A, B, C, D and E, the weighted View on immigration variable is constructed as: $\text{Sum over } i[\text{View on immigration for country } i * (\text{remittances from } i \text{ to } Z) / (\text{sum of remittances received by } Z \text{ from } A \text{ through } E)]$, where $i=A$ to E .	Bilateral remittance data from Ratha and Shaw (2007). View on immigration form World Population Policies (United Nations)
Policies on immigration	Desired policies on immigration of the five principal remittance-sending countries for each country in our sample, weighted by their share of remittances sent to these countries. Focusing on remittance-receiving country Z, and assuming that the top five remittance-sending countries to Z are countries A, B, C, D and E, the weighted Policy on immigration variable is constructed as: $\text{Sum over } i[\text{Policy on immigration for country } i * (\text{remittances from } i \text{ to } Z) / (\text{sum of remittances received by } Z \text{ from } A \text{ through } E)]$, where $i=A$ to E .	Bilateral remittance data from Ratha and Shaw (2007). Policy on immigration form World Population Policies (United Nations)

Appendix Table 3
List of the top five remittance-sending countries and their corresponding share

Remittance-Receiving Countries	Top Five Remittance-Sending Countries				
	1st	2nd	3rd	4th	5th
Albania	Greece (0.4)	Italy (0.34)	Macedonia, FYR (0.07)	US (0.07)	Germany (0.02)
Armenia	Russian Federation (0.51)	US (0.19)	Ukraine (0.05)	Germany (0.03)	Israel (0.02)
Bangladesh	India (0.43)	Saudi Arabia (0.16)	UK (0.12)	US (0.08)	Italy (0.02)
Belarus	Russian Federation (0.50)	Ukraine (0.17)	Poland (0.05)	US (0.04)	Israel (0.03)
Belize	US (0.84)	Canada (0.02)	UK (0.02)	Mexico (0.01)	Bolivia (0.01)
Benin	Nigeria (0.31)	France (0.11)	Togo (0.10)	Cote d'Ivoire (0.10)	Gabon (0.09)
Bolivia	Argentina (0.39)	US (0.28)	Spain (0.10)	Brazil (0.03)	Chile (0.02)
Bots wana	South Africa (0.60)	UK (0.08)	Namibia (0.06)	US (0.06)	Australia (0.02)
Brazil	Japan (0.29)	US (0.26)	Spain (0.06)	Paraguay (0.04)	Portugal (0.04)
Bulgaria	Turkey (0.47)	Spain (0.07)	Germany (0.07)	US (0.06)	Greece (0.04)
Burkina Faso	Cote d'Ivoire (0.79)	France (0.02)	Italy (0.02)	Germany (0.01)	Niger (0.007)
Cambodia	US (0.57)	France (0.19)	Australia (0.07)	Canada (0.06)	Thailand (0.03)
Cameroon	France (0.28)	Chad (0.11)	US (0.11)	Germany (0.10)	Gabon (0.09)
Cape Verde	Portugal (0.27)	US (0.23)	France (0.09)	Netherlands (0.08)	Mozambique (0.05)
Chile	Argentina (0.30)	US (0.19)	Spain (0.07)	Sweden (0.06)	Canada (0.05)
China	Hong Kong, China (0.35)	US (0.20)	Japan (0.06)	Singapore (0.06)	Canada (0.05)
Colombia	US (0.40)	Venezuela, RB (0.21)	Spain (0.21)	Ecuador (0.01)	Canada (0.01)
Congo, Rep.	France (0.41)	Tanzania (0.18)	Belgium (0.08)	US (0.05)	Gabon (0.03)
Costa Rica	US (0.74)	Panama (0.03)	Nicaragua (0.02)	Spain (0.02)	Canada (0.02)
Cote d'Ivoire	France (0.48)	Italy (0.09)	US (0.09)	Burkina Faso (0.05)	Benin (0.04)
Croatia	Germany (0.43)	Australia (0.07)	US (0.06)	Austria (0.06)	Canada (0.05)
Dominica	US (0.48)	UK (0.19)	Canada (0.07)	Antigua and Barbuda (0.05)	Virgin Islands (U.S.) (0.05)
Dominican Republic	US (0.80)	Spain (0.08)	Italy (0.01)	Venezuela, RB (0.007)	Germany (0.006)
Ecuador	Spain (0.46)	US (0.39)	Italy (0.02)	Venezuela, RB (0.01)	Canada (0.01)
