

Network Effects on Migrant Remittances

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Abstract

This paper explores whether immigrants' remittance behavior is influenced by other conationals in their area of residence. Using the National Immigrant Survey, a unique database for Spain, I show that immigrants living close to many conationals tend to replicate the remittance behavior of their country group. This result holds after accounting for nationality traits (e.g. culture) and municipality characteristics (e.g. labor demand) that influence remitting behavior. It is also robust to the selection of immigrants into municipalities where conationals live. These findings shed new light on the determinants of the decision to remit, as well as on the scope of immigrant networks.

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1 Introduction

For many developing countries, remittances constitute a significant source of foreign exchange and income. According to the World Bank, officially recorded remittances to developing countries reached \$414 billion in 2013 (three times the size of official development assistance) which implies an increase of 6.3% with respect to 2012. Furthermore, the World Bank expects remittance flows to continue to grow despite the current global economic recession. In money-receiving countries, remittances have been found to affect labor supply, self-employment, investment, wealth and fertility; see Yang and Martinez (2005), Maimbo and Ratha (2005), Yang (2008) and Chiodi, Jaimovich and Montes-Rojas (2009). Given the economic significance of remittances for the developing world, studying their driving forces is key for both academics as well as policy makers (Yang, 2011). On the other hand, immigrant's behavior has been found to highly depend on the behavior of immigrants of the same origin who live in the same area.¹ The current paper addresses the role of social networks in determining the individual decision to remit and the amount remitted. Using Spanish data, I find that there are positive and significant effects both for the likelihood of remitting and for the amount remitted.

Rapoport and Docquier (2006) provide a comprehensive summary of the economic analysis of remittances. They distinguish between individual (e.g., altruism, exchange) and household (e.g. investment, insurance) motives to remit. Social networks may impact remitting behavior for both individual and household reasons. First, social norms enforced through networks may play a role in determining remitting behavior for individual motives. For instance, social norms may dictate the extent to which one cares about family and acquaintances (altruism). Social norms may also dictate whether one should pay back for the gifts received from parents and others or whether one will be paid back

¹Evidence of positive influence has been found for human capital accumulation (Borjas, 1992 and Borjas, 1995), welfare use (Bertrand, Luttmer and Mullainathan, 2000 and Aslund and Fredriksson, 2005), job quality (Munshi, 2003), occupation choice (Patel and Vella, 2007), employment probability (Beaman, 2006 and Damm, 2009), and probability of working in a certain firm (Andersson, Burgess and Lane, 2009 and Dustmann, Glitz and Schoenberg, 2011).

for the gifts given to others (exchange). If living with many conationals reinforces the natural tendency to follow social norms, individuals living with many conationals will be more likely to replicate the remitting behavior of their country group. Second, social networks may also be useful as mechanisms to disseminate information about investment and insurance opportunities in the country of origin. In that case, for country groups who remit more because there are more investment and insurance opportunities in their countries, living with more conationals may induce immigrants to remit more for household motives.

The identification of a causal relationship between network effects and remittances is challenging. Positive correlations between exposure to remitting immigrants and individual remitting behavior might be explained for by unobserved characteristics, common to immigrants in the same social network, which affect remitting behavior (Manski, 1993). For example, immigrants living in the same municipality may remit more because wages are high in their municipality. Similarly, culture may explain the positive correlation among remitting behaviors of immigrants from the same country (Funkhouse, 1995). Finally, positive correlation among remittance behaviors of immigrants from the same origin who live in the same municipality may be also due to self-selection into ethnic enclaves (Borjas, 2000).²

I address these methodological problems that arise in the study of network effects by implementing a strategy first used by Bertrand, Luttmer and Mullainathan (BLM, 2000) in their analysis of welfare cultures. This strategy has since been applied to the study of network effects in many different contexts.³ According to this strategy, network effects on remitting behavior exist if immigrants living in areas with many conationals tend to

²Borjas (2000) shows that different types of immigrants tend to become segregated in different places.

³This general approach has been used to uncover network effects in the take-up of welfare (Åslund and Fredriksson, 2009), Medicaid (Gee and Giuntella, 2011), prenatal care assistance (Aizer and Currie, 2004), and the Special Supplemental Nutrition Program for Women, Infants and Children (Figlio, Hammersma and Roth, 2011). However, the use of this approach has extended far beyond the analysis of take-up probabilities. Goolsbee and Klenow (2002) explain the diffusion of home computers. Duflo and Saez (2003) study the decision to invest in a retirement plan. Hong, Kubik and Stein (2004) analyze stock-market participation. Bandiera and Rasul (2006) study technology adoption in Northern Mozambique.

replicate the remitting behavior of their country group disproportionately more. For instance, in Spain in 2007 Mauritians and Slovaks were the country groups with highest and lowest proportions of remitters, respectively. For network effects on remittances to be present, Mauritians living close to other conationals would have to increase their propensity to remit more so than Slovaks. This strategy to identify network effects allows researchers to control for country of origin, area of residence, the proportion of conationals in the area of residence (size of the network), and average remitting behaviour of the country group (remitting culture). However, this strategy does not eliminate the distortion caused by self-selection of immigrants into ethnic enclaves. This is why I use an IV estimation to address the direction and the bias induced by self-selection of immigrants across locations.⁴

Figures 1 and 2 display correlations between the size of the network and remitting behavior for country groups that remit more and less than the average separately. Both the propensity to remit and the amount remitted increase with the size of the network and they increase more for individuals belonging to high-remitting country groups. This indicates that individuals in social networks are more likely to remit and to remit more as their country group remits more.⁵ This is consistent with the results of my regression analysis which shows that a 1% exogenous increase in the probability of remitting is amplified by the presence of networks to 1.025%, and a 1% exogenous increase in the amount remitted to 1.064%.

