Origin Community Networks and Diffusion of Remittance Behavior Among Mexico-U.S. Migrants

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Abstract

Remittances from migrants constitute an increasingly important component of livelihoods in developing countries, and of scholarly debate in the literature. Prior research suggests altruism, insurance or investment as potential motives for migrant remittances. This paper suggests an alternative view: Remittances may result from social interactions in origin community networks, and migrants may be influenced by other migrants' behavior. Using longitudinal survey data from the Mexican Migration Project, this paper analyzes the remittance flows between Mexico and the United States from 1970 to 2000, and argues that the increase in the amount of remittances over time can be partially attributed to peer effects. To separate peer effects from other confounding influences, the paper utilizes an identification strategy outlined by Manski (1993), and introduces nonlinear and lagged measures of aggregate group behavior. Preliminary findings suggest that, even controlling for the most important determinants of remittances suggested by prior work, migrants' behaviors are strongly correlated with aggregate remittance patterns in the origin community. These results seem robust to the addition of community fixed-effects. These encouraging findings indicate the potential cumulative nature of remittance behavior, and invite the application of additional analysis to determine future predictions and policy directions.

1　Introduction

Scholarly interest in remittances, funds and goods sent by migrants to their origin families and communities, has grown dramatically in recent years due to the significant increase in the amount and perceived developmental potential of these flows (Taylor, 1999). Recent estimates indicate that international remittances to developing countries have reached US$126 billion annually, becoming the second largest source of external finance for these countries after foreign direct investment (Peria & Demirguc-Kunt). Remittances from international or rural-to-urban migrants serve the vital purpose of relaxing budget and credit constraints of origin households, and creating opportunities for investment and income redistribution within origin communities (Durand et al., 1996). A first step to evaluating these consequences of remittance flows is understanding the mechanisms that account for individuals' remittance behavior.

Research to date has attributed migrants' remittance behavior to altruism, insurance or investment motives. Altruism suggests that migrants seek to improve their households' welfare by remitting (Banerjee, 1984). Insurance motive implies that migrants' remittances serve as a premium for insurance against potential future unemployment and low wages (Agarwal & Horowitz, 2002; Stark, 1991), while investment motive suggests that remittances reflect migrants' desire to invest in their origin communities in order to maintain their linkages and assure security of their assets (Durand et al., 1996). These motives have received significant empirical support in the literature (de la Briere et al., 2002; Vanwey, 2004).

This paper proposes an alternative explanation: remittance behavior of migrants may be influenced by the remitting patterns of other migrants in their sending communities. This idea is inspired by the descriptive observations of remittance flows between Mexico and the United States, respectively the sender and recipient country of the largest international labor migration flow in the world (Sana & Massey, 2005).

Using data from 114 communities surveyed as part of the Mexican Migration Project, Figure 1 displays the percentage of remitters among migrants from 1970 to 2000, and Figure 2 depicts the amount of remittances (in 2000 US$) sent per migrant. The figures indicate an increasing trend in remittance flows; both the number of remitters among migrants and the average amount they send seem to increase. Figure 3 displays another consistent pattern: the amount of remittances as percentage of migrants' income in the United States also increases, while the average wages in the country are declining. How can we explain the increasing trend in remittance patterns? The individual or family-level motivations suggested in the literature do not imply an increasing remittance behavior over time, unless the economic conditions underlying those motives worsen. Then, how can we account for the fact that migrants are sending an increasing proportion of their incomes while their wages in U.S. are declining?

This paper suggests that the upward trend in remittances can be explained by social interaction effects in sending communities. Namely, as individuals from a community migrate and send remittances, the visible signs of increased welfare in their families compels other individuals to migrate and send remittances as well. A similar mechanism, propagated through the spreading of information networks among migrants, has been suggested to explain the cumulative migration patterns (Massey, 1990). This paper argues that a similar cumulative dynamic may shape remittance flows, and create a self-enforcing mechanism, which would explain the increasing remittance patterns we observe in the Mexican-U.S. case.

In what follows, I briefly describe the methodology, the study setting and data, and finally
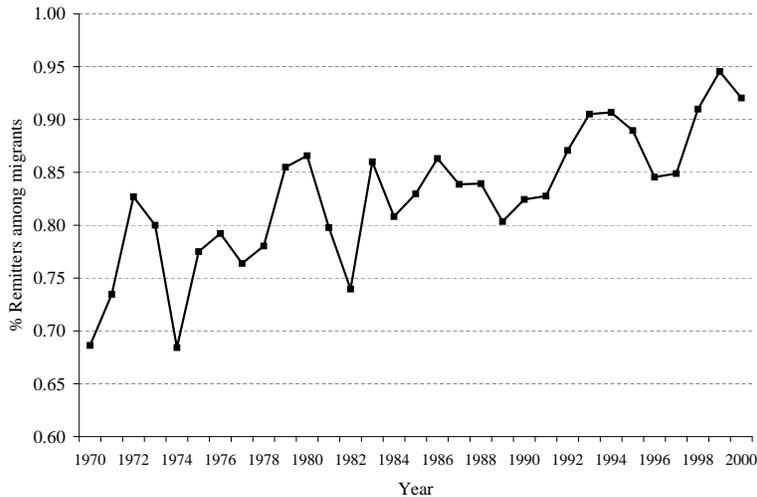
Figure 1: Change in the % of Remitters Among Migrants 1970-2000

