

**Effects of Remittances on Household Expenditure Patterns of Rural Mexico**

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## 1. Introduction

The number of people living in a country different from their birthplace has been growing and accounts for approximately three percent of the global population. According to the United Nations, in 2005 around 200 million people were migrants (UN, 2006). In 2000, Mexico was first place with net migration of 2 millions of people, followed by China with 1.95 million people living abroad (World Bank, 2005). This migrant flow of migrants all around the world creates an international labor market that leads to a flow of monetary resources that, in certain proportion, is reallocated to the origin countries in the form of remittances.

In 2004, at a global scale, the total amount of remittances reached 225.8 billion dollars of which 64.2% was sent to less developed regions being Asia, East Europe and Latin America the geographic regions with the higher proportions; 38%, 32% and 18% respectively (UN, 2006). The relationship between the total amount of international remittances and the less developed countries is noticeable. From 1990 to 2003 the growth of remittances has been extraordinary. Latin America contains several countries that have experienced a considerable growth in remittances received during these 14 years (World Bank, 2005).

In the case of Mexico, according to El Banco de México, in 1990, international remittances received were around 2.5 billion dollars. By 2007, this number increased to 26 billion dollars. This represents an annual growth rate of 15.2%. Because of the current global recession, uncertainty concerning remittance flows towards developing countries has increased. Trends are not clear so far. In October 2008 remittance flows to Mexico reached an historical maximum of 2.6 billion dollars. In contrast, the lowest value ever recorded was seen in January 2009 (1.6 billion dollars) as a result of the global economic turndown. Total remittances in 2008 are 3.6% lower than those in 2007. However, the decline in remittance flows is expected to be lower than that of private and official aid flows. Migrant flows are also expected to decrease but not the current stock of international migrants. (Ratha et. al., 2008). The nature of remittance flows (motivated mainly by altruism towards family, especially in hard times) and devaluation of currencies in several recipient countries are very likely to maintain remittances important for developing economies.

The extraordinary growth of international migration and the monetary flow associated with this phenomenon has motivated a great number of social researchers to study the diverse effects that migration might have in origin and destination countries. A basic question is if whether or not remittances have an effect on the economic development of migrant-sending countries.

Several studies conclude that there is no automatic mechanism through which migration and the inflow of monetary resources in the form of remittances help to improve the economic development of origin regions. How and to what extent migration and remittances can better perform this function is a question that must be present in any research agenda about the subject.

Remittances sent to the origin country represent an important resource that can be devoted to the creation of physical and human capital and thus, a mean to promote the development of origin regions. But beyond their quantitative importance, the possible impact of

remittances should be viewed in terms of their use in a diverse context since they can have multiplier effects on the local economy and even modify the migration dynamics.

A fundamental issue when studying the effects of migration on rural development in origin countries is to know the impact of internal and international remittances on the expenditure patterns of remittance-receiving households. The decision making process of how to spend a limited budget can be different when households receive no remittances.

The impact that the migration phenomenon may have over the incomes, expenditures and productive activities of rural households has been of particular interest among researchers. There are several questions to be answered. One of them, which constitutes the main purpose of this study, is to determine how remittances affect the monetary resources allocated to certain expenditure categories, especially those measuring physical and human capital investments. Moreover, our interest is to distinguish the impact of internal remittances versus that of international remittances, mainly from the United States.

A key question that must be also considered is the impact that remittances may have over productive investments since they have been considered part of the growth and development engine of rural communities and could be viewed as a strategy to decrease the need for future migration flows. Some studies have concluded that remittances are devoted mainly to current consumption instead of being invested, which little impact on the productive use that such resources may have (Chami et al., 2003; Taylor et al., 1996; Durand and Massey, 1992; and Papademetriou and Martin, 1991).

In the literature there are at least three views on how remittances are spent and impact economic development. The first is based on remittance use surveys, which ask remittance-receiving households what goods and services they spent their remittances on. Most of the time, a distinction between the effects of remittance income and other income is not made, assuming that a dollar increase in remittance income has the same effect of a dollar increase of wage or farm income, and the contribution of remittances to development will be the same as that from any other source of income. Remittance-use studies make the mistake of assuming that household income is completely fungible. Households can distinguish the nature of different income sources attributing them to different uses and managing them using separate accounting (Duflo and Udry, 2004). Because of this, they provide little insight into the ways in which remittances actually influence expenditure patterns in remittance-receiving households (Chami et al., 2003).

A second view argues that the receipt of remittances can cause behavioral changes at the household level that may lower their development impact relative to the receipt of income from other sources (Barham and Boucher, 1998). Because of a moral hazard problem between remitters and recipients, the dependency on these transfers induces recipients to use remittances as substitute for other income sources. External shocks may lower income from other sources increasing the dependency on remittance transfers in the future, and since they do not represent a capital flow, this may reduce economic activity and growth (Chami et al., 2003).

A third more recent set of studies uses an econometric approach, adding remittance income as an explanatory variable in a system of household demand equations. That is, demand is

modeled as a function of not only income, prices, and socio-demographic variables but also the amount of remittance income households receive. This view of remittances argues that remittances actually increase investments in human and physical capital at the margin, relative to other forms of household income. Examples include Adams (2005 and 1998), Edwards and Ureta (2003), Yang (2005) and Alderman (1996).

