Remittances: Transaction Costs, Determinants, and Informal Flows*

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Abstract: Recorded workers' remittances to developing countries have grown rapidly, to more than $100 billion in 2004, bringing increasing attention to these flows as a potential tool for development. But even these statistics are likely to significantly understate true remittances, as a large share is believed to flow through informal channels. Estimates of the importance of the informal sector vary widely, ranging from 35 percent to 250 percent of recorded flows. The primary motivation of the study is to develop the first empirical methodology to estimate informal flows. We use insights from the literature on shadow economies and empirically estimate informal remittances for more than 100 countries, using historical data on workers' remittances from the Balance of Payments (BOP), as well as data on migration, transaction costs, and various country characteristics. Our results imply that informal remittances amount to about 35–75 percent of official remittances to developing countries. There is significant regional variation: informal remittances to Sub-Saharan Africa and Eastern Europe and Central Asia are relatively high, while those to East Asia and the Pacific are relatively low. These estimates are supplemented with detailed household survey data on remittance receipts in a number of countries.

Our results also shed light on the determinants of recorded remittances and the associated fees in the formal sector. We find that the stock of migrants in OECD countries is the primary determinant of remittances. In addition, money transfer fees and the presence of dual exchange rates reduce the share of remittances reported in national accounts. In turn, transaction costs are systematically related to concentration in the banking sector, lack of financial depth, and exchange rate volatility. There is also evidence that remittances are misrecorded in the BOP as "Errors and Omissions".

I. Introduction

Recorded flows of workers' remittances to developing countries have grown from $66 billion in 2000 to more than $100 billion in 2004. Such high levels and rapid growth rates have brought increasing attention to remittances as a potential tool for development. But even these statistics are likely to significantly understate true remittances, as a large share is believed to flow through informal channels. Market observers suspect that informal flows may range from about 50 percent to 250 percent of recorded flows.[1] The primary motivation of this study is to estimate informal remittances for a broad range of countries. To do this, we construct and estimate a model of the determinants of remittances which focuses on the cost of sending remittances through formal channels, the presence of exchange-rate and other economic distortions, migration levels, and other country characteristics. The resulting cross-country estimates, based on macro-level data, are then supplemented with new country-specific micro-level estimates, based on household survey data on remittance receipts.

We define informal remittances as all types of money transfer services that do not involve formal contracts, and hence are unlikely to be recorded in national accounts. Formal channels include money transfer services offered by banks, post office banks, non-bank financial institutions, and forex bureaus and money transfer operators like Western Union and MoneyGram. Informal channels include cash transfers based on personal relationships through business people, or carried out by courier companies, friends, relatives or oneself. In addition, more advanced Hawala and Hundi systems allow faster transfers, relying on a network of agents that transfer money quickly.

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[1] Celent (2005) estimates informal remittances will be 35 percent of total in 2006, AITE(2005) estimates that remittances exceed remittances recorded in IMF statistics by 250 percent.

There are a number of reasons why policy makers and development workers will benefit from improved measurement of actual remittance flows. First, if policy is being designed to encourage remittances or stimulate investment, it is important to know the true size of the flows. Inaccurate information may lead to inappropriate initiatives. Second, from an efficiency standpoint, a large share of informal remittances in an economy suggests that rents to banks and money transfer providers in the official market are very large, and there may be simple ways to improve competition and increase the remittances received. Third, there may be positive externalities from using formal channels (and especially financial institutions such as banks) to transfer money, including increased access to credit and the use of financial institutions for savings.

No existing work uses an empirical methodology to estimate informal remittance flows globally. A handful of country studies use household survey data to estimate remittances, but these estimates cannot be compared with national accounts to compute the size of the informal sector because of issues in reporting. Indeed, the implied estimates of national remittances are well below the values recorded in the balance of payments (BOP). Surveys that ask how remittances are sent are likely to provide the best estimates of the size of the informal sector, but such surveys are only available for a handful of countries.

In addition to estimating informal flows, our results also provide information on the determinants of migrants' remittances and transactions costs. Not surprisingly, the stock of migrants in OECD countries is the primary determinant of official remittances. We estimate that a doubling of the migrant stock in OECD countries would lead to about a 75 percent increase in recorded remittances. We also find that transaction costs are

systematically related to concentration in the banking sector, lack of financial depth, and exchange rate volatility. Policies that improve competition in the banking sector, that encourage financial development in the migrant's home country, and that reduce exchange rate volatility will help lower official transactions costs.

The paper proceeds as follows. The next section provides background information on informal remittance flows; Section III surveys the literature on measuring informal flows; Section IV presents a simple model of the informal sector; Section V discusses the data; Sections VI and VII present results from cross-country data and household surveys, respectively; and Section VIII concludes.

II. Informality in Remittance Flows

The choice of provider for remitting money depends on a number of factors. The most prominent among these are: the cost of the transaction, speed, security of funds, geographic proximity/ accessibility, convenience in terms of familiarity and language. The attractiveness of formal and informal channels varies greatly across these factors.[2]

Globally, studies indicate that informal channels are cheaper than formal ones. The pure monetary cost (transaction cost) of remitting money across borders using official channels is estimated at approximately 13 percent of the remittance value. Orozco (2003) estimates the cost of a Hawala / Hundi transaction to be less than 2 percent of the value of the principal. For the informal remittance channels as a whole, Sander (2003) reports the average cost of remitting at 3-5 percent globally, although they can be higher in specific cases. Swanson and Kubas (2005) report costs from less than 1 to 5 percent. Similarly, remittances through friends, taxi drivers, etc., are also low-cost

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[2] Pieke et. al. (2005) provide a survey of informal market definitions, costs, and systems.

channels compared to the formal channels. For example, in a survey conducted in South Africa, remittances up to R250 to neighboring countries cost R25 and R50, through friends and taxi drivers, respectively, as compared with over R100 through registered banks and over R80 through money transfer agents like MoneyGram and Western Union (G:Enesis, 2003). Similarly, Siddiqui and Abrar (2003) find that costs of informal channels in Bangladesh are about 45 percent of formal costs. Apart from the general perception and anecdotal evidence of low cost of informal remittance channels, not much is known about how these costs vary with the amount transferred and the geographical location of the senders and receivers.

Formal remittance channels are typically more expensive, especially banks and money transfer operators (MTOs) like Western Union and MoneyGram. At times the cost of remitting small amounts can be prohibitively high due to a minimum fee charged by most service providers. Sanders and Maimbo (2003) report that fees for major MTOs start at about $15 and are usually structured by brackets of transfer values. Similarly, minimum fees at banks range from $5 to $50 depending on the sending and receiving countries as well as the product. Due to minimum fees, the average cost declines sharply as the amount remitted rises.

