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# An Exploratory Study of Financial Remittances Among Non-Resident Indians in the United States

Rupayan Gupta · S. Aaron Hegde

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**Abstract** Remittances by immigrants and temporary workers of Indian origin in industrialized countries are a growing part of India's economy. In this exploratory study we examine the social and economic characteristics affecting the remittance pattern of working households (or families) of Indian origin residing in the United States. As most previous studies have been undertaken at the macroeconomic level, our main contribution lies in identifying the household level factors that may influence remittances. Using an online and a mail-in survey of 39 households we find some of the significant factors affecting remittances. We also validate some of the remittance-related policies of the Indian government.

**Keywords** Factors · Household · India · Remittance

Remittances sent back home by migrants are an important component of the development finance of less developed countries. Remittances also help in partially offsetting the social loss suffered by developing nations due to the “brain drain” of skilled workers. Ratha (2005) discussed in detail the economic benefits of foreign remittances. These benefits include the increase in foreign exchange reserves, a positive

effect on savings and investment, output growth, and multiplier effects if consumed. Hence, the factors influencing remittances by non-residents and first generation migrants to their home country is of considerable interest to policy-makers who want to encourage such remittances. This is especially true in the case of India, which has seen a large outflow of skilled labor to foreign countries, particularly to the United States, over the past decade. As non-resident Indians and immigrants of Indian origin often retain close ties with their home country, they are recognized as prime sources of remittances.<sup>1</sup> There is much interest in Indian policy circles to identify policy measures that would encourage the increase in volume of remittances back to India. In this paper, we identify the social and economic characteristics affecting the remittance pattern of working households of Indian origin residing in the United States.<sup>2</sup> On the basis of identified characteristics, we suggest improvements to some of the remittance-related policies of the Indian government. This exploratory study is the first step towards understanding this complex problem.

As a background to our study, we note that there has been considerable outflow of skilled labor from India to the United States over the past decade, a trend that continues

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<sup>1</sup> During 2006–2007, Indians working abroad remitted approximately U.S. \$29 billion back to India, roughly 3% of India's GDP (Reserve Bank of India 2008). The magnitude of remittances may be understood in comparison, when we see that in 2004–2005 combined expenditures on education of Indian federal and state governments was less than the total amount of remittances. Further, in the same year government expenditure on healthcare was less than half the remittance amount (Chishti 2007).

<sup>2</sup> There is substantial literature on the role of socioeconomic variables on economic outcomes. For example, in a recent study, Sharpe (2008) studied the effects of education, household size, and duration of immigration on the household income of older Asian in the United States.

unabated to this day. One needs to study the immigration statistics of the United States to gain a perspective of this outflow of skilled labor from India to the United States. In 2006, Indian nationals received 125,717 temporary worker visas (H-1B) to the United States. This was the highest number of H-1B visas granted to workers from any nation.<sup>3</sup> Also of note is that 65,363 Indian nationals were granted legal permanent resident status in the United States in 2007<sup>4</sup> while 47,542 Indian nationals were granted U.S. citizenship in 2006.<sup>5</sup> Given these statistics, there is reason to believe that there exists significant potential for the Indian government to tap into remittances from the large community of professionally successful, well-established non-resident Indians<sup>6</sup> (NRIs) working in the United States.

In order to identify the socioeconomic characteristics affecting remittance patterns of the NRIs in the United States, we conducted an online and a mail-in survey. Using a Tobit analysis, we found that household income, the number of dependents in India, ties to property in India, family in India, family in the United States, the decision whether or not to relocate to India and the transactions costs of remittances are significant factors affecting the amount of remittances sent back to India.

The organization of this paper is as follows. Relevant migration literature is discussed in the next section, followed by the section specifying an econometric framework. Our survey methodology, description of the data, and econometric analysis are reported in the section following the econometric framework. The subsequent section evaluates the remittance policies of the Indian government, in light of our findings. The final section concludes the paper with some suggestions for future work.