Our research argues and offers empirical evidence that remittances (internal and external) reshape rural households' expenditure patterns in direct and indirect ways. The modeling approach we employ controls for censoring on household consumption categories while testing for differences in expenditure patterns between households receiving remittances and those that do not. These models are estimated for both external and internal remittances. The data to estimate the model is from the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 1992-2005.

This paper is organized as follows. Section two presents some insights about the possible relationship between remittances and the expenditures that rural households make. Section three offers an overview of possible ways of estimating the impact of remittances on different household expenditure categories. The fourth section presents the distinct specifications proposed for the empirical model. The fifth section contains a detailed description of the ENIGH data set. The sixth section presents the main results. Section seven displays our conclusions.

## **2. Remittances and Expenditures in Rural Households**

Empirical research on expenditures in migrant-sending households often has contributed to a pessimistic view of the impact of migration on development in migrant-sending areas. Such studies conclude that remittances are consumed instead of invested and thus are not put to productive use in migrant-sending areas (for reviews, see Chami et al., 2003; Taylor et al., 1996; Durand and Massey, 1992; and Papademetriou and Martin, 1991). This past research on remittance use offers a partial and possibly distorted view of how remittances influence demand, due to the fungibility of income. Moreover, it often rests on arbitrary definitions of what constitutes productive investments. For example, schooling often is absent from the list of productive investments. This is probably because expenditures on educating family members usually do not create direct, immediate employment and income linkages within migrant-sending economies. Housing expenditures are also not considered productive investments in many studies, despite their potentially important effects on mobility, family health and their stimulus to village construction activities.

Reported use of remittances for productive investment at times can be significant. In their review of studies carried out in Mexico, for example, Durand and Massey (1992) found that the relative share of remittances spent on productive activities, although always under 50 percent, fluctuated considerably from place to place and often reached substantial levels. Remittances enabled many communities to overcome capital constraints to finance public works projects such as parks, churches, schools, electrification, road construction, and sewers (Reichert, 1981; Massey et al., 1987; Goldring, 1990). Other studies report that remittances have been critical to the capitalization of migrant-owned businesses. Escobar and Martinez (1990), for example, found that 31 percent of migrants surveyed in Guadalajara

used U.S. savings to set up a business. Massey et al. (1987), in their survey of the same city, put the figure at 21 percent; and in a survey of businesses located in three rural Mexican communities, Cornelius (1990) found that 61 percent were founded with U.S. earnings. A number of studies from other world regions echo these findings (for a detailed review, see Taylor, et al., 1996.)

Under the right circumstances, then, a significant percentage of migrant remittances and savings may be devoted to productive enterprises. Rather than concluding that migration inevitably leads to dependency and a lack of development, it is more appropriate to ask why productive investment occurs in some communities and not in others. Durand and Massey (1992) conclude that, in Mexico “the highest levels of business formation and investment occur in urban communities, rural communities with access to urban markets, or rural communities with favorable agricultural conditions.”

Negative findings on the productive impacts of remittances may be attributable in part to poor research designs that do not consider the direct and indirect ways in which remittances may affect rural household expenditures. Recent empirical models have been designed to overcome this problem.

### 3. Estimating the Impacts of Remittances on Expenditure Categories

Most models of household expenditures assume that households allocate their budgets across expenditure categories so as to maximize the utility obtained from the consumption of goods and services, either presently or, in the case of investment expenditures, in the future. With the exception of a new empirical literature on intra-household resource allocation models, most consumer models assume that households pool their income. This leads them to ignore income-source effects. The solution to such a consumer model is a set of expenditure functions of the following form:

$$e_{hi} = f(P_h, Y_h, Z_h) + u_{hi} \quad (1)$$

where the subscripts  $h$  and  $i$  refer to household and expenditure category, respectively;  $e_{hi}$  denotes expenditure on good  $i$  by household  $h$ ;  $P_h$  is a vector of prices faced by the household;  $Y_h$  is household income;  $Z_h$  represents other variables influencing marginal utilities and constraints on household behavior, and  $u_{hi}$  is an error term that is assumed to be approximately normally distributed with mean zero and variance  $\sigma^2$ . In the standard consumer model, for a household with  $K$  diverse sources of income (including remittances), income is the pooled sum of income from these sources:

$$Y_h = \sum_{k=1}^K y_{hk} \quad (2)$$

Combining equations (1) and (2), it is evident that a marginal change in income from a given source  $k$  (say, remittances) has the same effect on expenditures as a marginal change in any other income source:

$$\frac{\partial e_{hi}}{\partial y_{hk'}} = \frac{\partial f(P_h, Y_h, Z_h)}{\partial Y_h} \frac{\partial Y_h}{\partial y_{hk'}} = \frac{\partial f(P_h, Y_h, Z_h)}{\partial Y_h} \quad (3)$$

Other things being equal, an increase in remittances from migrants shifts remittance-receiving households' budget constraints outward by the amount of the remittance transfer. This raises (decreases) the demand for normal (inferior) goods. In this model, the influence of migrant remittances is assumed to be limited to indirect effects operating through total income; income-source effects are ruled out.

