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ABSTRACT

Will Skill-Based Immigration Policies Lead to Lower Remittances? An Analysis of the Relations between Education, Sponsorship, and Remittances

As more and more developed countries adopt policies that favor highly educated immigrants, the impact of such policies on developing countries remains unclear. Some researchers have argued that migrants who are more educated tend to bring their immediate family members to the host country, and thus, send less money to the source country in remittances. While there is numerous papers documenting association between education and remittance, whether that is related to sponsorship decision remains under-explored. Using individual level panel data from the New Immigrant Survey, we show that sponsoring family members leads to lower remittance. Furthermore, we show that college educated immigrants from high-income families are less likely to sponsor relatives, presumably because of relatively higher opportunity cost of migration of their relatives. Together, these two results suggest a positive association between education and remittances, which is indeed, what we find in the data. Our extended analysis shows that alternative explanations (such as higher income of more educated immigrants, or repaying implicit educational loans) cannot completely explain the positive association between education and remittances. Our results suggest that skill-based immigration policies are likely to result in more remittances.

JEL Classification: O15, F22, F24, J61

Keywords: immigration, remittance, sponsorship, education

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1. Introduction

In recent years, more and more developed countries have adopted or are considering adopting skill-based immigration policies. For example, Canada now puts 37 per cent weight on educational credentials of prospective immigrants, compared to 17 per cent in 1986. Australia, UK, and New Zealand (among others) have adopted similar policies (Bedford, 2003; Spinks, 2010; Cerna, 2014). In the U.S., President Trump has recently called for a "merit-based" immigration system citing the Canadian system as an example[1]. The Reforming American Immigration for a Strong Economy (RAISE) Act, proposed by President Trump would cut family-based immigration[2] by 50 per cent and instead focus on a "merit-based" immigration system. The effects of such policies on developing countries are unclear. There are at least two avenues through which such policies can affect developing countries. First, by reducing family-based migration, it may affect remittances. Second, skill-based immigration policy aims to change the skill composition of the immigrants who enter the U.S. and consequently may have an effect on the remittance amount send to the source countries.

Although remittances have received widespread attention because of their importance for the economies of the developing countries, the relation between sponsorship and remittances remain under-explored. The conventional wisdom (as discussed in Faini 2007) is that immigrants who are more educated tend to bring more family members to the host country, which reduces the need for remittance. There is some evidence to that effect in aggregate data. For example, share of all (worldwide) remittances sent from the UK and Canada fell from 4.8 per cent and 1.6 per cent in 2005 to 2.8 per cent and 1.3 per cent in 2015, respectively[3]. Of course, these associations do not imply a causal relation. However, such possibilities have sparked a debate in both academic and policy circles.

In this paper, we explore the relationship between education and remittances, paying particular attention to the sponsorship decision (that is the decision of bringing family members to the host country) – an aspect of the remittance decision that has been largely ignored in the literature until now. To the best of our knowledge, this is the first paper to address this broad

[1] https://www.nytimes.com/2017/03/01/us/politics/immigration-trump.html
[2] This process is sometimes referred to as chain migration.
[3] http://www.worldbank.org/en/topic/migrationremittancesdiasporaissues/brief/migration-remittances-data

question about the relationship between education, sponsorship, and remittances. We use data from two rounds of the New Immigrant Survey (NIS), which is a nationally representative sample of newly admitted legal permanent residents (LPRs) to the U.S.

The NIS has several features, which greatly facilitate an analysis of remittance behaviour. The most important feature of the survey is that it is a panel data, where same respondents were interviewed about five years apart. Therefore, we can use a difference in difference (DD) estimator with individual fixed effect (FE) to estimate the effect of sponsorship on remittances. Our results suggest that sponsoring a relative leads to a $541 decline in the amount remitted per year. We also find that college educated immigrants from high-income families are 5.95 per cent less likely to sponsor relatives.

The inverse relationship between sponsorship and remittance, and the negative association between sponsorship and education suggest immigrants with a college degree may remit more than immigrants without a college degree. Indeed, that is what we find in our empirical analysis on the relationship between education and remittances. Our analysis also suggests that this positive association is not just an artifact of higher income of college-educated immigrants. We also find that pure investment motive is unlikely to be the primary explanation for the association between education and remittances. These results give us further evidence that the sponsorship decision plays a critical role in the relation between education and remittances.

The paper continues as follows: section two summarizes the existing literature, section three describes the data, section four shows estimation results including some robustness exercises, and section five concludes the paper.

2. Conceptual Framework

2.1 Remittances

Remittances have received considerable attention from researchers because of its role in increasing welfare (Lillard and Willis, 1997; Gerber and Torosian, 2013), reducing poverty (Adams and Page, 2005; Taylor *et. al*., 2005; Gupta *et al*., 2009; Adams and Cuecuecha, 2013), investing in human capital in recipient countries (Amuedo-Dorantes and Pozo, 2006; Carla *et al*., 2009; Adams and Cuecuecha, 2010, 2013; Vania, 2014; Bouoiyour and Miftah, 2015), reducing consumption uncertainty (Combes and Ebek, 2011), developing the recipient countries

(Giuliano and Arranz, 2009; Ratha, 2013), insuring senders themselves(Amuedo-Dorantes and Pozo, 2006) or for the recipient households (Yang and Choi, 2007), and reducing inequality (Garip, 2012, 2013).

Rapoport and Docquier (2006) discuss the major motives behind remittances. They discuss four individual motives: altruism, exchange, inheritance, and strategic; and two family arrangements: insurance and investment. Different motives predict different types of relationship between education and remittances (Bollard *et al*., 2011). Empirical evidence on this issue is also mixed. Some studies find a negative relationship (Rapoport and Docquier, 2006; Niimi and Ozden, 2006; Faini, 2007; Adams, 2008; Niimi, Ozden and Schiff, 2010); while others find no relationship exists between education level and remittance flows (Rodriguez and Horton, 1994). On the other hand, a number of studies report a positive relationship between education and remittance (Lucas and Stark, 1985; Hoddinott, 1994; Lillard and Willis, 1997; Poirine, 1997; Ahlburg and Brown, 1998; Cox *et al*., 1998; Regmi and Tisdell, 2002; Cai, 2003; Bollard *et al*., 2011). Docquier, Rapoport and Salomone (2012) find that the relationship between education and remittance depends on immigration policy of the host country. They find the effect of education on remittances is more likely to be positive when the policy is more restrictive and less skill-selective.

2.2 Sponsorship

Bringing family members to the host country (sponsorship[4]) could be an alternative to sending remittances. This may mean loss of human capital for the source country. However, for labor surplus economies, it may also reduce unemployment and therefore possible unrest (Mendola, 2012). A recent paper by Carr and Tienda (2013) find that an immigrant entering the U.S. during the early 1980s (1981-1985) sponsored 2.6 family members and that number went up to 3.45 for immigrants entering the U.S. during the late 1990s (1996-2000). The sponsorship decision has received relatively little attention from researchers (Jasso and Rosenzweig, 1986, 1989; Boyd, 1989; Yu, 2008 are some exceptions) despite its importance[5]. What is the relationship between

[4] A legal permanent resident or a citizen can file a petition (or sponsor) to bring a relative to the U.S. Citizens are allowed to sponsor a broader class of relatives compared to legal permanent residents. We discuss more on this later.
[5] Some researchers have explored related fields such as family or network effects in immigration decision (Borjas and Bronars 1991 among others), other have explored the links between and migration and remittance (Rapoport and Docquier 2006; Garip 2013).

education and sponsorship? Does sponsoring some family members mean less remittance for those who remain in source countries? These questions remain largely unexplored.

The conventional wisdom (as discussed in Faini 2007) is that more educated immigrants tend to bring more family members to the host country, which reduce the need for remittances. There are two underlying assumptions in this assertion: 1) more educated immigrants are more likely to bring their relatives to the host country, and 2) more sponsorship leads to less remittance. The first assumption has some institutional justification but there is little empirical evidence for it. For example, U.S. immigration laws state that an individual planning to sponsor new immigrant must have an income (or liquid asset) that is above 125 per cent of the Federal Poverty Level (which is $30,375 for a family of four)[6]. Since immigrants who are more educated are more likely to earn more, they are more likely to meet the threshold. However, these income levels are low-enough and well below the median annual earnings of a high-school graduate[7]. Furthermore, immigrants who are more educated may have family members with a higher opportunity cost of moving, presumably because they may have stable jobs or property in their source countries. As we mentioned earlier, despite some institutional justification, there is little empirical evidence for the first assertion. Bollard *et al.* (2001) do not find any difference in the family structures of immigrants with and without college degree. However, they do not discuss the issue of sponsorship. Jasso and Rosenzweig (2010) show that immigrants are more likely to sponsor their highly-educated children but send remittances to assist their less-educated children[8].