## Literature Review

The migration literature is rather expansive when dealing with the macroeconomic issue of the impact of remittances on economic development in recipient countries. It is also rich when considering the issue of amount of remittance, destination of remittances, and other macroeconomic studies dealing with remittance flows. It is, however, sparse in

microeconomic studies that consider the issue of remittances from perspectives of both remitting and receiving households, especially with regard to factors that affect remittance flows. Rapoport and Docquier (2005) consider seven factors that influence remittances, such as: (i) altruism; (ii) exchange; (iii) strategic motives; (iv) insurance and moral hazard; (v) family loans; (vi) inheritance; and (vii) mixed motives. The factor ‘exchange’ refers to the notion that remittances buy services such as taking care of a migrant’s assets. Funkhouser (1995), using household data from El Salvador and Nicaragua, found that differences in remittances between countries can be explained by differences in self-selection bias of those who remit. Clark and Drinkwater (2007) found that income and number of immigrants in the migrant household impact amount remitted.

While there is a significant amount of literature on the impact of remittances on development finance and on government policies that encourage remittances,<sup>7</sup> our study contributes to the understanding of how the personal (socioeconomic) characteristics of the remitters and their households (or families) affect the remittance patterns. Hence our study focuses on the microeconomic aspect of remittance flows, rather than the macroeconomic aspect.<sup>8</sup> While there have been other notable micro-level studies of remittance patterns, as mentioned before, those studies have tried to analyze the motive behind remittances—be it altruism, self-interest, or insurance.<sup>9</sup> Our study delves deeper than just the motive behind remittances and attempts to identify structural factors (at the household or family level) that affect remittance patterns.<sup>10</sup> This is one of the main contributions of our paper. At a more specific level, we believe that no similar study has been done with respect to Indian migrants in the United States. As NRIs in the United

<sup>3</sup> See Table 33, the 2006 Yearbook of Immigration Statistics, U.S. Department of Homeland Security.

<sup>4</sup> See Table 2, the 2007 Yearbook of Immigration Statistics, U.S. Department of Homeland Security. The only countries having higher numbers are Mexico and China.

<sup>5</sup> See Table 21, the 2006 Yearbook of Immigration Statistics, U.S. Department of Homeland Security. The only country having a higher number is Mexico.

<sup>6</sup> For the purposes of this paper, we refer to Indian citizens residing abroad, as well as persons of Indian origin who are not currently Indian citizens as NRIs.

<sup>7</sup> See Ratha (2005) for a survey of the literature.

<sup>8</sup> For the macroeconomic determinants of remittances to India, see Gupta (2005). This study identifies that the economic environment in source countries is important in determining the level of remittances to India. It also appears that the level of remittances is countercyclical (higher during periods of low economic growth in India). The study found that other economic or political variables, including political uncertainty, interest rates, or exchange rate depreciation, did not affect remittances significantly.

<sup>9</sup> See Agunias (2006) for a survey of this literature.

<sup>10</sup> Johnson (2003) and Kwon et al. (2004) are two important studies that identify familial and cultural backgrounds of immigrants as factors influencing their economic status and decisions. We perform a similar task, though the economic phenomenon analyzed in our paper (remittance flows) is different from those studied by these authors. Johnson (2003) studies how the interplay between traditional beliefs of Southeast Asian refugee migrants to Canada, and the new values they were subjected to after immigration, led their behavior with respect to financial responsibility for their families. Kwon et al. (2004) study the demographic, human capital, and acculturation factors that are associated with the official poverty status of Asian immigrant householders in the United States.

States are one of the most important groups of remitters found anywhere in the world, it is our belief that this study will be interesting not only to Indian policymakers, but to other researchers who are interested in identifying the structural factors which underlie remittance patterns.

### Model Specification

We hypothesize that remittance ( $R_t^i$ ) made to India in period  $t$  by person  $i$  who has relocated to work in the United States is given by a linear function  $R_t^i = f(X_{1t}^i, X_{2t}^i, \dots, X_{nt}^i)$ , where  $(X_{1t}^i, X_{2t}^i, \dots, X_{nt}^i)$  is a vector of socio-economic and family characteristics of person  $i$  at time period  $t$ . Given data regarding the value of  $R_t^i$ , and vector  $(X_{1t}^i, X_{2t}^i, \dots, X_{nt}^i)$  we can estimate the relationship  $R_t^i = f(X_{1t}^i, X_{2t}^i, \dots, X_{nt}^i)$  using a tobit model.