I use the National Immigrant Survey, a unique database containing information on a representative sample of international immigrants in Spain, to estimate network effects. This database contains a wide range of information about immigrants and their migratory experience, including several aspects of remittance behavior. The Spanish case provides

⁴A similar analysis has been performed by Evans, Oates and Schwab (1992) who were the first ones to use IV estimation to address self-selection in network analysis. BLM (2000) and many of the papers that follow their approach also use IV for this purpose.

⁵These graphs also show that individuals in high-remitting country groups tend to belong to smaller networks. This anticipates my conclusions about the direction of self-selection; if anything, individuals with high propensity to remit tend to belong to small networks if they belong to high-remitting country groups, but tend to belong to large networks if they belong to low-remitting country groups.

an interesting framework for the study of network effects on remittances because: (i) Spain is one of the top-remittance-sending countries, (ii) many immigrant country groups are significantly represented in the population, and (iii) there is great dispersion in remitting behavior across country groups.

Spain stands out as an immigrant receiving country and even more as a remittance-sending country. According to the World Bank, Spain ranks tenth regarding number of immigrants and sixth in remittance-sending countries. Moreover, the amount of money remitted from Spain has risen sharply since 2000, reaching a maximum of over 15 billion US dollars in 2008 (see Figure 3).

The presence of significant numbers of immigrants from many different countries in Spain is likely due to the geographical proximity to North Africa, Spain's former colonies in Latin-America, and the use of a Romance language easing migration by Portuguese, French, Italian and Romanians (Farrell 2001).

Immigrants from countries in different continents, with different colonial origins and institutions show very different remitting cultures.⁶ Figures 4 and 5 show the proportion of remitters and the average amount remitted by each country group. The high variation in remittance behavior across country groups helps me to identify network effects.

Following the seminal work by Philpott (1968), some anthropological studies highlight the role of immigrant networks in determining remittances. The studies by Sana (2005), Robert and Morris (2003), and Kankonde (2010) find that immigrants who have relationships with other immigrants from their country tend to remit more. These studies interpret remittances as the fee that migrants pay to remain in the network. Sending remittances is interpreted as a social norm and, as documented by Elia (2006), deviating from this norm may result in ostracism and a concomitant loss of access to some network services or resources. On the other hand, economists have only marginally addressed the relationship between immigrant networks and remittances. Chort et al. (2012) document

⁶Funkhouser (1995) explores the determinants of the major differences in remitting behavior between El Salvador and Nicaragua and finds that culture is a very important determinant of remittance behavior.

the relationship between Senegalese networks and remittances. Considering a sample of 602 Senegalese immigrants in France and Italy, the authors analyze correlations between network characteristics and remittance behavior and they conclude that networks encourage remittances. However, as acknowledged by the authors, they lack a suitable identification strategy. Maggard (2004) analyzes the role that different types of networks play in the remittances of Mexican migrants living in the US. The author concludes that the network effect on the decisions to remit and how much to remit depends on whether this network is formed by friends from the hometown, family or other members of the ethnic group. Specifically, hometown-friends have a positive effect on remittances while other ethnicity-based networks have a negative influence on remittances. These results stand in contrast to those by Amuedo-Dorantes and Pozo (2006) who use a different sample of Mexican migrants in the U.S. and conclude that networks as measured by the presence of friends in the host city exert a negative influence on the propensity to remit. The current paper contributes to this strand of the literature by explicitly addressing the methodological problems that arise in all studies of network effects.

The remainder of the paper is organized as follows. Section 2 presents the methodology used. Section 3 describes the data. In Section 4 I provide a discussion of the empirical results. Section 5 concludes.

2 Methodology

For the analysis of network effects on immigrant remitting behavior I consider two aspects: the probability of remitting and the amount remitted. Consequently, remitting culture is measured by the average remitting behavior of the country group in Spain, i.e., the proportion of remitters from each country and the average amount remitted by each country group. Exposure to networks is measured by the size of the network, i.e., the relative number of conationals in the municipality. In the presence of network effects, individuals from high-remitting country groups respond more to networks than immigrants

from low-remitting country groups. The variable of interest is hence the interaction term of remitting culture and size of the network. The individual probability of remitting is modeled by the following linear specification:

$$y_{imc} = \beta_0 + \beta_1 size_{imc} * culture_{ic} + \beta_2 size_{imc} + \beta_3 X_{imc} + \beta_4 V_m + \beta_5 W_c + \varepsilon_{imc} \quad (1)$$

where y_{imc} equals one if individual i living in municipality m and born in country c remits a positive amount, and zero otherwise. The variable $size$ reflects the relative number of individuals in the network, and $culture$ stands for the proportion of remitting individuals from i 's country.⁷ The vector X contains individual characteristics, family characteristics and labor market status indicators, V represents a set of municipality dummies and W denotes a vector of country binary variables. Finally, ε is the error term.⁸

The set of individual characteristics, in particular, includes a male dummy, age in years, age in years squared, dummies for years of residence in Spain (from 0 to 2, from 3 to 5, from 6 to 10, from 11 to 20, from 21 to 30, and more than 31 years), a Spanish nationality dummy, a documented dummy, education dummies (primary, secondary and post-secondary), a dummy for having been educated in Spain, and a dummy for owning a house in the country of origin.