Informal channels are typically faster and more convenient as they are not constrained by banking and foreign exchange regulations and often work in close proximity to their clients and frequently provide door-to-door services. Unlike banks, informal channels do not require the customer to have a bank account or any knowledge about operating one.

III. Approaches to Estimating Informal Remittances

Direct Approach

The most accurate estimates of the informal share of remittances are likely to come from household surveys that ask respondents both how much they have received and by what means. This allows direct estimation of what proportion was received through informal channels. An alternative methodology is to scale up data on total remittances received from household surveys and compare aggregates to national accounts. However, owing to noise in reporting, this method is not viable.

There are two problems with using household survey data on remittances. First, Individuals receiving remittances, and especially those receiving large amounts, are likely to be under-sampled: concerns about confidentiality may induce them not to answer survey questions. Second, respondents tend to underreport income (Ravallion, 2003). These problems make it especially problematic to compare income from surveys to national accounts. Indeed, studies that have worked with household remittance data find that they under-estimate total flows, however, because of the biases noted this does not imply that informal flows are not significant.

Still, provided there is information about the channel of transmission, the direct approach may be more accurate for remittances than other types of informal income. Amounts sent are often round numbers that are well known to family members—for instance, a household may receive $200 every month from a relative abroad. In addition, receiving remittances through informal channels is legal in most countries, so unlike activities in the underground economy, where participants seek to evade taxes, there is no direct incentive for concealment. Assuming the extent of underreporting is uncorrelated

with the mode of transmission, estimates of informal flows using responses on transmission channels will be unbiased.

We employ the direct approach in using household surveys from Dominican Republic, El Salvador, and the Philippines, as well as report results from surveys for Armenia, Bangladesh, Guatemala, Moldova, and Uganda.

Shadow Economies and Developing a Model-Based Approaches

To develop a structural model of remittances that can be estimated, we use insights from the literature on shadow economies. In general, the size of the informal economy is estimated using the relationship between variables that are correlated with the size of the informal economy, such as the currency relative to demand deposits or production, and variables create an incentive to go underground, such as the tax burden. The problem with this approach is that it can yield reasonable estimates of the growth of the underground economy, but some strong assumptions are needed to generate level estimates.

One of the most commonly used methods is the currency demand approach, developed by Phillip Cagan (1958). It uses the correlation between taxes and money demand to estimate the informal economy. The basic idea is that the shadow economy uses cash for transactions. The cash to current and deposit accounts ratio is then regressed on taxes and other conventional variables. Increases in the demand for currency that are not explained by standard factors, i.e. the residual plus that explained by increased taxes, reflect the shadow economy. Numerous criticisms have been leveled against the currency approach, including how to calibrate the model—in some base year

the shadow economy is assumed to be zero—and to what extent the structural model accurately reflects the underground economy (see Thomas, 1999, and Schneider and Entse, 2000, for more details). The physical input method also relies on a structural model, but in this case excessive energy usage, as opposed to currency, is used to capture the informal economy. The model suffers from many of the same critiques as the currency demand approach.

A more advanced modeling approach considers more than just one indicator to estimate the shadow economy. The strategy is to link the shadow economy to multiple observed indicators such as tax burden, heavy regulation, and declining "tax morality" to the shadow economy. Multiple indicators are also used, including monetary transactions, labor participation, and production.

As opposed to using estimated coefficients, previous studies of global informal remittance flows have relied on ad hoc calibration models (El Qorchi, Maimbo, and Wilson, 2003), where the key parameter determining informal flows is the black market premium. While this variable is likely to be correlated with the size of the informal sector, the extent of the correlation is determined by the authors and not based on a structural model nor on empirical analysis. In particular, they assume that the share of informal remittances is a quadratic function of the black market premium, where the coefficients are exogenously determined.

IV. A Simple Model of the Informal Sector

In this section, we develop a simple model of informal remittances. The model is meant to be illustrative and highlight key variables influencing informal remittances. We

8

assume that a migrant first decides how much money to send home, based on his earnings and his family's needs, and then decides whether to use official or unofficial means to send it. The key assumptions for our model and estimation is that the informal sector is cheaper and less secure, and that the cost of sending remittances primarily affects the channel by which money is sent and not the amount. Indeed, evidence detailed above suggests that costs in the informal sector are about 2-5 percent of the amount sent, while costs in the formal sector are on average about 10-20 percent. Available empirical evidence also supports the second assumption—the elasticity of total remittances sent or received with respect to costs is very low. Yang (2004) shows that Philippine migrants sent *less* money in foreign currency when the Philippine peso depreciated during the Asian financial crisis, suggesting that migrants have a target amount they want the family to receive. Similarly, Straubhaar (1986) shows that the total inflow of remittances to Turkey is affected neither by exchange rate variations nor by changes in the real rate of return on investment. His explanation is that many remitters have little option but to send money, given the severe economic hardships faced by their families in the source country. Again, Gibson, McKenzie, and Rohorua (2005) find that 70 percent of Tongan migrants say they would not change the amount that they send home if the fixed fee declined. More generally, existing studies typically find remittances to be driven by the need to support migrant workers' families, rather than by investment considerations (e.g., Aggarwal and Spatafora, 2005).

In particular, we assume that a risk-neutral individual chooses between sending money through informal or formal sector. Using official channels, the amount that will be received in the home country is

(1) $$Y_O = X * E_O - f_O,$$

where X is amount transferred, E_O is the official exchange rate, and f_O is the fixed fee of sending X officially.

Using informal channels, the value to the sender of the amount received in home country is

(2) $$E(Y_I) = P(X * E_I) - f_I$$

where X is amount transferred, E_I is the unofficial exchange rate, and f_I is the fixed fee in the informal sector of sending X. We assume $f_I < f_O$, as the anecdotal evidence noted above implies that the advantage of the informal sector is that the hefty fees involved in official transmission are avoided. P is the probability that the recipient receives the transfer. The informal channel is assumed involve the risk that the money is not received, $0 < P < 1$. This reflects the fact that there are no contracts in the informal sector.

Assuming a risk neutral individual, he will choose to transfer money via the official channel provided $Y_O > E(Y_I)$. This implies that official systems will be used, if the following condition holds:

(3) $$\bar{X} > \frac{f_O - f_I}{(1-P)E_O - P*z}, \quad Pz > 0,$$

where z is the black market premium ($z = E_I - E_O$). This inequality describes the cutoff value of the transfer size $\bar{X}$, above which official transfer will be optimal. The higher is the cutoff value, the greater is the number of transactions that will occur informally. The cutoff value is increasing in the fee differential between the formal and informal sector, the exchange rate differential, and the probability that the informal transfer is received.