The second assumption built into the conventional wisdom is a behavioral one that has not been empirically verified. The assertion that more sponsorship leads to less remittance, while plausible, is not obvious. Jasso and Rosenzweig (2010) develop a theoretical model where they show that remittance and sponsorship is positively related. They allow for immigrants to sponsor part of their families. When an immigrant sponsors one child to bring him/her to the host country (U.S.), it results in an increase in the sponsored child's income. To equalize the marginal benefit

[6] https://www.uscis.gov/i-864p

[7] Median annual earnings of a high school graduate is about $39,000. Authors' calculation based on data available at https://www.bls.gov/opub/ted/2016/weekly-earnings-by-educational-attainment-in-first-quarter-2016.htm

[8] In a recent paper, Kugler, Levinthal and Rapoport (2013) show that migration leads to an increase in cross-border financial flows by reducing incomplete information problem.

of additional dollars spent on each child, the immigrant sends more remittance to the children left behind in the source country. However, they did not empirically investigate that issue.

While the sponsorship has not attracted much attention, a number of theoretical and empirical papers have investigated the link between remittance and migration intentions. New Economics of Labor Migration (NELM) approach suggests that remittances increase productivity (income) and relax credit constraints in the receiving countries (Stark and Bloom, 1985; Katz and Stark, 1986; Stark, 1991). This may reduce motivation to migrate. At the same time, if remittances signal potential for success in destination countries it may increase migration intention. Naiditch, Tomini and Lakhdar (2015) have argued that low levels of remittance may relax credit constraint and induce more migration, while high levels of remittances received by family members in the country of origin may create disincentive to migrate. Empirical evidence in this area is limited and is based on data from recipient countries. A number of papers have found a positive relationship between remittance and migration intentions: Van Dalen *et al*. (2005) for Morocco, Dimova and Wolff (2009) for Bosnia-Herzegovina, Leeves (2009) for Fiji and Tonga, and Piracha and Saraogi (2013) for Moldova. However, it is important to note that these papers look at migration intentions and not actual migration decisions. In other words, this does not necessarily mean that more remittance will actually increase migration (Epstein and Gang, 2006). Even if some individuals are willing to migrate, in most cases, they still need a willing and able sponsor residing in the host country. Therefore, it is important to understand the decision process of potential sponsors (immigrants who are already LPRs or citizens) to complement the knowledge generated from the set of studies mentioned above.

3. Data

The first round of the NIS (conducted between 2002 and 2003) interviewed a sample of 8,573 adult immigrants who obtained their LPRs in 2002 and 2003[9]. The second round of the interview (conducted between 2007 and 2009) consists of 4,363 adult immigrants drawn from the initial sample. One major advantage of the NIS is the panel structure, where same respondents were interviewed about five years apart. Therefore, we can use a difference in difference (DD) estimator with individual fixed effect (FE) to estimate the effect of sponsorship on remittances.

[9] For further details on NIS please visit http:// nis.princeton.edu

Out of the 4,363 immigrants (present in both rounds), 3,280 immigrants answered (some) questions about remittances. We exclude 640 immigrants from our sample because the difference in remittance between first round and second round was not available. We further exclude 54 immigrants from our sample because they did not respond to questions about sponsorship behaviour. After deleting 354 observations with missing information on control variables (such as family composition, education, years since migration, and so forth), we are left with a sample of 2,232 immigrants.

First, we will discuss the issue of the representativeness of our sample. The NIS only interviewed LPRs[10], and therefore, it may not be representative of all immigrants in the U.S. Only 4,363 respondents out of 8,573 original respondents were interviewed in the second round. In other words, the attrition rate is close to 50 per cent. In addition, after imposing sample restrictions we left with 2,232 immigrants. Therefore, two questions may arise: 1) to what extent the NIS respondents are representative of all immigrants in the U.S. and 2) to what extent our final analysis sample of 2,232 immigrants is representative of the original NIS sample.

A first check on this issue comes from Bollard *et al*. (2011) who compare 14 different datasets from 11 countries, including the NIS for the U.S. They find that (see Table 2 p.141) socio-demographic characteristics (such as education, income, family structure, number of years abroad, and return intention) of the NIS respondents are similar to their pooled sample. However, the NIS respondents are less likely to remit compared to immigrants in other data sets in their study. For a second check of the representativeness of the NIS respondents, we compare the original NIS sample from the first round and our analysis sample to the non-citizen sample from 2003 Current Population Survey (CPS). We only focus on the variables that are available in the CPS[11]. Appendix A1 shows the summary statistics for the three samples. Comparison of column 1 (CPS) and column 2 (largest possible Round 1 NIS sample with relevant variables; we refer to this as full sample) suggest that NIS full sample is comparable to CPS sample in age, gender, marital status, and employment rate. However, the NIS immigrants are more educated, have higher income, and have been in the U.S. longer than CPS immigrants. A comparison of columns

[10] It is worth noting that Jasso *et al*. (2008) found that about one third of NIS (Pilot) respondents were previously undocumented.

[11] Appendix Table A2 shows the comparison between the NIS full sample and our analysis sample for all relevant variables.

2 (NIS full sample) and 3 (our analysis sample) suggest that despite the attrition and sample restriction, our analysis sample is representative of full NIS sample (Appendix A2 suggests the same). Jasso and Rosenzweig (2010) also observed that despite the high attrition rate, the Round 2 NIS sample remained representative of the Round 1 sample. However, our analysis sample has a lower marriage rate in comparison with the NIS full sample.

The NIS includes data on a variety of topics, including demographics information, education levels, migration history and so forth. Our primary outcome variables are remittance and sponsorship. We obtain total remittance variable by adding all the cash and non-cash transfers[12] to different categories of relatives in migrants' countries of origin in the 12 months preceding the interview. We convert the remittance amount into 2003 U.S. dollars. Questions about sponsorship behaviour were asked only in the second round. The exact question was: *'Since you became a legal permanent resident, have you yourself filed a petition to begin the process to bring a relative to live permanently in the United States?'*

Table 1a and 1b present the summary statistics for rounds one and two, respectively. We only discuss the summary statistics for the second round (Table 1b) in the text since the sponsorship question was only asked in the second round. Column 1 of table 1b presents the summary statistics for our analysis sample. In the second round, 10.1 per cent of the respondents reported remitting any money in the past 12 months and the average amount remitted (that is including the non-remitters) is $460.50. In our analysis sample, 10.8 per cent of respondents have initiated a sponsorship process.

Column 1 also shows that the average age of the immigrants is 43 years, and 50.5 per cent of the immigrants are male. Of the respondents, 60.8 per cent are married and 7.1 per cent have their spouse not residing in the U.S. Average number of children for respondents in our sample is 1.84, and 11.8 per cent of the respondents have at least one child not residing in the U.S. About 62.4 per cent of the respondents have at least one parent still alive, and 40.1 per cent have at least one parent outside of the U.S. If we define spouse, children, and parents as "close relatives", 52.3per cent of respondents in our analysis sample have at least one "close relative" outside of the U.S. At the time of the interview, respondents have spent 9.97 years in the U.S. on an

[12] Respondents were asked about the approximate value of all non-cash transfers. 5.51per cent of respondents had any non-cash transfers.

average. In our analysis sample, 37.5 per cent of the immigrants are college graduates, and 76.5per cent are working at the time of interview. Average annual earning (including zero income) is $29,075 (in 2003 dollars).