We hypothesize that the vector  $(X_{1t}^i, X_{2t}^i, \dots, X_{nt}^i)$  consists of the following variables:

- (i) *Annual Income*: This variable is expected to have a positive sign with regard to the dependent variable. The argument is that as households have higher income they are likely to remit more of it, given that remittances are a normal good. In most studies, data on household income is collected within ranges. In this survey the actual annual household income, rather than a suggested range, is collected. Clark and Drinkwater (2007) find that households in the upper range of income within the data had a probability of remitting that was 20% higher than those in the lowest range of income. This relationship is also found in remittances sent by Bulgarian migrants working in Spain (Markova and Reilly 2006).
- (ii) *Family in India*: Having family in India speaks to a migrant's possible social and economic ties to the home country. Clark and Drinkwater (2007) find that the likelihood of remitting is higher in households that have parents living abroad (in the host country). Markova and Reilly (2006) find that the number of family members living in Bulgaria has a positive impact on remittances sent by Bulgarian immigrants living in Madrid. Similarly, we would expect *Family in India* to have a positive impact on the amount remitted by NRIs. While this is an important variable, we feel that remittances might perhaps be more likely impacted by the number of dependents in India, since not every family member may be dependent on said remittances.<sup>11</sup>
- (iii) *Dependents in India*: Regardless of the relationship to the migrant, dependents in India are those who, to some degree, rely on income from remittances by the migrant. We expect this to have a positive relationship with the amount remitted.
- (iv) *Family in U.S.*: As family size increases in the host country, remittances sent back to the home country are likely to decrease (Clark and Drinkwater 2007). However, this relates to the size of the migrant's nuclear family. The number of family members living in Spain has a negative effect on remittances sent back to Bulgaria by Bulgarian migrants living in Spain (Markova and Reilly 2006). In this paper, we use the presence of other family members in the U.S., specifically the migrant's siblings, as the proxy for family in the U.S. It is assumed that with the presence of family in the U.S., the burden of remitting money back to India might be shared, thus having a negative sign. *Family in U.S.* enters the estimation as a binary variable.
- (v) *Property Maintenance*: Rapoport and Docquier (2005) showed analytically that remittances increase with the quantity of services to be offered by the recipient, such as taking care of the migrant's assets. We are interested in the amount of remittances that go specifically towards maintaining the migrant's property in India. The variable *Property Maintenance* is a broad category that includes any expenses relating to property, whether or not deeded in the name of the remitter. The a priori expectation is that *Property Maintenance* (measured in actual dollars sent by the remitter) will have a positive relationship with *Amount remitted*.
- (vi) *Relocation*: Though the likelihood of repatriation to the home country is lower for those migrating from developing countries, especially India, as opposed to developed countries, one could argue that if there was an intention of relocating to the home country, a positive relationship with *amount remitted* would be found. The logic behind this argument is that the migrant may be "saving" for retirement upon eventual return. In our estimation, *Relocation* is a binary variable.
- (vii) *Mode of Money Transfer*: There are various modes and costs associated with transferring monies to India. The costs of transferring funds typically take the form of commissions or other transaction fees. The range of services available to an NRI varies from traditional banks, with branches in the U.S. (as well as branches in India), to commercial agencies dealing with wire transfers over the internet. As the transaction costs associated with money transfers decrease, one would expect the amount of remittances to increase, hence the inclusion of a variable

<sup>11</sup> The reliance of aging parents (particularly elderly women) on financial support from children is well known, in case of Asians. Masud et al. (2008) document this phenomenon in the Malaysian context.

accounting for the mode of money transfer. We distinguish between the modes of transfer into two distinct dummy variables: (i) remittance via bank and (ii) remittance via the web (non-bank agency).<sup>12</sup>

The above translates into the following econometric model for estimation:

$$R_t = \beta_{0t} + \sum_{i=1}^8 \beta_{it} X_{it} + \varepsilon_t \quad (1)$$

where  $X_1 = \text{annual income}$ ;  $X_2 = \text{family in India}$ ;  $X_3 = \text{number of dependents in India}$ ;  $X_4 = \text{family in U.S.}$ ;  $X_5 = \text{funds sent for property maintenance in India}$ ;  $X_6 = \text{decision to relocate to India}$ ;  $X_7 = \text{mode of money transfer (bank)}$ ; and  $X_8 = \text{mode of money transfer (web)}$ .

