Remittances and their Response to Portfolio Variables

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Abstract

Using a recent Spanish database on immigrants from all across the globe, we show that remittances respond to differences in macroeconomic conditions at home and abroad. This behavior suggests that immigrants are sophisticated economic optimizers who take advantage of differential returns when accumulating assets. Immigrants remit more when per capita GDP growth rates at home are greater than in Spain, when the home-host real interest-rate differential increases, and when real exchange-rate uncertainty is higher. These patterns differ with ownership of home country assets and with the area of the globe from which immigrants originate, whether it is Africa, the Americas, Europe or Asia. The response of remittances to cross-country differences in portfolio variables suggests that remittances may not be counter-cyclical as often claimed. Hence, paradoxically, while remittances may promote consumption-smoothing at the individual or household level, remittances cannot be relied upon to shore up migrant-sending economies in times of need.

Keywords: Remittances, portfolio motives, Spain

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I. Introduction

In this paper, we show that immigrants' remittances are responsive to portfolio variables, rising and falling with risks and expected returns. In some respects, this behavior is at odds with the New Economics of Labor Migration (NELM) paradigm, which focuses on remittances as a by-product of migration undertaken to diversify risk spatially. According to the NELM, by spreading out geographically, idiosyncratic income shocks to a family member in one community may be offset with income from family members residing in other communities not subject to the same shock (Rosenzweig and Stark, 1989). Remittances then flow across communities with the purpose of smoothing consumption.

While spatial diversification may function as a mechanism to insure and smooth consumption for families in many circumstances, that may not be the case for emigrants themselves. This is particularly true in the case of migration from a poorer to a richer country, what is sometimes referred to as south north migration.[1] For instance, a migrant son residing in Spain may be able to assist his Ecuadorian mother should she experience a downturn in her luck. However, it would likely be challenging for the mother to help her migrant son should he run into hard times. Because of the large differences in the cost of living between Ecuador and Spain, an alternative mechanism would be needed for the emigrant's consumption-smoothing.

We argue that asset accumulation is likely to serve that purpose. While migrants residing in developed countries may typically assist their family members living in poor countries, reciprocity in the other direction is less likely given the substantial income and cost of living

[1] South south migration refers to migration from a developing country to yet another developing country. In contrast, south north migration refers to migration from poor to rich countries. See Ratha and Shaw (2007) for the use of this terminology to distinguish between these two types of migration flows.

differentials. In those instances, immigrants may need to set aside some of their earnings and engage in asset accumulation to insure against income shocks.[2]

The conclusion that individuals, whether they be natives or immigrants, engage in saving and asset accumulation for consumption smoothing purposes is not new.[3] However, what is peculiar about immigrants' saving behavior is that, unlike natives, immigrants have at their disposal transnational networks and knowledge about their home and host communities. Such networks and knowledge can facilitate the accumulation of assets in two different locations: in their home community and in their host community. As a result, immigrants can choose where to hold their assets. This choice is likely to be guided by expected returns for assets in the home versus the host countries. For instance, when relative asset returns increase in the home country, more remittances are likely to be sent home for safekeeping. In contrast, migrants may choose to accumulate assets in the host country and remit less when relative asset returns rise in the host country. Our intent is to capture this behavior –that is, the responsiveness of remittances to this and other portfolio variables.

At this juncture in the paper, it is important to note that we do not make the claim that all remittances are motivated by portfolio variables. It is well accepted that remittances are sent for many different reasons, such as contributing toward a family event (wedding, baptism, *quinceañera* celebration), to pay for children's school tuition or to make payments on loans. What we do stress, however, is that there are reasons to suspect that immigrants have reasons to accumulate assets and that the distribution of those assets across home and host communities is

[2] This is not meant to mean that there is no reciprocity on any other grounds. The migrant residing in the north may, for example, receive other services for the insurance provided. The home family may care for the migrant's home assets or tend to her/his children in return for the availability of financial assistance in times of need. Nonetheless, the emigrant still needs to find a way to insure her/himself against unforeseen income risks. One possibility is by saving and accumulating assets.

[3] Throughout this paper, we use the terms asset accumulation, investment and saving interchangeably.

likely to be influenced by portfolio variables. Hence, we would expect to see that remittances are affected by relative returns to holding assets in the host versus the home community. This behavior is most likely to be pertinent when it is more difficult for the home family to defray the immigrant's expenses in the host community (as in the case of south north migration), in which case the emigrant will need to insure her/himself against unforeseen risks by some other means other than tapping into the family's resources back home.

While some studies have recognized that immigrants hold assets both at home and abroad (see, for example, Gammage 2007), few empirical investigations have sought to link relative macroeconomic conditions in the home and the host countries to individual migrants' remitting behavior. The relative absence of remittance studies specifically linking migrants' remitting patterns to portfolio values is likely due to lack of adequate data. Much of the more representative datasets on remittances originate from surveys that focus on migrants originating from a particular region.[4] For instance, there are various larger surveys that detail remittance flows from Mexican migrants to their families in Mexico, such as the *Mexican Migration Project* (MMP) or the *Encuesta de Migración de la Frontera Norte* (EMIF). Nevertheless, most of the remittance flows in these two surveys originate in the same host country (*i.e.* the U.S.) and are sent to the same home country (*i.e.* Mexico) and are a one-time snapshot of each migrant's flows. With no cross-country or cross-time variation in macroeconomic conditions, we cannot examine how variations in portfolio variables (reflecting changes in market conditions) impact individual's remittance flows.

In this study, we make use of a recent immigrant survey, *i.e.* the *Encuesta Nacional de Inmigrantes* (henceforth: ENI), released by the Spanish Statistical Institute (*Instituto Nacional de*

[4] There are a large number of small immigrant surveys carried out by a variety of research institutes and NGOs in the U.S. Unfortunately, most of these surveys are small and are not designed with the intention of being representative of the migrant population in the host country, unlike the survey used in this study.

Estadística or INE). This Spanish immigration survey is ideal for the study at hand for various reasons. First, it was designed using the municipal population registers with the purpose of being as representative as possible of the current immigrant stock in Spain. Second, it informs on the remitting behavior of a geographically diverse group of immigrants. Indeed, the ENI benefits from the fact that Spain hosts immigrants from all Latin America, from numerous African nations, from a diverse number of European countries (members and non-members of the European Union) and from a handful of Asian nations. This diversity of origins allows us to examine migrants' remitting behavior in response to cross-country differences in macroeconomic conditions and other portfolio values. Finally, Spain offers an interesting case study owing to the unparalleled growth of its immigrant population during the past fifteen years and, in turn, of its remittance outflows, making Spain one of the leading countries from which remittance flows originate after the U.S.

Understanding whether and to what degree migrant remittances respond to cross-country differences in macroeconomic conditions –what we refer to as portfolio variables– is crucial for understanding remittance flow behavior. Specifically, are remittances counter-cyclical tending to shore up the home economy during an economic downturn? Or are remittances pro-cyclical, rising during an economic boom and falling during an economic downturn as investment conditions deteriorate? The current literature seems to primarily characterize remittances as counter-cyclical or a-cyclical, and many argue that remittances serve as a reliable source of foreign exchange for remittance receiving economies. It follows that countries with large emigrant populations are less susceptible to currency crises (Ratha 2004, Bugamelli and Paterno 2005). However, if remittances are responsive to portfolio variables, we need to question the assertion that remittances constitute a reliable source of foreign exchange to counteract

speculative outflows and idiosyncratic negative shocks. Instead, we should prepare for the possibility that at the macroeconomic level remittances may be destabilizing.