Columns 2 and 3 present the summary statistics for remitters and non-remitters, respectively. The average amount remitted (conditional on non-zero remittance) is $4568.13. Remitters are more likely to be sponsors (15.6% vs. 10.3%) as well, suggesting a positive association between remittance and sponsorship in cross-sectional data. There are some differences in the characteristics of remitters and non-remitters. For example, remitters are younger (41 years old vs. 43 years old) and more likely to be male (64.9% vs. 48.9%). Remitters are also more likely to have a spouse (12.9% vs. 6.4%), a child (20% vs. 10.9%), or a parent (47.6% vs. 39.3%) outside of the U.S. A higher percent of remitters have a college degree (50.7% vs. 30.6%) and remitters have higher annual income ($45,878 vs. $ 27,192).

Columns 4 and 5 present the summary statistics for respondents who have and have not initiated a sponsorship process, respectively. Respondents who have already initiated a sponsorship process are more likely to be remitters (14.5% vs. 9.5%) and have higher average amount remitted ($638.38 vs. $4438.97). They are older (45 years old vs. 42 years old), fewer college graduates (27.8% vs. 38.7%), and have lower annual income ($26,032 vs. $29,478). They are also more likely to have a spouse (29.9% vs. 4.3%) or a child (27.8% vs. 9.8%) outside of the U.S., but they are less likely to have a parent outside of the U.S. (29.9% vs. 41.4%).

4. Results

In this section, we will provide empirical evidence to show how sponsorship creates a positive relationship between education and remittances. First, using a DD approach, we will show that sponsoring family members leads to lower remittances (Section 4.1). Next, in Section 4.2, we will show that college-educated immigrants from above-average income families have a significantly lower propensity to sponsor relatives suggesting that, the opportunity cost of migration for the family members of college-educated immigrants plays an important role in this process. These two results, together, suggest that college educated immigrants may send more money in remittances. Our empirical analysis in Section 4.3 confirms the positive association between remittances and education. In the extended analysis (Section 4.4.4), we show that alternative explanations (such as higher income of college educated immigrants or repaying

implicit educational loans) cannot completely explain the positive association between education and remittances.

4.1 Sponsorship and Remittances

First, we estimate the effects of sponsorship on remittance using a DD method. Our treatment group consists of immigrants who have filed paperwork to sponsor a relative, and our comparison group consists of immigrants who have not. We observe the propensity to remit and the amount remitted before and after the sponsorship process for both groups. Therefore, we can implement a DD-FE estimator. DD estimators assume that in the absence of the treatment the trend in the treatment and control groups would have remained the same. Strictly speaking, we do not have a control group. The ideal control group would be immigrants who are otherwise similar to treatment group but randomly denied the opportunity to sponsor relatives. Such a group does not exist. Therefore, we rely on the current comparison group.

Panel A of Table 2 shows the propensity to remit for immigrants who sponsored a relative (the treatment group) and immigrants who did not sponsor a relative (the comparison group) in between two rounds of the interviews. In the before period (first round), 27.0 per cent of sponsors and 14.5 per cent of non-sponsors reported remitting. The difference is statistically significant. In other words, we observe a positive association between the probability of remitting and sponsorship. In the after period (second round), 14.5 per cent of sponsors and 9.5 per cent of non-sponsors report remitting, and the difference is statistically significant. Thus, the second round data also suggests a positive association between the probability of remitting and sponsorship. Comparing numbers across rounds, the decline among the sponsors was 12.4 percentage points. Conversely, the decline among the non-sponsors was 4.9 percentage points. Therefore, the mean DD estimates suggest that sponsorship leads to a 7.5 percentage point decline in the propensity to remit. In other words, DD results suggest a negative relationship between the probability of remitting and sponsorship[13].

Panel B of Table 2 shows the change in the average amount remitted. It shows that the sponsors, on an average, remit more money compared to non-sponsors, suggesting a positive

[13] We repeated this analysis using those who replied that that they intend to file a petition to sponsor a relative as our treatment group (as opposed to our current treatment group, which consists of individuals who have already filed paperwork to sponsor a relative). The results (not reported here) are qualitatively similar.

association between sponsorship and amount remitted. However, comparing across rounds, we find that in the before period, average amount remitted by a sponsor was $1208.75 and it declined to $638.38 in the after period. In other words, the average amount remitted by a sponsor declined by a statistically significant $570.37, after they sponsored a relative. In comparison, the decline in the amount remitted by non-sponsors was only $72.17. Our mean DD estimate suggests that sponsoring a relative leads to a statistically significant $498.2 decline in the average amount remitted. Therefore, DD results suggest a negative relationship between the amount remitted and sponsorship.

Next, we use a first difference (FD) regression to study the relation between sponsorship and remittances (Table 3). We include a number of time varying control variables such as dummies for college education, marital status, whether they have a spouse overseas, number of children, whether they have children overseas, whether they have at least one living parent, and whether the living parent is overseas. Theoretically, the time constant variables should be differenced out in a FD regression. We nonetheless include time constant variables (such as gender and country of origin) since the group specific trends may be different. Other control variables include dummy variables for immigrants' childhood family income (below-average, average, and above-average)[14]. Column 1 shows the results for the propensity to remit using a linear probability model. Our results suggest that sponsoring reduces the propensity to remit by 7.5 percentage points, which is same as the mean DD estimate. Therefore, our mean DD estimate on the propensity to remit is robust to inclusion of controls[15]. Column 2 presents the FD regression estimates for the average amount remitted. The results suggest that sponsoring leads to a reduction of $541.6 in the amount remitted. Again, the regression estimate is similar to the mean DD estimate. These results show the inference based on cross-sectional associations may give misleading results.

[14] The NIS question was *"Now I'd like to ask you some questions about when you were a child. Thinking about the time when you were 16 years old, compared with families in the country where you grew up, would you say your family income during that time was far below average, below average, average, above average, or far above average?"* In our analysis we combine the first categories and call it "below average". We also combine the last two categories and call it "above average".

[15] We also estimated a regression where we restricted the sample to employed immigrants. The results (not reported here) are similar.

One concern with our approach may be that immigrants who intend to become citizens may behave differently than those who intend to return to their source countries. Therefore, we restrict our sample to those who intend to become U.S. citizens. As highlighted in the last two columns of Table 3 the estimates are similar to those we obtained for the final analysis sample. Therefore, our previous discussion shows that sponsoring relatives leads to a decline in the propensity to remit and in the average amount remitted. This is consistent with the supposition of Faini (2007).

We recognize that individual level characteristics (such as altruism) may create a spurious correlation between sponsorship and remittance. For example, if some individuals are more altruistic than others, then they will sponsor more relatives and also send more money in remittances, creating a positive association between sponsorship decision and remittance decision. The last two columns of Table 1a and 1b also suggest that the immigrants in comparison group is different from treatment group in demographic characteristics. This raises the possibility that they may be different in unobservable ways. If the unobservable differences were time-constant, our individual level fixed effect would be sufficient to get a consistent estimate. However, if they were time varying, then our DD-FE estimates may not be consistent. We checked whether the sponsorship decision is endogenous using U.S. citizenship status as an instrument for immigrants' sponsorship decision. The U.S. immigration laws allow citizens to sponsor a broader group of immigrants compared to LPRs (see Jasso and Rosenzweig, 2010; Wasem, 2010b, for more detail) and therefore we should expect a strong first stage relationship, which is testable in the data. The F-stat for the excluded instrument is 18.46 suggesting that instrument is strong by conventional standards.

The question of validity of the instrument (that is whether it satisfies exclusion restriction) is a more challenging issue because it is not directly testable. It requires citizenship to affect the outcome variable (*that is the difference in remittances between two rounds or* ΔR_i) only through sponsorship. One potential threat to this is the time since LPR status determines citizenship status. For example, most LPRs become eligible to be a citizen five years after they obtain their LPR status. Immigrants who obtained their LPR status through marriage to a U.S. citizen or military service can apply for naturalization after three years. Therefore, immigrants who are citizens during their second interview have a longer time-since-LPR than non-citizens. Previous

literature suggests that there may exist a relation between time spent in the U.S. and level of remittances. However, since our outcome variable is *difference in remittances* (ΔR_i), we should not necessarily expect an association. Figure 1 confirms this, suggesting that there is no relationship between time since LPR and the outcome variable (ΔR_i). We test whether the difference in remittances (ΔR_i) is different by citizenship status. For immigrants who became citizens in between two interviews, the average amount remitted declined by \$108[16], whereas with immigrants who have not become citizens, the average amount remitted declined by \$127. The difference is not significant (t-stat 0.09). This suggests that time since LPR, which determines citizenship, does not have an independent effect on difference in remittances (ΔR_i). Using the standard regression approach (Wooldridge 2002) we fail to reject the null of exogeneity (p-value is 0.48 in the propensity to remit equation and 0.97 in the amount remitted equation). Another potential threat to exclusion restriction may be that immigrants who intend to stay in the U.S. permanently may behave differently than those who plan to return to their source countries. However, in this case, that is unlikely because all respondents in our sample are LPRs, which suggests they are long-term immigrants. We checked whether our results are sensitive to excluding the respondents who indicated that they do not want to become U.S. citizens. We again fail to reject the null of exogeneity (p-value is 0.38 in the propensity to remit equation and 0.98 in the amount remitted equation). IV estimates (not reported here but available on request) have same sign and similar in magnitude with DD results, but they are not statistically significant because of larger standard errors. If there is no endogeneity then both OLS and IV is consistent but IV is inefficient. Therefore, we prefer our DD results.