Recent studies by Adams (2005 and 1998), Zarate-Hoyos (2004) and Alderman (1996) add a new explanatory variable to the right-hand-side of equation (1): household income from migrant remittances  $R_h$ , where  $R_h$  is also included in  $Y_h$  and can contain both internal and external remittances as single or independent variables. That is,

$$e_{hi} = f(P_h, E_h, Z_h, R_h) + u'_{hi} \quad (4)$$

where as in most demand studies, total expenditures  $E_h$  are used in lieu of income. The marginal effect of a change in remittance income,  $y_{hk'}$ , on household  $h$ 's expenditure on good  $i$  is thus:

$$\frac{\partial e_{hi}}{\partial y_{hk'}} = \frac{\partial f(\cdot)}{\partial E_h} + \frac{\partial f(\cdot)}{\partial y_{hk'}} \quad (5)$$

This is the same as  $\frac{\partial f(\cdot)}{\partial E_h}$  only if there are no direct effects of remittances on expenditures.

In practice, a dummy variable indicating households' receipt of remittances, rather than the level of remittances, is used. Following this approach and including interactions between the remittance-receipt variable and other variables in equation (4), Adams found evidence that the spending behavior of rural Guatemalan households with remittances was significantly different than that of households without remittances. Specifically, households with remittance income spent less on consumption goods than otherwise similar households without remittance income, dispelling the notion that remittances are "conspicuously consumed." This implies that the second term on the right hand side of equation (5) is nonzero. Similar results are reported in Adams (1998) and Alderman (1996) using data from other less developed countries.

Constraints on household expenditures include not only income but also information, uncertainty, risk aversion, and preferences. If migrants provide households with information, this may have various effects on expenditures, for example, by broadening the consumption set, creating a demand for new goods (e.g., nutrition), or altering household production technologies (i.e., "better" ways of producing goods at home). Information from migrants

in this way may loosen human capital constraints on household production, investment, and consumption activities, while perhaps influencing preferences, as well.

Even if migrants did not contribute to income, their contact with an economy and society foreign to the village might influence village preferences and demands. Consumption is shaped, at least in part, by reference groups and identities. As rural peasants are brought into the global economy—both through their participation in wage work and increasing reliance on remittances from other family members, and through their increased consumption of non-local commodities—their expenditure patterns change, reflecting both the influence of new cultural standards and a reorganization of finances within the family farm.

If the household is risk-averse and remittances are not perfectly correlated with other income sources, the effect of remittances on consumption and investments in an uncertain world is likely to be different from the effect of the income with different risk profiles. For example, households would be expected to allocate income from a risky source, like crop production, more conservatively than income from remittances, if the latter are viewed as more certain. Differences in the effects of income from different sources in this case would reflect the influence of risk and uncertainty on household utility from various consumption and investment choices. Even if the variability of migration income is greater than the variability of farm income, income from migration nevertheless may reduce total household income risk through a low (or perhaps negative) correlation with farm income. The effects that internal and external remittances have on risk and uncertainty of households may also be different. It is reasonable to assume that internal remittances are associated with a lower level of riskiness than external remittances. This is because of the lower variability that internal remittances may reflect due to the nature of internal versus external migrants (internal migrants are typically more educated than external migrants) or the macroeconomics shocks with which external remittances flows are associated (e.g. revaluations of local currencies).

Remittance income may be perceived as less transitory than income from other sources (Suarez and Avellaneda, 2007). A permanent flow of remittances may encourage households to invest in goods whose use and upkeep require additional purchases in the future (e.g., fuel for a new vehicle). Income from migrants also may be controlled by different household members than income from other sources. In this case, a non-unitary household model might predict differences in marginal expenditures across income sources, reflecting the preferences and influence within the household of those who receive income from a given source (e.g., see McElroy, 1990; Schultz, 1990; Udry, 1996).

The data and empirical modeling approach to determine the possible effects of remittances on household expenditure patterns in rural Mexico are described below.

#### **4. - Data**

Information on household expenditures and income sources was obtained from the Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) carried out by the

Instituto Nacional de Estadística, Geografía e Informática (INEGI). It is a nation-wide survey collected on a two-year basis from 1992 until 2004. ENIGH was also collected in 2005 giving us 8 years of information. The sampling design of the ENIGH guarantees a representative cross-section of Mexico at the national and rural/urban levels. The rural sector is defined as localities with no more than 2,500 inhabitants. There are altogether 37,505 households located in rural localities and observations can be grouped into Mexico's 5 geographic regions: southeast, center, western, northeast and northwest. It includes a very wide disaggregation of expenditure and income records on weekly, three-month-long and six-month-long periods. A very rich dataset on households' socio-demographic characteristics is also available.

