BANKING ON REMITTANCES:
AN ANALYSIS OF MEXICAN MIGRANTS’ BANKING AND REMITTANCE SENDING BEHAVIOR
IN THE UNITED STATES

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By

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ABSTRACT

It is widely held that formal banking offers many benefits for account holders. For migrants, the relationship between banking status and remittance sending is further assumed to be positive. In this analysis of Mexican migrants’ banking and remittance sending behavior in the United States, it is observed that migrants with bank accounts are likely to remit less frequently than migrants without accounts. This finding appears to contradict the optimistic idea that having a bank account would contribute to more frequent remittance sending; income smoothing benefits for remittance receivers in Mexico; and personal finance benefits for both the sender and receiver associated with the financial institution. The study concludes that while remittance sending through U.S. banks holds tremendous promise for delivering the aforementioned benefits, banks are failing to deliver competitive offerings to customers that would promote sending through their channels. A second model finds that unbanked Mexican migrants who desire to open a bank account are likely to remit more frequently than unbanked migrants not interested in opening a bank account, confirming that there is a large market of remittance senders interested in the formal financial system, but yet to be tapped by U.S. banks.
I would like to thank Dr. Gillette Hall, my dedicated thesis advisor who created a wonderful environment in which to write; my peer reviewers for their support and constructive comments – Dr. Rebecca Johnson, Hilary Haycock and Igor Kheyfets; my entire workshop for their feedback along the way – Maria Baldauf, Renato Busquets, Renzo de la Riva Agüero, Katherine Douglas, Jennifer Hoeg and Pavan Jagalur; and the Pew Hispanic Center for its insightful survey data. Finally, this thesis is dedicated to Matt, my parents and the Mexican migrants of California’s San Joaquin Valley.
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I. INTRODUCTION

Mexican migrants and macroeconomics

Mexican migrants living in the United States are a vulnerable population because many have low incomes and insecure immigration status (Benavides 2002). At the same time, this population has the power to affect economic growth, poverty levels and financing structures in two countries and for this, policymakers should take note.

Migrants send large amounts of money back to households in Mexico, more than $25 billion in 2008, which are estimated to have a significant impact on incomes and poverty in Mexico (Banco de México 2009; Fajnzylber and López 2008; Bouquet 2005; Durand, Parrado and Massey 1996). These payments, called remittances, are the second largest source of income for the country as a whole, nearly 2 percent of GDP. Overall, Mexico is the third-largest recipient of remittances in the world after India ($45 billion in 2008) and China ($35 billion in 2008) (Ratha 2009). Increasingly, the Mexican government, international organizations and NGOs are looking to leverage remittances for broader development goals that extend beyond the households receiving payments (de Graauw, Els 2005; Gonzalez 1999; Durand, Parrado and Massey 1996; Durand et al. 1996; Ascencio 1993). Aside from the importance of remittance quantities, the frequency of remittance sending appears to have a critical
role promoting income and consumption-smoothing for families receiving the transfers (Morduch 1995).

However, this is a challenging time for Mexico. For the first time ever, annual remittances decreased 3.6 percent in 2008 from $26 billion in 2007 and payments became less frequent (Banco de México 2009; Ratha 2009). While this is a symptom of the financial crisis all countries are experiencing, the impact is intensified for Mexico because of the significant share of GDP that remittances represent. And since remittances are an income-stabilizing factor for many Mexicans, especially the poor, it is in Mexico’s best interest to prevent dwindling of these flows.

In the U.S., Mexican migrants are an important component of the labor market. Migrant workers comprise a significant proportion of the agricultural, textile and construction industries – a pool of cheap labor that the U.S. reluctantly depends upon to keep prices low and growth steady in these sectors (Durand and Massey 1992). California, as one example, experienced the greatest economic growth in sectors with the highest concentration of migrants (high- and low-skilled) during the 1980s and 1990s (Hanson et al. 2001). There is always concern regarding the costs of receiving migrants, however most researchers now agree that skilled migrants pay more in taxes than what they receive from U.S. entitlement programs and the fiscal costs of unskilled migrants, if any, are limited to one generation (Borjas 1994). As remittances add up to
billions of dollars moving across borders annually, struggling U.S. banks would like to have them flowing through formal channels, making Mexican migrants important customers or potential customers for the banking industry (Sana 2008; Suro and Bendixen 2002; Hanson et al. 2001).

Whatever policy disputes may exist surrounding this population, the bridge of common interest between Mexico and the United States lies in the financial stability of Mexican migrants living in the U.S. and their ability to save and remit using safe, affordable instruments.
II. LITERATURE REVIEW

Economics is one of the key drivers of migration to the U.S. While migrants do move to escape persecution or simply join family members, many more come for the opportunity to work and earn a better quality of life (Durand and Massey 1992). Because of its proximity and the income differential between the two countries, Mexico has historically been the largest source of economic migrants to the U.S. In 2000, there were 10 million Mexicans living in the U.S. – by far, the largest of any foreign-born population (Fajnzylber and López 2008).

When they arrive in the U.S., Mexican migrants become a vital part of the American labor market, earning better wages and thereby achieving the goal of migration by sending remittances back to Mexico. As mentioned above, these remittances are a crucial safety net for Mexico, as for many developing countries, where markets are often characterized by extreme volatility (“Task Force on Remittances” 2004).