4.2 Education and Sponsorship Behaviour

Next, we will explore the relation between education and sponsorship behaviour using a linear probability model[17]. In the regressions, we include a vector of individual level controls such as age, gender, number of years in the U.S., college education and so forth. Additionally, family structure variables such as whether the individual is married, has children, and has parents are also included. We also control for whether they have a spouse living abroad, any child living abroad, and any parent living abroad. In our data, education does not change for most immigrants

[16] The details of amount remitted by each group not shown.
[17] Marginal effects from a Probit model have similar results.

(average age at the time of the first interview is about 39 years) over time, and we do not have any suitable instruments. Therefore, we rely on OLS to estimate the association between education and sponsorship decision. All regressions include source country fixed effects[18] (along with the variables shown on Table 4). Results presented in column 1 of Table 4 show that immigrants who have a college degree are 1.79 per cent less likely to sponsor a relative compared to immigrants without a college degree. However, this coefficient is not significant. In column 2, we add immigrants' yearly income as an additional control and the coefficient of college remains negative but insignificant.

The negative association between education and sponsorship decision may happen if highly educated immigrants *already* have all of their close relatives in the U.S. and therefore they are less likely to sponsor anyone else. Next, to test this hypothesis, we create an interaction between whether an immigrant has a "close sponsor-able relative" (spouse, biological children, or parent) overseas and college degree. Column 3 shows the regression results. In column 3, since we include whether they have a "close sponsor-able relative" overseas, we do not include separate dummies for whether they have a spouse, children, or parent overseas. As expected, immigrants with a "close sponsor-able relative" overseas are 9.22 per cent more likely to sponsor compared to immigrants without a "close sponsor-able relative" overseas. However, the results also show that college graduates without a "close sponsor-able relative" are 1.53 per cent less likely to sponsor, and college graduates with a " close sponsor-able relative" are 6.82 per cent less likely (significant at 5% level) to sponsor[19]. Therefore, these results suggest that immigrants with a college degree have a lower propensity to sponsor when they have a "close sponsor-able relative" overseas.

Next, we explore the potential reasons behind this result. One potential explanation is that the relatives of college graduates have a higher opportunity cost of migrating to the U.S. presumably because they have jobs and/or property in their source countries. We do not have any direct evidence about the current opportunity cost of migration of their relatives. However, we do know the relative family income of the immigrants' families in their source countries when the immigrants were young (16 years old). If we assume that relative family income situation has not

[18] For about 31 per cent of respondents in our sample the source country is not identified in the publicly available NIS data. In those cases, we use source region fixed effects.
[19] We obtain this by testing the summation of coefficient of college and the interaction term.

changed substantially since then, we can use this variable as a proxy for the potential opportunity cost of migration for their family members. For example, members from a family with below-average income would have a lower opportunity cost of moving to the U.S. compared to members from a family with above-average income. Therefore, we create interactions for college degree and childhood family income. Column 4 of Table 5 presents the results. Results show that immigrants with college degree who come from an above-average income family are 5.95 percentage point less likely to sponsor. However, there is no significant association between college degree and sponsorship for immigrants from average or below-average income families. These results suggest that the opportunity cost of migration of family members drives the relationship between college education and sponsorship.

4.3 Education and Remittances

Our results suggest immigrants (from above-average family income) with a college degree are less likely to sponsor family members. Furthermore, there is an inverse relationship between sponsorship and remittances. Therefore, college-educated immigrants may send more in remittances. In addition, this explanation also suggests that the more remittances sent by college educated immigrants are not simply driven by their higher income (that is as concluded by Bollard et al., 2011), but also by the higher opportunity cost of migration of the family members of the college educated immigrants.

Next, we estimate the association between education and remittances. We report the regression results on extensive margin[20] (that is whether an immigrant remits or not), amount remitted (including zero remittances), and on intensive margin (amount remitted conditional on sending non-zero remittance). We present only the relevant coefficients in Table 5 (that is the coefficients of education) and the set of controls is same as those included in Table 4. We estimate the relation between education and remittances separately for Round 1 and Round 2 to check whether the relationship changes over time. First three columns show the estimates based on Round 1 data and the last three columns show the estimates based on Round 2 data.

Panel A presents the results for the final analysis sample without controlling for income. First column provides the results for the extensive margin (the propensity to remit). Estimate shows

[20] Again, we report results from linear probability model. Marginal effects from Probit model provide similar results.

that immigrants with a college degree are 4.96 percentage points more likely to send remittances. Column 2 presents the results for amount remitted (including those who send zero in remittance). Result suggests that immigrants with a college degree send $349 more in remittances compared to immigrants without a college degree. Column 3 presents the results for amount remitted conditional on sending non-zero remittance. Therefore, this column has substantially smaller sample size. Result suggests that, conditional on sending non-zero remittance, immigrants with a college degree send $1,041 more in remittances compared to immigrants without a college degree. Therefore, the results suggest that education affects both the extensive and intensive margin of remittances. Next three columns present results based on Round 2. Estimate in column 4 shows that immigrants with a college degree are 5.19 percentage points more likely to remit. Column 5 and 6 suggest that immigrants with a college degree send $419.57 more in remittances compared to immigrants without a college degree, and they send $1,749 more conditional on sending non-zero remittance. Thus, our results suggest that the relation between education and remittance is positive and stable over time.

4.4 What Explains the Relation Between Education and Remittances?

To explore the plausibility of alternative hypotheses that may explain the observed positive association between education and remittances, we perform a series of tests. First, we re-estimate the regressions reported in Panel A of Table 5 for the immigrants with income information is available. However, we do not control for income. The findings of the regression analyses are presented in Panel B of Table 5. Results are broadly similar to those reported in Panel A. Next, we check whether the positive association between education and remittances is a result of higher income of college graduates. To test this we add immigrants' yearly income as an additional control. Regression estimates are robust after adding income as an additional control (see Panel C of Table 5). In other words, the higher remittances sent by college-educated immigrants are not simply driven by their higher income.

Next, we explore whether the positive association is driven by investment motive. To test the investment hypothesis, we estimate separate regressions for immigrants who have any U.S. education and those who do not. It is likely that immigrants who have invested in U.S. education received financial support from their family members in source countries. Therefore, they are more likely to remit to repay their families (that is have investment motive) compared to

immigrants who did not invest in U.S. education. All regressions include the full set of controls including income. Columns 1 and 2 present the results based on data from Round 1 and columns 3 and 4 present the results based on Round 2. Panel A of Table 6 shows the estimation results for the propensity to remit. The coefficient estimate of college for the immigrants without any U.S. education is positive and significant (column 2), while the coefficient for immigrants with U.S. education is negative but insignificant (column 1). Both rounds show the same pattern. Panel B of Table 6 shows the estimation results for the amount remitted. In the sample of immigrants with U.S. education (column 1), those with a college degree send $472.6 more in remittances compared to immigrants without a college degree. On the other hand, in the sample of immigrants without any U.S. education (column 2), those with a college degree send $152.5 more in remittances compared to immigrants without a college degree. Both numbers are not statistically significant. In the second round (columns 3 and 4), the coefficients for immigrants without any U.S. education are significant.