The vector of family characteristics is composed of a married dummy, the number of household members, a dummy for intending to bring at least one family member to Spain, a dummy for spouse abroad, a dummy for at least one sibling abroad, a dummy for at least one child abroad, a dummy for father abroad and a dummy for mother abroad. This set of variables accounts for the presence of family members in the country of origin and in the home country which is likely to affect individual willingness to remit.

The labor market status indicators include an employed dummy, income, an indicator

⁷Alternatively, y_{imc} equals the amount remitted and $culture$ stands for the average amount remitted by individuals from i 's country.

⁸The missing covariates are dummied out to avoid reducing the sample. In particular, dummy variables account for missing observations in the following variables: documented, educated in Spain, sibling abroad, children abroad, father abroad, mother abroad, income and permanent contract. The standard errors are clustered at the municipality by country of origin level.

for permanent labor contract, and dummies for the sector of employment (industry, construction or services). These variables reflect the financial situation of individuals, which proxies their capacity to remit.

The variable remitting culture is constructed using country-group averages at the national instead of municipality level. This is crucial because it eliminates the possibility that municipality characteristics create artificial correlation between the remitting behavior of immigrants from the same country who live in the same municipality. Municipality fixed-effects control for local labor market features, local prices and other local characteristics like the presence of money transfer agencies. Country of origin fixed-effects account for cultural factors and the economic situation of the receiving country. Still, the coefficient of the interaction of remitting culture and network size could be biased if immigrants' decisions to become part of networks depend on their remitting cultures (self-selection problem). For instance, living close to many conationals could indicate a strong attachment to the country of origin if the individual belongs to a high-remitting country group but it could also be a sign of weak ties to the host country if the individual belongs to a low-remitting country group. I test whether self-selection can explain the network effect found in the OLS estimation by estimating Equation (1) by instrumental variables. In particular, I instrument the size of the network at the municipality level with the size of the network at the province level, i.e., at a more aggregated level. If self-selection is present in this context, the OLS estimates are biased due to selection within and between provinces but the IV estimates are biased only due to selection between provinces. Under the assumption that the determinants of residence choice operate in the same direction for municipality and province choice, the difference between OLS and IV estimates indicates the sign of the total bias induced by self-selection. Hence, if the OLS estimation reveals a stronger network effect than the IV estimation, self-selection could explain part of the network effects found in the OLS estimation.

3 Data and Descriptive Statistics

3.1 Databases

For the empirical analysis I use the Spanish National Immigrant Survey ("Encuesta Nacional de Inmigrantes"). This database is a unique cross-section for January 2007. The National Immigrant Survey is directed to foreign-born citizens, 16 years of age or older, who live in Spain at the time of the interview, and who have been (or intend to stay) in Spain for at least a year. The sample is composed of 15,465 households. The Spanish National Immigrant Survey provides information on a wide variety of aspects: socio-demographic characteristics, the migratory experience, conditions upon departure, conditions upon arrival, labor market activity, housing, contacts with Spanish civil society and contacts with the society of origin.⁹ This information is used to construct measures of remitting behavior and control variables. The National Immigrant Survey is well-suited for the analysis of network effects because it includes information on current municipality and country of origin so it is possible to assign immigrants to their networks very precisely.¹⁰

Unfortunately, the Survey does not cover all immigrants in Spain. Hence, if I were to estimate network size using the Survey, it would be measured with error. To address this issue, the size of the network for each country group in each municipality is estimated using the information in the Spanish Town Hall Census.

The Census is an administrative register that contains information on all individuals residing in the municipality. The main advantage of the Town Hall Census for the study of immigrants is its accuracy regarding the number of immigrants from each country that live in a municipality. Most immigrants that live in Spain are registered regardless of whether they are documented or undocumented because there are strong incentives to

⁹For further information on the survey design and other methodological issues, see Reher and Requena (2009) or the methodological description provided by the Spanish National Statistics Institute (INE):

http://www.ine.es/en/daco/daco42/inmigrantes/inmigra_meto_en.pdf

¹⁰In Spain, municipalities are defined as the smallest administrative entities to have democratic elected representation. In 1997, there were 8,111 municipalities in Spain.

register: First, registering gives them access to basic medical care, access to education for their children, and many other social services. Second, they can be certain that there will be no negative legal consequences of registering, even for the undocumented.¹¹

3.2 Construction of network variables

Size of the network

For constructing the size of the network, I follow BLM. Their measure takes into account that for a given number of conationals, interaction is greater in a small municipality than in a big one. It also avoids underweighting small country groups. For instance, in the Spanish case, a network that represents 5% of the population in a municipality may be a small network for Romanians (the largest immigrant group in Spain) but a big one for Slovaks (a relatively small country group). Hence, the number of network members is divided by the total population in the municipality, and the ratio (constructed at the municipality level) is considered relative to the ratio constructed at the national level. Thus, the variable size of the network can be expressed as follows:

$$size_{cm} = \log \frac{N_{cm}/N_m}{N_c/N}$$

where N represents the number of immigrants, c denotes the country of origin and l stands for municipality.

Remitting culture

Remitting culture refers to the average remitting behavior in the country group. It refers either to the proportion of remitters among immigrants from a certain country of origin or to the average amount remitted.