II. Background on Immigration to Spain

Before proceeding any further, we provide an overview of immigration to Spain. Until quite recently, Spain was a country of emigrants. However, the arrival of democracy in 1975, the entry of Spain into the EU in the 1980s, the long-standing decline in many African economies and the economic crises in several Latin American countries during the 1990s marked a sudden change. Within a decade, the foreign-born population quadrupled from 1.2 percent of the adult population (300,000 individuals) in 1991 to 4.0 percent (1,370,000 individuals) in 2001 (*España en Cifras, 2008*).[5] Between 2001 and 2005, the foreign-born doubled to account for 8.0 percent of the population (3,100,000 individuals) and, by the time the ENI was implemented in 2007, immigrants represented 10 percent of the population (*i.e.* 4.5 million immigrants out of 45.2 million inhabitants). The Spanish immigration rate became three to four times as large as the average immigration rate in the U.S. and Spain ranked as one of the most important countries from where remittance flows originate, after the U.S.

Figure 1 indicates, by means of a higher concentration of dark dots, where this new immigrant population is concentrated: Madrid, the Mediterranean arc (including Andalucía, Murcia, Valencia and Cataluña) and the Balearic and Canary Islands. Table B in the appendix lists the migrant-origin regions we focus on in this study, i.e. the Americas, Europe, Africa and Asia. According to these figures, approximately 41 percent of immigrants in our sample originate in the Americas, about 39 percent from Europe, 16 percent from Africa, and 3 percent from Asia. The most common countries-of-origin for immigrants in our sample (countries of

[5] Available at: http://www.ine.es/prodyser/pubweb/espcif/espcif.htm

origin for more than 5 percent of the entire immigrant sample) are Morocco, Romania, Ecuador, Colombia, France, Argentina, and the U.K. Further details on the immigrant sample are discussed in the data section.

III. Remittances and Asset Accumulation

There is a small literature examining the link between migrant remittances and asset accumulation in the home community. Some studies rely on migrants' self-reports regarding the purpose for which they remit money home. In this vein, the latest *Mexican Migration Project* database (*i.e.* the MMP118) reveals that about 11 percent of Mexicans who migrate to the U.S. and remit money home claim asset accumulation as the primary motive for remitting.[6] While this information is interesting and does suggest that there are many motives for remitting, including an asset accumulation motive, we still lack information on the influence of portfolio variables on migrants' remitting behavior.

Another set of studies compares expenditure patterns of remittance-receiving households and non-receiving households. Using the *Mexican National Rural Household Survey*, Taylor and Mora (2006) conclude that households affected by international migration (and presumably receiving remittances) modify their expenditure patterns by increasing their share of expenditures on investment at the expense of consumption. Likewise, Adams (2005) finds that remittance-receiving households in Guatemala spend less on consumption (defined as food, consumer goods and durables), and more on education, health and real estate relative to non-remittance receiving households. Similar findings are also reported by Zarate-Hoyos (2004) and Airola (2007). These studies, however, do not examine how differences in macroeconomic

[6] Authors' tabulations using the MMP118 and classifying the following categories as asset accumulation: construction or repair of a home, debt payment, saving, purchase of a home or lot, education expense, start/expand a business, purchase of agricultural inputs, purchase of livestock, purchase of a vehicle, purchase of tools. We excluded the category "unknown" in this tabulation.

conditions in the home and host countries impact migrants' remitting patterns as the data focus on households in the origin communities and not on the migrants sending money home.

A third set of studies focuses on testing whether there is an association between aggregate remittance inflows and various macroeconomic variables – including the exchange rate, exchange rate volatility, aggregate output, the inflation rate and interest rates. Faini (1994), Lianos (1997) and Higgins *et al.* (2004) all take this approach and estimate aggregate macroeconomic remittance functions. However, their findings are not consistent. For example, Faini (1994) and Higgins *et al.* (2004) find that home country real exchange rate depreciation increases remittance flows, while Lianos (1997) finds that nominal depreciation of home currency reduces the level of remittances sent home. More importantly, these studies estimate aggregate remittance inflows. Aggregate remittance data do not allow us to clearly track how portfolio variables affect remittances because they do not inform where remittances originate from. For example, remittance inflows to Colombia originate not only from Spain, but also from the U.S., Argentina, and many other countries where Colombian migrants settle. It is unclear then what the relationship between the average multilateral exchange rate (which could be made up of some currencies rising and others falling in relation to the Colombian peso) and aggregate inflows reveal about the response of individual level remittances to cross-country differences in portfolio variables.

The only study linking portfolio and macroeconomic conditions in the home and host countries to individual migrant remittances is a study by Pozo and Vargas-Silva (2006). The authors rely on individual level data from the *Legalized Population Survey* (LPS) –a survey carried out by the U.S. Department of Labor in 1987 and, again, in 1991 on a sample of undocumented migrants who adjusted their status following the passage of the Immigration

Reform and Control Act (IRCA). They exploit the cross-country nature of this survey (with approximately 50 percent of the immigrants originating in Mexico and the other 50 percent originating in other countries around the globe) and find that individuals originating from countries that experience depreciation of the home currency tend to increase their remittances home. In contrast, individuals originating from countries that experience greater uncertainty in the home/host exchange rate tend to reduce their remittance outflows. While this paper is more closely related to the present study, it differs in a few regards. First, it works with a selected sample of migrants: newly legalized immigrants. As noted by Amuedo-Dorantes and Mazzolari (2010), there are reasons to believe that the remitting behavior of immigrants significantly changes post-legalization. Therefore, one has to be careful when making inferences about the asset accumulation or investment motives behind migrants' remitting patterns looking at such a selective sample of migrants. Additionally, the LPS survey was conducted approximately fifteen years ago. Given the transformed economic environment, one may question the applicability to today's world.

In sum, there have been studies that examine the link between remittances and asset accumulation from a variety of perspectives –including studies that use information on the intentions of remitters, studies that examine the differential spending patterns of remittance-receiving and non-receiving households, studies that gauge how aggregate remittance inflows respond to changes in multilateral economic conditions, and one that analyzes how the remitting behavior of newly legalized immigrants responded to macroeconomic and portfolio conditions more than fifteen years ago. Yet, these disparate approaches have not yielded consistent findings regarding the impact of portfolio variables on migrants' remitting patterns.

IV. Methodology

Our primary aim is to assess whether remittances respond to portfolio variables. Such a finding would suggest that remittances are being used to reallocate asset holdings in the migrant's portfolio cross-nationally. Remittances can also be linked to portfolio variables when they are sent for purposes other than asset accumulation. Nevertheless, the preponderance of certain patterns provides considerable evidence of remittances being sent, at least in part, with a portfolio motive.

Our methodology involves estimating a remitting equation that includes portfolio variables and differences in macroeconomic conditions between the home and host country. With that intent, we model the remittances of immigrants in Spain as follows:

(1) $R_i = a_1 + a_2 I + a_3 F + a_4 R + a_5 P + e_i$

where R is the euro amount remitted last year by the ith immigrant. I is a vector of personal characteristics, including gender, age, education, Spanish fluency, time in Spain, work and immigration status. The vector F includes information on family characteristics, such as marital status, the number of children residing in the Spanish household, in the home country and elsewhere, and information on family reunification plans and on return migration in the next five years. Additionally, the vector R includes a set of dummy variables indicative of the Spanish region where immigrants reside to address regional differences –including cost of living and remittance sending infrastructure– that could contribute toward differences in immigrants' remitting behavior.

Crucial to our study is P, a vector of portfolio variables capturing differences in market conditions and portfolio returns in the home and host communities. This vector includes real

depreciations of the home currency (vis-à-vis the euro) and real exchange rate uncertainty.[7] We also include information on differences in real deposit interest rates and differences in per capita GDP growth rates between the home country and Spain to further capture relative economic conditions at the two locations. Some of these variables (real interest rate differentials and real exchange rate uncertainty) provide a fair amount of evidence that immigrants are remitting in response to changes in expected asset returns as would be expected when migrants remit for asset accumulation, investment or what we refer to as a "portfolio" motive. In other cases (real growth-rate differentials and real exchange-rate depreciations), the evidence in favor of a portfolio motive for remitting is less clear as the remitting pattern is also consistent with other motives, including altruism. Nonetheless, portfolio variables seem to influence remittance flows, thus hinting on the possibility that remitters respond to relative macroeconomic conditions in the home versus the host countries in a manner often consistent with the idea that they are accumulating assets trans-nationally.