Next, we further explore whether the higher remittances sent by college-educated immigrants represent a repayment of education loan offered by their source-country families. Our results so far suggest that it is unlikely to be the case. However, it may be that some of the immigrants may have acquired U.S. education while working in the U.S., or possibly after working for a while in the U.S. In those cases, they may not need financial support from their source-country families. Immigrants who arrived in the U.S. as students (F-1 visa holders) may be more likely to use their source country family resources. Therefore, we are most likely to observe loan repayment among (former) F-1 visa holders. All regressions include full set of controls including income. Columns 1 and 2 present the results based on data from Round 1 and columns 3 and 4 present the results based on Round 2. Panel C of Table 6 shows the estimation results for the propensity to remit. Results are similar to those reported in panel A. Panel D of Table 7 shows the estimation results for the amount remitted. Again, only the coefficients for immigrants who did not enter on F1 visa is significant (in Round 2). Therefore, overall results suggest that pure investment motive is unlikely to be the primary explanation for the association between education and remittances.

5. Conclusion

As more and more developed countries adopt skill-based immigration policies, their effect on developing countries remain unclear. This paper focuses on the possibility of a trigger effect of

skill-based immigration policies on remittance flow and family-based migration. Conventional wisdom suggests that the relationship between education and remittances could be shaped by sponsorship behaviour. However, to the best of our knowledge, there is no study that empirically investigates this issue. In this paper, we explore whether a relationship between sponsorship and remittance exists and whether that can explain the observed association between education and remittances. We use a DD estimator with individual (FE to estimate the effect of sponsorship on remittances. Our results suggest that sponsoring a relative leads to a $542 decline in the amount remitted per year. We show that college educated immigrants from above-average income families are less likely to sponsor relatives, suggesting that the opportunity cost of migration of their relatives is relatively high. Together, these two results suggest a positive association between education and remittances. Our extended analysis show that alternative explanations (such as higher income of more educated immigrants or repaying implicit educational loans) cannot, by themselves, completely explain the positive association between education and remittances.

Our results have important policy implications. The results suggest that skill-based immigration policies (such as the proposed RAISE act) may have some unintended consequences. While the proposed goal of the RAISE act is to promote high-skilled migration and reduce total legal immigration, both of these will have an effect on remittance. *First,* The RAISE act proposes reducing the number of legal immigrants by half (from 1 million per year to 540,000 per year) by restricting family preferences to immediate family members and by eliminating diversity visas. Our estimates suggest that immigrants will send an additional $542 in remittances (since they will not be able to sponsor their extended family members), this will result in about $300 million in extra remittances from the U.S. However, this is the immediate impact. In the long run, as the stock of sponsorship-constrained immigrants grow, the effect of remittances will grow as well. In 20 years, the stock of sponsorship-constrained immigrants will grow to about 11 million. These individuals will send an additional $6 billion in remittances. *Second,* currently about 28 per cent of immigrants are college educated[21]. Assuming that RAISE act (which will promote high-skilled immigration) will double the ratio to 56 per cent, this will result in an additional 3 million college graduates. Using our estimate that college graduates send

[21] https://www.migrationpolicy.org/article/college-educated-immigrants-united-states. Accessed on 11/11/17.

about $349 more in remittances compared to those without a college degree, this will result in additional $1 billion in remittances. Therefore, the total amount of remittances may be $7 billion more under the RAISE act compared to the current scenario. To put this in perspective, in 2015 immigrants sent over $133 billion in remittances from the U.S. Therefore, the extra $7 billion will represent a 5.25 per cent increase in the amount remitted.

References

Adams, Richard Jr., and Page, John., 2005 "Do international migration and remittances reduce poverty in developing countries?" *World Development*, 33, no (10):1645–69

Adams, Richard Jr. 2008., "The Demographic, Economic and Financial Determinants of International Remittances in Developing Countries." *In World Bank Policy Research Working Paper 4583*. Washington, DC: World Bank.

Adams, Richard Jr., and Cuecuecha, A., 2010. "Remittance, household expenditure and investment in Guatemala." *World Development* 32, no. 8 [2010]; 1407-17.

Adams, Richard Jr., and Cuecuecha, A., 2013. "The Impact of Remittances on Investment and Poverty in Ghana." *World Development*, 50, 24-40.

Ahlburg, D., and Brown R.P.C., 1998. "Migrants' intentions to return home and capital transfers: a study of Tongans and Samoans in Australia." *The Journal of Development Studies* 35.2, 125–51.

Amuedo-Dorantes, C., and Susan P., 2006. "Remittances as Insurance: Evidence from Mexican Migrants". *Journal of Population Economics*, 19(2): 227-54.

Bedford, R., 2003. "New Zealand: The Politicization of Immigration". *The online Journal of the Migration Policy Institute*. January 1st.

Bollard, A., McKenzie, D., Morten, M., and Rapoport, H., 2011. "Remittances and the Brain Drain Revisited: The Microdata Show That More Educated Migrants Remit More." *The World Bank Economic Review*, 25 (1): 132 – 56.

Borjas, G. J., and Bronars. S. G., 1991. "Immigration and the family", *Journal of Labor Economics*, 9(2):123-148.

Bouoiyour, J., and Miftah, A., 2015. Why do migrants remit? Testing hypotheses for the case of Morocco". *IZA Journal of Migration* 4(2). December.

Boyd, M., 1989. "Family and personal networks in international migration: recent developments and new agendas", *International Migration Review*, 23(3): 638-70.

Cai, Q., 2003 "Migrant remittances and family ties: a case study in China." *Population, Space and Place*. 9: 471-483. 10.1002/ijpg.305.

Carla, C., Arjun, B., and Robert, S., 2009. "Remittances, liquidity constraints and human capital investments in Ecuador." *World Development*, 37, pp. 1143–1154

Carr S., and Tienda, M., 2013. “Family sponsorship and late-age immigration in aging America: Revised and expanded estimates of chained migration”. *Population Research and Policy Review*, 32, 825–849. 10.1007/s11113-013-9300-y

Cerna, L., 2014 “Attracting High-Skilled Immigrants: Policies in Comparative Perspective”. *International Migration*. Vol. 52(3) 2014

Combes, J., and Ebeke, C. 2011. “Remittances and household consumption instability in developing countries”. *World Development*, 39 (7), 2011, pp. 1076–1089

Cox, D., Eser Z., and Jimenez, E., 1998. “Motives for private transfers over the life cycle: An analytical framework and evidence for Peru.” *Journal of Development Economics* 55(1):57-80.

Dimova, R., and Wolff, Francois-Charles., 2009. “Remittances and Chain Migrations: Longitudinal Evidence from Bosna and Herzegovina.” *IZA Discussion Papers*. 4083, Institute for the Study of Labor (IZA).

Docquier, F., Rapoport, H., and Salomone, S. 2012a. “Remittances, Migrants' Education and Immigration Policy: Theory and Evidence from Bilateral Data”. *Regional Science and Urban Economics* 42, 817–828.

Epstein, G S., and Gang I. N., 2006. “The Influence of Others on Migration Plans.” *Review of Development Economics*, Wiley Blackwell, vol. 10(4), pp 652-665, November.

Faini, R., 2007. “Remittances and the Brain Drain: Do more skilled migrants remit more?” *The World Bank Economic Review* 21(2): 177-91.

Garip, F., 2012. “An Integrated Analysis of Migration and Remittances: Modeling Migration as a Mechanism for Selection”. *Population Research and Policy Review* 31(5):637-663.

Garip, F., 2013. “The Impact of Migration and Remittances on Wealth Accumulation and Distribution in Rural Thailand”. *Demography*. 51:673-698

Gerber, T. P., and Torosyan. K, (2013) “Remittances in the Republic of Georgia: Correlates, economic impact, and social capital formation”. *Demography* (2013), pp. 1–23

Giuliano, P., and Marta Ruiz-Arranz., 2009. “Remittances, financial development, and growth”. *Journal of Development Economics*, 90, 2009, pp. 144–152

Gupta, S., P, C. A., and Wagh, S., 2009, “Effect of remittances on poverty and financial development in Sub-Saharan Africa”. *World Development*, 37(1), pp. 104-115.

Hoddinott, J., 1994. “A Model of Migration and Remittances Applied to Western Kenya”. *Oxford Economic Papers* 46:459-476.

Jasso, G., and Rosenzweig R. M., 1986. “Using National Recording Systems for the Measurement and Analysis of Immigration to the United States.” *International Migration Review* 21:1212-1244.