### Survey Methodology, Descriptive Statistics, and Econometric Analysis

A survey was conducted in order to gather data on the above household variables such that Eq. 1 may be estimated. In order to collect primary data for this study, two methods of surveying NRIs were utilized: an online survey and a mail-in questionnaire. Given that the question being addressed deals with the factors affecting remittances to India, the sample was restricted to people of Indian origin.

The following section will discuss both survey methodologies utilized within this study.

#### Online Survey

Invitations to the online survey, administered on SurveyMonkey.com, were sent out to various NRI groups. Throughout the United States there are both regional and national associations of NRIs. Many of these associations cater to people from specific regions of India, typically sharing a language or culture in common. There are also national groups that cater to NRIs in various fields of occupation. Emails were sent to executive committee members of the various groups, over two hundred in total, asking them to forward the request to their members to complete the online survey. Of the completed online surveys, we were able to use 15 surveys within our sample.

Using an online survey is an optimal manner in which to obtain a random sample, given limited resources. Through

this method, we were able to target a large percentage of our population. Hence, responses received formed a sample fulfilling criteria of random sampling.

#### Mail-in Questionnaire

Another method of data collection was the mail-in questionnaire. In order to reach NRIs, researchers traveled to locations in Los Angeles, CA known to contain predominantly Indian establishments that cater to NRIs. Questionnaires were randomly handed out to prospective subjects encountered on the street at these various locations. Participants were asked to mail-in the questionnaire. Again, no pattern to returned responses could be discerned. Of the returned mail-in surveys, we were able to use 24 within our sample.

#### Descriptive Statistics and Econometric Estimation

Of the combined 60 completed online and mail-in surveys, 21 were deemed to be unusable due to incomplete information. As a result, a total of 39 completed surveys were used in the analysis. The average respondent was male, in his 30s, married with two children, had a bachelor's degree or higher, lived in California, had a green card, immigrated from India 12.5 years ago, made \$150,000 annually<sup>13</sup> and remitted just over \$12,000 a year to India. More complete descriptive statistics are presented in Table 1.

Other interesting statistics to come out of the survey were that, of those sending remittances, approximately three-quarters (77%) sent at least some money to family members in India.<sup>14</sup> For those not sending remittances to family members, investments were the primary destination (11%), with a few sending them exclusively to charity (7%). Overall, 41% of those sending remittances also sent a portion for investment purposes; one-third also sent some money to charitable organizations. Approximately 40% of those remitting funds used a web-based transfer to do so, while one-third used a traditional bank.<sup>15</sup> Seventy percent of the respondents were male, and 40% of the respondents were in their 30s. Two-thirds had at least a green card, with the rest having a work permit. The average frequency of

<sup>12</sup> It is interesting to note that immigrants of Indian origin (even first generation immigrants) are well assimilated within the U.S. financial market, i.e. they are able to take advantage of financial institutions and banking instruments (like internet banking) to a considerable extent to achieve their remittance objectives. This is in contrast to some other immigrant groups in the U.S. (like Hmong refugees) for whom financial integration may take up to 15–20 years (see Paulson and Rhine 2008).

<sup>13</sup> A significant portion of Indian migrants in the U.S. have a high level of education. This is not surprising—the literature on migration recognizes that the likelihood of migrating increases with educational attainment (see Swain and Garasky 2007).

<sup>14</sup> Respondents were allowed to choose multiple destinations for their remittances.

<sup>15</sup> This mode of transferring remittances is uniquely different among NRIs than among other immigrant groups. Many other immigrant groups tend to use currency exchanges, rather than traditional bank accounts (see Paulson and Rhine (2008) for a study of financial market participation of the Hmong).



**Table 1** Descriptive statistics for variables used in estimated model

Variable	Yes (%)	No (%)	Minimum	Maximum	Average	Std Dev
Remittance	67	33	\$0	\$250,000	\$12,661	\$42,262
Annual income			\$40,000	\$600,000	\$153,722	\$117,857
Family (in India)	92	8				
Dependents (in India)	95	5	0	5	1.97	1.34
Family (in U.S.)	67	33				
Property maintenance	77	23	\$0	\$200,000	\$5,697	\$31,997
Relocate to India	33	67				
Immigrated (years ago)			1	41	12.5	10.6
<i>N</i> = 39						

**Table 2** Selected correlation coefficients

Variables	Correlation
Income/relocate	0.232
Income/years since migrate	0.591
Relocate/years since migrate	−0.189
Family (India)/dependent (India)	0.211
Prop (India)/property maintenance	0.099
<i>N</i> = 39	

remittances was bimonthly, with the most frequent choice being monthly remittances.