Recall that we assume that the migrant first decides how much to send home, depending on his income and the income of his family remaining in the home country, and then decides how to send it. Aggregate remittances will therefore depend on wages in the host economy, income in the source economy, and the total number of migrants. In order to pinpoint informal remittances, we assume that high official costs in the form of the money transfer fee, the exchange rate spread, and the presence of a dual exchange rate affect primarily the extent to which remittances are transmitted formally. This allows us to estimate total remittance flows using the coefficients on these cost of transmission variables, assuming they take values such that individuals would always prefer formal transmission. This is explained in more detail in Section VI.

The model also highlights a testable feature of the informal sector. Informal transactions are likely to be smaller. The intuition is straightforward. If the fixed fee is high in the formal sector, then the fee as a fraction of the amount sent will be large if amounts are small and it will always be optimal to use the informal sector.

V. The Data

In order to estimate our model, we collected a panel of aggregate data on remittances from the IMF's *Balance of Payments* statistics. The dataset covers up to 104 countries for which workers' remittances are reported over the 1995–2003 period. On average, we have five observations per country. As is standard practice, we define remittances as the sum of three items in the *Balance of Payments* statistics: "Compensation of Employees," "Workers' Remittances," and "Migrants' Transfers." Adjustments are however made for

a number of countries, following the advice of IMF country desks and national

authorities.[3]

In Figure 1, we present broad trends in remittance receipts for several different

regions. One notable feature is the rapid increase over the last decade, particularly for

Latin America. This increase is likely to reflect rising numbers of migrant workers

around the world. In addition, however, it may reflect technological developments and

increased competition in the financial services industry, reducing the cost of sending

remittances, especially through the formal financial sector. This could have both

encouraged remittances in general and, as argued above, led to a shift in transactions

from the informal and into the formal sector. Indeed, data from household surveys imply

that the informal sector is now quite small and has been declining in several Latin

American Countries.

In addition to not capturing the informal sector, remittance data in the balance of

payments do not always include transactions through money transfer providers. One

study of 40 central banks in developing countries around the world indicates that about

60 percent do not record data from money transfer providers that do not settle through

banks (de Luna Martinez 2005). Transactions by money transfer providers that are

settled through banks and are properly identified as remittances will still be recorded.

Because of this under-recording, a portion of formal remittance transactions will end up

in the statistical discrepancy in countries that do not collect information from money

transfer providers. Our estimates of the informal sector are based on costs of using

formal versus informal modes and thus will not incorporate misrecorded flows. Total

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[3]Please see the Appendix for a fuller discussion of the definition of remittances and of the various
adjustments made to the data.

remittance flows will therefore exceed the sum of official recorded flows and informal flows by the extent to which misreporting is important. To account for under-recording, we also include net errors and omissions as a percent of GDP in the panel exercise. Provided misreporting is not correlated with the transaction cost variables, our estimates of the size of the informal sector will still be unbiased.

In addition, misrecording implies that part of the dramatic increase in official remittances in recent years owes to improved data collection and not just a shift from the informal to the formal sector. For example, Mexican remittances increased by 95 percent from 2000 to 2004. According to the central bank, improvements in central bank recording were a key factor: only after 2002 did Mexico begin recording transactions from money transfer providers (de Luna Martinez 2005).

We also collected data on the transaction costs associated with sending remittances to specific countries. These transaction costs include both explicit service fees, and the implicit exchange rate spreads (defined as the difference between the exchange rate offered by the remittance service provider, and the central exchange rate as quoted by Bloomberg). The total transaction costs, the service fees, and the exchange rate spreads were all computed assuming a remittance size of USD 200, and are quoted as a percentage of this amount. The transaction cost data were collected from Western Union, refer to transfers from the United States or the United Kingdom to the relevant country, and are only available for the year 2005. We use US costs for countries with large stocks of migrant workers in the United States, UK costs for countries with large migrant stocks in the United Kingdom, and an average of costs from the two countries

when migrant stocks are roughly split between the two (and/or are predominantly in other countries).[4]

We also gathered data on the stock of migrant workers around the world. Where such data is available, it generally refers to the total number of migrant workers *present* in a specific country. Given our interest in remittance *receipts*, however, we needed data on the total number of migrant workers *originating* from a specific country, regardless of which country they migrated to. Such data are available from the OECD's *Database on Immigration and Expatriates*, but only for the year 2000, and they only cover migrant workers residing in OECD countries. This latter restriction, however, may not be too problematic, given that the OECD is likely the source for the bulk of remittances to developing economies.

Other variables used in the estimation include: per capita domestic output; per capita output in the country where most of a country's migrant workers are located ("main host output"); an indicator denoting the presence of a dual exchange rate system ("dual exchange rate dummy"); country-specific financial risk ("financial risk"); the 3-firm concentration ratio for the banking sector ("bank concentration"); and a dollarization dummy. The Appendix provides further details on precise definitions and sources.

Table 1 reports summary statistics for the cost and financial variables. In terms of transactions costs, countries in Latin America have the lowest exchange spreads, while countries in South Asia have the lowest fees. Sub-Saharan Africa performs poorly all indicators.

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[4] The results are robust to using only cost data from the United States. There is no full sample for the United Kingdom data, as costs from the U.K. to some Latin American countries were missing.

VI. Estimation

We begin by examining the determinants of remittance receipts, based on the model in Section IV.[5] We include only developing countries in our sample, as the determinants of remittances to industrial countries are likely to be very different. Our basic estimating equation is the cross-sectional regression

$$(4)\ WR_i\ =\ \alpha + \beta_1\ Y_i + \beta_2\ y_i + \beta_3\ M_i + \beta_4\ y_i{}^* + \beta_5\ DualER_i + \beta_6\ Fee_i + \beta_7\ Spread_i + \varepsilon_i,$$

where *WR* denotes the log of workers' remittances; *Y* denotes the log of domestic output; *y* denotes the log per-capita domestic output; *M* denotes the log of the stock of migrant workers; *y** denotes the log of per-capita main host output; *DualER* is a dummy variable for the presence of a dual exchange rate; *Fee* and *Spread* denote, respectively, the service fee and exchange rate spread components of the total transaction costs associated with receiving remittances; and *i* indexes the relevant country. All variables are constructed as an average over the 1995–2003 period, except for the transaction cost variables where we use values for 2005 (the only available year). Alternative specifications employ as the dependent variable the log of remittances per emigrant or the log of remittances per capita; in such cases, aggregate domestic output is not included among the regressors.

The results are presented in Table 2. The stock of migrant workers in OECD countries and the size of the economy are the main drivers of remittances. A one percent increase in the stock of migrants in the OECD boosts aggregate recorded remittances by 0.7 percent.[6] A one percent increase in income boosts remittances by 0.3 percent. The

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[5] Our framework builds on work by Aggarwal and Spatafora (2005). However, they use remittances to GDP as the dependent variable and we use the log of remittances (or remittances per capita), as this is closer to the model and allows us to interpret the coefficients as elasticities or semi-elasticities. In addition, their specification included neither migrant stock nor transactions costs.