We are aware that this survey is not designed to properly study the migration phenomenon and thus it poorly defines the concept of remittances. What we call in this study "remittances" is recorded in the ENIGH as "income coming from other countries" or "income coming from other Mexican households". Though we hypothesize that most of this income represents remittances sent by migrants, we are aware that this concept may also include other kinds of income such as money earned abroad by professionals or even money coming from a next-door household. Furthermore, this concept is not restricted to income coming from the United States. Nevertheless, we emphasize that our focus is on the rural sector and thus, it is very likely that the traditional Mexico-US migration phenomenon is present in the sample and, accordingly, most of this income is expected to be remittances coming from the United States.

Another shortcoming of the ENIGH data set is the lack of information about household members abroad that might be sending money. The only thing we see is the amount of money received by the recipient households but we know nothing about the characteristics of the sender (age, gender, education, place of living, etc), a household member who migrated internally or internationally. It would be ideal to have such information on migrants' characteristics and deal with the selectivity issue affecting the decision to migrate. However, our focus is restricted to study the way in which households decide to spend remittances, with the processes generating migration and remittances taken as given under the assumption that remittances would be treated just like any other income and taken into account in the household's expenditure decisions.

We take the standardized values of the three-month-long period income and expenditures provided by the ENIGH as well as their non-monetary counterparts to define income and expenditure categories (including totals). The reason to include the non-monetary measures is that self-produced goods represent a very important part of income and consumption. Income and expenditure records were adjusted to 2002 prices and divided by household size to obtain three-month-long period measures in per capita terms.

Table 1 presents some summary statistics for the sample, with households divided by their remittance-receiving condition. In all, 5,465 households received internal remittances while 3,071 households received external remittances. These numbers represent 14.5% and 8.2% of the sample, respectively. We found 456 households (1.2%) that receive both kinds of remittances.



Several interesting contrasts emerge when comparing different groups. For instance, the proportion of households headed by a female is higher in remittance-receiving households (above 25%) than in non-remittances households (9.6%). 78.4% of non-remittances households are headed by a member who reads and writes; in contrast, this proportion is always below 63% for any of the remittance-receiving groups. Household heads in the non-remittances group are more likely to work in agriculture than those in the remittance-receiving categories.

Interestingly, all of the education indicators (head's schooling, maximum schooling, members with secondary and high school completed) are higher for the non-remittance receiving households. This seems to be in conflict with the New Economics of Labor Migration (NELM) (Taylor et al., 2001) which posits that better educated people find a higher reward in migrant labor markets and thus are more likely to migrate. However, it is possible that the remittance-senders have higher education than the rest of the family members who stayed behind. Again, it would be ideal to have information on migrant characteristics to test this hypothesis. Educational levels are extremely low in rural areas. Despite the fact of having higher levels of education compared to remittance-receiving households, household heads in the non-remittance category reach on average only 4.25 years of schooling. Even the average maximum schooling achieved is only enough to have completed primary education.

Remittance-receiving households have more members over age 59 and fewer children below 7 than non-remittance households; further, household heads are older in remittance-receiving households. This compliments with the NELM which claims that migrants are younger than their non-migrants counterparts. Access to medical insurance is higher for non-remittance households; on average 0.29 members have medical insurance (either public or private) as part of their job benefits. External remittances households have, on average, more vehicles than non-remittance households, 0.40 against 0.28, respectively. In general, there is evidence that remittance-receiving households have better access to services (public water, drainage, electricity and phone service) than non-remittance households. Finally, households receiving both kinds of remittances seem to have a better access to credit than non-remittance households as 14.7% got loans versus 9.7% for the latter category.

The income and remittance figures by household categories are summarized in Table 2; data is presented in monthly approximations. External-remittance households seem to be highly dependent on monetary resources coming from abroad, with external remittances representing on average 40% of their total income, receiving 524.7 pesos per capita<sup>1</sup> per month. This figure is lower for internal-remittance households which are dependent on remittances for 24.4% of their total income and receive on average 261 pesos per capita. Households receiving both kinds of remittances seem to diversify dependence, but still their share of external remittances in total income is slightly higher, representing 25% versus 14.9% attributed to internal remittances.

It is interesting to note that the total income of external-remittance households is higher than the total income of non-remittance and internal-remittance households in most of the

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<sup>1</sup> Around US\$39.2 per capita at the current exchange rate (13.37 pesos per dollar).

years and, on average, over the complete period. For all years, households receiving both kinds of remittances have the highest total income of all household categories.

Concerning the evolution of these magnitudes over the years, we see a drastic reduction of total incomes immediately after the 1994 macroeconomic crisis that affected Mexico. This income reduction was about 20.1% for the total sample. Mirroring Mexico's economic performance, internal remittances also fell for internal-remittance households and households receiving both kinds of remittances. Conversely, external remittances didn't fall either for external-remittance households or for households receiving both remittances. This mitigated the fall in total incomes which only decreased by 5.1% and 12.7%, respectively. It is possible that this behavior is also due to the devaluation of the Mexican peso during those years. From this period onwards, we see a slow recovery of total incomes along with a moderate increase in external and internal remittances received. As mentioned previously, this trend is still uncertain under the current global crisis conditions.