Jasso, G., and Rosenzweig. R. M., 1989 “Sponsors, Sponsorship Rates, and the Immigration Multiplier”. *International Migration Review* 23:856-888.

Jasso, G., Massey. S. D., Rosenzweig. R. M., and Smith. P. J., “From Illegal to Legal: Estimating Previous Illegal Experience among New Legal Immigrants to the United States.” *International Migration Review* 42, no. 4 (2008): 803-843.

Jasso, G., and Rosenzweig. R. M., 2010. “Remit or Reunify? US Immigrant Parents, Remittance and the Sponsorship of Children”.

Katz. E., and Stark O., 1986. “Labor Migration and Risk Aversion in Less Developed Countries”. *Journal of Labor Economics*. Volume 4 (1). January

Kugler, M., Levintal O., and Rapoport H., 2013. “Migration and Cross-Border Financial Flows Migration and Cross-Border Financial Flows”. *CReAM Discussion Paper*, 13(17) 29.

Leeves, G., 2009. “Migration Plans and Received Remittances: Evidence from Fiji and Tonga”. *International Migration Review*, 43(1): 160-177.

Lillard, L. A., and Willis, R. J., 1997. “Motives for Intergenerational Transfers: Evidence from Malaysia.” *Demography* 34, No. 1 (1997): 115-134.

Lucas, R., and Stark, O., 1985. “Motivations to remit: Evidence from Botswana”. *Journal of Political Economy* 93: 901-918.

Mendola, M., 2012. “Review Article: Rural Out-migration and Economic Development at Origin: A Review of the Evidence”. *Journal of International Development*. 24: 102-122

Naiditch, C., Tomini, A., and Ben, Lakhdar C., 2015. “Remittances and incentive to migrate: An epidemic approach of Migration.” *Equippe*, Lille.

Niimi, Y., and Özden, C., 2006. “Migration and Remittances: Causes and Linkages”. *World Bank*, Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/8839

Niimi, Y., Ozden, C., and Schiff, M., 2010. “Remittances and the Brain Drain: Skilled Migrants Do Remit Less.” *Annals of Economics and Statistics* 97-98: 123-11

Piracha, M., and Saraogi, A., 2012. “The Determinants of Remittances: Evidence for Moldova”. *Oxford Development Study* 40:467–491

Poirine, B., 1997. “A theory of remittances as an implicit family loan arrangement”. *World Development* 25(4):589-611.

Rapoport, H., and Docquier. F., 2006. “The Economics of Migrants’ Remittances. Chapter 17 in Handbook of the Economics of Giving”. *Altruism and Reciprocity*, 2006, vol. 1, pp 1135-1198

Ratha, D., 2013. “Migration and the Post-2015 Development Agenda” *Presentation at the Graduate Institute of International Studies*, Geneva, May 30, 2013.

Regmi, G., and Tisdell. C., 2002. “Remitting Behaviour of Nepalese Rural-to-Urban Migrants: Implications for Theory and Policy”. *Journal of Development Studies* 38(3):76–94.

Rodriguez, E., and Horton. S., 1994. “International Return Migration and Remittances in the Philippines”. In D. O’Connor and L. Farsakh, eds., *Development Strategy, Employment and Migration. Country Experiences*. Paris: OECD Development Centre

Spinks, H., 2010 “Australia’ Migration Program”. Parliament of Australia. Department of Parliamentary Services. October 29.

Stark, O., and Bloom, D., 1985. “The New Economics of Labor Migration”. *American Economic Review*, 75, 173-178.

Stark, O., 1991. “The migration of labour”. Cambridge: Basic Blackwell

Taylor. J., Mora. J., Adams, R., and Alejandro, Lopez-Feldman., 2005. “Remittance, Inequality and Poverty: Evidence from Rural Mexico”. University of California, Mimeo, Davis

Van, D., Hendrik, P., Groenewold, G., and Fokkema, T., 2005. “The Effect of Remittances on Emigration Intentions in Egypt, Morocco and Turkey”. *Population Studies*. 59-3, pp. 375-392.

Vania, S B., 2014. “International Remittances and Human Capital Formation”. *World Development*, Elsevier, vol. 59(C), pages 224-237.

Wasem, R E., 2010b. “Noncitizen Eligibility for Federal Public Assistance: Policy Overview and Trends”. Washington, DC: Congressional Research Service.

Wooldridge, J. M., 2002. “Econometric Analysis of Cross Section and Panel Data”. Cambridge, MA: MIT Press, 2002.

Yang, D., and Choi, H.J., 2007. “Are Remittances Insurance? Evidence from Rainfall Shocks in the Philippines”. *The World Bank Economic Review*, Vol. 21, Issue 2, pp. 219-248, 2007

Yu, B., 2008. “Chain Migration Explained: The power of the immigration multiplier”. *LFP Scholarly Publishing*; New York.

Tables

Table 1a : Descriptive Statistics of Round 1 Data

Variables	Full Sample	Remit Status: Remitter	Remit Status: Non-Remitters	Sponsorship Status: Sponsors	Sponsorship Status: Non-Sponsors
	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)
Variable of Primary Interests					
Remittance Amount	586.46	3708.16***	0	1208.75***	511.14
	(2188.46)	(4329.73)	(-)	(3260.69)	(2008.61)
% Remitter	0.158			0.270***	0.145
	(0.365)			(0.445)	(0.352)
Control Variables					
Age	38.90	38.40	39.00	40.809**	38.672
	(13.24)	(10.18)	(13.73)	(12.71)	(13.282)
Male	0.507	0.603	0.489	0.510	0.507
	(0.500)	(0.490)	(0.500)	(0.501)	(0.500)
Married	0.559	0.657	0.541	0.544	0.561
	(0.497)	(0.475)	(0.498)	(0.499)	(0.496)
Spouse not in U.S.	0.068	0.130	0.056	0.187***	0.054
	(0.252)	(0.337)	(0.231)	(0.390)	(0.226)
Number of children	1.586	1.487	1.604	2.145***	1.518
	(1.848)	(1.549)	(1.899)	(2.031)	(1.814)
Child not in U.S.	0.122	0.201	0.108	0.290***	0.102
	(0.328)	(0.401)	(0.310)	(0.455)	(0.303)
Parent alive	0.535	0.524	0.538	0.473**	0.543
	(0.499)	(0.500)	(0.499)	(0.500)	(0.498)
Parent not in U.S.	0.378	0.419	0.370	0.290***	0.389
	(0.485)	(0.494)	(0.483)	(0.455)	(0.488)
At least one "close relative" not in the U.S.	0.500	0.623	0.476	0.585***	0.489
	(0.500)	(0.485)	(0.500)	(0.494)	(0.500)
College	0.358	0.453	0.340	0.270***	0.368
	(0.479)	(0.499)	(0.474)	(0.445)	(0.482)
Yearly salary in thousands	18.506	31.062***	16.041	13.599**	19.107
	(31.500)	(38.440)	(29.335)	(28.171)	(31.836)
Has a job	0.678	0.821	0.650	0.65	0.681
	(0.4675)	(0.384)	(0.477)	(0.478)	(0.466)
Year since migration	5.738	6.717	5.555	3.693***	5.986
	(6.928)	(7.171)	(6.868)	(5.778)	(7.016)
Childhood Family income Below average	0.269	0.292	0.265	0.324*	0.263
	(0.444)	(0.455)	(0.441)	(0.469)	(0.440)
Childhood Family income Above average	0.173	0.184	0.171	0.149	0.176
	(0.378)	(0.388)	(0.376)	(0.357)	(0.381)
Obs.	2,232	353	1,879	241	1,991

Note: We only have complete information of income for 1,950 immigrants.
Standard deviation are in parentheses.