[6] One might expect a coefficient of one on the migrant stock. The fact that it is less than unity may reflect: that this only includes migrants in OECD countries and remittances are global, the extent of informality in

service fee, exchange spread, and dual exchange rate are always negative, consistent with the notion that higher fees push remitters into the informal sector. In the aggregate specification (column1), only the fee is significant. One concern is that large remittances may drive fees down. We instrument for costs using financial development and dollarization (column 2) and the coefficient on fee remains significant. Moreover, even when we normalize remittances by emigrant stock, we find a negative impact of fees on remittances, suggesting that low fees are not entirely the result of economies of scale or more competition in large remittance channels. Our measure of economic restrictions, the dual exchange rate dummy, is negative and significant when we normalize remittances by population; in panel regressions, discussed later, the dual exchange rate dummy is always negative and highly significant. Overall, the results suggest that policies aimed at reducing costs in the remittance marketplace would be associated with increases in recorded remittances.

Host-country income is negative and significant when remittances are normalized by the migrant stock. One explanation is that the migrant stock tends to be recorded more accurately in high income countries. As a result, there will be an upward bias on remittances per migrant, when migrants reside primarily in low income countries.

The coefficient on home-country per-capita income is positive and significant when remittances are normalized by population. It is also less than unity. There are two interpretations. First, as average skill levels within a country increase, so do the average human capital of, and wages earned by, its migrant workers; however, the number of

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many countries with a large stock of migrants; the fact that migration is easier from wealthier countries and for wealthier families, and such migrants may send less money home; or that, as the number of migrants from a country increases, they may also start bringing with them members of their family.

migrants also tends to decrease. Second, as the cost of living within a country increases,

migrants partially offset this by sending more money home.

An Analysis of Money Transfer Costs

Next, we investigate the transaction costs associated with receiving remittances.

We present no precise theoretical model of their determinants. However, we would

expect greater competition in the financial services industry to have a powerful negative

impact on such costs. Also, greater overall financial-sector development might lead to

greater availability and lower costs for remittance services. Defective institutions and

greater business risk, as proxied by our measure of financial risk, would instead be

expected to reduce the willingness of agents to provide remittance services. Lack of

exchange rate risk, as would be the case for dollar remittances being sent to a dollarized

economy, should conversely reduce the cost of providing remittance services. Finally,

domestic wages (as proxied by domestic per-capita income), if not matched by equivalent

service-sector productivity, might be associated with greater cost of remittance services.

We also consider market size effects below.

We therefore run the cross-sectional regression

(5) $Cost_i = \alpha + \beta_1\ Conc_i + \beta_2\ FinDev_i + \beta_3\ Risk_i + \beta_4\ Dollar_i + \beta_5\ y_i + \varepsilon_i$,

where *Cost* denotes the total (percentage) transaction costs associated with receiving

remittances; *Conc* denotes bank concentration; *FinDev* denotes financial development, as

measured by the ratio of domestic deposits to GDP; *Risk* denotes financial risk; *Dollar*

denotes a dollarization dummy; and *y* denotes the log of domestic output per capita. All

variables are constructed as an average of all available years over the 1995–2003 period, except for transaction costs where we again use values for 2005.

The results are presented in column 1 of Table 3. Bank concentration, financial development, and dollarization all have the expected sign and are significant at the 5 percent or lower confidence level. Overall, the results suggest that a wide range of policies (including measures to increase competition among remittance-service providers, to increase financial development, and to reduce exchange rate volatility) would be expected to reduce the transaction costs associated with remittances, and hence to increase recorded remittances.

There is also the possibility that greater remittances reduce fees, because of more competition in large markets or returns to scale. To control for potential market size effects, we include log of remittances in the regression equation (column 2) and also log of the migrant stock (column 3). While both have the expected negative sign, neither is significant, suggesting that financial development is a more important driver of costs. When remittances or migrant stock are included, bank concentration is also no longer significant. This is consistent with the view that the impact of large markets arises largely through enhanced competition; given measurement error, it would then be hard to estimate separately the effect of market size and of competition. Indeed, when bank concentration is not included in the regression, the market size variables are statistically significant (columns 4 and 5). These results highlight the importance of measures to improve competition, especially in small markets, where market size alone will not boost competition.

Panel Estimates

As mentioned before, the data on remittances are available on a panel basis, but data on transaction costs and on the number of migrant workers are only available for a cross-section. Nevertheless, building on the results in Table 3 on the determinants of transaction costs, we now try to make more efficient use of the available information. As a first approach, we use the estimated coefficients from Table 3, combined with historical panel data on the independent variables, to "backcast" transaction costs. Let us call this backcast pseudo-variable "predicted costs." We then run the panel regression

(6) $WR_{i,t} = \alpha_i + \beta_0\, Y_{i,t} + \beta_1\, y_{i,t} + \beta_2\, y_{i,t}{}^* + \beta_3\, DualER_{i,t} + \beta_4\, PredCost_{i,t} + \beta_5\, NEO_t + \beta_6\, t + \varepsilon_{i,t},$

where the variables are defined above, and α_i denotes the country-specific fixed effects; *PredCost* denotes the predicted costs; NEO is Net Errors and Omissions component of the Balance of Payments, which will control for changes in measurement of remittances (see below), and t indexes the relevant year. The equation is estimated over the 1995–2003 period. The specification implicitly assumes that the country-specific fixed effects will adequately capture the impact of the number of migrant workers. The results are presented in Table 4, columns 1 and 3. Predicted costs and the dual exchange rate have the expected sign and are statistically significant.

As an alternative approach, rather than "backcasting" transaction costs and then using the predicted transaction costs as a regressor for remittances, we allow all variables used to explain transaction costs in Table 3 to enter *directly* as regressors for remittances. This approach might be more robust to errors in measuring transaction costs. Specifically, we run the panel regression

(7) $WR_{i,t} = \alpha_i + \beta_1 \, y_{i,t} + \beta_2 \, y_{i,t}* + \beta_3 \, DualER_{i,t} + \beta_4 \, Conc_{i,t} + \beta_5 \, FinDev_{i,t} + \beta_6 \, Risk_{i,t} +$

$\beta_7 \, Dollar_{i,t} + \beta_8 \, NEO_t + \beta_9 \, Controls_t + \beta_{10} \, t + \varepsilon_{i,t},$

where all variables are as defined previously. The results are presented in Table 4,

columns 2 and 4. Financial development (the main determinant of cost) is significant at

the 1 percent confidence level. One issue is that to the extent that remittances are used

for investment purposes, these variables may not only reflect costs, but also capture the

investment climate and thus overstate effect of lowering costs on remittances.