Given that the dependent variable (remittance amount) is a truncated censored variable, our econometric model was estimated using the Tobit regression model. In order to facilitate model specification and to ensure no multi-collinearity, various correlations between variables were calculated. The results are given in Table 2 above. The table reflects variables used in Eq. 1.

From Table 2, it is evident that there is no fear of multi-collinearity in the specified model. Using the Akaike Information Criteria (AIC), the model that was found to be the best representation among the various models that were estimated using a Tobit model is presented in Table 3. All other models with different combinations of the variables had higher AIC than the reported estimated model. Some of the models included different combinations of variables, such as only one variable for mode of transfer or the inclusion of the property ownership variable. Table 3 reflects variables used in Eq. 1.

As can be seen from Table 3, the variables *Income*, *Family in India*, *Family in the U.S.*, *dependents in India*, *Property Maintenance*, the decision to *Relocate*, and sending remittances via the web (*Remit (Web)*) are significant and impact the amount remitted as previously predicted. It is curious why the coefficient for *Family (in India)* is not positive as was expected. One possible explanation is that since not all family in India are dependents (see Table 2 for correlation), it could be that Indian family members (resident in India) help the

**Table 3** Tobit regression results

Parameter	Coefficient	(Std Error)	<i>P</i> >   <i>t</i>
Income ( <i>X</i> <sub>1</sub> )	0.14***	0.03	0.00
Family (in India) ( <i>X</i> <sub>2</sub> )	−35801.65***	7924.80	0.00
No. of dependants (India) ( <i>X</i> <sub>3</sub> )	4462.94**	1737.69	0.01
Family (in U.S.) ( <i>X</i> <sub>4</sub> )	−7417.59 <sup>†</sup>	4385.39	0.09
Property maintenance ( <i>X</i> <sub>5</sub> )	1.06***	0.07	0.00
Relocate ( <i>X</i> <sub>6</sub> )	12619.49**	4867.26	<0.01
Remit (bank) ( <i>X</i> <sub>7</sub> )	5856.70	5903.73	0.32
Remit (web) ( <i>X</i> <sub>8</sub> )	16215.13**	6946.67	0.02
<i>(N</i> = 39); censored = 13			
AIC	15.21		

Note: <sup>†</sup> *p* < 0.1; \*\* *p* < 0.01; \*\*\* *p* < 0.001

dependents of the NRIs. This behavior would not be uncommon within the Indian family structure.

### A Discussion of the Indian Family Structure

At this juncture it would be prudent to provide some insights into the Indian family structure, as we have taken that structure into consideration while specifying our econometric model. Traditionally Indian families have been joint families; this is especially true in the rural parts of the country. Within the joint family, all the male offspring live under one roof with the patriarch as head of the household, while daughters join the households of their respective spouses upon marriage. Such a joint household stays together until either the death of the patriarch or until a division within the family; both events could occur simultaneously or one may precede the other. Economic theory suggests that joint households exist due to gains from the sharing of costs, information, as well as household income risk.<sup>16</sup> Once these gains are no longer present, the joint household may choose to divide. Upon division, it is

<sup>16</sup> Rosenzweig (1988), and Rosenzweig and Stark (1989) showed that daughters who leave the joint household for marriage also participate in risk-sharing arrangements with their father's households.

typical for the male heirs to divide the property among themselves.

Another factor leading to division of joint households has been industrialization. As younger generations of families have taken part in the rural-urban migration, India has seen a breakdown of the joint family structure, leading to a dominance of a nuclear family (Niranjan et al. 2005). According to Niranjan et al. (2005), approximately 50% of households were classified as nuclear, while approximately 20% were classified as joint families. Foster and Rosenzweig (2002) suggested that once a male heir leaves the joint household, it increases the probability of division of the remaining household. However, familial ties are typically maintained, especially as they relate to the family ownership of land/property. In cases where households own land/property, there is a higher likelihood of a joint family structure, especially if land owned is agricultural in nature (Niranjan et al. 2005). So, in regard to property ownership, we can categorize families into one of three groups: (i) joint, with property ownership; (ii) nuclear with ancestral divided-property<sup>17</sup>; and (iii) nuclear with non-ancestral property ownership.