Egypt, Arab Rep.	Saudi Arabia (0.50)	Libya (0.11)	US (0.09)	Italy (0.03)	Canada (0.02)
El Salvador	US (0.87)	Canada (0.03)	Australia (0.008)	Costa Rica (0.006)	Guatemala (0.005)
Estonia	Russian Federation (0.33)	Finland (0.22)	Sweden (0.07)	US (0.07)	Canada (0.04)
Ethiopia	US (0.34)	Israel (0.18)	Germany (0.07)	Canada (0.05)	Sweden (0.05)
Fiji	Australia (0.30)	US (0.26)	Canada (0.16)	New Zealand (0.15)	UK (0.02)
Gabon	France (0.50)	Sierra Leone (0.19)	Cameroon (0.04)	Congo, Rep. (0.03)	US (0.02)
Gambia, The	Spain (0.29)	US (0.20)	UK (0.11)	Germany (0.09)	Sweden (0.08)
Georgia	Russian Federation (0.58)	Greece (0.09)	Ukraine (0.07)	Armenia (0.04)	Israel (0.03)
Ghana	US (0.23)	UK (0.18)	Cote d'Ivoire (0.15)	Germany (0.08)	Nigeria (0.07)
Grenada	US (0.51)	UK (0.16)	Canada (0.13)	Trinidad and Tobago (0.10)	Barbados (0.006)
Guatemala	US(0.87)	Mexico(0.03)	Canada (0.02)	Belize (0.01)	Spain(0.007)
Guinea-Bissau	Portugal (0.39)	France (0.22)	Spain (0.10)	Senegal (0.10)	Gambia, The (0.04)
Guyana	US (0.66)	Canada (0.21)	UK (0.06)	Venezuela (0.007)	Trinidad and Tobago (0.006)
Haiti	US (0.79)	Canada (0.08)	Dominican Republic (0.03)	France (0.03)	Guadeloupe (0.007)
Honduras	US (0.88)	Spain (0.01)	Canada (0.01)	Nicaragua (0.008)	El Salvador (0.007)
Hungary	US (0.23)	Germany (0.16)	Canada (0.11)	Austria (0.08)	Australia (0.04)
India	United Arab Emirates (0.27)	US (0.20)	Saudi Arabia (0.11)	UK (0.08)	Canada (0.05)
Indonesia	Malaysia (0.29)	Saudi Arabia (0.19)	Netherlands (0.15)	US (0.08)	Singapore (0.07)
Iran, Islamic Rep.	US (0.37)	Germany (0.14)	Canada (0.08)	Sweden (0.06)	Israel (0.06)
Jamaica	US (0.64)	UK (0.15)	Canada (0.12)	Cayman Islands (0.003)	Cuba (0.002)
Jordan	West Bank and Gaza (0.40)	Saudi Arabia (0.27)	US (0.14)	Germany (0.03)	Canada (0.01)
Kazakhstan	Russian Federation (0.69)	Ukraine (0.07)	Uzbekistan (0.05)	Germany (0.03)	Israel (0.02)
Kenya	UK (0.51)	US (0.18)	Canada (0.07)	Tanzania (0.06)	Germany (0.02)
Kyrgyz Republic	Russian Federation (0.72)	Israel (0.06)	Germany (0.05)	Ukraine (0.04)	US (0.01)
Lao PDR	US (0.73)	France (0.12)	Thailand (0.05)	Canada (0.04)	Australia (0.02)
Latvia	Russian Federation (0.39)	US (0.16)	Germany (0.06)	Israel (0.05)	Canada (0.04)
Lesotho	South Africa (0.84)	Mozambique (0.07)	US (0.003)	UK (0.003)	Tanzania (0.002)

Appendix Table 3
List of the top five remittance-sending countries and their corresponding share (cont.)

Remittance-Receiving Countries	Top Five Remittance-Sending Countries				
	1st	2nd	3rd	4th	5th
Lithuania	Russian Federation (0.24)	Poland (0.20)	US (0.13)	Germany (0.06)	Israel (0.05)
Macedonia, FYR	Germany (0.23)	Switzerland (0.15)	Australia (0.12)	Italy (0.11)	US (0.06)
Madagascar	France (0.80)	Comoros (0.02)	Reunion (0.02)	Canada (0.02)	Italy (0.01)
Malawi	UK (0.53)	South Africa (0.10)	US (0.08)	Tanzania (0.07)	Zambia (0.06)
Malaysia	Singapore (0.69)	Australia (0.05)	US (0.04)	UK (0.04)	Brunei (0.03)
Maldives	Nepal (0.22)	UK (0.19)	Australia (0.14)	India (0.09)	Germany (0.06)
Mali	Cote d'Ivoire (0.32)	France (0.17)	Burkina Faso (0.16)	Nigeria (0.06)	Gabon (0.04)
Mauritania	France (0.26)	Senegal (0.22)	Spain (0.17)	Nigeria (0.07)	US (0.07)
Mauritius	France (0.28)	UK (0.26)	Australia (0.14)	Italy (0.09)	Canada (0.06)
Mexico	US (0.92)	Canada (0.004)	Spain (0.003)	Bolivia (0.0008)	Guatemala (0.0008)