A) Real Interest Rate Differentials: Cross-country differences in real interest rates will change the relative return to financial assets held in the home versus the host countries in a very predictable manner. If remitters are concerned about asset returns, remittances would be expected to rise with home-country real interest rates and fall with host country real interest rates, *ceteris paribus*. If immigrants are remitting to simply finance the current consumption needs of family members left behind (such as paying for rent or for food), there is no reason for remittance flows to change in response to differences in the relative rate of return to investments at home versus abroad. On the other hand, the observation that remittances increase with home

[7] We use the terms *uncertainty* and *volatility* interchangeably to refer to exchange risk. We proxy exchange risk using the standard deviation of the monthly log differenced real exchange rate.

versus host difference in real interest rates, is consistent with the notion that remittances are sent with a portfolio motive.

B) Per Capita GDP Growth Rate Differentials: Unlike real interest rate differentials, per capita GDP growth rate differentials are less useful in distinguishing remittance flows sent with a portfolio motive in mind from remittance flows sent for other reasons. While remittances sent following a decrease in home growth rates are suggestive of remittance flows being altruistic in nature, it can also be argued that slower growth back home can induce some investment on the part of migrants in a position to take advantage of bargain prices. Hence, when remittances increase as home country growth rates fall, it is unclear if a portfolio motive is present. However, when remittances flow home in response to increases in home country growth rates –a sign of higher returns for home investment, a portfolio motive is likely to be present.

C) Real Exchange Rate Movements: An understanding of money flows across borders needs to address the potential impact of the real exchange rate. Hence, in addition to real interest and per capita GDP growth rate differentials, we examine immigrants' responses to exchange-rate movements. The real exchange rate is defined as:

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where $e_{Home\ currency/euro}$ is the market (or nominal) exchange rate while P_{Spain} and P_{Home} are price indexes for the host and home countries, respectively. P_{Spain} tracks the cost of goods and assets (such as land, housing and durables) in Spain, while P_{Home} tracks the same in the home country. By multiplying the Spanish price index by the nominal exchange rate, the two price series are expressed in a common currency. Therefore, a rise in the above ratio (real depreciation of the

home currency or real appreciation of the euro) implies that the cost of goods and the value of physical assets are higher in Spain than in the home country.

How might a Spanish immigrant investor respond to depreciation of the home currency? It depends on a number of factors. First of all, it depends on whether the immigrant currently owns assets at home, in Spain or, if in both places, on their relative weights in the migrant's portfolio. If the immigrant has assets back home, their value has declined, making the immigrant less wealthy. This wealth effect will likely reduce remittances sent home. If the immigrant, on the other hand, owns assets in Spain, s/he is now wealthier. The increased wealth will increase remittance transfers. Secondly, there is a relative price effect associated with the real exchange rate depreciation. The change in relative prices makes the acquisition of home assets more desirable since it is now relatively cheaper to acquire them. This could induce the immigrant to substitute away from assets held in Spain in favor of assets held in the home country –thereby increasing remittances sent back home for asset accumulation. In sum, it is unclear how real exchange rate depreciation will impact remittances sent home for investment. The price effect should increase remittances sent home, while the wealth effect could affect remittance flows in either direction. The more home assets the migrant owns, the more likely the wealth effect will be negative and override the positive price effect, leading to a reduction in remittances.

Yet, real exchange-rate depreciations can either increase or decrease remittances sent home for other motives, such as altruism. On the one hand, if the cost of acquiring home goods has decreased, an altruistically-minded migrant might send more money home to allow family members to take advantage of the price difference and increase their current consumption. On the other hand, if the altruistically-minded migrant is simply sending money to finance a particular consumption level (*i.e.* make a rent or mortgage payment), remittance flows might

decrease since that consumption level can now be financed with fewer euros. Hence, movements in the real exchange rate can impact remittance flows sent for various motives. While they are not helpful in identifying a portfolio motive for remitting, they need to be accounted for if we wish to understand how remittance flows respond to relative macroeconomic conditions in the home versus the host country.

D) Exchange Rate Risk: The final macroeconomic variable included in the analysis is exchange-rate risk (uncertainty) as captured by real exchange-rate volatility. To understand how exchange risk can impact remittances, consider an immigrant who has the possibility of acquiring assets in two locations: Spain and the home country. The expected return to the immigrant's portfolio is simply the weighted average of the expected returns in the two countries:

$$E\left(R_{portfolio}\right) = \omega_s E(S) + \omega_h E(H) \tag{2}$$

where: ω_s and ω_h are the weights of the portfolio shares in Spain and at home and they sum to 1. *S* and *H* are returns of Euro-denominated and home-currency denominated assets, respectively. We normally assume that the investor desires a high expected return ($E\left(R_{portfolio}\right)$) with a low variance ( ) in that return. The variance of the two asset portfolio can be expressed as:

(3)

and it will depend directly on the variance of the asset values and on their covariance. The latter can be zero, positive or negative. Therefore, increases in the volatility of the real exchange rate will change the value of that currency-denominated assets and the value of $\sigma^2_{\text{portfolio}}$, which is expected to be followed by a re-organization of the immigrant's portfolio. The latter may involve increasing the relative share of home assets by remitting more, or increasing the relative share of Spanish assets by remitting less. Therefore, while we cannot predict how increases in

real exchange-rate volatility will ultimately impact remittances, they are expected to change portfolio risk and, therefore, remittances sent for asset accumulation, investment purposes or, overall, a portfolio motive. If remittances are simply used to attend to the immediate consumption needs of family back home, there is no reason for remittance flows to vary with changes in exchange-rate volatility.

We estimate equation (1) as a Tobit model to address the zeros in the sample owing to the ongoing selection into remitting. We argue that cross-country differences in portfolio variables induce change in migrants' remitting patterns as migrants reorganize their portfolios in light of varying macroeconomic conditions in the home and host countries. In particular, non-zero responses to cross-country interest-rate differentials and to fluctuations in real exchange-rate uncertainty suggest that remittances are sent, in part, for portfolio considerations. After all, there is no reason for changes in real interest-rate differentials or exchange risk to impact remittances if these are sent to pay for current consumption needs of family members back home. We expect increases in home versus host interest-rate differentials to raise migrants' remittances sent for asset accumulation, investment purposes or a portfolio motive, while increases in exchange risk could either increase or decrease remittances sent with such aims.

We also include the other two portfolio variables –real growth rate differentials and real exchange rate depreciation. Increases in the home versus host real growth rate differentials may increase or decrease remittances sent for asset accumulation purposes, but they are only expected to decrease remittances sent for altruistic purposes. Therefore, a positive coefficient on the real growth rate differential suggests that remittances are responding to portfolio concerns, whereas a negative coefficient does not allow us to distinguish between altruistic and portfolio motives. Finally, a depreciated home currency can raise or lower remittances sent for asset accumulation,

as well as for altruistic purposes. Consequently, despite being crucial in understanding migrants' remitting behavior in response to changes in relative macroeconomic conditions, immigrants' response to real exchange rate appreciations/depreciations does not allow us to identify a portfolio motive for remitting.

V. Data

We rely on data from the recent Spanish immigration survey, the *Encuesta Nacional de Inmigrantes* (ENI). The ENI is a cross-sectional survey carried out by the Spanish Statistical Institute (INE) on foreign-born individuals, at least sixteen years of age, residing in the Spain. The INE relied on the municipal population registers to extract a representative sample of the immigrant population. The municipal register or *Padrón Municipal* provides the most representative immigrant count as registering in it grants immigrants the right to medical and other municipal services. The ENI was implemented over the four-month period running between November 2006 and February 2007. While most information in the survey refers to the previous week, some questions refer to a different time period. For instance, the remittance question refers to the euro amount sent by immigrants during the previous year.