For this study, household expenditures records have been divided in ten categories: **Food**, **Health** (medical services, medicines, health insurance), **Education** (tuition, materials, transportation) **Durable Goods** (furniture, household equipment, audiovisual equipment, vehicles) **Non Durable Goods** (household cleaning items, personal care items, clothing) **Other** (transportation, personal services, culture and entertainment, vehicle services, fuels and services, gifts, other expenditures and transfers), **Patrimony** (additional constructions/renovations, purchases of houses and land), **Business** (purchases of machinery or animals for the production process), **Savings** (deposits, currencies, metals, stocks and bonds) and **Out transfers** (lending, debt service, insurance, inheritance, etc).

Table 3 presents average budget shares for each of the ten expenditure categories defined above. As expected, food occupies the highest proportion of total expenditure for all of the household categories, with 41.31% for the entire sample. However, there seem to be interesting differences in budget shares across household categories. Remittance receiving households devote significantly more of their total expenditure to health care (always above 5%) than non-remittance households but less to education. Households receiving external and both types of remittances spend more on durable goods (3.62% and 4.21%, respectively) than non-remittance households (2.67%). Households receiving external remittances have a higher share devoted to the patrimony category (2.25%) compared to non-remittance households (1.11%). There are no significant differences concerning the business category across household categories, although non-remittance households seem to allocate a higher share than internal-remittances households. It seems that external remittances create incentives to save as shown by the significantly higher share of savings for the external and both remittance households, 5.97% and 4.27% respectively, compared to 3.50% for non-remittance households.

These differences suggest that expenditure behavior across household categories is affected by remittance perception. To explore this possibility, models depicted in the next section are applied to the ENIGH data for rural Mexico.

## 5. Our Empirical Model

A common problem when dealing with micro data, and especially with disaggregated expenditure categories, is the existence of a large number of zeros in the dependent variable. The reasons for the presence of zeros (see Garcia and Labeaga, 1996) are summarized as follows:

- 1) Infrequency of purchase: an issue in individual or household surveys covering a short period of time.
- 2) Abstention: due to individual or household unobservable characteristics that prevent it from participating in a given market (selection model).
- 3) Corner solution: individuals and household decide not to purchase a particular item because of active budget constraints, i. e. having a genuine zero expenditure on the item.

While putting aside the debate about the various reasons possibly limiting observations, we propose the use of three different approaches to modeling household demands, assuming that all households with zero expenditure are actually in a corner solution.

First, we apply a standard Tobit model specification as follows:

$$\begin{aligned}
 e_{hi}^* / E_h &= \alpha_i + \beta_{1i} \ln(E_h) + \beta_{2i} Z_h + \beta_{3i} R_{hr} + u_{hi}^* & (6) \\
 e_{hi} / E_h &= 0 & \text{if } e_{hi}^* / E_h \leq 0 \\
 e_{hi} / E_h &= e_{hi}^* / E_h & \text{if } e_{hi}^* / E_h > 0
 \end{aligned}$$

where  $e_{hi} / E_h$  is the share of household  $h$ 's expenditure on good  $i$ , and  $\alpha_i$ ,  $\beta_{ki}$ ,  $k=1, \dots, 3$ , are vector parameters. The  $r$  subscript indicates internal and international remittances.  $e_{hi}^* / E_h$  is the corresponding latent variable governing the observability of a positive expenditure share.

The use of a Tobit model in a single-equation framework affected by censorship is straightforward. However, in a system approach, such as the one we adopt, censored regressions have correlated error terms and estimation must be done jointly. Applying the Tobit technique to each equation separately leads to inefficient estimators since it fails to take into account the interrelations across equations. So, in a context of a system of equations with limited dependent variables the modeling of the data must be different. Theoretical literature about the subject exists. However, most employs a censored demand equation approach to model household expenditures without testing for remittance effects (Heien and Wessells (1990), Shonkwiler and Yen (1999), Perali and Chavas (2000), Gould et al. (2002), Lazaridis (2003) and Jabarin (2005)). We adopt the next two systems of equations approaches and utilize them to capture remittance effects on the demand system.

The first specification involves a system of equations in which the dependent variables, household expenditure shares, are censored by unobserved latent variables influencing the decision to spend income on given consumption and investment goods. In both systems, expenditure by household  $h$  on good  $i$  is observed (i.e.,  $e_{hi} > 0$ ) only if the household's total desired expenditure on the item exceeds some threshold. This threshold will depend on the lumpiness of the good as well as the opportunity cost (the satisfaction or utility that the household would enjoy by spending this threshold amount on some other item). Both, the

decision to spend income on a specific category of goods and the amount spent depend on the variables in equation (4)  $(P_h, E_h, Z_h, R_h)$ . Assuming that the stochastic errors are approximately normal with zero means and a finite variance-covariance matrix that is constant over all observations—that is, iid—the system of expenditure equations can be estimated using Lee’s (1978) generalization of Amemiya’s (1974) two-step estimator to a system of equations.