*Joint family with property ownership:* One of the advantages of having joint families is the ready access to labor, which would need to be outsourced in a divided family. In such a joint family, when members<sup>18</sup> migrate away from the household, they typically do so to engage in geographically diversifying family earnings. Upon securing employment, whether it is in another part of the country or in another country altogether, the migrants send back earnings as remittances.<sup>19</sup> In such cases, in lieu of providing labor to the joint households, migrants instead make financial contributions towards the maintenance of the property. Even if the actual deed to the property were in the name of the patriarch or another male heir, in cases where the patriarch is no longer alive, the migrant would nonetheless send remittances for property management. Hence

the variable, *Property Maintenance*, is included within the model.

*Nuclear family, divided ancestral property:* In a divided family, if one of the sons were to migrate away from the household, his share of the ancestral land would need to be managed, either by his brother(s) or by someone else in exchange for financial compensation, thus requiring the migrant to send remittances for property maintenance. Again, the variable *Property Maintenance* would capture this.

*Nuclear family, no ancestral property:* If on the other hand, no land/property is involved in the division of the joint family, one can imagine a scenario where a member of the former joint household may have migrated to another area, and if successful, would purchase some property, which would then need to be managed by someone else. This is especially true of NRIs who migrate to the U.S. and become well established. For the purposes of this paper, it is not important to ascertain the reasons why NRIs would or would not purchase property in India, just that if they did, it would have to be managed. As a result, they would need to send remittances for property management. We now turn to policy implications from our study.

The above discussion highlights the fact that while many NRIs or Persons of Indian Origin (PIO) might not hold property in their own name, it is possible for them to have a stake in family property and, more importantly, have a responsibility for contributing to family property that is being held in another family member's name. This, of course, in no way disputes the fact that many NRIs do hold property in India in their own name. The variable *Property Maintenance*, as used in our study, captures property related remittances under all circumstances (whether or not the property is held under the remitter's own name).

## Policy Implications of the Econometric Results

We see from Table 3 that the number of dependents in India, ties to property in India (the need for property maintenance), transaction costs associated with remittances, and plans to relocate back to India, along with income and family in India and the U.S. are the significant factors affecting remittances. Government policies to encourage remittances should take into account some of these factors. While the number of dependents or family in India and/or the U.S., and household income are not something that government policies can affect, policymakers should keep in mind the other factors. The acquisition of property in their home countries by migrants should be made easier. As described in the previous section, property ownership in India would require the absentee owner to remit funds for the management of the property. Policies proposed by the government of India to

<sup>17</sup> Typically when a joint family divides into nuclear units, the male heirs get shares of the property, while female heirs typically do not receive any share of ancestral land.

<sup>18</sup> With female heirs migrating for purposes of marriage, there is still an observed lowering of the variance of household income and consumption smoothing in rural Indian families. This is especially true during adverse times when household income is lower than average (Rosenzweig and Stark 1989).

<sup>19</sup> This is typically the reason Mexicans migrate to the U.S. As populations age, they become more dependent on those who are working. This is especially true in Asia, which as a whole is expected to see a quadrupling of people over the age of 65 by the year 2050, with India expected to see a tripling (Abdel-Ghany 2008). As is typical in Indian households, the burden for care for older parents typically falls on the children, thus making remittances increasingly important.

make it easier for PIOs<sup>20</sup> who hold foreign citizenship to own property in India are a step in the right direction. Laws simplifying ownership of property by NRIs should also be introduced. Further, the creation of infrastructure, housing development, financial liberalization, foreign exchange liberalization, and favorable tax policies would make it easier for workers residing abroad to relocate back to India (either later in their careers or after retirement). The model demonstrated that plans to relocate back positively affect the amount of remittances being sent back to the home country.