Table 1 displays the average characteristics of all immigrants in the survey and of immigrants by continent of origin. About 55 percent of Spanish immigrants are female and, on average, they are 39 years old and have been in Spain for 13 years. Approximately 65 percent of them are fluent in Spanish and, overall, immigrants are fairly well-educated, with almost a quarter of them reporting having a tertiary or university education. About half of the migrants in our sample are married and approximately 61 percent have children living with them in Spain. Sixty-four percent of migrants are employed and 92 percent are documented. Finally, a quarter

of immigrants plans on bringing family to Spain and about 7 percent expects to return to their home country within five years.

Characteristics of immigrants from Africa, the Americas, Asia and Europe are displayed in the last five columns of Table 1.[8] There is considerable diversity in personal and family migrant characteristics according to their origins. Immigrants from Africa and Asia are more likely to be male relative to immigrants from the Americas or Europe. Immigrants from the Americas have arrived more recently, while African migrants display the longest migration spells. Asian and African immigrants are the least likely to be fluent in Spanish, with African immigrants reporting the least education of all migrants. Immigrants from the Americas are the least likely to be married or documented. Asian immigrants are more likely to have home assets, while American immigrants are more likely to report planning to return home within the next five years. In contrast, African immigrants are much more likely to have intentions of family reunification in Spain. Overall, it appears that immigrants from the different world regions differ in their personal and family characteristics, pointing to their potentially distinct motives for migrating and remitting.

Average remitting rates and the average amount sent by immigrants who remit are reported in Table 2. Immigrants from the Americas seem the most likely to remit, with almost half of them doing so in 2006. Immigrants from Europe are much less likely to remit, which suggests that their remitting motives might differ from those of African, American or Asian immigrants. Finally, Asian and American immigrants are, on average, remitting the largest sums of money, followed by immigrants from Europe and Africa.

[8] While immigrants from Oceania are included in the full sample, we do not report disaggregated results for that continent given the very limited number of immigrants from Oceania.

Who remits? Table 3 addresses that question with a summary of the characteristics of remitters by region of origin. Remitters (as opposed to the general population of immigrants) are generally characterized by having shorter Spanish residencies, similar educational attainment, higher employment and also higher home country asset ownership rates than the average migrant from the same region. Additionally, remitters are generally more likely to be documented and to have plans of returning home in the next five years. Yet, we also find that remitters are more likely to claim having plans of family reunification in Spain, thus hinting on the very diverse motives for migrating and remitting in our sample.

In order to determine whether relative macroeconomic conditions in the home and host countries impact the remitting patterns of immigrants in our sample, we match 2006 macroeconomic home and host countries' conditions to each observation in the survey. For example, for immigrants from Argentina, we have information on the average monthly rate of real depreciation of the Argentinean peso against the euro, on the difference in Argentinean and Spanish real deposit interest rates, on the difference in per capita GDP growth rates between Argentina and Spain and on the uncertainty of the real Argentinean peso/euro exchange rate – which is measured as the standard deviation in monthly real exchange rate changes for that currency pair over the year.[9] Table 4 displays the average economic conditions in each of the continents included in the study as well as in Spain. It is worth noting that average real exchange rate depreciation of the domestic currency with respect to the euro is greatest in the Americas and smallest in Africa. Asian currencies appear to suffer from the greatest amount of exchange rate uncertainty (vis-à-vis the Euro) while exchange rate uncertainty (vis-à-vis the Euro) is lowest in Africa. Inflation is highest in the Americas, as are nominal deposit interest rates in

[9] Please refer to the data appendix for details on the construction of these variables and for information on the macroeconomic data sources.

2006. Finally, per capita GDP growth rates are highest for Asia and lowest for Spain. Overall, the figures in Table 4 reflect the wide variety in macroeconomic conditions across the globe and their potentially distinct impact on migrants' remittances.

VI. Results

Our goal is to examine whether migrants' remittances respond to differences in macroeconomic conditions at home and abroad as one might expect if there is an asset accumulation or investment purpose for remitting. With this in mind, we first estimate a Tobit model of the euro amount remitted yearly by all migrants in our sample to determine whether the Euro amount varies with relative macroeconomic conditions in the home and the host countries. Subsequently, in an effort to further draw out the effect of portfolio variables on remittance flows, we distinguish immigrants according to their ownership of home country assets. As noted by Lucas and Stark (1985), migrants who own assets in their home country have revealed a preference for home investment. Therefore, we would expect their remittance flows to be more responsive to cross-country variations in portfolio variables than the remittance flows from their counterparts with no home assets. To conclude, due to the marked disparities across immigrants from the various regions of origin, we also examine differences in immigrants' remitting behavior in response to variations in relative macroeconomic conditions, conditional on their continent of origin. This analysis allows us to uncover important differences in migrants' remitting patterns in response to variations in portfolio variables not apparent in the estimations that aggregate all immigrants. Furthermore, it allows us to indirectly assess whether, as we hypothesized earlier, the response of remittance flows to portfolio variables is particularly stronger among migrants originating from less developed economies more likely to rely on transnational asset accumulation as an insurance mechanism.

A) Evidence from All Immigrants

Table 5 presents the coefficients, standard errors and marginal effects for both the likelihood of remitting money home and for the euro amount remitted yearly by migrants from the Tobit model estimated using the full sample of immigrants. Recall that equation (1) includes four vectors of regressors: a vector of personal-level (immigrant-level) characteristics, a vector of household-level descriptors, a vector of regional dummies and a vector of portfolio variables. For the sake of brevity, we briefly discuss the personal and family characteristics affecting migrants' remitting behavior to more thoroughly comment on the impact of portfolio variables.

A number of personal characteristics seem to impact the likelihood of remitting and the euro amount remitted by migrants on a yearly basis. Older migrants, as well as their employed counterparts, are more likely to remit. We also find that immigrants who own assets back home are more likely to remit and remit higher sums. Such a finding is consistent with the idea that migrants with assets in the home community have revealed a preference for home investment and that remittances are sent to either maintain (Lucas and Stark, 1985) or increase their stock of home assets. It could also signify that those immigrants are more tuned into their home communities for a number of reasons, including caring for home family or for their own home assets. The results from the Tobit model also indicate that immigrants with plans to return home in the next five years are more likely to remit and to remit larger sums than their corresponding counterparts. This supports the idea that immigrants planning to return home need to maintain their social capital by supporting their families. It can also indicate that these immigrants are 'target savers' remitting with the goal of purchasing certain assets. In contrast, migrants with longer Spanish residencies, those with a tertiary education and those with a Spanish degree –a sign of greater assimilation into Spanish society– are less likely to remit and remit smaller euro amounts than migrants with shorter residencies, without a tertiary education or without a Spanish

educational degree. This is also true of undocumented immigrants, who appear less likely to remit and to remit less than documented immigrants.

As with personal characteristics, a few family descriptors appear to significantly drive migrants' remitting behavior. For instance, family composition, as captured by the number of children residing in the Spanish household and the number of children living elsewhere, seem to curtail remittances. However, migrants planning on bringing their families to Spain are 23 percentage points more likely to remit and remit an average of 463 more euros per year than their counterparts without that intention.

Finally, it is worth noting the significant differences in migrants' remitting behavior according to their region of origin. American migrants (our reference category) are, as noted earlier, the ones more likely to remit and remit larger sums back home. They are followed by Asian, African and, finally, European migrants.

Do migrant remittances respond to portfolio variables? The results suggest they do. First, higher GDP growth rates back home raise remittance flows. Specifically, a 1 percentage point increase in the per capita GDP growth rate differential between home and Spain increases the probability of remitting by 2 percentage points (from an average of 37 percent to 39 percent) and the yearly amount remitted by 32 euros (from an average of 1868 euros/year to 1900 euros/year) or approximately 1.7 percent. We do not expect higher home growth rates to raise remittance flows sent to finance the current needs of family members. Hence, this result suggests that remitters are, in part, responding to a portfolio motive when sending money home. Likewise, higher real interest rates in the home country relative to Spain seem to promote remittances, supporting the notion that migrant remittances respond to portfolio-type variables. However, the effect is rather small.