present *preliminary* results. Note that the presented analysis is only an initial exploration to justify the idea. The future analysis will include more precise measures, and clearer descriptions of proposed hypotheses and methods. As they are incomplete and imprecise, these results should not be cited or quoted.

2 Methodology

The identification of social interaction effects is a difficult task. Basically, to claim a causal social interaction effect, as Manski (2000) argues, we need to distinguish among three competing hypotheses (1) *Endogenous Interactions* The propensity of an agent to behave in some way varies with the behavior of the group. (2) *Contextual Interactions* The propensity of an agent to behave in some way varies with the exogenous characteristics of the group members. (3) *Correlated Effects* Agents in the same group tend to behave similarly behave similarly because they have similar individual characteristics or face similar institutional environments. (This is a non-social phenomenon.) Empirically, (1) is true if remittances depend on the average remittances of those in the group. (2) is true if individual remittances depend on other socioeconomic characteristics of the group (average wage) - Note this is assumed to be exogenous, which would only be the case if the group is not based on homophily. (3) is true if migrants remit similarly because they have similar individual and family characteristics. Distinguishing among endogenous interactions, contextual interactions and correlated effects is important because these hypotheses
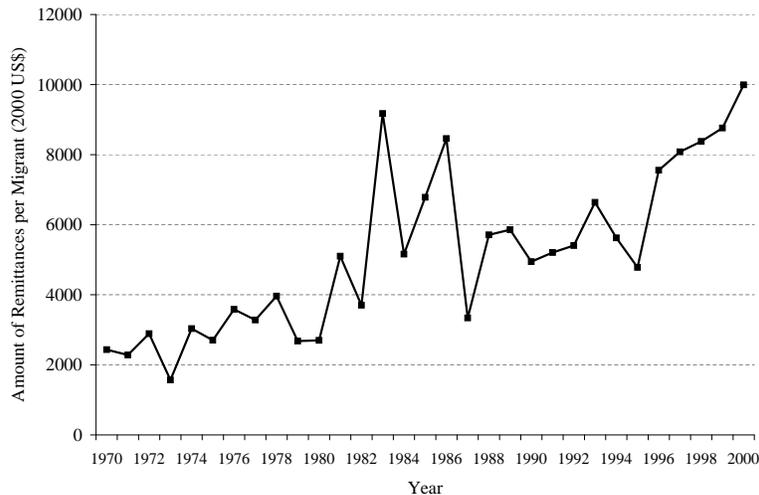
Figure 2: Change in the Amount of Remittances per Migrant 1970-2000

imply different predictions for the impact of policy changes. It is difficult to distinguish among these alternative explanations, which creates an identification problem. (In our case, endogenous interactions represent social norms regarding remittances, contextual interactions represent community or neighborhood effects, and correlated effects represent individual heterogeneity.)

In short, the analysis needs to separate group behavior effects from the influences of other individual, family or community characteristics, and consider the fact that individual and group behavior are determined simultaneously. The latter problem, coined as the 'reflection problem' by Manski (1993), can be resolved by using lagged values of group mean behavior. Another alternative supposes that individual behavior varies with some feature of group behavior other than the mean, perhaps the median (but one needs to know the relevant feature of group behavior).

3 Study Setting and Data

We analyze the life history data collected from a random sample of 1,500 Mexican household heads in 114 communities as part of the Mexican Migration Project.[1] The survey data have been gathered in the winter months of 1982-2006 in communities located in western Mexico, a region