The coefficient on net errors and omissions (NEO) is always negative and

significant. Net errors and omissions is the item in the *Balance of Payments* that balances

the financial account and the current account. To the extent that the current account is

properly recorded and that foreign currency that enters informally makes its way into the

system (i.e. is not stored under a mattress), informal flows, as well as flows that go

through formal channels but are not recorded by the central bank, will fall into the

statistical discrepancy or the category called "net errors and omissions", along with other

unrecorded flows. Because this is a net category and a catch all for many items, it is

impossible to know exactly how much of it is comprise of remittance inflows. But, one

implication is that increased formal transactions and improvements in recording

remittances should be associated with a decline in the statistical discrepancy, all else

equal. That is, inflows will be shifted from net errors and omissions to remittances on the

balance of payments, as remittances are recorded because of better accounting practices

or because senders move to formal channels. To look for evidence that net errors and

omissions conceals remittances, we include net errors and omissions as a share of GDP in

the panel regression.[7] The coefficient is negative and highly significant (Table 4). In particular, a one percentage point decrease in the net errors and omissions category is associated with a 0.02 percent increase in remittances. This implies that a significant amount of past remittance growth likely reflects enhanced formality and improved recording.

Estimating Informal Remittances

To estimate informal remittances, we consider the following thought experiment: assume that the transaction costs and other distortions associated with sending and receiving remittances were to be reduced through policy interventions. In particular, say that transaction costs were reduced to 2-5 percent of the transaction amount (up to the 5th percentile of all values observed in the 2005 cross-section), which is the range of informal costs found in Orozco (2003) and Sander (2003). Further, assume that all dual-exchange-rate restrictions were eliminated. What would be the predicted impact on remittances in each region, using the estimated cross-sectional coefficients from Table 2? And what would be the predicted impact using the estimated panel coefficients from Table 4, columns 1 and 3?

Analogously, assume that some of the key underlying determinants of transaction costs as identified in Table 3 (specifically, bank concentration and financial development) were changed to more favorable values through policy interventions.[8] Further, assume

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[7] We use net errors and omissions/GDP as opposed to log net errors and omissions because it is often negative. When Remittance/GDP is the dependent variable the coefficient is 0.13 and highly significant, indicating that a ten percentage point decrease is net errors and omissions is associated with a 1.3 percentage point increase in remittances/GDP.

[8] In particular, assume that bank concentration and financial development were changed to, respectively, the 10th–15th percentile and the 85th–90th percentile of observed values. The results here are relatively

that all dual-exchange-rate restrictions were eliminated. What would be the predicted

impact on remittances, using the estimated panel coefficients from Table 4, columns 2

and 4?

The results of these related thought experiments are presented in Table 5.

Regional estimates are constructed as a weighted average of the country-specific

estimates of the percentage impact on remittances, with the weights proportional to

recorded remittance flows. For developing countries as a whole, the thought experiments

imply an increase in remittances on the order of about 35 to 75 percent (using the mean

of, respectively, the 2-percent transaction cost and the 5-percent transaction-cost

experiments). At a regional level, the increases would be especially large in Sub-Saharan

Africa, the region where costs are currently highest and many dual exchange systems

prevailed.

One important issue concerns how to interpret these results, and to what extent

they relate to the presence of "informal" remittances. We are assuming that costs are the

main determinant of informality. In some countries, there may be other reasons why

migrants prefer to send money informally. For instance, illegal migrants may prefer to

avoid formal channels or may not have access to formal channels. Because of potential

taxation in the home country, migrants may prefer to keep remittances out of

government's reach. There may be a history of informality and a well-developed

informal sector that is very competitive. We attempted to control for some of these

features by including data on the size of the informal economy and income tax rates,

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insensitive to the specific values chosen for these variables, since much of the explanatory power of the
panel regressions stems from the dual exchange rate indicator.

neither of which proved significant, but data on informality are very noisy. To the extent that such factors are important, our estimates will tend to understate the informal sector.

Set against this, a reduction in the cost of sending and receiving remittances through the formal sector, as well as in the presence and severity of other formal restrictions affecting remittance senders and recipients, could in principle increase recorded remittances by either: (i) increasing *total* remittances; or (ii) increasing the share of remittances that flow through the formal as opposed to the informal sector. To the extent that the first channel is active, our estimates of informal remittances would be biased *upwards*. However, as discussed earlier, we find the second channel to be relatively more plausible. Overall, we view the estimates in Table 5 as plausible ball-park estimates of the magnitude of informal flows. However, we now check this conclusion by turning to some detailed country case-studies.

VII. Household Survey Estimates

Household surveys are likely to be the most accurate means of estimating the informal sector for particular countries. The main issue is that remittances must be fairly widespread or it is difficult to get a representative sample of recipients. As a result, we use only surveys from countries where remittances are known to be large and widespread, where there is more than one year of data, and which include questions about the channel through which money was transferred. Three household surveys satisfy these criteria: the (2000–2003), El Salvador (1995–1997), and the Philippines (1992–2000). We also report results from a handful of remittance surveys done by IOM and other agencies.

Dominican Republic

According to national statistics, Dominican Republic is among the top 15 developing country recipients of remittances (and of remittances/GDP), receiving approximately $2.1 billion per year.

We use the Panel Survey of the Work Force (Encuesta de Panel de Fuerza de Trabajo) for 2000–2003. The survey is conducted biannually, is a nationally representative survey, and covers a three-month period (Jan-March or July-September). About 22,000 people are surveyed.

From 2000–2003, a number of detailed questions on remittances were added, including the channel by which they were received. During each three-month period, 15-18 percent of households report receiving remittances. Table 6 shows the percentage of total remittances received via the various channels by residents of the Dominican Republic. The share of remittances that flow through the informal sector is declining, from nearly 10 percent in 2000 to about 4½ percent in 2003. Money transfers have shifted to postal banks and money transfer providers. Of interest, banks account for a very small share of money transfer and their share did not increase. This is likely due to an intense distrust of the banking sector in this period: the withdrawal of funds from the country's second largest private bank (Banco Intercontinental) in September 2002, ultimately culminated in the central bank bailing it out in April 2003, at a cost of roughly 15 percent of GDP to taxpayers (Hanke 2004). Despite nearly 50 percent of Dominicans residing in the U.S. reporting having a bank account, most choose not to use bank services for money transmission and report being satisfied with their current provider

(Bendixen 2004). In order for Banks to play a significant role in money transfer services, they have to inspire trust in their services.