Micro-level benefits of remittances

Although remittances do end up having significant macro-economic impacts, the intention behind the payments is usually focused on the micro-level needs of households in Mexico. Migrants remit money for a variety of reasons, usually to support families’ household expenditures: home construction, health care, vehicles,
weddings, electronics, or monthly bills (“Task Force on Remittances” 2004, Reichert 1981). Migration, and then the remittances that follow, are part of a strategy families use to smooth income, accumulating savings for consumption or investment and preventing the need to borrow in the event of an income shock (Massey, Durand and Malone 2003).

Remittances are also sent because they allow the sender to maintain a connection with his or her homeland. The strand of literature examining these transnational connections shows that remittances strengthen ties between families across borders and allow the emigrant to make investments within his or her community (Shain 1999). The Mexican government has tried to encourage the growing trend in the U.S. of bundling remittances for the specific purpose of community development in Mexico. In 1999, the Mexican government started the ‘3x1 program,’ matching collective remittances sent by migrant community organizations in the U.S., called Hometown Associations, threefold. It is clear this path has tremendous development potential for Mexico; however, the vast majority of remittances are still sent from family to family (Goldring 2002).

**Determinants of remittance sending**

Because of the many benefits of remittances, a great deal of academic research has sought to reveal factors that encourage or discourage remitting. Research has
consistently shown a statistically significant negative relationship between both aging and time in the U.S. and remittance sending (Cortes 1998; Pérez-López and Díaz-Briquets 1998). This indicates that all else equal, Mexican migrants are less likely to remit the older they are and the longer they live in the U.S. Significant positive effects are found for male migrants with spouses or children still in Mexico (Sana 2008; Massey 1986).

**Remittances and the banking system**

While remitting has many positive effects, these are mitigated when remitters have to adjust the amount sent depending on the costs of the actual transfer. Unfavorable currency conversions and fees at the sending and receiving ends can significantly shrink a sum sent home.

Most often remitters send money through wire transfer companies like Western Union or MoneyGram, followed by international money order businesses, the U.S. Post Office, formal banking/financial institutions and finally by informal transfer through couriers or friends (Lowell and de la Garza 2000). However, eight wire transfer companies control the vast majority of the U.S.-Mexico remittance corridor, holding 5 to 15 percent of the market each: Western Union, Dolex, Vigo, MoneyGram, Sigue, Ria Envia, Orlandi Valuta and Mexico Express (Orozco 2004).
Rerenting with a wire transfer company has gotten less expensive over the years as competition in the market has increased (Hernández-Coss 2005). The average fee for sending remittances has stabilized over the past few years at the numbers seen in Table 1; however the difference in fees between wire transfer companies remains substantial because of lack of centrality in the market and the problem of imperfect information for consumers (Andreassen 2006). Remittance senders choose a method of remittance based on convenience. Shopping around for the lowest rate on a given day is infrequent and impractical given the time constraints working migrants face (Amuedo-Dorantes and Pozo 2004).

<table>
<thead>
<tr>
<th>Amount of remittance</th>
<th>Wire transfer company average fee</th>
<th>Average difference in fees between wire transfer companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$100</td>
<td>9.1%</td>
<td>3.2 percentage points</td>
</tr>
<tr>
<td>US$200</td>
<td>5.5%</td>
<td>2.4 percentage points</td>
</tr>
<tr>
<td>US$500</td>
<td>3.3%</td>
<td>1.9 percentage points</td>
</tr>
<tr>
<td>US$1000</td>
<td>2.1%</td>
<td>1.8 percentage points</td>
</tr>
</tbody>
</table>

(Andreassen 2006)

Pew Hispanic Center research has concluded if a larger share of migrants began making formal remittance transfers through U.S. banks, which currently have only 3 percent of the remittance sending market, it would increase competition and lead to lower fees and more efficiency in the system (Suro and Bendixen 2002). However, it
also notes that a large move by remittance senders into the banking system would only be possible if banks could match or better the services and convenience currently offered by wire transfer companies. A comprehensive report on the remittance transfer services between the U.S. and Latin America, based on interviews with 84 companies, found that banks’ rates do not differ in any significant way from wire transfer companies’ (Orozco 2004).

So why do banks hold potential for lowering costs in the U.S.-Mexico remittance corridor? Banks have a much greater financial and technological capacity than wire transfer companies (Bouquet 2005). Several U.S. banks have also developed partnerships with Mexican banks to make transfers more efficient for senders and receivers. Wells Fargo and BBVA Bancomer, for example, started such a partnership and in turn, the cost for sending a $360 remittance dropped from $50 in 1995 to $10 in 2003 (BBVA Bancomer 2004). Another advance which is intended to bring more banks into the remittance market is the U.S. Federal Reserve’s Mexico automated clearinghouse (ACH) system. Created in 2002, ACH allows money from any bank or credit union in the U.S. to be wired to Mexico through a connection developed between the Federal Reserve and the Central Bank of Mexico. In 2005, the program was rebranded and called Directo a México, offering financial institutions customizable Spanish-language promotional materials and financial literacy
information for customers (Orozco 2004). Finally, though still in early stages, the innovation with the most potential for dramatically reducing the cost of sending remittances is a bank account accessible by ATM in both Mexico and the U.S. Several banks now offer this possibility and it reduces the transfer cost to a 1.5 percent withdrawal fee in Mexico (Andreassen 2006).