Real exchange rate depreciations appear to discourage immigrants' remitting. A doubling of the real exchange rate (real depreciation of 100 percent) lowers the likelihood of remitting by 14 percentage points (from 37 percent to 23 percent) and the amount remitted by 23 euros per year (from 1868 euros/year to 1845 euros/year) or by approximately 1.2 percent. If remitting is taking place with asset accumulation/investment purposes in mind, the wealth effect is overriding the price effect. That is, the loss in value of assets held back home following the real exchange rate depreciation reduces the migrant's wealth and remittance outflow despite the fact that it is now cheaper to invest in the home country. If, on the other hand, the remitting is taking place for altruistic reasons, such behavior is consistent with the notion that support of the family back home now requires fewer euros.

While the exchange rate depreciation link is consistent with alternative remitting motives, the growth in remittance outflows following an increase in real exchange rate uncertainty suggests that investment may be a driver of remittance flows. A one standard deviation increase in real exchange rate uncertainty raises the probability of remitting by 1.3 percentage points (0.17*0.078) to approximately 38 percent and, among remitters, the euro amount remitted yearly by 1.2 percent or 23 euros (0.17*134.8) to an average of 1891 euros/year.[10]

In sum, the remitting behavior of Spanish immigrants conforms to what the literature has previously noted when it comes to personal and family characteristics of remitters. Our findings also reveal that migrant remittances respond to relative macroeconomic conditions.[11] Of particular interest to us is the response to exchange rate uncertainty, to differentials in per capita

[10] This figure is computed using the standard deviation of the volatility of the real exchange rate (0.17) and the marginal effect in question.

[11] On numerous occasions, we have been asked whether our results are dependent on the educational attainment of the immigrant. We have estimated the models separately according to the educational attainment of the migrant and find that remittances continue to respond to variations in portfolio variables. Results are available from the authors upon request.

GDP growth and to real interest rates, all of which are consistent with the idea that asset accumulation is a motive for remitting. Additionally, the pro-cyclical response of remittances to cross-country differences in these macroeconomic variables is of particularly interest to us, as it questions the notion that remittances serve to stabilize the macro-economy.

B) Evidence from Immigrants According to their Ownership of Home Country Assets

In the previous section, we combine all immigrants –migrants more likely to remit solely with altruistic purposes, migrants who remit for altruistic and asset accumulation purposes, and migrants who remit with only asset accumulation in mind. While it is interesting to incorporate all immigrants to gauge the importance of the asset accumulation motive, it is also interesting to examine how important the remittance response to cross-country differences in macroeconomic variables can be when migrants are more likely to have an investment purpose in mind, as should be the case with migrants who have revealed a preference for home assets. Additionally, it allows us to assess whether the responses to cross-country differences in macroeconomic conditions of migrants with and without investment motives in mind are statistically different, as we would expect if they are remitting, in part, with a portfolio motive in mind. Hence, we separate immigrants according to whether they own assets back home and assess if portfolio variables have a stronger impact on the remittance flows of migrants with home country assets, as we would expect if remittances are being sent, in part, with a portfolio motive in mind.

The figures in Table 6 reveal that about one quarter of immigrants own home assets (2100 out of 8344). More than half of immigrants in this category remit home (1120 out of 2100), as opposed to 28 percent (1750 out of 6244) in the case of immigrants who do not own assets back home. Of interest are the differences in the groups' responses to cross-country variations in portfolio variables. While both groups of immigrants –those owning home assets

and those who do not– increase their remittances in response to differences in per capita GDP growth rates between the home country and Spain, the response of remittance flows from immigrants with home assets is considerably larger and statistically different as indicated by the Chow test at the bottom of the table. A 1 percentage point increase in the difference in per capita GDP growth rates between the home country and Spain raises the probability of remitting by owners of home assets by 1.6 percentage points from an average of 48.4 percent to 50 percent. In contrast, among immigrants who do not own home assets, that figure amounts to only 0.2 percentage points, raising the likelihood of remitting only from 25.5 to 25.7 percent. Similarly, a 1 percentage point increase in the difference in per capita GDP growth rates between the home country and Spain raises remittances from immigrants who own home assets by 47 euros per year from an average of 2076 euros/year to 2123 euros/year –that is, by approximately 2.3 percent. Yet, among their counterparts who do not own home assets, there is only an increase of 25 euros per year, from an average of 1514 euros/year to 1538 euros/year or by 1.7 percent.

We also find that a 1 standard deviation increase in the uncertainty of the real exchange rate increases the probability of remitting by owners of home assets by 3.5 percentage points (0.2498*0.141) to approximately 52 percent and the amount remitted yearly by 103 euros (0.2498*411.82) or roughly 5 percent. However, real exchange rate uncertainty has no effect on the remitting patterns of immigrants who do not report ownership of home assets. Therefore, a Chow test of the equality of the estimated effect of the uncertainty of the real exchange rate for migrants with home assets and migrants without home assets reveals that those coefficients are statistically different.

Finally, it is worth noting that variations in the real exchange rate also have a much larger and statistically different impact among immigrants with home assets than among those without.

For instance, a doubling of the real exchange rate (that is, a 100 percent deprecation of the home currency) reduces the probability of remitting among owners of home assets by 34 percentage points from 48 to 14 percent, but only by 0.4 percentage points among immigrants who do not own home assets. Likewise, owners of home assets would respond to the currency depreciation by reducing their remittances by nearly 1000 euros/year or 48 percent, whereas immigrants who do not own home assets would only reduce their remittance flows by 104 euros/year or 7 percent.

In sum, for immigrants who own home assets, the response of remittance flows to variations in portfolio variables is non-trivial and, as would be expected, statistically larger than the response of remittance flows to variations in portfolio variables among immigrants without home assets. The greater responsiveness of remittances to portfolio variables among migrants who own assets back home serves as a robustness check of the hypothesized portfolio motive for remitting. Furthermore, it helps us gauge how important portfolio variables can be among migrants who have revealed a preference for asset accumulation.

C) Evidence from Immigrants According to their Region of Origin

We saw earlier that the characteristics of immigrants and remitters from the various regions of the world differ and, as such, it would not be surprising if they also differed in their remitting motives. We attempt to see if, indeed, this is the case by estimating remitting equations for immigrants according to their regions of origin. The results are displayed in Table 7. Because we are most interested in determining how remitters respond to portfolio variables, we report only on the response of remittance flows to cross-country differences in those regressors.[12]

[12] Full results are available from the authors upon request.

We find that real interest rate differentials and the uncertainty of the real exchange rate affect the remitting behavior of African immigrants. Specifically, a 1 percentage point increase in the real interest rate differential increases the proportion of African migrants who remit by 7 percentage points to an average of 47 percent, and the amount they remit on a yearly basis by 119 euros or 8 percent. Additionally, a one standard deviation increase in the uncertainty of the real exchange rate increases the probability of remitting among African immigrants by 13 percentage points (0.0066*20) to an average of 53 percent, and the amount sent by 224 euros/year (0.0066*33955) or approximately 16 percent. Finally, we also find that a doubling of the real exchange rate reduces the proportion of African remitters by 21 percentage points to 19 percent, and the amount remitted by 97 euros/year or roughly 7 percent. In sum, African remittances are quite responsive to portfolio variables.

Among American immigrants, remittances seem to decline with greater per capita GDP growth rates at home as well as with real exchange rate depreciations. These responses are in line with both investment and altruistic motives for remitting. However, the fact that remittances increase with real exchange rate uncertainty signals the presence of an investment motive among American remitters. Specifically, a 1 standard deviation increase in real exchange rate uncertainty (0.01) increases the probability of remitting among immigrants from the Americas by 2.6 percentage points (0.01*2.624) to approximately 51 percent, and their yearly remittances by 84 euros (0.01*8414) or 4 percent. Therefore, American immigrants also appear to be responsive to portfolio variables when they remit money home.