Respondents are also asked how often they receive remittances during the year. Among those that receive remittances monthly, the informal sector is very small—only about 1-2 percent of total, as compared with 5-10 percent for all remittances. We also find that the informal sector is more heavily *dollarized*, about 70 percent of transactions were in foreign currency, as compared with just over 50 percent in the formal sector on average over this period. In addition, as the model predicts, the transaction size is smaller, on average about $90 as compared with about $200 in the formal sector.[9]

El Salvador

According to national statistics, El Salvador is among the top 15 developing country recipients of remittances and of remittances/GDP, receiving approximately $2.3 billion per year. Stratified surveys are available for a number of years from 1989-2003. Only the surveys in 1995-1997 record detail about the channel by which remittances were received.

Results in Table 7 show that inflows to El Salvador through informal channels are about 15-20 percent of total recorded flows in 1995-1997. Of interest, there appears to be a large shift away from money transfer providers to banks and post offices in 1997.

As predicted by the model, flows through informal channels tend to be smaller. On average, formal transactions were about double informal transactions. The median

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[9] Excludes data for third quarter 2001, because of idiosyncrasies due to September 11.

formal transaction was about \$100 in 1995 and 1996, while the median informal

transaction was about \$50 in the same years.[10]

The Banking Law of 1999, dollarization in 2001, and sharp decreases in transfer

costs, have surely led to a further decrease in informal flows. Most likely reflecting this

shift, remittance growth in El Salvador has been explosive in recent years, with recorded

remittances surging by 53 percent (in current USD) from 1999 to 2003.

Philippines

According to national statistics, the Philippines is the third largest developing

country recipient of remittances (and sixteenth largest recipient of remittances/GDP),

receiving approximately \$6.4 billion per year. Stratified surveys are available for 1992-

2000; they are administered to households reporting having any members overseas in the

last five years, from a nationally representative sample of roughly 40,000 households.

About 17-19 percent of households report receiving remittances from overseas.

The survey indicates that about 6 percent of remittances went through informal channels

(friends and co-workers) in 1992, and that the share fell to 1 percent in 2000 (Table 8).

The change was due to a shift away from sending through friends and co-workers and

towards using banks. Door-to-door (a common name for couriers/offices which

personally deliver packages including cash to the doorstep of the household) and agencies

decreased their share over the period. Remittances carried by migrants may be official or

unofficial, as by far the largest share of remittances in the BOP in the Philippines comes

through migrant transfers. Some are transferred using bank services, as opposed to cash

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[10] In 1995 and 1996 amounts were listed in Colones, converted using market exchange rate. In 1997, amounts were given in U.S. dollars. Transaction size in 1997 were larger on average in dollars (about \$150), but formal transactions were still about 20 percent larger on average than informal.

carried home by the migrant, though it is likely that some portion of this is repatriated

unofficially in cash. In addition, some of the door-to-door services may be unofficial or

overlooked in national accounts. So even with the household data, it is difficult to get a

good estimate of informal flows.

Other Surveys

To expand regional variation, we also compile data from various other reports and

surveys that ask questions about channel of transmission. The advantage of these surveys

is that they have a large sample of remittance receivers and ask more detailed questions.

The disadvantage is that it is not clear to what extent they are nationally representative.

Table 9 shows estimates from these surveys, as well as the ones above for

comparison purposes. There is a lot of variation in the channel of transmission. Data

from Uganda imply that a large share of remittances enter the country informally.   This

is consistent with the results on Sub-Saharan Africa from our aggregate estimation, which

support high informal flows to the region. In addition, data from France show that 70

percent of remittances to Mali and Senegal move in informal Channels (ECFIN 2004).

The Dominican Republic and Guatemala and tend to have small informal sectors.

VIII. Conclusions

Globally, our estimates suggest that informal remittances may equal about 35-75 percent

of official flows. In countries with well-functioning financial systems, large, regular

users tend to send remittances through formal channels. This acts to put a bound on the

size of the informal sector. On the other hand, in some countries, and especially those

with large exchange-rate spreads, the informal sector may be much larger than the above average. In particular, we estimate that informality is most extreme in Sub-Saharan Africa, Eastern Europe and Central Asia.

Over time, the informal sector has been shrinking, especially in Latin America and Asia. To some extent, this development has generated misleading impressions about the true speed at which remittances are growing. Reductions in transaction costs would encourage a further shift of remittances towards the formal sector. Such cost reduction could be usefully pursued through measures to enhance competition in the banking sector, promote financial development, and reduce exchange rate volatility.

Future work should focus on collecting data on the cost of sending remittances from a wider range of institutions, and for a wider range of originating countries. Such information would not only prove valuable for research purposes, but would also strengthen competition in the remittance marketplace and hence aid migrants wishing to send money home. Similarly, conducting more detailed surveys, in more countries and regions, on how remittances are sent would prove extremely useful in understanding the relative importance of the informal sector.

Appendix A: Data Sources for Cross Country Regression

This appendix provides further details on the data used in the essay, and in particular discusses the time-series employed to construct a measure of remittances. Throughout the essay, regional classifications follow the current IMF groupings. However, for the thought experiments in the econometric section, we redefined the Middle East region to include the North African countries of Morocco and Tunisia.

The most reliable information available on remittance flows is the one published by the IMF in its annual Balance of Payments Statistics. Using this source, Ratha (2003) argues that, to arrive at a more accurate estimate of remittances, one should add the "compensation of employees" and "workers' remittances" items from the current account, and the "migrants' transfers" item from the capital account. Unless otherwise indicated, remittances were defined as the sum of three items in the IMF's *Balance of Payments* statistics: "Compensation of Employees" (part of the income component of the current account), "Workers' Remittances" (part of current transfers in the current account), and "Migrants' Transfers" (part of the capital account). Specifically, the IMF's *Balance of Payments Manual, Fifth Edition* defines "Workers' Remittances" as current transfers made by migrants who are employed and *resident* in another economy. This typically includes those workers who move to an economy and stay, or are expected to stay, a year or longer. "Compensation of Employees" instead comprises wages, salaries, and other benefits (cash or in-kind) earned by *nonresident workers* for work performed for residents of other countries. Such workers typically include border and seasonal workers, together with some other categories, e.g., local embassy staff. Finally,

"Migrants' Transfers" include financial items that arise from the migration (change of residence) of individuals from one economy to another.

Following discussions with the IMF statistical department, the IMF country desks, and national authorities on the precise construction of the above measures in each specific country, "Compensation of Employees" was excluded from remittances for the following countries: Argentina, Australia, Azerbaijan, Barbados, Belize, Benin, Brazil, Cambodia, Cape Verde, China, Côte d'Ivoire, Dominican Republic, Ecuador, El Salvador, Guyana, Italy, Panama, Rwanda, Senegal, Seychelles, Turkey, and Venezuela.[11] In general, the "Other Current Transfers" item was not included in the definition of total remittances. However, the *Balance of Payments Statistics Yearbook* (BOPSY) specifies explicitly that migrants' remittances are in fact recorded under "Other Current Transfers" for the following countries: Kenya, Malaysia, and the Syrian Arab Republic.