**Mexican migrants and banks**

Mexican migrants living in the U.S. – managing their own household finances and sending remittances – face the invariable challenges that working class and poor families have limited access to financial markets. In the U.S., Latino families, regardless of immigration status, are the least likely of all Americans to own a home, have employer-provided pension coverage, and save or invest in the stock market (Yzaguirre 2002). For these reasons, Mexican migrants represent a financially vulnerable population, with undocumented individuals more at risk because of their lower wages and English language skills (Morduch 1994).

All Mexican migrants in the U.S., including undocumented individuals, have financial instruments available to them with the use of a *matrícula consular*. Access to these instruments allows migrants to cash paychecks, save, establish a credit history,

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1 The *matrícula consular* is an identification card issued by Mexican consulate offices to Mexican citizens living abroad. Beginning in 2002, several large U.S. banks began accepting the *matrícula* as satisfactory identification to do banking and open accounts. In the U.S., a small group of states accept the card as official identification.
plan expenses, and take out loans for investment or emergencies. This is crucial to lifting households out of poverty and creating a buffer in the event of future income shocks (Bouquet 2005). But while migrants would benefit tremendously from links to formal financial services, it is challenging to reach this population and communicate the importance of these services (Suro and Bendixen 2002). Migrants are wary of U.S. banks because of long-ingrained habits of managing money informally, lack of knowledge and fear of being deported by exposing one’s finances in a formal setting (Lowell and de la Garza 2000).

A clear way to integrate migrants into the formal financial system is through transactions they are already completing, such as remittance sending. Of remittance senders to Mexico, only 24.8 percent have a bank account (Orozco 2004). Amuedo-Dorantes and Pozo (2004) found that remitters select a method of remitting based primarily on the proximity of the transfer agency and the speed with which the money arrives. These convenience-centric criteria suggest that if a financial institution were to offer a competitive remittance fee structure, it might be more ‘convenient’ for remitters to use its services rather than another route.

The current gap between the large remittance market and the amount of people connected to financial institutions represents a tremendous opportunity for government, banks or civil society to step in and create more opportunities for
During 2002, U.S. President Bush and Mexican President Fox worked jointly on a program called Partnership for Prosperity, which incentivized public-private partnerships, innovative financial instruments in the banking sector and lowered the cost of sending money home (Yzaguirre 2002). Later that year, Assistant Treasury Secretary for Financial Institutions, Sheila C. Bair, expressed the agency’s “support for efforts that expand the availability and affordability of remittances to Latin America” and that bring historically unbanked groups into the system (U.S. Treasury 2003). However, when President Fox left office and other concerns arose as U.S. policy priorities, the program was neglected.

**Bank accounts and the frequency of remittances**

While most studies have focused on determinants of remittance quantities, the related issue of remittance frequency has remained largely unexplored. More frequent sending (independent of the amount) has been shown to have income smoothing effects for the receiving household, lowering the risk of income shocks (Morduch 1995). Many families receiving remittances in Mexico face poverty vulnerability, which means they are at greater risk of becoming poorer when they face harmful events such as an illness or job loss that lead to a sudden drop in income (Morduch 1994). There is reason to believe that more frequent remitting can help families on
both sides of the remittance corridor to manage money more effectively and plan for expenses and emergencies.

Research has established that greater bank involvement in the remittance market increases competition, which reduces costs and offers ancillary benefits to bank accounts holders on both sides of the border. However, no quantitative work has examined whether a Mexican migrant’s connection to a bank increases the actual frequency of remittances he/she sends.

This paper will explore the question of whether Mexican migrants’ links to banks facilitate more frequent remittance sending; as well as whether among the unbanked, frequent remitting is associated with a stronger desire for banking access; and discuss the policy implications related to the answers.
III. CONCEPTUAL FRAMEWORK AND HYPOTHESIS

Two conflicting views exist on the relationship between formal banking and the frequency of migrant remitting. Theory suggests that having a bank account is associated with familiarity and comfort with U.S. institutions, which may in turn be associated with greater length of time in the U.S. and therefore lower frequencies of remittance sending. However, if remitting from a bank adds convenience, because migrants are already managing money and cashing paychecks there, it is possible remittance frequency would increase for bank account holders.

*Hypothesis 1*: Mexican migrants with bank accounts in a U.S. banking institution will send remittances more frequently than those without accounts.

The estimation framework of this study will analyze the *frequency of remittance sending* as a function of whether a migrant *has a bank account*, while holding other exogenous characteristics of the individual constant. If Hypothesis 1 proves to be true, a strong case should be made for policies that connect migrants to bank accounts because it would not only aid money management in the U.S., but also facilitate more frequent remittance sending, which smoothes income for Mexican remittance receivers and aids development in Mexico. Because most migrant remitters do not have bank accounts, this relationship has not yet been adequately examined.
Hypothesis 2: Among Mexican migrants who do not have U.S. bank accounts, an individual who wants to open an account will remit more frequently than one who does not desire an account with a U.S. bank.