Again, following BLM, I include individual's remitting culture in differences with respect to the average remitting culture for all immigrants in the country. Thus, the variable remitting culture is defined as:

¹¹It is compulsory for non-EU immigrants to re-register in the Town Hall Census every two years so the figures are not artificially inflated by return migrations.

$$culture_c = \bar{y}_c - \bar{y}$$

where y represents remitting behavior, \bar{y} stands for its average value and c denotes the country of origin. This approach facilitates the interpretation of the coefficient associated with the size of the network.

3.3 Sample definition and descriptive statistics

The samples used in the empirical analysis come from the National Migration Survey. To be able to compute consistent remitting culture variables, I only select immigrants born in countries with more than 5,000 immigrants in Spain. This selection leaves 58 different countries of origin in the sample.

Hence, the sample for the probability of remitting (see Table 1) includes 14,329 individuals in 796 municipalities. Over one third of all individuals remit. The average proportion of conationals in a municipality is 2.06%.

Table 2 shows descriptive statistics for the sample used in the estimation of amount remitted. In this sample, there are 13,237 individuals. The average amount remitted in the year preceding the interview was around 600 Euros. Statistics of all remaining variables that are similar to those in Table 1.

4 Empirical results

To test for the existence of network effects on remitting behavior, I focus on the coefficient of the interaction of network size and average remitting behavior. A positive coefficient indicates that individuals tend to replicate the remitting behavior of the country group when surrounded by individuals from their country. This is consistent with the notion of individuals adapting to social norms in networks. It is also consistent with individuals remitting more when their networks can provide more information regarding remittance channels and investment opportunities. In contrast, a negative coefficient could indicate

that high-remitting networks provide more insurance to their members and as a result immigrants in high-remitting networks consume more and remit less for investment motives. High-remitting networks could also present stronger links and immigrants could be substituting links in their network for links with their home country.

4.1 Probability of remitting

Tables 3 and 4 display the OLS and IV results for the estimation of network effects on the probability of remitting.¹² All coefficients of interest are positive and significant. Including family and labor market status controls does not change the coefficient significantly. Hence, the willingness and capacity to remit seem to be orthogonal to network effects once individual characteristics, country of origin and municipality of residence are accounted for. The comparison of OLS and IV estimates reveals that the IV estimation produces consistently larger estimates of network effects. Hence, self-selection at the geographical level tends to bias the coefficient towards zero. IV estimates are thus lower bounds of actual network effects.¹³

The negative bias that arises as a consequence of self-selection may be due to the fact that immigrants prefer to live with many conationals and that they enjoy their presence even more so in the case of a similar propensity to remit. In that case, individuals would be indifferent between a small network with similar conationals and a large network with more diverse conationals.

IV coefficients for network size and its interaction with the proportion of remitters in the complete specification (column 3 in Table 4) are 0.006 and 0.038, respectively. This shows that the impact of an increase in network size is at least seven times greater for an immigrant from a country to which all immigrants remit than for an immigrant from a country to which nobody remits. Given that the estimated network effect is a lower

¹²The first stage shows that the instrument is valid under the Stock and Yogo (2005) criteria.

¹³In unreported regressions, I explore whether living close to immigrants from other country groups affects individual remitting behavior. However, I do not find significant effects.

bound of the true effect, we can conclude that the coefficient of network size interacted with the proportion of remitters, in the absence of self-selection biases, is higher than 0.038. Hence, any factor that would increase remittances by one percentage point in the absence of networks, will increase remittances by at least 1.025 points when networks are present.¹⁴

The estimated network effect is robust to measuring the size of the network: (i) in levels instead of logs or (ii) by the log of the ratio of network members over the total population in the municipality. The result is also robust to other functional forms for the probability of remitting (e.g., the Probit model).

Regarding the control variables, the signs of the estimated coefficients are consistent with the findings of Bollard, McKenzie and Morten (2010) in their study of the remitting behavior of African migrants. Spanish nationality, being older, documented, single, employed, and having family members abroad are all positively correlated with the likelihood of remitting and the amount remitted. Similar to Sinning (2007), I find that education does not seem to play a significant role once the variable 'having completed studies in the host country' is included.

4.2 Amount remitted

The results of the OLS and IV estimations for the network effects on the amount remitted are displayed in Tables 5 and 6. OLS produces consistently positive and significant coefficients of the interaction of network size and average amount remitted by country group. Similar to the estimation for the probability of remitting, the magnitude of the estimated effect remains fairly consistent as more controls are added. Again, the comparison of the OLS and IV estimates shows that the bias induced by self-selection of immigrants is, if

¹⁴Following BLM, these numbers correspond to the weighted average of a variable defined as:

$$\left(\frac{1}{1 - \beta_1 * \overline{size}_c} \right) - 1$$

where \overline{size}_c is the average network size by birth country and the weights are proportional to the number of individuals from each country in the sample.

anything, negative. In the complete specification, the IV coefficient (0.096) is 50% higher than the OLS coefficient (0.067). Thus, network effects are at least 0.096.

The magnitude of the estimated network effect implies that if in the absence of networks the amount remitted would increase by one percentage point, with networks present remittances would increase by 1.064%. This effect is slightly higher than the one for the probability of remitting because networks affect the likelihood of remitting (the change from zero to a positive value for the amount remitted) and also the amount remitted by these individuals who decide to remit, with both effects acting in the same direction.

The correlations of the control variables with the amount remitted are similar to the ones with the probability of remitting. Some exceptions are the variables 'being documented' and 'being married' whose coefficients turn insignificant. On the other hand, the positive coefficients of the variables 'having secondary education' and 'number of individuals in the household' become significant. Finally, 'income' is positive and significantly correlated with amount remitted.