In the first stage, a probit is estimated for participation in each expenditure category. The dependent variable in each probit is equal to 1 if  $e_{hi} > 0$  and zero otherwise. The probit models are used to calculate a set of Inverse-Mills ratios, one for each expenditure category in which censorship is likely to be a problem:

$$IMR_{hi} = -\phi(X_h)/\Phi(X_h) \quad (7)$$

where  $\phi(X_h)$  denotes the standard normal density function and  $\Phi(X_h)$  denotes the normal distribution function, and  $X_h$  is a vector containing  $E_h$ ,  $Z_h$  and  $R_h$ .

In the second step, the Inverse-Mills ratios are included as right-hand-side variables in the corresponding expenditure equations to correct for censoring. We estimated the expenditure system using the Almost Ideal Demand System (AIDS) method, extended to include demographic characteristics (Deaton and Muellbauer, 1980). Unfortunately, prices were not available in the data set and for that reason they are not included in our estimation. The first system of equations estimated has the form:

$$e_{hi}/E_h = \alpha_i + \beta_{1i} \ln(E_h) + \beta_{2i} Z_h + \beta_{3i} R_{hr} + \beta_{4i} IMR_{hi} + u_{hi} \quad (8)$$

where  $e_{hi}/E_h$  is again the share of household  $h$ ’s expenditure on good  $i$ , and  $\alpha_i$ ,  $\beta_{ki}$ ,  $k=1, \dots, 4$ , are vector parameters. The set of equations depicted in 8) was estimated using the seemingly unrelated regression (SUR) technique as proposed in Shonkwiler and Yen (1999). This functional form displays a number of advantages for these purposes. It is flexible enough to allow expenditure patterns to change with the total expenditure level. It permits us to estimate the remittances’ marginal effect to as well as the marginal effect of other variables on expenditures for each category of goods. It also controls for some (lumpy) expenditure categories. Finally, it has attractive properties from a theoretical point of view, e.g., restrictions are easily imposed so that it conforms to adding-up, homogeneity, and symmetry properties derived from standard demand theory (Lazaridis, 2003).

The second system approach consists of a version very similar to that depicted previously with some changes proposed by Perali and Chavas (2000) showing that it is possible to find a more efficient two-step estimator. Accordingly, the second system of demand estimations takes the form:

$$e_{hi}/E_h = \Phi(X_h)[\alpha_i + \beta_{1i} \ln(E_h) + \beta_{2i} Z_h + \beta_{3i} R_{hr}] + \beta_{4i} \phi(X_h) \quad (9)$$

As above,  $\phi(X_h)$  denotes the standard normal density function and  $\Phi(X_h)$  denotes the normal distribution function. Again  $X_h$  is a vector containing  $E_h$ ,  $Z_h$  and  $R_h$ . The first stage of this approach is to estimate  $\phi(\cdot)$  and  $\Phi(\cdot)$ , using a Probit specification and then, in the second stage, the use of functions  $\phi(\cdot)$  and  $\Phi(\cdot)$  to correct the system of equations as depicted in 9). This second system of expenditure equations is also estimated with the SUR technique.

The share of each household expenditure category in total expenditure is regressed, according to our empirical methodologies previously depicted, against household characteristics and internal and external remittances. Remittances were included as shares in total income. Dummy variables for years and geographical regions were also included with year 1992 and Region South as the base cases. The list of variables used can be found in Table 4.

## 6. - Results

Table 5 presents results on the Tobit specification of equation (6). Household characteristics were found significant in several cases and mostly according to expectations.

For instance, a one-year increase of a household head's schooling and a one-member increase of household members with high school completed decreases the share devoted to food by 0.21% and 0.93% respectively. The presence of more people over 59 years old is associated with a lower share spent on food while more children below 7 years old has a positive relation to it.

A one-year increase in the household head's schooling increases the share spent on education by 0.22%. Contrary to expectations, the number of household members with high school completed has a negative and significant effect on the education share. A household head working in agriculture is associated with a decrease of the share devoted to education by 0.72% and a household head being male decreases the share devoted to education by 2.02%. Having a household member over 14 years old who doesn't read and write is associated with a 0.97% decrease in educational expenditures. Having a household member studying in a private school has a strong positive relation with expenditures on education, increasing the share devoted to it by 10%.

The number of elderly people over 59 years old and children below 7 years old in the household increases the share spent on health by 0.98% and 0.75%, respectively. A male household head and one working in agriculture is associated with higher levels of expenditure devoted to durable goods. Access to medical security as well as to the provision of public services seems to provide an incentive as well increase expenditures devoted to durable goods, with estimated coefficients of 0.18% and 0.87%. A one-vehicle increase in the number of vehicles possessed by the household increases the share devoted to durable goods by 1.64%.

Several household variables have significant effects on the non-durable goods category. For example, a one year increase in household head's schooling leads to an increase of 0.042% in the share devoted to this category. The higher the number of household members with high school completed the higher the share devoted to non durable goods. It seems that households headed by a male spend less on this category than those headed by a female, with a decrease of 0.21%.

Households already paying for their house spend considerably more on the patrimony category, with an increase of 19.7% of the share devoted to this category. Households where the head works in agriculture spend more on the business category than otherwise, with a significant increase of 9.3% of the share. These same households devote 2.5% more to savings. Also, households with a higher presence of members over 59 and below 7 years old are associated with higher levels of savings.