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[1]The Mexican Migration Project (MMP) is a collaborative research project based at the Princeton University and the University of Guadalajara" More information is available at http://mmp.opr.princeton.edu/
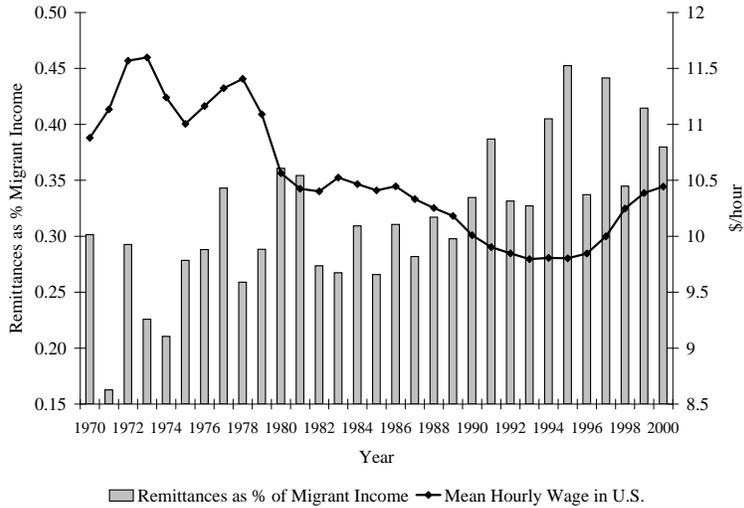
Figure 3: Change in Remittances as % of Migrant Income 1970-2000

that has historically been a major sender of migrants to the United States. These data have been supplemented with non-random samples of migrants located in the United States during the summer subsequent to each winter's survey. (For details of the data collection strategy, see Massey & Espinosa (1997).)

The life history data has been collected retrospectively from each household head in the sample. As only household heads are included, the data comes predominantly from men. The life histories include detailed information on migration and labor experiences of individuals, as well as property, marital and fertility information. Information on migrants' remittances are available for the last trip made by the migrant. These individual- and household-level data are supplemented with several community-level and macroeconomic indicators.

A data set that combines the individual, household and community level data with macroeconomic and policy context indicators, has been prepared and used by Massey & Espinosa (1997). The authors have made this data set publicly available. The analysis in this paper uses a similar data set with a larger number of communities. (Because their research was completed in 1997, they were able to include 25 communities. We include all 114 communities currently available.) Although the life history data goes as far back as 1900, the macroeconomic indicators of interest become available after 1970. Therefore we only include the 1970-2000 time period in our analysis. The life histories contain information on all migration moves by household heads from their birth until the survey year. Because the clustering methods we use cannot handle time-series data, we restrict our analysis to first-time migrants, and only keep the information from the year of their first trip. Besides, some migrants in the sample are born in the United

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States, or have migrated there in their childhood with their families. As we do not have any information on the nature of such moves (that is, we do not know anything about migrants' parents, or the context of migration then), we restrict our sample to only include the individuals who migrated after the age of 18.

4   Preliminary Findings

Table 1 lists a number of variables and operational definitions that will potentially be used in the paper. Table 2 provides the descriptive statistics for those variables. To provide an initial exploration of the idea that aggregate remittance behavior in a community influences the amount of remittances sent by a migrant, Table 3 presents estimates from two statistical models. The baseline model includes several individual, household and community level variables that have been shown to affect remittance behavior in prior work. The dependent variable is the logarithm of the total remittances sent by a migrant during his or her last trip to the United States. In the baseline model, the most important predictors of remittances are the migrant's earnings in the U.S. and settlement status. Remittances increase with earnings, but decrease if migrant is settled in the U.S. rather than a temporary migrant going back and forth. Adding indicators capturing community-level remittance behavior in the proposed model purchases significant explanatory power, and the proportion of explained variance increases from 0.33 to 0.45. Among the added indicators (logarithm of median of remittances among households in community, and the cumulative percentage of remitters among migrants up through the previous year), median remittances has a large, significant effect, which supports the main hypothesis of this paper. Interaction terms with the indicator of whether community is in a metropolitan area, added to test the idea that social norms about remitting will be stronger in small towns, are insignificant. Note that these results are only preliminary. While they provide initial justification to the project, they are not conclusive.

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Table 1. Definition of Variables Used in Analysis of Migrants' Remittances and Savings*

Variable	Operational Definition
Demographic background:	
Age	Age
Sex	Sex
Spouse in Mexico	Spouse is in Mexico
Spouse in U.S.	Spouse is a migrant in U.S.
Education	No. of year of school completed
Household Characteristics	
No. of minors in household	No.of own children under age 18
Parents in the U.S.	Mother or father is a migrant in U.S.?
Land	Hectares of land owned by household
Home	No. of houses owned by household
Business	No. of businesses owned by household
Trip Characteristics:	
Log of Total Earnings	Logarithm of total wages during last U.S. trip
Received help in crossing border	Family or friends paid for border crossing costs
Received help in lodging	Family or friends helped in finding lodding
Received help in job search	Family or friends helped in finding a job
Received financial help	Family or friends provided financial help
Migrant has documents	Migrant has legal documents
Duration of trip	Length of last U.S. trip in moths
Destination Networks:	
Contacted relatives	Migrant contacted any relatives?
Contacted paisanos	Migrant contacted any community members
Controls	
Year	Year of last U.S. migration
Settled in U.S.?	1 if migrant interviewed in the U.S., 0 otherwise
Community Context:	
Paved road to highway	Paved road between community and highway
Ejido established	1 if community has wjido; 0 otherwise
Bank in community	Bank office open in municipio
% females in manufacturing	% of female workers employed in manufacturing
% of males in agriculture	% of male labor force employed in agriculture
% U.S. migrants in community	% over age 15 with U.S. experience
Mexican inflation rate	Annual rate of change in Mexican CPI
Community in metropolitan area	1 I community is metropolitan, 0 otherwise
Origin Networks and Remittance Norms	
Log of Median remittances to community	Log of median of remittances sent
Cumulative % remitters	Cumulative % of remitters among migrants