In contrast, although responsive to relative macroeconomic conditions, remittance flows for Asian immigrants are not responsive to portfolio variables in the direction expected when remitting is, in part, taking place for asset accumulation. Rather, Asian remittance outflows

decrease with increases in the real interest rate differential between the home country and Spain, pointing toward altruism as an alternative motive for remitting. Perhaps, higher returns to investments back home are indicative to the migrant of an improved economic environment and a reduced need for help, leading to fewer remittance outflows. In any event, because the vast majority of immigrants –in excess of 95 percent– originate from the Americas, Europe and Africa, one should be extra cautious in making any inferences using the small Asian sample.

To conclude, the bottom half of table 7 displays comparable results for Europe. We find that, overall, remittance flows from European immigrants do not respond to cross-country variations in portfolio variables. However, if we split European immigrants into: (a) immigrants originating from countries in Western Europe, and (b) immigrants originating from other European countries, we find an interesting contrast.[13] The remitting patterns of immigrants from Central or Eastern Europe are affected by two of the portfolio variables considered in the analysis: per capita GDP growth and real interest rate differentials. Higher growth rates back home and higher returns to investments back home increase remittance flows. Specifically, a 1 percentage point increase in the per capita GDP growth rate differential increases the proportion of Central and Eastern Europeans migrants who remit by 2.7 percentage points to approximately 57 percent, and the amount they remit on a yearly basis by 62 euros or 8 percent. Likewise, a 1 percentage point increase in the real interest rate differential increases the proportion of Central and Eastern European remitters by 1.3 percentage points, and the amount they remit on a yearly basis by 31 euros or 4 percent. In sum, remitters from Central and Eastern European nations do respond to cross-country differences in portfolio variables. However, Western Europeans do not

[13] The *Western Europe* dummy includes, for the most part, nations that had entered the European Union by 2004 and, specifically, the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland and the United Kingdom.

seem to be remitting to take advantage of profit opportunities, which is not surprising in a common market.

Overall, the results reveal that, for the vast majority of immigrants –those from Africa, the Americas, Central and Eastern Europe, portfolio variables appear to impact remitting patterns by non-trivial amounts. It is interesting that portfolio variables seem to matter: (a) in a manner suggestive of asset accumulation being one of the motives for remitting, and (b) among migrants originating from poorer regions of the world for whom the home-host cost of living differential is likely larger (when compared to migrants from Western Europe). Altogether, the findings are suggestive of asset accumulation being used as a consumption smoothing strategy for immigrants originating in countries poorer than Spain.

VII. Summary and Conclusions

Migration takes place for many reasons. Some people migrate in search of better working opportunities. Some migrate to acquire human capital. Yet, others migrate in order to accumulate retirement or business assets. Many migrate to escape political or religious persecution or for family reunification purposes. Some families may seek to diversify income streams by sending one or more family members to live and work elsewhere geographically. Consequently, it should not come as a surprise that remittances –the earnings that immigrants send home– might also be sent for a plethora of motives. Given this diversity, it is not possible to unequivocally assign a motive for remittance flows. Nonetheless, we do observe that remittances respond to portfolio variables.

While portfolio values seem to drive remittances, it is interesting that, in this study, we found the response to be much stronger for immigrants originating from the poorer regions of the world relative to Spain. Why might this be so? We argue that asset accumulation for risk

diversification and consumption smoothing may be the primary insurance strategy used by immigrants from countries where the cost of living is significantly lower than in Spain. While those migrants may be able to support their families back home during difficult economic times via their remittance flows, their families back home are likely to be more limited in their ability to help them pay for their living expenses in Spain. Therefore, they need to resort to saving as an insurance mechanism against potential income risks. This is done by accumulating assets trans-nationally and in response to portfolio variables.

In sum, remittances may be sent for many different reasons. One such reason may be for asset accumulation purposes –a behavior possibly motivated by emigrants' desire to smooth their consumption during difficult times. Indeed, we find that remittance flows are responsive to cross-country differences in portfolio variables in a manner consistent with the accumulation of assets trans-nationally. The manner in which remittances respond to cross-country variation in portfolio variables suggests that remittances may not be as counter-cyclical as often assumed.

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Table 1: Characteristics of Immigrants by Continent of Origin

Variables	All	Africa	America	Asia	Europe
Male	0.45	0.57	0.40	0.57	0.44
Age	39.17	38.71	37.50	39.29	41.07
Time in Spain	13.18	15.09	10.61	13.58	14.89
Fluent in Spanish	0.65	0.34	0.96	0.28	0.48
Primary Education or Less	0.19	0.35	0.18	0.23	0.16
Secondary Education	0.57	0.52	0.57	0.47	0.59
Tertiary Education	0.23	0.12	0.25	0.31	0.25
Spanish Educational Degree	0.28	0.19	0.29	0.19	0.31
Married	0.54	0.64	0.48	0.63	0.55
Children in the HH	0.61	0.81	0.60	0.74	0.53
Children in Home Country	0.20	0.29	0.18	0.16	0.19
Children Elsewhere	0.02	0.02	0.02	0.01	0.02
Employed	0.64	0.53	0.70	0.71	0.61
Undocumented	0.08	0.09	0.17	0.05	0.01
HC Asset Ownership	0.25	0.20	0.28	0.32	0.25
Plans on Returning Home	0.07	0.03	0.10	0.06	0.05
Plans on Bringing the Family	0.25	0.40	0.31	0.34	0.11
Number	15465	2475	6296	429	6094

Table 2: Remittances by Continent of Origin

Area of Origin	Number of Observations	Proportion Who Remits	Amount Remitted in euros (last year)[a]
All Immigrants	15465	0.37	1868
Africa	2475	0.40	1443
America	6296	0.48	2103
Asia	429	0.45	2121
Europe	6094	0.23	1638

Notes: (a) Average amount remitted conditional on remitting a positive sum last year.

Table 3: Characteristics of Remitters by Continent of Origin[a]

	Africa	Americas	Asia	Europe
Male	0.73	0.38	0.58	0.45
Age	34.70	35.72	37.34	35.09
Time in Spain	8.49	6.27	10.93	5.20
Fluent in Spanish	0.23	0.97	0.22	0.36
Primary Education or Less	0.37	0.20	0.24	0.13
Secondary Education	0.51	0.62	0.51	0.69
Tertiary Education	0.11	0.18	0.24	0.18
Spanish Educational Degree	0.07	0.13	0.12	0.09
Married	0.65	0.47	0.67	0.55
Children in the HH	0.60	0.54	0.69	0.43
Children in Home Country	0.06	0.10	0.04	0.08
Children Elsewhere	0.01	0.03	0.01	0.01
Employed	0.71	0.80	0.84	0.78
Undocumented	0.07	0.15	0.04	0.02
HC Asset Ownership	0.29	0.35	0.44	0.48
Plans on Returning Home	0.04	0.15	0.08	0.10
Plans on Bringing the Family	0.68	0.52	0.57	0.30
N	996	3022	193	1425

Table 4: Macroeconomic Conditions in the Continent of Origin and in Spain, 2006

Macroeconomic Conditions	Africa	Americas	Asia	Europe	Spain
Real Exchange Rate Depreciation (monthly average)	1.78E-03	0.06	-0.01	-0.01	NA
Real Exchange Rate Uncertainty	0.01	0.03	0.12	0.06	NA
Inflation Rate (in %)	3.63	5.59	5.45	0.06	0.03
Nominal Deposit Interest Rate (in %)	4.14	5.99	5.51	3.64	2.37
Per Capita GDP Growth Rate	5.51	4.95	6.27	4.22	2.16

Notes: The exchange rate is defined as home currency units per euro. Hence, a rise indicated depreciation for the home currency or appreciation of the Euro. See appendix for details about the measurement of real exchange rate changes.