4.3 The role of employment, income and intentions to bring family members

In the baseline specifications, I include several control variables and I find a positive and significant network effect on remitting behaviour. However, in addition networks are likely to also influence remittances indirectly through their impact on some of the control variables. For instance, there is a potential impact of immigrant networks on remittances through employment, income and intentions to bring at least one family member to Spain. If social networks were correlated positively (negatively) with immigrants' intentions to bring family members to Spain, with employment or with income, the unconditional network effect would be stronger (weaker).

Results shown in Table 7 correspond to the OLS and IV estimations of network effects on the intention to bring family members to Spain, on employment and on income. The variable of interest is the interaction of network size and the proportion of remitters.

Coefficients for intentions to bring family members to Spain are negative but insignificant. These negative coefficients are consistent with the hypothesis that immigrants might substitute links in their networks for links with their home country. Estimated coefficients for employment and income are positive and significant. This is in line with the role of networks as providers of employment and income insurance. IV estimates are higher than OLS estimates for intentions to bring family members and for income but lower than OLS estimates for employment. Overall, the estimates show that high-remitting networks are associated to lower intentions to bring family members to Spain and to higher employment probability and income. However, in the case of intentions to bring family members, network effects are indistinguishable from zero and in the case of employment, one cannot rule out that network effects are a result of self-selection. Hence, income (and possibly employment) reinforce network effects while intentions to bring family members to Spain do not seem to significantly alter network effects.

5 Conclusion

This paper explores the existence of network effects on remitting behavior. Networks are groups of immigrants from the same country living in the same municipality. Following BLM, network effects on remittances are present if individuals replicate the average remitting behavior of their country group as a consequence of being part of social networks formed by conationals.

Using a unique database for Spain, networks are shown to have a positive impact on the probability of remitting as well as on the amount remitted. This is consistent with the existence of encouraging network effects on remitting arising from social pressure or information about investment opportunities and money sending channels. The estimated network effects provide lower bounds of actual network effects. The quantification of those effects would probably require richer databases or experimental designs and is left for future research.

From the point of view of the receiving country, remittances constitute an important source of income. As immigrants become more scattered in their host countries, remittances decrease. In the country of origin this implies that families with migrating members are less likely to receive the extra support of remittances. Policies aimed at reinforcing cultural ties among immigrants (e.g., promotion of immigrant associations and celebration of national days) could increase remittances. In contrast, policies that encourage immigrants to spread throughout the host country are likely to decrease remittances sent abroad, in favor of consumption and investment in the host country. The impact of social networks on remittance behavior suggests that the scope of networks for the behavior of immigrants is broader than currently appreciated.

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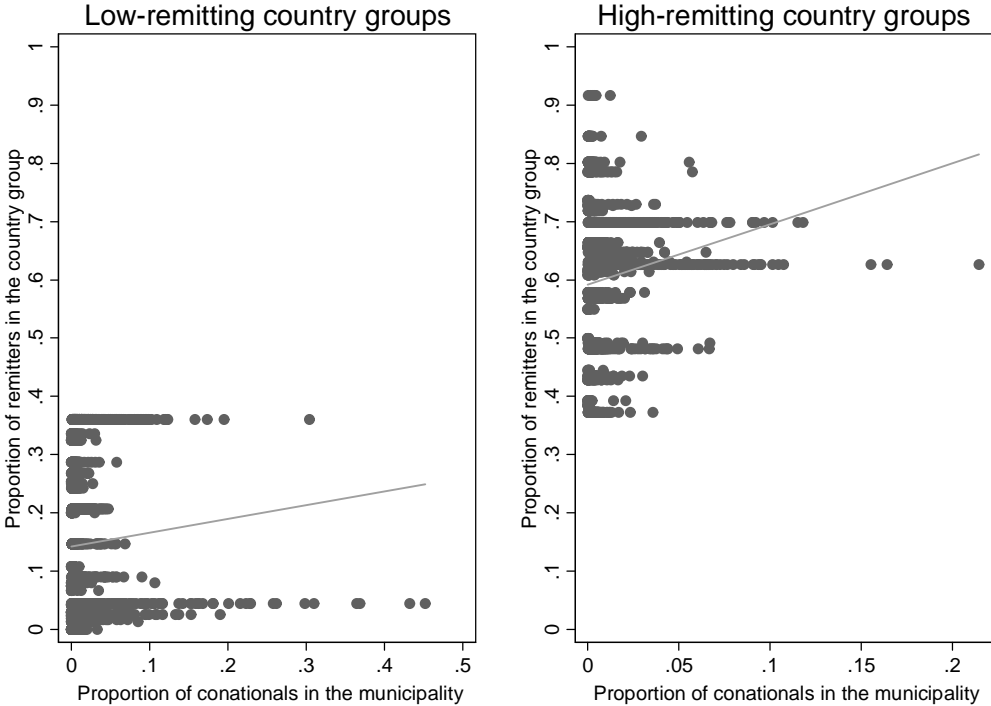
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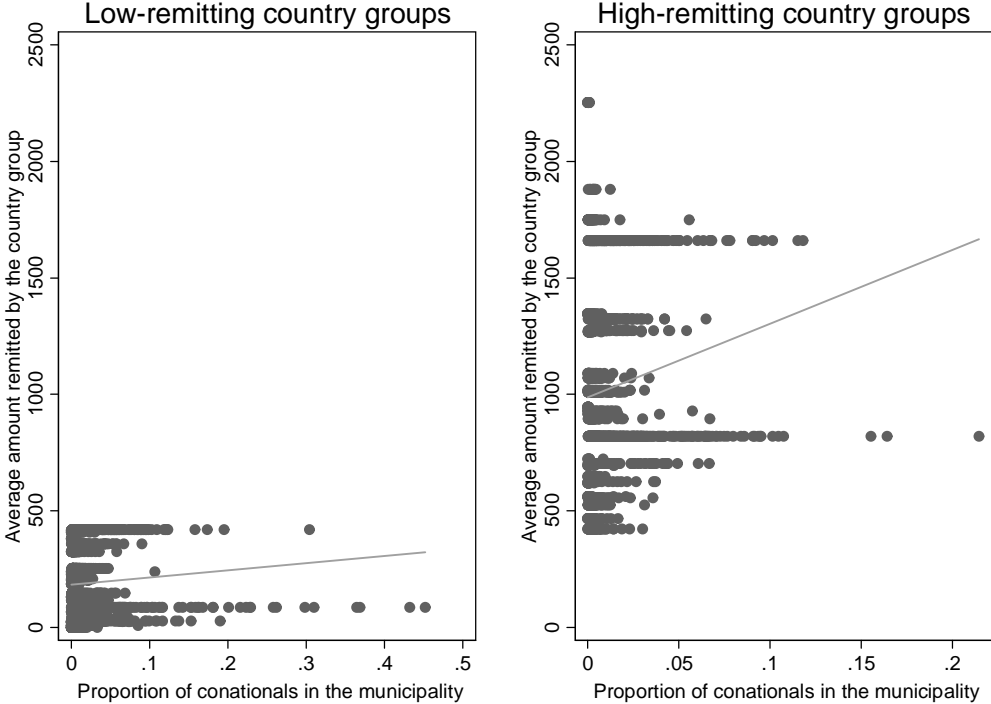
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Figure 1: Proportion of remitters in the country group and network size