Table 1b: Descriptive Statistics of Round 2 Data

		Remit Status		Sponsorship Status	
	Full Sample	Remitter	Non-Remitters	Sponsors	Non-Sponsors
Variables	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)	Mean (St. dev)
Variable of Primary Interests					
Remittance Amount	460.50	4568.13	0	638.38***	438.97
	(2068.80)	(4876.43)	(-)	(2316.43)	(2036.38)
% Remitter	0.101			0.145**	0.095
	(0.301)			(0.353)	(0.294)
% Sponsor	0.108	0.156**	0.103		
	(0.310)	(0.363)	(0.304)		
% citizens	0.284	0.262	0.286	0.336*	0.277
	(0.451)	(0.441)	(0.452)	(0.473)	(0.448)
Control Variables					
Age	43.15	41.16	43.37	45.08**	42.92
	(13.21)	(10.07)	(13.51)	(12.59)	(13.27)
Male	0.505	0.649	0.489	0.506	0.505
	(0.500)	(0.478)	(0.500)	(0.501)	(0.500)
Married	0.608	0.627	0.606	0.747***	0.591
	(0.488)	(0.485)	(0.489)	(0.436)	(0.492)
Spouse not in U.S.	0.071	0.129	0.064	0.299***	0.043
	(0.257)	(0.336)	(0.245)	(0.459)	(0.203)
Number of children	1.839	1.662	1.859	2.506***	1.758
	(1.909)	(1.854)	(1.914)	(2.183)	(1.858)
Child not in U.S.	0.118	0.2	0.109	0.278***	0.098
	(0.322)	(0.401)	(0.311)	(0.449)	(0.298)
Parent alive	0.624	0.631	0.623	0.585	0.628
	(0.485)	(0.484)	(0.485)	(0.494)	(0.483)
Parent not in U.S.	0.401	0.476	0.393	0.299***	0.414
	(0.490)	(0.501)	(0.489)	(0.459)	(0.493)
At least one "close relative" not in U.S.	0.523	0.649	0.509	0.656***	0.507
	(0.500)	(0.478)	(0.500)	(0.476)	(0.500)
College	0.375	0.507	0.360	0.278***	0.387
	(0.484)	(0.501)	(0.480)	(0.449)	(0.487)
Yearly salary in thousands	29.075	45.878	27.192	26.032	29.478
	(54.876)	(57.955)	(54.217)	(49.920)	(55.503)
Has a job	0.765	0.933	0.746	0.801	0.761
	(0.424)	(0.25)	(0.435)	(0.400)	(0.427)
Year since migration	9.966	8.902	10.085	8.012***	10.202
	(6.974)	(6.312)	(7.036)	(5.833)	(7.064)
Obs.	2,232	225	2,007	241	1,991

Note: We only have complete information of income for 1,667 immigrants.
Standard deviation are in parentheses.

Table 2: Mean DD Estimates for the Relation Between Sponsorship and Remittances				
	Round 1	Round 2	Difference	Diff-in-Diff
	Panel A: Propensity to remit			
Sponsor	0.270	0.145	-0.124***	-0.075***
	(0.029)	(0.023)	(0.033)	(0.030)
Non-Sponsors	0.145	0.095	-0.049***	
	(0.008)	(0.007)	(0.010)	
	Panel B: Amount remitted			
Sponsor	1208.75	638.38	-570.37**	-498.2***
	(210.04)	(149.21)	(239.00)	(192.68)
Non-Sponsors	511.14	438.97	-72.17	
	(45.02)	(45.64)	(60.48)	
Obs.	2,232	2,232	2,232	2,232

Notes: Standard errors are in parentheses.
* Significant at 10 per cent; ** Significant at 5 per cent; ***significant at 1 per cent

Table 3: First Difference Regression Estimates for the Relation Between Sponsorship and Remittances

	Full Sample		Limited sample: Intend to become U.S. citizen	
	Propensity to Remit	Amount Remitted	Propensity to Remit	Amount Remitted
Sponsorship	-0.0750**	-541.6**	-0.0736**	-539.4**
	(-2.123)	(-2.233)	(-2.000)	(-2.144)
College educated	0.0359	-152.8	0.0376	-132.5
	(0.601)	(-0.260)	(0.604)	(-0.215)
Number of children	-0.0223**	-94.36*	-0.0260**	-109.8*
	(-2.261)	(-1.763)	(-2.138)	(-1.677)
Child not in U.S.	0.148	698.7	0.211	-248.2
	(0.625)	(0.382)	(0.890)	(-0.205)
Married	-0.0410	-184.9	-0.0426	-173.2
	(-1.471)	(-1.055)	(-1.494)	(-0.958)
Spouse not in U.S.	0.0419	285.9	0.0467	249.7
	(1.088)	(1.221)	(1.174)	(1.040)
Parent alive	0.0212	-107.2	0.0271	-86.93
	(0.649)	(-0.478)	(0.799)	(-0.373)
Parent not in U.S.	0.107**	648.6*	0.123***	731.7**
	(2.572)	(1.907)	(2.884)	(2.051)
Year since migration (YSM)	0.0525	-525.1	0.0745	-365.1
	(0.590)	(-0.898)	(0.797)	(-0.597)
YSM squared	-0.00567	59.32	-0.00821	43.50
	(-0.572)	(0.921)	(-0.793)	(0.647)
Male	-0.0117	16.13	-0.0146	16.19
	(-0.631)	(0.135)	(-0.746)	(0.132)
Childhood family income	-0.0102	38.07	-0.0090	48.77
below average	(-0.439)	(0.278)	(-0.369)	(0.348)
Childhood family income	-0.01000	91.05	0.00127	139.2
above average	(-0.386)	(0.468)	(0.0466)	(0.668)
Constant	-0.137	836.2	-0.203	282.4
	(-0.669)	(0.631)	(-0.907)	(0.200)
Observations	2,232	2,232	2,069	2,069
R-squared	0.035	0.035	0.039	0.038
Source country fixed effect	YES	YES	YES	YES

Notes: Robust t statistics in parentheses

* Significant at 10 per cent; ** Significant at 5 per cent; ***significant at 1 per cent.

Table 4: Regression Estimates for the Relation Between Education and Sponsorship Behaviour

	Baseline Results		Robustness Check	Potential Explanation
	Do not control for income	Control for income	Either spouse, a child or a parent overseas	Opportunity cost of migration
College educated	-0.0179	-0.0161	-0.0153	-0.0595*
	(-1.161)	(-0.850)	(-0.773)	(-1.960)
Sponsor-able relative			0.0922***	
			(4.759)	
College * Sponsor-able			-0.0529**	
			(-2.022)	
Below				-0.0160
				(-0.548)
College * Below				0.0651
				(1.482)
Average				-0.0330
				(-1.187)
College * average				0.0483
				(1.452)
Yearly salary in thousands		9.82e-05		
		(0.730)		
Number of children	0.0225***	0.0177***	0.0203***	0.0226***
	(4.504)	(3.183)	(3.995)	(4.517)
Child not in U.S.	0.111***	0.112***		0.110***
	(4.003)	(3.554)		(3.998)
Married	0.0203	0.0238	0.0502***	0.0198
	(1.374)	(1.331)	(3.260)	(1.346)
Spouse not in U.S.	0.312***	0.310***		0.310***
	(7.553)	(6.440)		(7.510)
Parent alive	0.0414**	0.0589**	-0.0242	0.0417**
	(2.045)	(2.398)	(-1.242)	(2.064)
Parent not in U.S.	-0.0420**	-0.0515**		-0.0414**
	(-2.396)	(-2.340)		(-2.355)
Male	-0.00266	-0.00242	0.00485	-0.00212
	(-0.204)	(-0.151)	(0.354)	(-0.162)
Age	0.00485*	0.00522	0.00389	0.00479*
	(1.732)	(1.590)	(1.317)	(1.710)
Age square	-6.32e-05**	-6.33e-05**	-4.84e-05*	-6.24e-05**
	(-2.263)	(-1.974)	(-1.668)	(-2.236)
Childhood family income below average	0.0188	0.0308	0.0285*	
	(1.190)	(1.593)	(1.743)	
Childhood family income above average	0.00665	0.00505	0.0104	
	(0.394)	(0.246)	(0.589)	

YSM	-0.00355	-0.00418	-0.00422*	-0.00346
	(-1.639)	(-1.615)	(-1.898)	(-1.599)
YSM Square	3.34e-05	4.71e-05	5.37e-05	3.24e-05
	(0.762)	(0.964)	(1.190)	(0.739)
Constant	-0.0722	-0.0897	-0.0279	-0.0419
	(-0.886)	(-0.907)	(-0.362)	(-0.498)
Observations	2,232	1,667	2,232	2,232
R-squared	0.159	0.154	0.089	0.160
Source country fixed effect	Yes	Yes	Yes	Yes