Additional adjustments or additions to the series for remittances were made on the basis of information received from IMF country desks and national authorities, as follows:

1. Bosnia and Herzegovina: Desk provided data for 1998–2003.

2. Bulgaria: Other current transfers are included in remittances.

3. Caribbean countries: Desk provided data for 1991–2002.

4. Iran, I.R. of: Other current transfers are used as figure for Remittances.

5. Lebanon: Desk provided data for 1997–2003.

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[11]For most of these countries, the *Balance of Payments Statistics Yearbook* states explicitly that no information on border and seasonal workers is included in this category.

6.   Lesotho: Desk provided data for 1982–2003.

7.   Macedonia, FYR: Desk provided data for 1993–97.

8.   Moldova: Desk provided data for 2000.

9.   Niger: Desk provided data for 1995–2003.

10. Romania: Desk provided data for 2000–2003.

11. Slovak Republic: Desk provided data for 1999–2003.

12. Tajikistan: Desk provided data for 1997–2001.

13. Ukraine: Desk provided data for 2000.

14. Venezuela: Desk provided data for 1997–2003.

No data on remittances were available for the following countries, and they were therefore excluded from the analysis: Afghanistan, I.S. of; Angola; the Bahamas; Bahrain; Bhutan; Brunei Darussalam; Burundi; Canada; Congo, Dem. Rep. of; Iraq; Kuwait; Liberia; Libya; Qatar; Singapore; Taiwan Province of China; United Arab Emirates; Uzbekistan; Vietnam; and Zambia.

Details of some other key variables are as follows.

- *Domestic Output*. This is measured as real GDP per capita. It comes from the Penn World Table Version 6.1.

- *Main Host Output*. For each country i, this is measured as real GDP per capita in the country j which contains the largest share of country i's migrant workers. It is from the Penn World Table Version 6.1 and the above-mentioned migration data from the OECD.

- *Dual Exchange Rate Dummy*. This binary indicator specifies if a country has more than one exchange rate that may be used simultaneously for different purposes and/or by different entities. It comes from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions, 2003* (ARREAR).

- *Financial Risk*. This indicator assesses a country's ability to pay its way by financing its official, commercial and trade debt obligations. It is based on the following components: foreign debt as a percentage of GDP, foreign debt service as a percentage of exports of goods and services, current account as a percentage of XGS, net liquidity as months of import cover, and exchange rate stability. It comes from the International Country Risk Guide (ICRG).

- *Bank Concentration*. This measure of bank concentration is calculated by taking the assets of the three largest banks in a country as a share of the assets of all commercial banks. It comes from the World Bank's Financial Structure Database.

- *Dollarization Dummy*. This binary indicator equals unity for any year when a country is officially dollarized.

- *Restrictions on foreign-currency deposits held abroad*. This indicator specifies whether resident accounts that are maintained in foreign currency and held abroad are allowed. It comes from ARREAR.

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Table 1: Summary Statistics: Simple Averages

Region	Fee	Spread	Dual Exchange Rate System	Financial Development	Bank Concentration	Financial Risk
Sub-Saharan Africa	18.64	2.90	0.34	19.55	79.52	-28.82
Eastern Europe and central Asia	16.32	1.76	0.21	23.81	62.89	-35.23
East Asia and the Pacific	11.41	2.63	0.25	49.78	65.86	-36.50
Middle East and North Africa	14.64	0.68	0.33	59.96	63.49	-37.92
Latin America and the Caribbean	13.29	0.55	0.28	40.22	56.25	-34.47
South Asia	9.21	2.37	0.25	31.10	57.97	-35.23

Table 2: Regression Results: Determinants of Worker Remittances

Explanatory Variables	Dependent Variable: Ln (Remittances) (1)	Dependent Variable: Ln(Remittances) IV[a] (2)	Dependent Variable: Ln (Remittances per Emigrant) (3)	Dependent Variable: Ln(Remittance per capita) (4)
Dual Exchange Rate	-0.42 (-1.32)	-0.18 (-0.46)	-0.31 (-0.90)	-0.74** (-2.04)
Service Fee	-0.06** (-2.32)	-0.12* (-1.94)	-0.07** (-2.47)	-0.04 (-1.00)
Exchange Rate Spread	-0.04 (-0.50)		-0.02 (-0.26)	-0.05 (-0.52)
Stock of Migrant Workers	0.73** (7.66)	0.64** (5.41)		0.22** (2.45)
Main Host Per-capita Income	-0.10 (-0.77)	-0.05 (-0.31)	-0.22* (-1.75)	0.11 (0.69)
Home Per capita Income	-0.15 (-1.03)	-0.17 (-1.00)	-0.06 (0.40)	0.72** (4.35)
Income	0.31** (4.05)	0.31 (3.75)		
NOB	104	85	104	104
R-Squared	0.70	0.69	0.08	0.35

Robust t-statstics in parentheses. **Significant at the 5 percent level
*Significant at the 10 percent level. a. Instruments include financial development and dollarization.
Hansen's J-statistic is 2.49 (p-value 0.12) and the Shea partial R-squared of the instruments is 0.37.

Table 3. Regression Results: Determinants of Transaction Costs

Explanatory Variables	(1)	(2)	(3)	(4)	(5)
Bank Concentration	0.05**	0.03	0.03		
	(2.29)	(1.10)	(1.35)		
Financial Development	-0.05**	-0.05**	-0.05**	-0.06**	-0.05**
	(-2.41)	(-2.38)	(-2.42)	(-2.54)	(-2.53)
Financial Risk	0.04	-0.04	0.03	-0.04	0.01
	(0.32)	(-0.26)	(0.24)	(-0.31)	(0.02)
Dollarization	-4.12**	-3.92**	-3.92**	-4.10**	-4.00**
	(-4.47)	(-3.87)	(-4.20)	(-4.14)	(-4.33)
Domestic Output	-0.22	-0.56	-0.32	-0.75	-0.46
	(-0.46)	(-1.02)	(-0.66)	(-1.47)	(-0.98)
Remittances		-0.30		-0.42*	
		(-1.18)		(-1.85)	
Stock of Migrant Workers			-0.34		-0.59**
			(-1.18)		(-2.40)
R-Squared	0.52	0.56	0.53	0.52	0.52
Number of Observations	76	69	76	70	78

Robust t-statistics in parentheses.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 4. Panel Regression Results: Determinants of Remittances