In order to determine what, if any, unmeasured motivational characteristics affected the direction of the first relationship hypothesized, a second hypothesis will be examined, evaluating whether the desire to open a bank account (though the migrant does not yet have one), affects the frequency of remittances sent, holding other factors constant. One would expect a younger population of more recent migrants not to have bank accounts but be interested in opening them, given the wide acceptance of the matrícula consular at banks today. Theory also suggests that a younger, recently migrated population would also be more frequent remittance senders. If, in fact, migrants who desire to open a bank account are associated with higher frequencies of remittance sending, the direction of the first hypothesized relationship can be interpreted in light of this omitted variable bias.
IV. DATA AND METHODS

Data

This research uses individual level data from the Survey of Mexican Migrants (SMM), conducted by the Pew Hispanic Center from July 12, 2004 to January 28, 2005 at Mexican consulates in Dallas, Raleigh, Atlanta, Chicago, Los Angeles, Fresno and New York. The SMM collected responses from 4,836 Mexican adults who completed 12-page questionnaire describing their demographic information, work experiences, financial decisions and attitudes about medical care and social communications. For each location, data collection was conducted over five to 10 business days, depending on the size of city.

The sample was taken from adults applying for a *matrícula consular* identity card in the consulates (described in greater detail below). This process is completed in several locations within the consulate offices and takes 20 minutes to four hours depending on the conditions at the consulate. Prospective participants were asked if they were applying for the *matrícula consular* on that day and only those who responded affirmatively were included in the data.

Potential respondents were informed of the opportunity to participate in the survey with public announcements. If they expressed interest in completing the survey, they received a verbal explanation of the process and assurance of anonymity.
and confidentiality procedures. Prospective respondents were also informed they would receive a phone card to telephone Mexico as a thank-you for their time. During the informational phase, it was made clear to potential respondents that the questionnaire was unrelated to the work of the consulate and their answers would not affect their process of application.

Participants had the option to self-administer the survey or have an interviewer read out questions and take down answers; literacy was not a prerequisite to participate. Participants either filled out the survey using a clipboard and pencil or were interviewed as they waited in line. When the survey was returned to the interviewer, it was checked for completion. Participants were able to skip questions, however if the participant stopped answering questions at any point, an effort was made to have the participant complete the remainder with an interviewer reading the rest. If the participant preferred not to complete the survey, it was marked incomplete.

Data issues

The matrícula consular is an identity document issued by Mexican diplomatic missions, which several states, municipalities, and businesses accept as an official form of identification in the U.S. The document does not indicate immigration status, only that the holder is a Mexican citizen. The U.S. Treasury has given banks approval to accept the matrícula consular as identification to open an account.
Because of the nature of the *matricula consular*, it can be assumed that a high proportion of survey respondents are undocumented and recent migrants. Research indicates that this population of undocumented migrants is more likely to remit because they have come to the U.S. with the purpose of earning money in the short-term (Durand and Massey 1992). It is also a good sample to examine a high concentration of remittance senders. These results still have external validity. If undocumented migrants with bank accounts are shown to remit more frequently than undocumented migrants without accounts, there is no reason to believe this effect would be different for migrants with legal status, given the effect is likely related to cost and convenience, which would be the same for both groups.

One challenge of this data might be that undocumented migrants are less likely, in general, to be connected to a financial institution because fear of deportation makes them reluctant to expose themselves to a U.S. institution. However, my second hypothesis, testing the effects of *wanting to open a bank account* should capture this omitted variable bias and should aid in interpreting the results for the greater population.

Finally, the relationship between bank account and quantity of remittances is an additional area of interest. This particular survey is limited in the information it provides on amounts of remittances because they are reported in ranges rather than
exact values. However, it is one of the only sources for data on both documented and undocumented immigrants, providing a host of valuable, detailed information on remittance patterns, banking statuses and other important household characteristics. While this study will focus on the determinants remittance frequency, further research should examine the relationship between banking status and quantity of remittances.

**Analysis plan**

The population for analysis includes all respondents to the SSM with one exception. Observations for people who did not know or did not answer the frequency with which they sent money to Mexico were excluded. To clarify, it is perfectly acceptable if respondents did not remit at all, but people who did not know or did not answer could not have a dependent variable value defined, which is essential to run a probability model. Once observations with missing values for other independent variables were also dropped from the sample, 2,509 individual-level observations remained for analysis. No significant differences were found in the descriptive statistics of the omitted population as compared to the study sample.

The present study conducts a multivariate analysis using *frequency of remittance sending* as the dependent variable. In order to show variation in remittance sending behavior, the dependent variable has three possible values. People who did not remit were coded 0. People who remitted one to 12 times annually were grouped
as infrequent to average remitters and coded 1. People who remitted two or more times a month were labeled frequent remitters and coded 2 (see Table 5).