Moldova	Russian Federation (0.36)	Ukraine (0.21)	US (0.08)	Germany (0.05)	Romania (0.04)
Mongolia	Germany (0.45)	US (0.23)	Japan (0.10)	Hungary (0.03)	UK (0.02)
Morocco	France (0.32)	Spain (0.24)	Italy (0.11)	Israel (0.07)	Netherlands (0.06)
Mozambique	South Africa (0.39)	Portugal (0.25)	Tanzania (0.09)	Malawi (0.08)	Swaziland (0.02)
Namibia	Mozambique (0.32)	UK (0.13)	Tanzania (0.11)	US (0.10)	Germany (0.05)
Nepal	India (0.52)	US (0.10)	Saudi Arabia (0.05)	Thailand (0.04)	UK (0.04)
Nicaragua	US (0.60)	Costa Rica (0.29)	Canada (0.02)	Spain (0.008)	Panama (0.005)
Niger	Cote d'Ivoire (0.27)	Burkina Faso (0.15)	Nigeria (0.13)	Chad (0.07)	France (0.06)
Nigeria	US (0.35)	UK (0.20)	Italy (0.06)	Chad (0.04)	Germany (0.04)
Pakistan	Saudi Arabia (0.24)	UK (0.20)	US (0.15)	India (0.14)	Canada (0.04)
Papua New Guinea	Australia (0.67)	New Caledonia (0.09)	US (0.07)	UK (0.03)	New Zealand (0.02)
Paraguay	Argentina (0.69)	US (0.07)	Brazil (0.05)	Canada (0.02)	Spain (0.01)
Peru	US (0.43)	Spain (0.13)	Japan (0.07)	Italy (0.06)	Argentina (0.06)
Philippines	US (0.56)	Saudi Arabia (0.08)	Canada (0.07)	Japan (0.04)	Malaysia (0.04)
Poland	US (0.25)	Germany (0.19)	Belarus (0.08)	Canada (0.08)	France (0.05)
Romania	US (0.14)	Israel (0.12)	Germany (0.10)	Italy (0.10)	Spain (0.10)
Russian Federation	Ukraine (0.39)	Kazakhstan (0.15)	Israel (0.06)	Belarus (0.06)	US (0.05)
Rwanda	Uganda (0.22)	Tanzania (0.14)	Belgium (0.11)	France (0.07)	UK (0.07)
Samoa	New Zealand (0.46)	US (0.26)	Australia (0.15)	American Samoa (0.08)	
Senegal	France (0.34)	Italy (0.24)	Cambodia, The (0.10)	Spain (0.07)	US (0.05)
Seychelles	UK (0.28)	Australia (0.21)	Canada (0.09)	Italy (0.07)	US (0.06)
Sierra Leone	US (0.40)	UK (0.29)	Germany (0.11)	Netherlands (0.03)	Spain (0.03)
Slovak Republic	Czech Republic (0.52)	US (0.08)	Germany (0.07)	Hungary (0.07)	Austria (0.04)
Solomon Islands	Australia (0.46)	New Zealand (0.14)	UK (0.13)	New Caledonia (0.09)	US (0.07)
South Africa	UK (0.25)	Mozambique (0.15)	US (0.12)	Australia (0.12)	Canada (0.06)
Sri Lanka	Canada (0.13)	Saudi Arabia (0.12)	UK (0.11)	Germany (0.09)	Italy (0.08)
Sudan	Saudi Arabia (0.50)	Uganda (0.11)	US (0.09)	UK (0.04)	Chad (0.03)
Suriname	Netherlands (0.84)	French Guiana (0.06)	US (0.03)	Netherlands Antilles (0.005)	Canada (0.004)
Swaziland	South Africa (0.83)	Mozambique (0.03)	UK (0.01)	US (0.01)	Australia (0.003)
Syrian Arab Republic	Saudi Arabia (0.23)	US (0.19)	Germany (0.10)	Sweden (0.05)	Canada (0.04)
Tanzania	UK (0.38)	Canada (0.20)	US (0.15)	Uganda (0.06)	Mozambique (0.02)
Thailand	US (0.34)	Cambodia (0.10)	Germany (0.08)	Malaysia (0.08)	Japan (0.06)
Togo	Germany (0.24)	France (0.19)	Nigeria (0.19)	Benin (0.08)	Gabon (0.06)
Tonga	US (0.45)	New Zealand (0.30)	Australia (0.15)	American Samoa (0.009)	France (0.004)
Trinidad and Tobago	US (0.64)	Canada (0.18)	UK (0.06)	Venezuela, RB (0.006)	Barbados (0.005)
Tunisia	France (0.66)	Libya (0.08)	Germany (0.05)	Israel (0.01)	US (0.01)
Turkey	Germany (0.64)	France (0.04)	Netherlands (0.04)	Austria (0.03)	US (0.02)
Uganda	UK (0.58)	US (0.14)	Canada (0.10)	Tanzania (0.03)	Sweden (0.02)
Ukraine	Russian Federation (0.52)	US (0.11)	Israel (0.05)	Germany (0.04)	Poland (0.04)
Uruguay	Argentina (0.33)	Spain (0.22)	US (0.13)	Brazil (0.06)	Australia (0.04)
Vanuatu	Australia (0.34)	France (0.25)	New Zealand (0.08)	New Caledonia (0.07)	UK (0.06)