In light of our findings, it is interesting to evaluate in detail some of the policies already adopted by the Indian government, and some which have been proposed for the future. In order to do this, we first present a brief overview of some relevant facts pertaining to Indian remittances. Formal remittances to India include inward remittances (direct transfer of funds from someone residing abroad to someone in India through a bank or wire transfer agency) and local withdrawals from NRI deposit accounts with Indian banks. During the fiscal years 2003–2004, 2004–2005, and 2005–2006, the local withdrawals from NRI accounts exceeded the amount of inward remittances.<sup>21</sup> One of the reasons (among others) why withdrawals from remittance accounts have outstripped the amount of inward remittances might be because the former method might have substituted the latter (to some degree) as the NRIs' preferred method of repatriating money to their family members back in India. This is not surprising given the upsurge in internet banking facilities for NRIs and the ease of internet funds transfers for NRIs to their deposit accounts in Indian banks (especially for NRIs residing in the United States).<sup>22</sup> Further, due to the information technology boom in the United States in the 1990s a large number of Indian professionals very familiar with internet technology relocated to the United States. It is natural that internet banking options might be the preferred mode for these professionals to remit money back to India.<sup>23</sup>

It has been argued in the past that the Indian government has not undertaken specific policies to increase the flow of remittances (Nayyar 1994), though some authors have acknowledged its efforts to attract capital deposits (Chishti 2007). However, in light of our findings regarding the factors influencing remittances to India, and the dominance of internet banking in the transfer of remittances to India, we can state that the remittance policies instituted by the Indian government over the past few years has been quite proactive.<sup>24</sup> It is not accidental that today India leads all other countries in the world as the largest recipient of remittances. We discuss below a few policies adopted by the Indian government, and the effectiveness of those policies in the context of our results.

1. *Repeal of Foreign Exchange Regulation Act (FERA) in 2000:* The desire of NRIs to hold deposit accounts denominated in Indian Rupees is driven in part by their desire to support dependents in India, property maintenance and acquisition, etc. It is not surprising that after the repeal of the FERA, the percentage of rupee-denominated NRI deposits in Indian banks increased. We believe that this has happened because the depositors are able to meet their monetary commitments in India (to their dependents) to their fullest desired extent, with the added assurance that they will be able to easily convert this money back into foreign currency (if need be). In support of this argument, we note that NRIs are recently withdrawing more money for use or consumption in India, partly explained by the increase in the local withdrawal component of remittance figures (Chishti 2007).<sup>25</sup> Thus, the repeal of the FERA is a policy that encourages remittances by NRIs who are motivated by the factors identified in our study, such as money sent for property maintenance.
2. *Reduction of transaction costs:* Transaction costs of remittances may be divided into two main categories. The first category consists of the fees paid to

<sup>20</sup> As of 2002, the Government of India allows visa free entry to Indian origin people living abroad and gives them all the rights enjoyed by Non-Resident Indians (NRIs), including purchase of non-agricultural land. In order to enjoy these benefits, persons of Indian origin (PIOs) holding non-Indian citizenship can apply for PIO Cards. Fifteen million people of Indian origin living abroad will benefit from the Card.

<sup>21</sup> See Chishti (2007) for a detailed discussion of Indian remittance accounting and the evolution of remittance patterns.

<sup>22</sup> The Automatic Clearing House based internet fund transfer facility, available in the United States, facilitates this mode of transfers.

<sup>23</sup> Note that the share of remittances originating in North America has gone up from 24% of total remittances in 1990–1991 to about 44% in the following decade (Reserve Bank of India 2006a). In our sample we found that approximately 40% of respondents preferred internet banking.

<sup>24</sup> Given that it is now possible for NRIs to mandate an Indian resident who has the right to withdraw from their (interest earning) NRI accounts in an Indian bank, we feel that there is very little distinction between interest rate policies (which encourage savings in NRI accounts) and remittance policies (especially because the accrued interest can be withdrawn by the mandated Indian resident—and will then be accounted for as a remittance).

<sup>25</sup> We note that consumption activities would have positive multiplier effects in the economy. Other uses like family maintenance might include traditional components like spending on education of younger siblings and other such productive uses. Spending on property maintenance and acquisition would also count among productive spending. Out of a total remittance flow of about \$25 billion to India in 2005–2006, \$13.5 billion was used by the migrant's family to meet requirements of food, education and health, \$5 billion was deposited in local bank accounts and \$3.25 billion was used for purchase of shares and property.