Since the dependent variable is categorized in ordinal responses, an ordered logistic regression model is estimated, which predicts the cumulative probabilities of different frequencies of remittance sending (never, infrequent to average and frequent). If the models were to be estimated using Ordinary Least Squares, there would be significant problems with heteroskedasticity and predicted probabilities outside the unit interval. For this reason, the ordered logistic technique is used. A positive and significant coefficient on any of the covariates indicates a higher probability of remitting more frequently and a negative and significant coefficient indicates a higher probability of remitting less frequently.

The ordered logistic model is a variation on the ordered probit model, first used in the field of biostatistics (Aitchison and Silvey 1957). Just like logit models for binary dependent variable data, the model seeks to capture how changes in the independent variables affect the probability of observing a particular ordinal outcome. The process slightly more complex than a binary response model, but still estimated by maximum likelihood (MLE). Other research in the field of immigration and social behavior has employed this technique, notably the work of Itzigsohn and Saucedo,
which predicted probabilities of three different degrees of transnational linkages for
migrants from various Latin American countries (2002).

In the present study, the dependent variable $y$ is an ordered response taking on
the values \{0, 1, 2\}. The ordered logistic model for $y$ (conditional on explanatory
variables $x$) can be derived from a latent variable model:

$$y_i^* = x_i'\beta + u_i,$$

where $x_i$ and $\beta$ are vectors of explanatory variables and coefficients and $u_i$ is a random
error term that has a logistic distribution. Another feature of the ordered logistic
regression is the cut points or threshold points reported, which define the range of
responses to the dependent variable. Let $\alpha_1$ and $\alpha_2$ be the two cut points separating the
three possible responses in the present study:

- $y = 0$ if $y^* \leq \alpha_1$
- $y = 1$ if $\alpha_1 \leq y^* \leq \alpha_2$
- $y = 2$ if $y^* > \alpha_2$

\[
\frac{\partial p_0(x)}{\partial x_i} = -\beta_i \Lambda(\alpha_1 - x\beta)
\]
\[
\frac{\partial p_1(x)}{\partial x_i} = \beta_i [\Lambda(a_0 - x\beta) - \Lambda(a_1 - x\beta)]
\]
\[
\frac{\partial p_2(x)}{\partial x_i} = \beta_i \Lambda(\alpha_2 - x\beta)
\]

The explanatory variables ($x_i$) of interest in this study are a set of dummy
variables indicating possession of and interest in a U.S. bank account. This set of
variables was created by integrating migrants’ responses to the survey question: ‘Do
you have a bank account in the US?’ and the question: ‘How do you want to use your *matrícula consular*? – To open a bank account’ (Table 2).

**Table 2**

**DEFINITIONS FOR CREATION OF BANK SET OF DUMMY VARIABLES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Distribution of cases across categories</th>
<th>Number of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANK</td>
<td>=1 if Want a bank account but don’t have one. (BANKWANT=1)</td>
<td>30.09%</td>
<td>755</td>
</tr>
<tr>
<td></td>
<td>=2 if Don’t want a bank account and don’t have (BANKNOWANT=1)</td>
<td>34.32%</td>
<td>861</td>
</tr>
<tr>
<td></td>
<td>=3 if Have a bank account (BANKYES=1)</td>
<td>35.59%</td>
<td>893</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100.00%</td>
<td>2509</td>
</tr>
</tbody>
</table>

**Table 2.1**

**BANK DUMMIES IN THREE CATEGORIES (MODEL A)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANKWANT = 1</td>
<td>755</td>
</tr>
<tr>
<td>BANKNOWANT = 1</td>
<td>861</td>
</tr>
<tr>
<td>BANKYES = 1</td>
<td>893</td>
</tr>
</tbody>
</table>

**Table 2.2**

**BANK DUMMIES AS BINOMIAL CATEGORIES (MODEL B)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANKNO=1</td>
<td>1616</td>
</tr>
<tr>
<td>BANKSI=1</td>
<td>893</td>
</tr>
</tbody>
</table>

Two regression models are run to isolate and analyze the effects of different possible relationships with banks. The other explanatory variables in Model A and Model B are as follows:
Model A: Independent variables ($x_i$)

- Bank set of dummies
  - Has bank account
  - Wants bank account, but does not have bank account (Base: Does not want account)
- Male
- Age
- Own land, real estate or business in Mex.
- Number of children
- Spouse in Mexico
- Months in the US
- Months x Wants bank account

Model B: Independent variables ($x_i$)

- Bank dummy
  - Has bank account
  - (Base: Does not have account)
- Male
- Age
- Own land, real estate or business in Mex.
- Number of children
- Spouse in Mexico
- Months in the US
- Months x Has bank account

The first model examines the relationship of two variables of interest to the frequency of remittance sending: *having a bank account* and *wanting a bank account* (but not yet having one). It also controls for other variables known to be determinants of remittance sending from previous studies and described at greater length below. The second model focuses more narrowly on the relationship between *having a bank account* and the *frequency of remittance sending*. In this second case, the base category for the binary variable of interest is simply *not having a bank account* – it is not divided at all based on desire for an account, as it was in the first model (Tables 2.1 and 2.2). The demographic control variables are the same for both models.