Table 5: Tobit Model of the Euro Amount Remitted Yearly by All Immigrants

Variables	Euro Amount Remitted Yearly			
	Coefficient	**S.E.**	**M.E. on Prob (Y>0)**	**M.E. on E(Y|Y>0)**
Male	121.840*	71.410	0.016	27.230
Age	8.396**	3.791	0.001	1.870
Time in Spain	-51.576***	17.009	-0.007	-11.486
Time in Spain Squared	-0.732	0.512	-9.37E-05	-0.163
Fluent in Spanish	62.287	96.173	0.008	13.815
Secondary Education	113.158	88.672	0.014	25.063
Tertiary Education	-379.371***	116.901	-0.047	-79.377
Spanish Educational Degree	-973.533***	105.253	-0.115	-192.066
Married	126.830*	73.977	0.016	28.187
Children in the HH	-301.770***	43.069	-0.039	-67.207
Children in Home Country	-118.731	96.861	-0.015	-26.442
Children Elsewhere	-444.541**	201.383	-0.057	-99.003
Employed	1162.115***	81.611	0.139	235.638
Undocumented	-297.446**	130.503	-0.036	-61.491
HC Asset Ownership	964.818***	76.698	0.132	246.833
Plans on Returning Home	1011.710***	114.926	0.146	286.700
Plans on Bringing the Family	1632.037***	76.773	0.233	462.554
Africa	-873.102***	135.636	-0.099	-159.845
Asia	-816.356***	232.640	-0.091	-144.572
Europe	-1697.562***	110.189	-0.222	-409.216
Per capita GDP Difference	**145.121*** **	**14.541**	**0.019**	**32.320**
Real Interest Rate Difference	**20.315***	**10.987**	**0.003**	**4.524**
Real Exchange Rate Depreciation	**-1074.368*** **	**256.540**	**-0.138**	**-239.270**
Uncertainty of Real Exchange Rate	**605.600*** **	**185.776**	**0.078**	**134.872**
No. of Observations:		8364		
Uncensored Observations (in Tobit Model)		2870		
LR Chi-square		3556.18		
Prob > Chi-square		0.000		

Notes: ***Significant at the 1 percent level or better, **significant at 5 percent level or better and *significant at the 10 percent level or better. Regressions include a constant term and region dummies. We use immigrants from the American continent as the reference category.

Table 6: Tobit Models for the Euro Amount Remitted Yearly by Immigrants According to their Ownership of Home Country Assets

Variables	Does Not Own Home Country Assets				Owns Home Country Assets			
	Coefficient	S.E.	M.E. on Prob (Y>0)	M.E. on E(Y|Y>0)	Coefficient	S.E.	M.E. on Prob (Y>0)	M.E. on E(Y|Y>0)
Male	56.334	82.615	0.006	9.057	272.495**	132.964	0.043	125.343
Age	11.011**	4.553	0.001	1.767	0.836	6.659	1.31E-04	0.383
Time in Spain	-83.363***	17.736	-0.011	-13.375	116.541***	43.854	0.018	53.381
Time in Spain Squared	0.356	0.479	5.65E-05	0.057	-7.464***	1.859	-0.001	-3.419
Fluent in Spanish	121.429	111.287	0.010	19.264	18.469	179.413	0.003	8.456
Secondary Education	150.252	100.871	0.017	23.873	-26.654	170.791	-0.004	-12.215
Tertiary Education	-188.240	138.233	-0.017	-29.042	-781.478***	211.086	-0.121	-333.712
Spanish Educational Degree	-1084.571***	121.155	-0.100	-154.170	-481.626**	203.964	-0.075	-207.375
Married	104.501	85.619	0.007	16.777	90.022	138.115	0.014	41.059
Children in the HH	-255.199***	52.332	-0.030	-40.946	-393.670***	73.643	-0.062	-180.319
Children in Home Country	14.654	121.709	0.004	2.351	-263.679*	155.381	-0.041	-120.777
Children Elsewhere	-254.330	285.050	-0.023	-40.807	-487.025*	286.906	-0.076	-223.080
Employed	1135.490***	92.931	0.118	166.440	1116.596***	157.669	0.171	470.435
Undocumented	-374.027***	147.671	-0.050	-53.525	67.874	253.392	0.011	31.398
Plans on Returning Home	1090.739***	142.579	0.227	243.763	903.806***	189.899	0.142	462.380
Plans on Bringing the Family	1631.349***	88.900	-0.076	363.660	1562.312***	141.835	0.243	783.227
Africa	-832.331***	149.165	-0.065	-107.201	-989.945***	284.676	-0.150	-391.350
Asia	-657.544**	270.451	-0.203	-84.359	-941.529**	428.729	-0.142	-366.845
Europe	-1699.589***	125.699	0.017	-309.767	-1447.815***	212.975	-0.224	-666.127
Per capita GDP Difference	**153.801*** **	**16.811**	**0.002**	**24.677**	**103.347*** **	**27.625**	**0.016**	**47.338**
Real Interest Rate Difference	**14.248**	**12.430**	**-0.075**	**2.286**	**25.611**	**21.190**	**0.004**	**11.731**
Real Exchange Rate Depreciation	**-645.959****	**280.020**	**0.004**	**-103.643**	**-2174.214*** **	**647.566**	**-0.341**	**-995.891**
Uncertainty of Real Exchange Rate	**-114.716**	**307.435**	**0.006**	**-18.406**	**899.082*** **	**258.715**	**0.141**	**411.821**
No. of Observations:		6244				2100		
Uncensored Observations		1750				1120		
LR Chi-square		2541.38				656.84		
Prob > Chi-square		0.000				0.000		
Chow Test of Equality of Key Coefficients:								
Per capita GDP Difference				F(1, 8307) = 5.18 with Prob > F = 0.023				
Real Exchange Rate Depreciation				F(1, 8307) = 4.33 with Prob > F = 0.038				
Uncertainty of Real Exchange Rate				F(1, 8307) = 5.92 with Prob > F = 0.015				

Notes: ***Significant at the 1 percent level or better, **significant at 5 percent level or better and *significant at the 10 percent level or better. Regressions include a constant term and region dummies. We use immigrants from the American continent as the reference category.

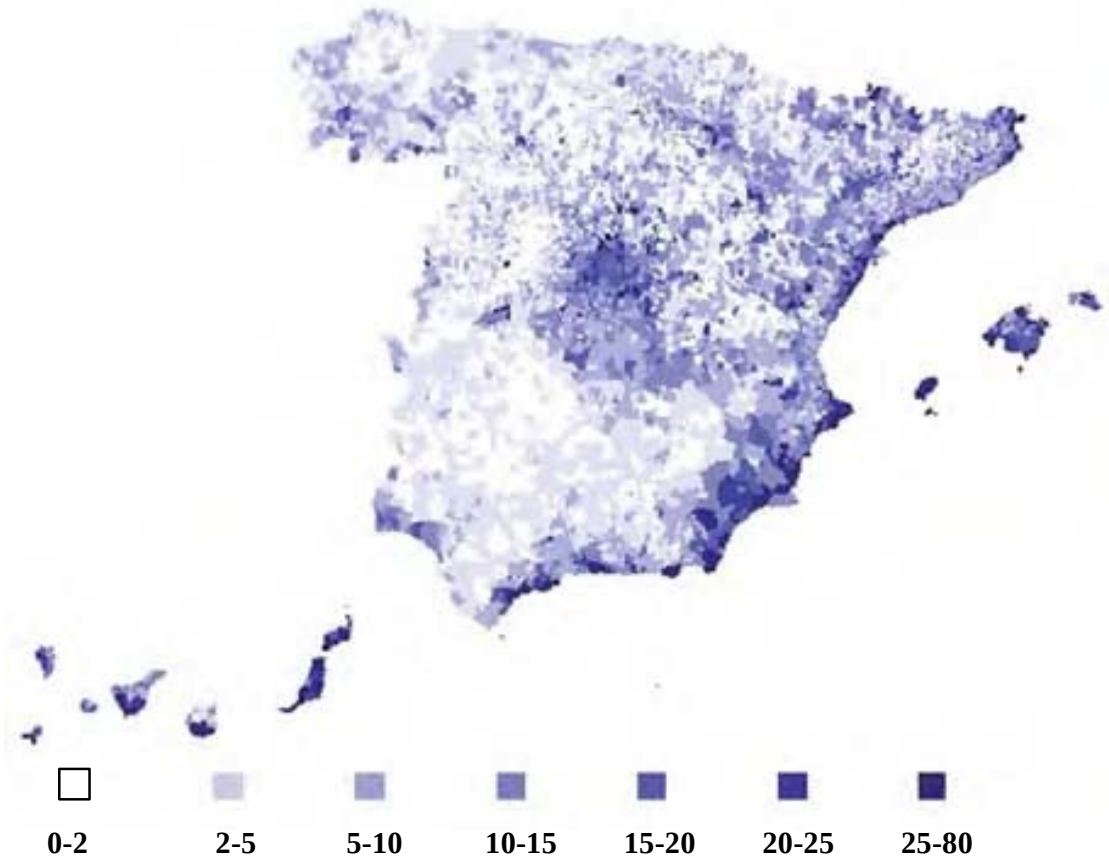
Table 7: Tobit Models for the Euro Amount Remitted Yearly by Immigrants by Continent/Region of Origin