The loan dummy performs surprisingly well, with significant effects on several categories, especially on those that we might call physical investment categories. Having a loan increases the share of durable goods, patrimony and business by 0.40%, 3.5% and 8.6% respectively. It is worth noting that it also has positive and significant effects on the education and health categories, with increases of 0.37% and 3.4% respectively. Access to capital markets may also capture the financial position of households and, not surprisingly, richer households spend more on education and health care. Year and regional dummies were also found significant in several cases indicating the presence of important time and location effects.

Moving to our results with respect to the central issue of remittances, we find that an increase in the share of internal remittances by 1% significantly decreases the share of food (-0.048%) and of savings (-0.07%) and increases that devoted to health (0.02%), education (0.04%), durable goods (0.01), non durable goods (0.01%), patrimony (0.05%) and outtransfers (0.02%). An increase in the share of external remittances by 1% significantly decreases the share devoted to food (-0.11%) and other (-0.01%) and increases the share expended on education (0.01%), health (0.01%), durable goods (0.03%), nondurable goods (0.02%), patrimony (0.097%), savings (0.07%) and outtransfers (0.06%).

This result shows that remittances, whether internal or external, have significant effects on the ways households decide how to allocate their resources. Both types of income seem to reduce the share devoted to food expenditures and allocate more resources to other categories, such as human development investments (health and education) and capital investment (durable goods and patrimony) categories. This results are consistent with Borraz (2005), and Hanson and Woodrouf (2003) for education. Hildebrandt and McKenzie (2005) obtain similar results concerning health. There is also evidence that they affect positively the "current consumption" of households partially captured in the non durable goods category in agreement with Canales and Montiel (2004).

We attribute the lack of significant effects of remittances on the business category to the weakness of this concept to effectively capture the type of businesses in which external remittances recipients are more likely to invest as documented by Escobar and Martinez (1990), Durand and Massey (1992), Massey et al. (1987) and Cornelius (1990). The specific question attached to this information asks about the purchase of machinery, equipment or animals to be used in the production process. In this way, the information required is not

properly captured. Concerning the results on savings, remittances have significant but opposite effects. While external remittances seem to encourage household savings, internal remittances seem to decrease savings by the same proportion, indicating a reallocation of household income.

Results for the implementation of equation (8) with the first two-step estimator are shown in Table 6. Some minor changes emerge concerning household characteristics. For the particular results of remittances almost all effects are in general the same as above in direction, magnitude as well as significance. The only surprising change is the appearance of a very small negative but significant effect of external remittances on the business category, i.e., a 1% increase in external remittance leads to a surprising decrease in the share of total expenditure devoted to business of 0.002%.

The second two-step estimation of equation (9), shown in Table 7 also originated some changes concerning remittance effects. In particular, external remittances no longer have a positive and significant effect on the education category. The number of household members with high school education has now a positive and significant effect on the share devoted to education. The positive effect of internal remittances on the patrimony category found in the two previous specifications disappears, leaving only external remittances with a significant role. The negative effect of external remittances on the business category remains while this time, there is a positive and significant effect of internal remittances within the same category.

As noted, the more interesting results pertain to the business category. It is also possible that the number of observations may be too small to obtain reliable estimates. Out of 37505 possible observations, only 471 recorded a positive amount of expenditure on business.

Results of internal and external remittances for the food, health, durable goods, non durable goods and savings categories seem robust to different specifications meaning the the significance levels as well as the sign of the coefficients are the same across different specifications. Regarding results on education, internal remittances seem to have a robust effect across specifications while external remittances did not pass the third specification test. Thus we may conclude that external remittances have a positive but weak effect on education. The same applies for internal remittances in the case of the patrimony category. In this same category, external remittances have a consistent positive effect.

Also, it is important to remark that the effect of external remittances on the durable goods and patrimony categories is higher than that of internal remittances. The opposite happens with health and education where internal remittances have a higher impact. These findings are robust and consistent across specifications and suggest a differentiated impact of remittances on human and physical capital categories. Internal remittances are mainly devoted to human development while external remittances are mainly devoted to physical capital investments. A possible explanation for this result relies on the nature of both types of income. Human capital investments tend to be constant over time, especially those of education. In contrast, physical capital investments are not as frequent and most of the times contingent upon the availability of monetary resources, especially for poorer households. If internal remittances present a lower variability, then households may decide to use them in an expenditure category that requires a constant injection of resources. On the other side, if

external remittances are highly volatile, households may decide to use them in eventual investments such as furnishing or renovating the house as well as purchasing lands or new houses.

A surprising finding is the significant effect of the loan dummy across expenditure categories and specifications. Access to capital markets seems to shape consumption behavior of rural households consistent with standard consumer theory. Thus, it is worth asking ourselves if the remittance-receiving condition has some effect on the probability of a household getting a loan. Out of 37505 households, 3674 got a loan, or around 9.8% of the sample.