Both models contain an interaction term indicating that the effect of *length of time in the U.S.* on *frequency of remittance sending* is different for differences in banking status. The interaction term was created using a centered value (the mean) for
length of time in the US. The interaction terms were included after conducting tests of joint significance on respondent’s length of time in the U.S. and desire to open a bank account in Model A (p<0.0001) and length of time in the U.S. and having a bank account in Model B (p<0.0001).

The other demographic control variables (male; age; own land/real estate/business in Mexico; children; spouse in Mexico; months in the U.S) were selected because of their significance in prior research (Sanat 2008; DeSipio 2000; Cortes 1998; Pérez-López and Díaz-Briquets 1998; Massey 1986). Consistent with the previous findings, it is expected that age and months in the U.S. have significant negative relationships with the predicted frequency of remittances, while male, own land/real estate/business in Mexico, children and spouse in Mexico will likely have significant positive relationships with the predicted frequency of remittances.
V. RESULTS

Descriptive statistics

The 2,509 respondents analyzed in the present study prove to be a young and recently arrived segment of the Mexican-born population in the U.S. The mean age of the population sample is 33 years and 32 percent have been in the U.S. less than five years. The descriptive statistics show that 38 percent own either land, real estate or a business in Mexico and 14 percent have a spouse living in Mexico. All of these factors likely contribute to the large percentage (84 percent) of the population that reports sending remittances at least once annually. It does prove to be an ideal sample to observe a high concentration of remittance senders. Approximately 36 percent of the sample currently has a bank account, but only 12 percent of remittance senders report sending through the bank. This is slightly higher proportion than the figure in a 2004 Pew Hispanic Center report on the remittance marketplace, which estimated banks had captured only 3 percent of the market share on the sending end of the remittance corridor. The full descriptive statistics are found in Table 3.
TABLE 3
DESCRIPTIVE STATISTICS FOR VARIABLES USED IN THE ANALYSIS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>%</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Banking status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has a bank account</td>
<td>893</td>
<td>35.59%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wants a bank account and does not have</td>
<td>755</td>
<td>30.09%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does not have a bank account and does not want</td>
<td>861</td>
<td>34.32%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1461</td>
<td>58.23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>2509</td>
<td>33.48</td>
<td>10.39</td>
<td>13</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Owns land, real estate or business in Mexico</td>
<td>952</td>
<td>37.94%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of children</td>
<td>2509</td>
<td>2.18</td>
<td>1.59</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Spouse lives in Mexico</td>
<td>369</td>
<td>14.71%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of months in the US</td>
<td>2509</td>
<td>128.95</td>
<td>105.20</td>
<td>0</td>
<td>839</td>
<td></td>
</tr>
<tr>
<td><strong>Remittance related variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sends remittances</td>
<td>2106</td>
<td>83.94%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Method of remittance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire transfer company</td>
<td>1554</td>
<td>72.55%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank</td>
<td>248</td>
<td>11.58%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send with a friend</td>
<td>181</td>
<td>8.45%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATM</td>
<td>59</td>
<td>2.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash CD</td>
<td>35</td>
<td>1.63%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit union</td>
<td>33</td>
<td>1.54%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mail</td>
<td>32</td>
<td>1.49%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

One group of interest was individuals who responded that they wanted a bank account (and did not have one). Suspecting that this might be a more recently arrived subsection of the sample, and that this might affect the interpretation of the coefficient in a regression, an analysis of this variable in particular was taken, cross-tabulating it with number of years in the U.S. Forty-one percent of respondents who desired to open a bank account had been in the U.S. less than five years, which is a slightly
higher proportion than the 32 percent who have been in the U.S. less than five years in the general sample. Another 30 percent of respondents who desired to open a bank account had been in the U.S. for six to 10 years. The other 29 percent of respondents interested in opening a bank account had been in the U.S. for over ten years.

**Regression results**

In interpreting ordered logistic regression, the coefficient $\beta$, in and of itself, is of limited interest. The estimated probability of $y^*$ given $x$ is an abstract construct $[E(y^* | x) = \beta x]$. Instead, the estimated response probabilities are more interesting to examine $[P(y = j | x)]$ because they indicate the proportion of predicted outcomes in the empirical simulation. Table 4 presents the regression results for both Model A and Model B. Tables 6 and 7 present the response probabilities for various values of the independent variable of interest.

The results for the control variables in the models are largely consistent with the literature on determinants of remittances. Among the control variables, only one was negative and statistically significant, indicating *length of time in U.S.* is associated with lower frequencies of remittances. *Age* proved not to be a significant predictor of probability of frequency of remittances. Positive and statistically significant variables indicating an association with higher frequencies of remittances included: *male*;
owning land, real estate or a business in Mexico; number of children; and spouse living in Mexico.

The main variable of interest, has a bank account, has a coefficient that is statistically significant (p<.10) and negative in Model A. However, the effect is magnified in Model B where the banking variables are divided in a straightforward binary fashion (has bank account / does not have bank account). In Model B, the coefficient on has a bank account is negative and highly statistically significant (p<.001) indicating that having a bank account is associated with lower frequencies of remitting compared to those who do not have a bank account. This finding is contrary to the first hypothesis of the study.