* Note - All time-dependent variables are measure at the time of last U.S. trip

Table 2. Descriptive Statistics*

	mean	s.d.
Log of remittances	5.64	4.28
Age	39.35	11.92
Sex	1.05	0.22
Spouse in Mexico	0.80	0.40
Spouse in U.S.	0.10	0.31
Education	5.96	3.81
No. of minors in household	2.11	2.18
Parents in the U.S.	0.07	0.25
Land	0.17	0.48
Home	0.56	0.62
Business	0.12	0.35
Log of Total Earnings	8.85	2.52
Received help in crossing border	0.13	0.33
Received help in lodging	0.79	0.41
Received help in job search	0.64	0.48
Received financial help	0.55	0.50
Migrant has documents	0.36	0.48
Duration of trip (months)	41.01	59.68
Contacted relatives	0.61	0.49
Contacted paisanos	0.62	0.49
Settled in U.S.?	0.26	0.44
Paved road to highway	0.88	0.32
Ejido established	0.95	0.21
Bank in community	0.77	0.42
% females in manufacturing	0.21	0.14
% of males in agriculture	0.52	0.24
% U.S. migrants in community	0.25	0.14
Mexican inflation rate	27.89	21.42
Community in metropolitan area	0.48	0.50
Log of Median remittances to community	6.79	2.77
Cumulative % remitters	80.16	17.05
N	1522	

* All time-dependent variables measured at the time of last U.S. trip.

Table 3. OLS Regression Predicting Total Remittances Sent to Community During the Last Trip: Male Household Heads from 114 Mexican Communities

	Baseline		Proposed Model	
	β	t	β	t
Age	0.00	-0.30	0.00	-0.47
Sex	-1.61	-3.12 *	-1.46	-3.12 *
Spouse in Mexico	-0.24	-0.61	-0.25	-0.71
Spouse in U.S.	-1.31	-2.81 *	-1.27	-3.01 *
Education	-0.02	-0.81	-0.03	-1.13
No. of minors in household	0.08	1.81	0.07	1.62
Parents in the U.S.	-0.66	-1.76	-0.76	-2.23 *
Land	0.49	2.45 *	0.48	2.64 *
Home	-0.02	-0.11	-0.06	-0.39
Business	-0.12	-0.44	-0.16	-0.67
Log of Total Earnings	**0.74**	**15.73** *	**0.61**	**14.09** *
Received help in crossing border	0.28	0.92	0.32	1.17
Received help in lodging	0.42	1.73	0.28	1.26
Received help in job search	0.35	1.77	0.29	1.62
Received financial help	-0.22	-1.11	-0.32	-1.76 *
Migrant has documents	-0.48	-2.19 *	-0.30	-1.50
Duration of trip	0.00	-2.12 *	0.00	-2.34 *
Contacted relatives	-0.01	-0.06	-0.02	-0.13
Contacted paisanos	0.83	4.27 *	0.54	3.02 *
Year	0.07	3.94 *	-0.01	-0.35
Settled in U.S.?	**-3.70**	**-14.12** *	**-3.08**	**-12.89** *
Paved road to highway	-0.83	-2.58 *	-0.60	-2.01 *
Ejido established	0.45	0.96	0.24	0.58
Bank in community	-0.69	-2.85 *	-0.39	-1.79
% females in manufacturing	0.09	0.13	0.53	0.81
% of males in agriculture	0.64	1.38	-0.11	-0.24
% U.S. migrants in community	-0.67	-0.92	-0.96	-1.48
Mexican inflation rate	0.01	1.51	0.00	0.29
Community in metropolitan area	-0.11	-0.51	-0.45	-0.47
Log of Median remittances to community			0.56	9.81 *
Cumulative % remitters			0.01	0.91
Metro*Log of Median remittances			0.06	0.82
Metro*Cumulative % remitters			0.00	0.27
Intercept	-138.76	-3.86 *	10.91	0.32
N	1513		1513	
Adjusted-R^2	**0.33**		**0.45**	

*p<0.05