	Ln(Remittances) (1)	Ln(Remittances) (2)	Ln(RemitPC) (3)	Ln(RemitPC) (4)
Dual Exchange Rates	-0.28**	-0.22**	-0.26**	-0.21**
	(-2.69)	(-2.18)	(-2.48)	(-2.03)
Fitted Cost	-0.08*		-0.08*	
	(-1.70)		(-1.74)	
Bank Concentration		-0.00		-0.00
		(-1.00)		(-1.03)
Financial Development		0.03**		0.02**
		(5.13)		(4.30)
Financial Risk		0.00		0.01
		(0.02)		(1.12)
Dollarization		0.62*		0.58
		(1.73)		(1.60)
Net Errors and Omissions	-0.02**	-0.02**	-0.02**	-0.02*
	(-2.07)	(-2.03)	(-2.12)	(-1.97)
Home Per Capita Income	2.10*	3.64**	0.43**	0.63**
	(1.71)	(2.92)	(2.37)	(3.31)
Host Per Capita Income	1.37	1.28	1.33	1.41
	(1.39)	(1.34)	(1.33)	(1.46)
Home Income	-1.71	-3.13**		
	(-1.38)	(-2.46)		
NOB	295	295	295	295
R-Squared	0.27	0.35	0.21	0.29

All regressions include country and year fixed effects. Robust t-statistics in parentheses. ** Significant at 5 percent level. * Significant at 10 percent level.

Table 5. Predicted Percentage Change in Remittances if Transaction Costs Were Reduced to 2-5 percent of Transaction Size and Dual Exchange Rates Were Eliminated[1]

Region	Cross-Section Estimates			Panel Estimates	
	Based on Ln(Remit)	Based on Ln(Remit per migrant)	Based on Ln(Remit per capita)	Using 'Back Cast' Costs[2]	Using All the Underlying Determinants of Costs[2]
All Developing Countries	34-96	34-104	27-58	41-56	44-63
Sub-Saharan Africa	144-257	139-262	135-193	71-136	104-140
Eastern Europe and Central Asia	103-198	99-202	94-141	70-103	59-87
East Asia and the Pacific	19-75	24-87	12-40	11-17	..
South Asia	1-48	0-50	9-36	32-37	42-68
Middle East and North Africa	102-196	111-219	93-141	62-76	..
Latin America and Caribbean	23-48	20-82	26-57	43-56	82-115

.. indicates no increase.

[1]Results averaged over 1995-2003 and weighted by size of official remittances. First number is based on transaction cost of 5 percent and second number assumes 2 percent. All estimates based on elimination of the dual exchange rate, where applicable.

[2] See text for fuller explanation of the procedures.

Table 6: The Dominican Republic: Channel of Transmission
(percent share)

Channel	2000	2001	2002A	2002B	2003
Post Office	2	13	11	3	6
Commercial Bank	1	1	2	1	1
Money Transfer Provider	87	79	80	91	88
Personal	10	8	7	5	4

Source: Calculated from "Encuesta de Fuerza de Trabajo" (2000-2003).

Table 7: El Salvador: Channels of Transmission

(percent share)

Mode of Transmission	1995	1996	1997
Mail	5	6	8
Bank	6	7	15
Savings and Loans Associations	1	1	1
Private Sending agencies	71	72	61
Family and friends	7	5	6
Particular individuals	10	8	9
Other		1	0
Share of households receiving remittances	15	15	15
informal	18	13	16

Source: Calculated from "Encuesta de Hogares de Propósitos Múltiples" (1995-1997).

Table 8: The Philippines: Channel of Transmission (percent share)

Channel	1992	1993	1994	1995	1996	1997	1998	1999	2000
Bank	33	34	42	45	44	43	40	44	44
Agency/Local office	4	2	2	3	5	2	2	2	1
Friends/Co-worker	6	5	4	3	3	1	1	1	1
Door-to-door	13	17	19	21	15	17	14	15	14
Others (specify)	1	3	1	2	1	1	1	0	0
Brought home by migrant	43	39	32	26	32	36	42	38	40

Source: Survey on Overseas Filipinos, 1992-2000, National Statistics Office of the Philippine Government.

Table 9: Evidence on Informality, Selected Countries
(percent share, most recent year)

Country	Formal	Informal
Philippines	99	1-40
Dominican Republic	96	4
Guatemala	95	5
El Salvador	85	15
Armenia	62	38
Moldova	53	47
Bangladesh	46	54
Uganda	20	80

Sources:

Armenia: Roberts, B. and K. Banaian, 2004, "Remittances in Armenia: Size, Impacts, and Measures to enhance their Contribution to Development", Special Study for USAID/Armenia, Bearing Point, October. Based on number of transactions.

Bangladesh: Tasneem Siddiqui and CR Abrar (2001) "Migrant Worker Remittances and Micro-Finance in Bangladesh"

Dominican Republic: See notes to Table 6.

El Salvador: See notes to Table 7

Guatemala: Survey on the Impact of Family Remittances on Guatemalan Homes, conducted in 2004 by the Vice-Presidency of Guatemala, The Central American Bank of Integration, The Bank of Guatemala and IOM. 2,921 homes were surveyed across22 "departments" and 170 municipalities.

Moldova: "Moldova Remittance Study", by CBS AxA, a TNS CSOP Branch in Moldova, involving *inter alia* a survey of 3,714 households in October-November 2004. 1,299 households had at least one member earning a living abroad in 2003 and 2004. Only 65 percent of remittance receivers answered question.

Philippines: See notes to Table 8.

Uganda: Data from IOM, Kampala

Figure 1. Remittances Received by Region[1]
(Billions of U.S. dollars; 1970–2003)

Among developing countries, those in the Western Hemisphere and developing Asia account for the bulk of remittance inflows.
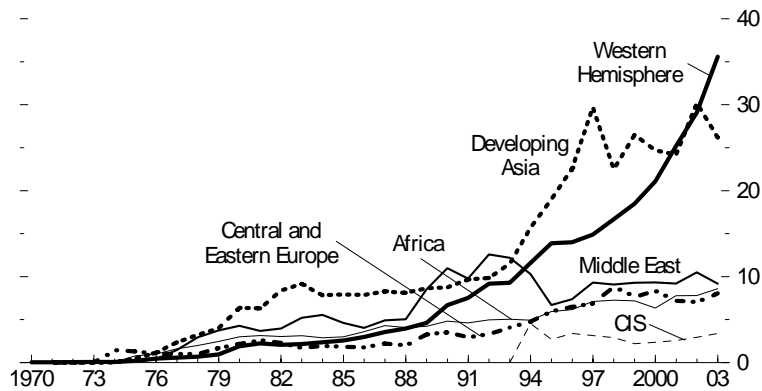
Sources: IMF, *Balance of Payments Statistics Yearbook;* and IMF staff calculations.
[1] For a detailed definition of the components of remittances, see the Appendix.
[2] Regional groups are based on the current IMF, *World Economic Outlook* country groupings. Only developing countries are included.