The second variable of interest, wants a bank account, has a coefficient that is positive and statistically significant (p<.05), in Model A, indicating that wanting a bank account is associated with higher frequencies of remitting compared to those who do not want a bank account. This confirms the second hypothesis of the study. While this finding is interesting in and of itself (see Discussion), it is also illuminating if wants a bank account is viewed as capturing the level of a migrants’ motivation or comfort with U.S. institutions, which is omitted in Model B, where the focus is the effect of has a bank account. This ‘motivation/comfort’ would be positively correlated with has a bank account and is positively correlated with the frequency of remittance
sending, as seen by its positive effect in Model A. Therefore, not capturing ‘motivation/comfort’ means a positive bias can be assumed for the coefficient on has a bank account in both models. Since the coefficient on has a bank account is negative in both cases, one can assume its effect is even more negative if you consider the omitted variable bias.

Among the reported response probabilities, the noteworthy results are seen in Table 6, where it is shown that the probability of being a frequent remittance sender is higher for those respondents who want a bank account than those that have one. It is estimated that 27 percent of people who want a bank account are frequent remitters, while only 22 percent of bank account holders fall into the same category. Also, the probability of not remitting at all is higher for respondents with a bank account (14 percent) than those who do not have a bank account but desire one (11 percent).

It should be noted that the interaction terms present in the models also affect the interpretation of the binary variables of interest. The value of the coefficient on wanting a bank account (or having a bank account, depending on model) indicates the effect of wanting a bank account when a respondent has stayed the average length of time in the US. Also, the unique effect of length of time in the U.S. on frequency of remittance sending is not limited to the coefficient on length of time in the US, but also
depends on the values of the coefficient on the interaction term and on the corresponding banking status binary variable.

The interaction variables are important to interpret because they show that the impact of banking status on frequency of remittance sending is moderated by length of time in the U.S. (Banking status is associated with length of time in the U.S. and length of time in the U.S. affects frequency of remittance sending.)

In Model A, the interaction between length of time in the U.S. and wanting a bank account is negative and significant (p<.10). In Model B, the interaction between length of time in the U.S. and having a bank account is positive and marginally significant (p<.15). In other words, there are different slopes for the regression lines between frequency of remittances and length of time in the U.S. One is less steep if respondents have a bank account, indicating that the negative effect of length of time in the U.S. on remittance sending is slightly lessened if respondents have a bank account. The slope is steeper if respondents want a bank account, indicating the negative effect of length of time in the U.S. on remittance sending is increased if respondents want a bank account.
### Table 4
**Ordered logistic model estimated for frequency of remittances to Mexico, N=2509**

<table>
<thead>
<tr>
<th>Variables of interest</th>
<th>( \hat{\beta} ) (Model A)</th>
<th>( \hat{\beta} ) (Model B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a bank account</td>
<td>-0.1765 (0.1059)*</td>
<td>-0.3014 (0.0978)**</td>
</tr>
<tr>
<td>Wants a bank account and does not have</td>
<td>0.2144 (0.1041)**</td>
<td></td>
</tr>
<tr>
<td>Demographic variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.6436 (0.0888)**</td>
<td>0.6303 (0.0885)**</td>
</tr>
<tr>
<td>Age</td>
<td>-0.0070 (0.0055)</td>
<td>-0.0067 (0.0055)</td>
</tr>
<tr>
<td>Owns land, real estate or business in Mexico</td>
<td>0.5254 (0.0879)**</td>
<td>0.5286 (0.0885)**</td>
</tr>
<tr>
<td>Number of children</td>
<td>0.0893 (0.0316)**</td>
<td>0.0912 (0.0318)**</td>
</tr>
<tr>
<td>Spouse lives in Mexico</td>
<td>1.5190 (0.1298)**</td>
<td>1.5093 (0.1293)**</td>
</tr>
<tr>
<td>Number of months in the U.S.</td>
<td>-0.0029 (0.0005)**</td>
<td>-0.0040 (0.0007)**</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction between months in U.S. and <em>having</em> a bank account</td>
<td>0.00132 (0.0009)*</td>
<td></td>
</tr>
<tr>
<td>Interaction between months in U.S. and <em>wanting</em> a bank account</td>
<td>-0.0019 (0.0011)*</td>
<td></td>
</tr>
<tr>
<td>Pseudo ( R^2 )</td>
<td>0.1058 (0.1045)</td>
<td></td>
</tr>
<tr>
<td>LR Chi(2)</td>
<td>513.18***</td>
<td>506.74***</td>
</tr>
<tr>
<td>/cut 1</td>
<td>-1.5254 (1.5580)</td>
<td>-1.7344 (1.3428)</td>
</tr>
<tr>
<td>/cut 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- *Marginally significant at the 15% level*
- *Statistically significant at the 10% level*
- **Statistically significant at the 5% level**
- ***Statistically significant at the 1% level***
### Table 5: Response Profile for Ordered Dependent Variable

<table>
<thead>
<tr>
<th>Variable options</th>
<th>Total frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does not remit</td>
<td>403</td>
</tr>
<tr>
<td>Infrequent to average remitter</td>
<td>1433</td>
</tr>
<tr>
<td>(One to 12 times annually)</td>
<td></td>
</tr>
<tr>
<td>Frequent remitter</td>
<td>673</td>
</tr>
<tr>
<td>(Two or more times a month)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2509</td>
</tr>
</tbody>
</table>