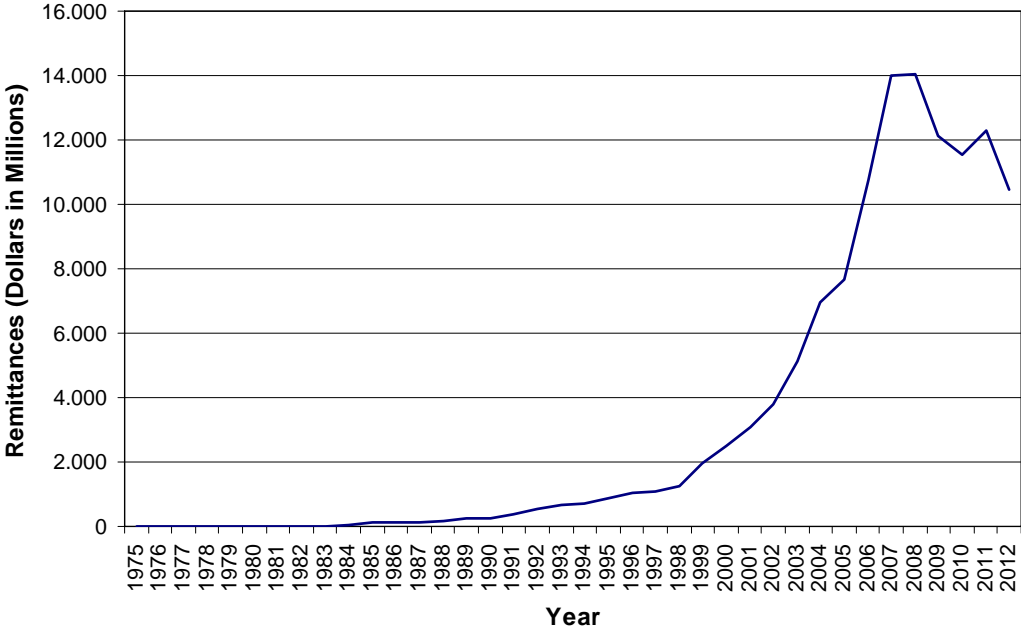
Data: Spanish National Migration Survey, 2007. Low-remitting (High-remitting) groups are those with a proportion of remitters lower (higher) than the average (37%).

Figure 2: Average amount remitted by country group and network size



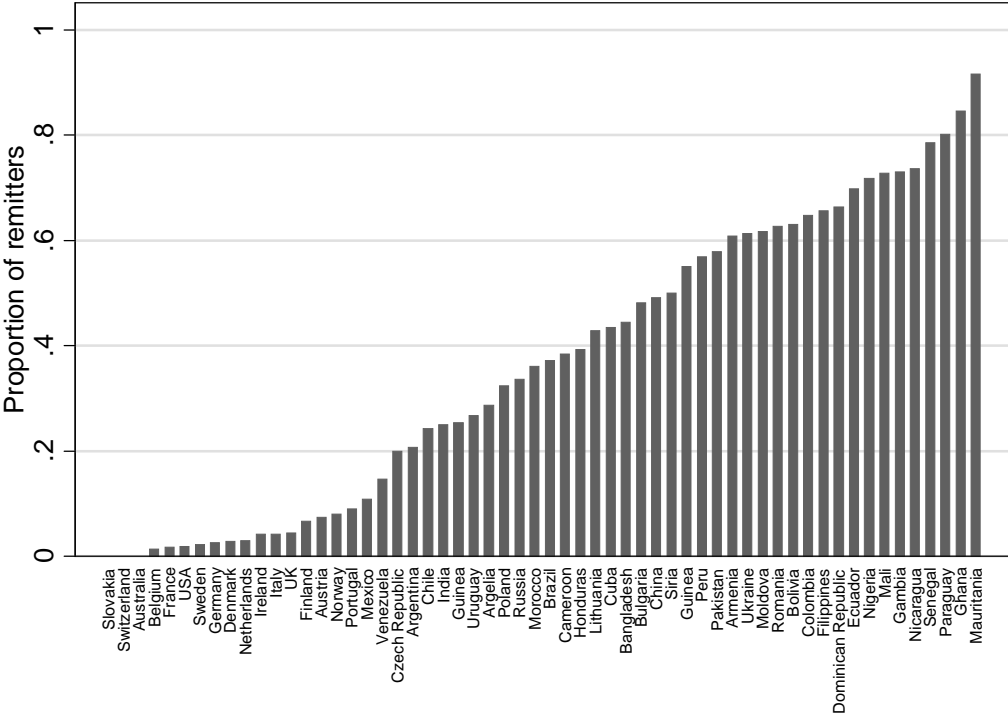
Data: Spanish National Immigrant Survey, 2007. Low-remitting (High-remitting) groups are those with an average amount remitted lower (higher) than the average (420 euros).