Notes: Robust t statistics in parentheses
* Significant at 10 per cent; ** Significant at 5 per cent; ***significant at 1 per cent.
Below: Childhood family income below average.
Above: Childhood family income above average

Table 5: Regression Estimates for the Relation Between Education and Remittances						
	First round			Second round		
	Propensity to remit	Remittance amount	Non-zero Remittance	Propensity to remit	Remittance amount	Non-zero Remittance
	Panel A: Not controlling for income (Final Analysis Sample)					
College	0.0496**	348.76***	1,041	0.0519***	419.57***	1,749**
	(2.50)	(2.69)	(1.53)	(3.43)	(4.10)	(2.08)
Obs.	2,232	2,232	353	2,232	2,232	225
Panel B: Not Controlling for income (Limit the Sample to those with Available Income)						
College	0.0556**	345.9**	682.1	0.0630***	423.5***	1,017
	(2.570)	(2.443)	(0.923)	(3.564)	(3.350)	(0.880)
Obs.	1,950	1,950	320	1667	1667	168
	Panel C: Controlling for income					
College	0.0373*	235.1*	506.9	0.0577***	350.8***	484.6
	(1.725)	(1.694)	(0.694)	(3.279)	(2.828)	(0.459)
Obs.	1,950	1,950	320	1,667	1,667	168

Note: Robust t statistics in parentheses

* Significant at 10 per cent; ** Significant at 5 per cent; ***significant at 1 per cent

Controls: college, yearly salary in thousands, marital status, whether they have a spouse overseas, number of children, whether they have children overseas, whether they have at least one living parent, and whether the living parent is overseas, gender, age, age squared, childhood family income below average, childhood family income above average, years since migration, years since migration squared, and a full list of country dummies

Table 6: Alternative Explanations for the Relation Between Education and Remittances

	First round		Second round	
	Has U.S. education	No U.S. education	Has U.S. education	No U.S. education
	Panel A:Propensity to remit			
College	-0.0155	0.0430*	-0.0214	0.0849***
	(-0.259)	(1.840)	(-0.640)	(3.964)
Obs.	426	1,524	479	1,188
	Panel B: Amount remitted			
College	472.6	152.5	-179.1	531.3***
	(1.425)	(1.016)	(-0.687)	(3.466)
Obs.	426	1,524	479	1,188
	Entered on F1 visa	Did not enter on F1 visa	Entered on F1 visa	Did not enter on F1 visa
	Panel C: Propensity to remit			
College	-0.0274	0.0333	0.0755	0.0558***
	(-0.189)	(1.495)	(0.794)	(3.002)
Obs.	132	1,818	104	1,563
	Panel D: Amount Remitted			
College	499.6	177.4	353.3	311.0**
	(0.590)	(1.257)	(0.424)	(2.443)
Obs.	132	1,818	104	1,563

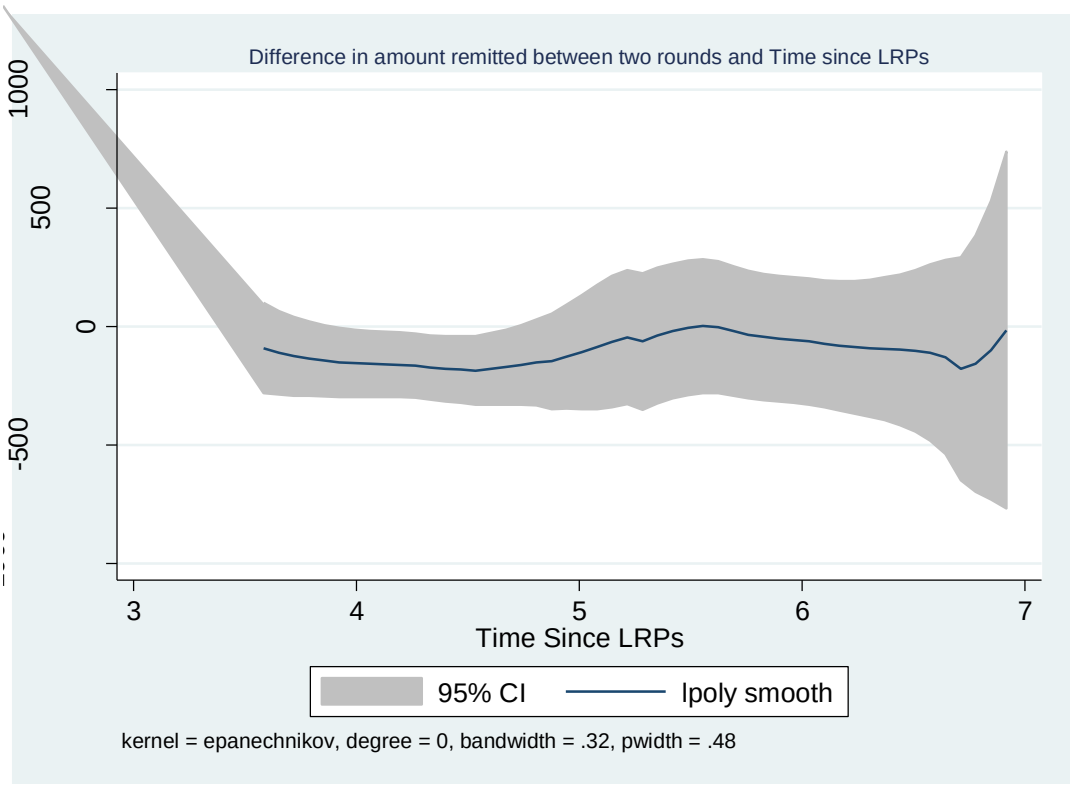
Notes: Robust t statistics in parentheses

* Significant at 10 per cent; ** Significant at 5 per cent; ***significant at 1 per cent.

Controls: college, yearly salary in thousands, marital status, whether they have a spouse overseas, number of children, whether they have children overseas, whether they have at least one living parent, and whether the living parent is overseas, gender, age, age squared, childhood family income below average, childhood family income above average, years since migration, years since migration squared, and a full list of country dummies

Figures

Figure 1: The Relation between Difference in Amout Remitted and Difference in Time Since LPR



Appendices

Appendix A1: Comparison of Our Analysis Sample with NIS Full Sample and 2003 CPS Sample

	2003 CPS (Noncitizens)	NIS (Full sample)	Our Analysis Sample
Age	38.35	39.20	38.90
Male	50.17%	48.20%	50.72%
College	19.78%	34.35%	35.75%
Married	63.75%	68.27%	55.92%
Employed	65.14%	62.83%	67.76%
Years Since Migration <10	56.55%	77.95%	77.02%
Obs.	12,429	7,903	2,232

Note: We only include non-citizen in 2003 Current Population Survey Data
Descriptive statistics for NIS was based on Round 1.

Appendix A2: Comparison of Descriptive Statistics Between NIS Full Sample and Our Analysis Sample

Variables	Full Sample Mean/ Proportion (St. Dev.)	Our Analysis Sample Mean/ Proportion (St. Dev.)
Average amount remitted	538.87	586.46
	(2132.14)	(2188.46)
% Remitter	0.1385	0.1582
	(0.3455)	(0.3650)
Age	39.48	38.90
	(13.79)	(13.24)
Male	0.52	0.51
	(0.50)	(0.50)
Married	0.60	0.56
	(0.49)	(0.50)
Spouse not in U.S.	0.07	0.07
	(0.25)	(0.25)
Number of children	1.72	1.59
	(2.07)	(1.85)
Child not in U.S.	0.12	0.1502
	(0.33)	(0.33)
Parent alive	0.53	0.54
	(0.50)	(0.50)
Parent not in U.S.	0.38	0.38
	(0.49)	(0.49)
At least one “close relative”	0.51	0.50
not in U.S.	(0.50)	(0.50)
College	0.35	0.36
	(0.48)	(0.48)
Yearly salary(in $1000)	26.54	18.51
	(54.20)	(31.50)
% Working	0.65	0.68
	(0.48)	(0.47)
Year since migration	5.746	5.74
	(7.102)	(6.93)
Childhood Family income	0.271	0.27
Below average	(0.444)	(0.44)
Childhood Family income	0.183	0.17
Above average	(0.386)	(0.38)
Obs.	6,332	2,232

Note: Standard deviations are in parentheses.
Number of observations for income of NIS full sample is 2,446