intermediaries and institutions to facilitate the transfer. The second cost, which is more invisible, arises because remitters may not be able to get the best foreign exchange rate for their transfer. The Report of the Working Group on the Cost of NRI Remittances (Reserve Bank of India 2006b) advised Indian banks active in the NRI remittance business to consciously conduct an awareness program for the NRIs. The working group report advised that such an awareness program should suggest to NRIs that they need to route their remittances through an Indian bank or a foreign bank having branches in India. Doing this would keep the cost of remittance low (at the foreign center). The report said that NRIs should be advised to make their remittances in foreign currencies with conversion to Indian Rupees happening at the Indian end (to get a better exchange rate). The report directed banks in India to review their existing scale of charges both at the foreign end and in domestic centers in order to decrease the overall cost for the remitter. Public sector banks were directed to explore relationships with more correspondent banks at existing and emerging centers. These steps suggested by Indian policymakers reduce transaction costs for NRIs remitting money to support family members, to maintain property, and for investment purposes.

3. *Introduction of internet banking:* The Reserve Bank of India has been active in directing Indian banks to incorporate internet banking methods. Allowing internet transfers by NRIs makes the process easier, faster, and less expensive (this is related to the reduction of transaction costs). In some sense, the reduction of effort and expenses due to internet banking has made it easier for NRIs to fulfill their familial and other obligations in India. In fact, it is possible for NRIs to mandate withdrawal privileges (including ATM withdrawal privileges) for their deposit accounts to a family member residing in India, and manage those accounts through internet banking from abroad. Given the ease of the transaction process, it is obvious why this method of remitting money for family members would be preferred and used by many NRIs, as supported within our sample.<sup>26</sup>
4. *Availability of other banking services to NRIs:* NRIs using deposit services with Indian private sector banks such as State Bank of India and Industrial Credit Investment Corporation of India (ICICI) are presented with further banking services like mortgages and

insurance policies. Given that relocation back to India in the future (perhaps after retirement) is a significant motive behind remittances, the introduction of these services is likely to encourage such remittances.<sup>27</sup>

5. *Availability of lucrative investment opportunities:* Lucrative investment opportunities for NRIs instituted by the Indian government, such as the Resurgent India Bond (which matured in 2003) and the Millennium India Bond (which matured in 2005), have helped with remittance flows. The fact that significant portions of the redeemed value of these bonds were retained in India as remittances and not repatriated back abroad (Chishti 2007) seems to lend credence to our finding that many NRIs have a strong motive to put back money in the Indian economy, based on familial responsibilities, need for property maintenance and acquisition, and the desire to relocate back to India in the future. Introduction of competitive investment schemes by the Indian government has been a channel to attract remittances from these NRIs.

In sum, it seems that Indian policymakers have managed to craft policies that are in line with the underlying structural factors driving remittances by Indian expatriates, as identified by our study. These policies have been important in encouraging remittance flows to India, and has made it the largest recipient of remittances from abroad. In order to sustain the success story, future policies would also need to take into account these significant factors.

## Conclusion

In this paper we identified personal characteristics and household factors that affect the remittances made by Indian nationals residing in the United States. These factors should be taken into account by the Indian government while adopting policies that encourage remittances by Non-Resident Indians.

Our work provides some useful initial insights into remittance patterns and how remittances are important in mitigating the effect of brain drain for developing nations. To the best of our knowledge, our primary survey of Non-Resident Indians is the first of its specific kind. Future work on this topic should involve a broader survey of Indian nationals residing abroad in the United States and other nations.

<sup>26</sup> In a further attempt to integrate emerging technologies, the State Bank of India, the largest private bank in India, has partnered a pilot project with The GSM Association to attempt the introduction of remittance transfers using mobile phones.

<sup>27</sup> It is interesting to note that in 2005, 20% of all properties worth over 10 million Indian rupees were bought or funded by NRIs. Even though there might be an investment motive behind these purchases, the motive to relocate back to India might also be a significant factor behind these purchases.

## Limitations of Our Study

Due to budgetary limitations, we restricted ourselves to an online survey and mail-in questionnaires. One of the disadvantages of mail-in questionnaires is their typically low response rates (Frankfort-Nachmias and Nachmias 2000). Likewise, it is hard to gather detailed data (as is necessary for our study) using online surveys. This is reflected in the small sample size we had to estimate our model. Thus, there is scope for expanding our work using other high impact survey techniques, which of course would involve a significantly higher data-gathering cost. However, we believe that the validation of our results using more comprehensive survey methods might help the Indian government (and other governments in similar situations) frame beneficial policies that lessen or even reverse the adverse effects of brain drain.

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