### Table 6: Model A: Predicted Probabilities by Interest in Bank Account

<table>
<thead>
<tr>
<th>Has a bank account</th>
<th>Does not remit</th>
<th>Infrequent to average remitter (One to 12 times annually)</th>
<th>Frequent remitter (Two or more times a month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1411</td>
<td>0.6409</td>
<td>0.2180</td>
</tr>
<tr>
<td>Wants a bank account and does not have</td>
<td>0.1121</td>
<td>0.6217</td>
<td>0.2662</td>
</tr>
</tbody>
</table>

### Table 7: Model B: Predicted Probabilities by Possession of Bank Account

<table>
<thead>
<tr>
<th>Has a bank account</th>
<th>Does not remit</th>
<th>Infrequent to average remitter (One to 12 times annually)</th>
<th>Frequent remitter (Two or more times a month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.1516</td>
<td>0.6434</td>
<td>0.2050</td>
</tr>
</tbody>
</table>
VI. DISCUSSION

The first hypothesis of this study predicted that Mexican migrants with bank accounts in a U.S. banking institution will send remittances more frequently than those without bank accounts. The regression results surprisingly indicated just the opposite – migrants with bank accounts have a higher probability of remitting at lower frequencies. What does this mean for the optimistic idea that having a bank account would contribute to more frequent remittance sending; income smoothing benefits for remittance receivers in Mexico; and personal finance benefits for both the sender and receiver associated using a financial institution?

Remittance sending through U.S. banks holds tremendous promise for delivering the aforementioned benefits, but banks are failing to deliver competitive offerings to migrants that would promote sending through their channels. While more banks have entered the market and costs have dropped because of the FedACH (Orozco 2004), banks are not transferring these savings to customers, bringing new Mexican migrants into the system or inducing their current customers to use the bank for remittances. Even if being competitive meant being a loss-leader in the remittance market, banks could then offer other services to the estimated 8 million Mexican migrants in the U.S. without bank accounts and profit (Orozco 2004). The community is simply being overlooked.
One encouraging finding in the regression was that the negative effect of length of time in the U.S. on frequency of remittance sending is slightly lessened if respondents have a bank account. While it is natural for migrants to send less and less to Mexico the longer they remain in the U.S., this effect is mitigated for those with accounts. This shows that there might be some convenience or profit from managing money in a bank account that prevents migrants’ remittances from decreasing with time in the U.S. – as quickly as remittances from someone without a bank account would.

After the analysis, the second hypothesis was found to be correct: Mexican migrants who want to open a U.S. bank account have a higher probability of remitting more frequently than migrants without an interest in a bank account. A young, recently arrived population is interested in opening a bank account with their matrícula consular. While this survey was conducted in 2004, it shows that there might be less apprehension about banks among young remittance senders. This population, setting up money management practices and remittance sending habits in the U.S., is a ripe market to be connected to U.S. banks. Still, they need to be induced by a competitive pricing scheme and convenience that rivals wire transfer companies.

This thesis echoes many papers before it in recommending that governments, international organizations, financial institutions and philanthropic organizations work
together to get more remittance senders and recipients to open and use bank accounts (Task Force on Remittances 2004; Bouquet 2005). At this time when remittances to Mexico are waning (Banco de México 2009), it is even more critical that transactions are happening in the most efficient way possible.

In the U.S., the government can fill a role as an information provider. Not only can the Federal Reserve continue to provide Spanish-language financial literacy information to migrants through banks and post offices (Task Force on Remittances 2004), it can develop a public access website where remittance fees and commissions are posted daily by wire transfer companies and banks. If it were as easy to compare fees as it is to check foreign exchange rates, the market would quickly become more competitive.

U.S. banks would benefit from further developing innovative financial instruments attractive to migrants. The most efficient way to remit money to relatives in Mexico today is through a jointly accessible savings account where migrants can deposit remittances and relatives can withdraw them in Mexico for a 1.5 percent fee. This is far less than the average 4.4 percent fee in the remittance market. Still, only one-third of banks active in the remittance market offer to issue ATM cards for use in Mexico by relatives of immigrants (Orozco 2004). Another idea is to offer an auto-remit option similar to “bill pay” for bank customers. Under this system, an amount is
automatically transferred from an account in the U.S. to an account in Mexico every month. Certain transaction fees could be lessened if uncertainty was reduced for banks and increased usage covered costs.

In Mexico, it is important to remember that there needs to be a bank (credit union or ATM) on both sides of the border for a transaction to be possible. Remittance senders in the U.S. will not use banks if their relatives live in rural areas of Mexico without access to banking institutions. The Mexican government should work with Mexican banks to continue efforts to place ATMs in rural parts of the country where these services can be accessed by more people.

This field of research would benefit from further investigation of Mexican migrants’ attitudes about banking; what migrants hope to get out of a relationship with a bank; and what remittance sending mechanisms would best meet their needs. Ultimately, migrants themselves have a large stake in efficiently managing the money they have earned against difficult odds and likely have innovative ideas which governments and businesses can partner with them to achieve.
REFERENCES