Figure 3: Total remittances from Spain



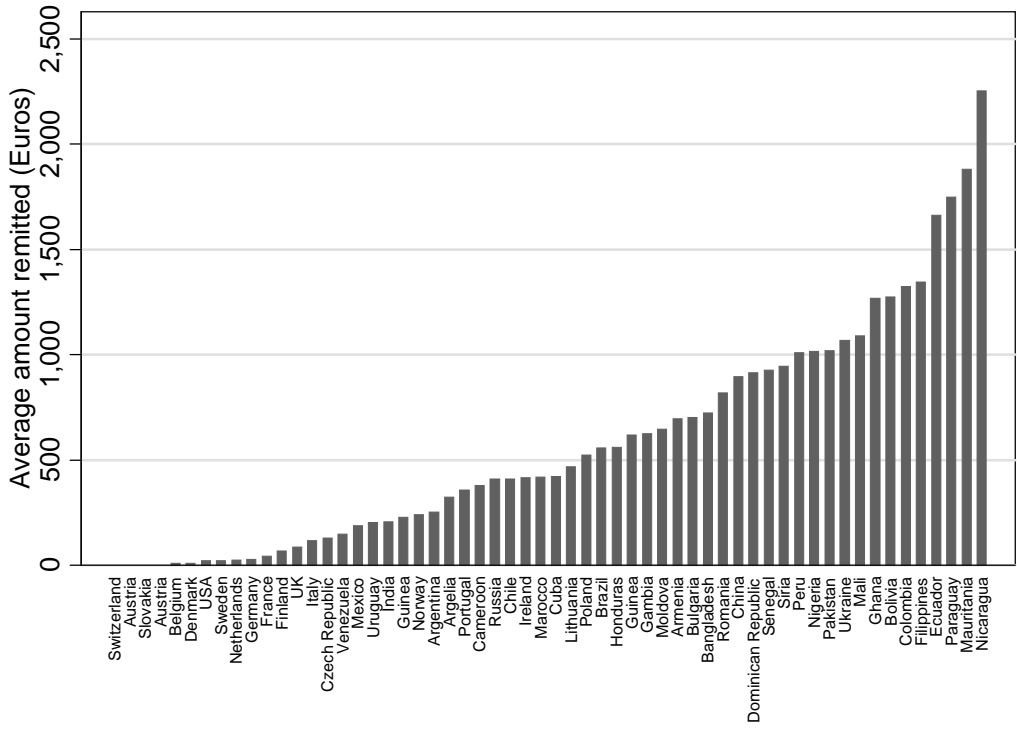
Data: World Bank.

Figure 4: Remitters by country of origin



Data: Spanish National Immigrant Survey, 2007. Including countries with over 5,000 individuals in Spain.

Figure 5: Average amount remitted by country of origin



Data: Spanish National Immigrant Survey, 2007. Including countries with over 5,000 individuals in Spain.

Tables

Table 1: Descriptive statistics. Probability of remitting

Variable	Mean	Std. Dev.	Min.	Max.
Remit	0.37	0.483	0	1
Proportion of conationals in the municipality	0.021	0.038	0	0.452
Male	0.446	0.497	0	1
Age	39.197	14.306	16	98
3 to 5 years in Spain	0.246	0.431	0	1
6 to 10 years in Spain	0.286	0.452	0	1
11 to 20 years in Spain	0.126	0.332	0	1
21 to 30 years in Spain	0.074	0.262	0	1
More than 30 years in Spain	0.139	0.346	0	1
Spanish nationality	0.283	0.45	0	1
Documented	0.449	0.497	0	1
Primary education	0.157	0.364	0	1
Secondary education	0.521	0.5	0	1
Tertiary education	0.207	0.405	0	1
Educated in Spain	0.204	0.403	0	1
House in home country	0.288	0.453	0	1
Married	0.536	0.499	0	1
Number of household members	3.356	1.576	1	18
Intentions to bring family members	0.246	0.431	0	1
Spouse abroad	0.046	0.21	0	1
Brother abroad	0.485	0.5	0	1
Children abroad	0.129	0.336	0	1
Father abroad	0.283	0.451	0	1
Mother abroad	0.356	0.479	0	1
Employed	0.638	0.48	0	1
Income in euros	530.367	679.312	0	9000
Permanent labor contract	0.279	0.449	0	1
Industry	0.075	0.264	0	1
Construction	0.112	0.315	0	1
Services	0.415	0.493	0	1

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain.