Independent Variables	Africa		America		Asia	
	M.E. on P(Y>0)	**M.E. on E(Y|Y>0)**	**M.E. on P(Y>0)**	**M.E. on E(Y|Y>0)**	**M.E. on P(Y>0)**	**M.E. on E(Y|Y>0)**
Per capita GDP Difference	0.019	31.731	-0.021***	-67.569***	-0.018	-35.276
Real Interest Rate Difference	0.071***	119.181***	0.000	0.274	-0.058***	-113.975***
Real Exchange Rate Depreciation	-0.207***	-96.939***	-0.216***	-692.757***	-0.131	-256.400
Uncertainty of Real Exchange Rate	20.138***	33954.8***	2.624***	8413.691***	0.257	503.952
No. of Observations	927		2569		170	
Uncensored Obs.	405		1480		82	
LR Chi-Square	311.68		758.23		100.31	
Prob > Chi-Square	0.000		0.000		0.000	

Independent Variables	Europe		Western Europe		Central/Eastern Europe	
	M.E. on P(Y>0)	**M.E. on E(Y|Y>0)**	**M.E. on P(Y>0)**	**M.E. on P(Y>0)**	**M.E. on E(Y|Y>0)**	**M.E. on P(Y>0)**
Per capita GDP Difference	0.001	1.403	-0.003	-4.922	0.027**	61.509**
Real Interest Rate Difference	0.002	3.013	-0.006	-9.215	0.013*	30.879*
Real Exchange Rate Depreciation	-0.184	-225.710	-2.190	-3645.463	-0.408	-943.015
Uncertainty of Real Exchange Rate	0.006	7.591	0.698	1162.038	0.003	6.610
Western Europe	0.013***	-308.071***	-	-	-	-
No. of Observations	4694		3004		1690	
Uncensored Obs.	903		75		828	
LR Chi-Square	1733.99		154.55		297.61	
Prob > Chi-Square	0.000		0.000		0.000	

Notes: For the sake of simplicity, we display the marginal effects being interpreted. Full regression results, including coefficients and standard errors, are available from the authors. ***Significant at the 1 percent level or better, **significant at 5 percent level or better and *significant at the 10 percent level or better. Regressions include a constant term and all other regressors in Table 5. All of the marginal effects are evaluated at the country mean except for Africa, in which case real exchange rate depreciation of 3 percent was assumed (a global mean).

Figure 1
Share of the Foreign-born Population 15 yrs old and above by municipalities on January 1, 2007.



Source: Encuesta Nacional de Inmigrantes 2007: una monografía, Instituto Nacional de Estadística, Madrid, 2009.

APPENDIX TABLES

Table A: Variable Names and Definitions

Variable Names	Definitions
Likelihood of Remitting	Migrant remits money home
Euro Amount Remitted Yearly	Euro amount remitted last year if they remitted money home
Independent Variables	
Male	Respondent's gender dummy
Age	Respondent's age
Time in Spain	Years in Spain
Time in Spain Squared	Years in Spain squared
Fluent in Spanish	Migrant is fluent in Spanish
No Education	Migrant has no education
Primary Education	Migrant has a primary school education
Secondary Education	Migrant has a secondary school education
Tertiary Education	Migrant has purchased university studies
Spanish Educational Degree	Migrant has a Spanish academic degree
Employed	Employment status dummy
Undocumented	Legal status dummy
HC Asset Ownership	Migrant owns assets (housing, land, cattle, business, autos) in home country
Plans on Returning Home	Migrants plans on returning to her/his home country in the next five years
Married	Respondent's marital status dummy
Children in the HH	Number of children in the household
Children Outside Spain	Number of children outside Spain
Plans on Bringing the Family	Migrant intends to bring some family members to Spain
Africa	Respondent's continent of birth
America	Respondent's continent of birth
Asia	Respondent's continent of birth
Europe	Respondent's continent of birth
Per capita GDP Difference	Difference in per capita GDP between home and host country during 2006
Real Interest Rate Difference	Difference in real interest rates between home and host countries for 2006
Real Exchange Rate Depreciation	Average of monthly real exchange rate depreciations during 2006
Uncertainty of Real Exchange Rate	Standard deviation of monthly real exchange rate depreciations during 2006
Western Europe	Respondent originates from one of the following nations: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden and Switzerland and the United Kingdom.

Table B: Means and Standard Deviations of Variables Used in the Analysis

Variable Names	Mean	S.D.
Likelihood of Remitting	0.37	0.48
Euro Amount Remitted (if they remitted)	1868.14	2275.35
Independent Variables		
Male	0.45	0.50
Age	39.17	14.30
Time in Spain	13.18	14.54
Fluent in Spanish	0.65	0.48
Primary Education or Less	0.19	0.39
Secondary Education	0.57	0.49
Tertiary Education	0.23	0.42
Spanish Educational Degree	0.28	0.45
Married	0.54	0.50
Children in the HH	0.61	0.95
Children in Home Country	0.20	0.70
Children Elsewhere	0.02	0.19
Employed	0.64	0.48
Undocumented	0.08	0.27
HC Asset Ownership	0.25	0.43
Plans on Returning Home	0.07	0.25
Plans on Bringing the Family	0.25	0.43
Africa	0.16	0.37
Asia	0.03	0.16
America	0.41	0.49
Europe	0.39	0.49
Per capita GDP Difference	2.62	2.75
Real Interest Rate Difference	-0.70	8.33
Real Exchange Rate Depreciation	0.02	0.22
Uncertainty of Real Exchange Rate	0.04	0.16
Western Europe	0.24	0.43

DATA APPENDIX

Derivation and data sources for the macroeconomic variables used in the analysis

1. Real interest rate differentials: Deposit interest rates come from International Financial statistics (variable 60L..zf). If the deposit rate is not reported by IFS Statistics, a similar interest rate variable is used in its place. Inflation rates are subtracted from the nominal interest rate to obtain real interest rates. Inflation rates are constructed from the CPI index (line 64..zf), when available, or from a close substitute when unavailable.

2. Real per capital growth differentials: Real per capita GDP growth rates for 2006 for the individual countries come from World Development Indicators online.

3. Real exchange rate depreciation: Real exchange rates are constructed from nominal exchange rates and price indexes extracted from IFS statistics. The nominal exchange rate is from line WA.ZF or AA.ZF the CPI from line 64..zf. The real exchange rate is constructed for each month in 2006 as:

$$\frac{\qquad\qquad}{\qquad\qquad}$$

where e represents the nominal exchange rate and P the CPI index. The home currency depreciation rate is defined for each month as follows:

Monthly real exchange depreciation rates are averaged for any given year to derive the yearly average real exchange depreciation rate.

4. Real exchange rate uncertainty: The standard deviation of the monthly log differenced real exchange rates is computed to derive a measure of yearly real exchange rate uncertainty.