Table 2: Descriptive statistics. Amount remitted

Variable	Mean	Std. Dev.	Min.	Max.
Amount remitted	601.894	1696.466	0	60000
Proportion of conationals in the municipality	0.021	0.038	0	0.452
Male	0.444	0.497	0	1
Age	39.5	14.579	16	98
3 to 5 years in Spain	0.238	0.426	0	1
6 to 10 years in Spain	0.277	0.448	0	1
11 to 20 years in Spain	0.128	0.334	0	1
21 to 30 years in Spain	0.079	0.27	0	1
More than 30 years in Spain	0.15	0.357	0	1
Spanish nationality	0.297	0.457	0	1
Documented	0.429	0.495	0	1
Primary education	0.156	0.362	0	1
Secondary education	0.52	0.5	0	1
Tertiary education	0.212	0.409	0	1
Educated in Spain	0.216	0.412	0	1
House in home country	0.285	0.451	0	1
Married	0.538	0.499	0	1
Number of household members	3.336	1.563	1	18
Intentions to bring family members	0.227	0.419	0	1
Spouse abroad	0.041	0.199	0	1
Brother abroad	0.476	0.499	0	1
Children abroad	0.121	0.326	0	1
Father abroad	0.272	0.445	0	1
Mother abroad	0.34	0.474	0	1
Employed	0.629	0.483	0	1
Income in euros	531.911	688.464	0	9000
Permanent labor contract	0.282	0.45	0	1
Industry	0.075	0.263	0	1
Construction	0.109	0.311	0	1
Services	0.411	0.492	0	1

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain.

Table 3: Probability of remitting. OLS

Dep var: Remit	(1)	(2)	(3)
Size by proportion of remitters	0.024 (0.012)***	0.032 (0.012)***	0.026 (0.012)**
Size of the network	0.008 (0.004)**	0.007 (0.003)**	0.006 (0.003)*
Individual characteristics	Yes	Yes	Yes
Family characteristics	No	Yes	Yes
Labor market status	No	No	Yes
No. Observations	14,784	14,354	14,329
R-squared	0.29	0.47	0.478

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain. Standard errors are clustered by municipality of residence and country of origin. * denotes significance between 5-10%, ** between 1-5% and *** less than 1%.

Table 4: Probability of remitting. IV

Dep var: Remit	(1)	(2)	(3)
Size by proportion of remitters	0.033 (0.017)**	0.044 (0.016)***	0.038 (0.016)**
Size of the network	0.007 (0.005)	0.007 (0.003)**	0.006 (0.003)*
Individual characteristics	Yes	Yes	Yes
Family characteristics	No	Yes	Yes
Labor market status	No	No	Yes
No. Observations	14,784	14,354	14,329
R-squared	0.29	0.47	0.478

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain. Standard errors are clustered by municipality of residence and country of origin. * denotes significance between 5-10%, ** between 1-5% and *** less than 1%.

Table 5: Amount remitted. OLS

Dep var: Amount remitted	(1)	(2)	(3)
Size by average amount	0.066 (0.03)**	0.073 (0.029)**	0.067 (0.029)**
Size of the network	-9.771 (19.090)	-1.426 (18.970)	-2.595 (18.843)
Individual characteristics	Yes	Yes	Yes
Family characteristics	No	Yes	Yes
Labor market status	No	No	Yes
No. Observations	13,638	13,261	13,237
R-squared	0.172	0.224	0.229

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain. Standard errors are clustered by municipality of residence and country of origin. * denotes significance between 5-10%, ** between 1-5% and *** less than 1%.

Table 6: Amount remitted. IV

Dep var: Amount remitted	(1)	(2)	(3)
Size by average amount	0.315 (0.046)***	0.103 (0.037)***	0.096 (0.037)***
Size of the network	24.458 (15.815)	-.172 (18.748)	-1.363 (18.627)
Individual characteristics	Yes	Yes	Yes
Family characteristics	No	Yes	Yes
Labor market status	No	No	Yes
No. Observations	13,638	13,261	13,237
R-squared	0.089	0.224	0.229

Data: Spanish National Immigrant Survey, 2007. Information used to compute size of the network comes from Spanish Town Hall Census. Including immigrants from countries with over 5,000 individuals in Spain. Standard errors are clustered by municipality of residence and country of origin. * denotes significance between 5-10%, ** between 1-5% and *** less than 1%.

Table 7: Probability of remitting. Mechanisms

	OLS			IV		
	intend	employed	income	intend	employed	income
Size by proportion of remitters	-0.0008 (0.012)	0.018 (0.006)***	14.775 (17.368)	-0.005 (0.016)	0.004 (0.007)	46.370 (25.921)*
Size of the network	-0.004 (0.003)	0.005 (0.002)***	-9.297 (4.663)**	-0.004 (0.003)	0.004 (0.002)***	-8.552 (4.710)*
No. Observations	14,329	14,329	14,329	14,329	14,329	14,329
R-squared	0.326	0.909	0.48	0.326	0.909	0.48

Data source: Spanish National Immigrant Survey, 2007. The information used to compute size of the network comes from the Spanish Town Hall Census. The sample is composed of immigrants from countries with over 5,000 individuals living in Spain. The standard errors are clustered by municipality of residence and country of origin. * denotes significance between 5-10%, ** between 1-5% and *** less than 1%.