Table 8 shows the marginal effects of a probit estimation for the probability of getting a loan as a function of household characteristics and their remittance-receiving condition. In particular, a household receiving internal remittances increases the probability of getting a loan by 0.02. The same happens for households receiving both kinds of remittances with a 0.04 increase. However, surprisingly there is no evidence that households receiving external remittances improve their credit access.

A more accurate measure of the frequency and quality (formal vs informal) of credit as well as borrowing constraints may allow us to develop a more complete and adequate model to test if the remittance-receiving condition improves the financial access of households (maybe through a higher collateral represented by a permanent flow of remittances); a model such as that developed in Quisumbing and McNiven (2008). The ENIGH data set does not allow us making such distinctions.

## **7. - Conclusions**

The migration phenomenon, in addition to contributing to household income, links village households to new markets, societies and cultures; it may induce changes in production technologies and induce a substitution from home-produced goods to purchased goods in response to lost labor, technology change and other effects; it may also alter households' information set, risk profile, and preferences in ways that affect marginal utilities of consumption and investment.

A simple comparison of households with and without remittances reveals that the former group spends more of their income on health, durable goods, and patrimony. There are other significant differences that indicate that consumption preferences may be shaped by the remittance-receiving condition. External remittance households have higher incomes than internal or non-remittance households, on average, and socio-demographic characteristics across different household categories differ as well. It is not clear, a priori, whether differences in average expenditures between remittance-receiving and non-remittance households are due to remittances or to differences in total income or other variables.

In this work we have presented different empirical specifications to test for the impact of remittances on expenditure patterns in rural Mexican households. The modeling approaches we used are more general than standard consumer models, remittance-use studies, and recent



work extending consumer models by including direct remittance effects. We control for censoring in demands while offering a comprehensive test of remittance effects on expenditure patterns. Our findings indicate that there is evidence of significant effects of internal and external remittances on household expenditure patterns; these income sources reshape household demands in ways that are independent of total income. Moreover, effects are different for each type of remittance income. Internal remittances seem to stimulate more categories related to human development investments, health and education, while external remittances affect positively physical capital investments. External remittances have also a solid positive effect on health, and less consistent effect on education. Household characteristics do not affect these results which agree to what has been found in previous literature.

External remittances, usually considered as part of transitory income, may indeed represent a constant and permanent flow of monetary resource for those household that are heavily dependent on such income source and can be therefore be viewed as permanent income. In this case households can make consumption and investment decisions based on them. The same is true for households for which internal remittances are a significant part of household income. A separated analysis must be made in order to asses whether internal and external remittances are part of permanent or transitory income. Suarez and Avellaneda's findings (2007) support positive and significant effects of remittance income on consumption decisions when regarded as permanent.

Our findings do not support the view that households receiving remittances disproportionately spend their income on "current consumption". It is consistent with the findings reported by other researchers (Edwards and Ureta 2003, Adams 2005, Lopez Cordova 2004). Besides evidence of positive effects on current consumption (partially measured by expenditure on non-durable goods), our findings reveal that remittances do indeed significantly influence expenditure patterns in rural areas of Mexico. In particular, the propensity to spend on some investment categories (education, health, durable goods, patrimony and savings) appears to be considerably larger for remittance-receiving households, internal or external, than for non-remittance households.

As rural incomes rise, expenditure patterns change. This is true regardless of whether the income gains are from migrant remittances or other sources. The key question that should be of interest to researchers and policy makers is whether expenditure patterns change differently for households that receive remittances, and if so, why. This study has shown that they change indeed, most of the time in a way improving the future well-being of remittances-receiving households.

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## 9. - Appendices

**Table 1. Summary Statistics of Non-Remittance and Remittance-Receiving Households**

					Mean-difference t-test		
	Not remittances	Internal remittances	External remittances	Both remittances	Not remittances vs Internal remittances	Not remittances vs External remittances	Not remittances vs Both remittances
Household size	4.85 (2.40)	4.04 (2.46)	4.59 (2.39)	4.04 (2.46)	22.37***	5.64***	6.97***
Hh head’s sex (1=male, 0=female)	90.4% (29.5%)	72.1% (44.8%)	74.5% (43.6%)	68.2% (46.6%)	28.89***	19.72***	10.12***
Hh head’s age	45.30 (15.34)	54.78 (17.66)	50.87 (16.08)	57.30 (17.03)	-37.06***	-18.31***	-14.94***
Hh reads and writes (1=yes, 0=no)	78.4% (41.2%)	60.3% (48.9%)	62.7% (48.4%)	60.5% (48.9%)	25.58***	17.22***	7.74***
Hh head works in agriculture (1=yes, 0=no)	52.5% (49.9%)	45.4% (49.8%)	43.9% (49.6%)	41.7% (49.4%)	9.65***	9.10***	4.64***
Hh head’s schooling	4.25 (3.88)	2.70 (3.30)	2.62 (3.02)	2.59 (3.22)	31.01***	27.69***	10.89***
Maximum schooling in the hh	7.28 (3.83)	6.00 (3.99)	6.84 (3.41)	6.43 (3.79)	21.83***	6.73***	4.75***
Hh members with secondary schooling	0.77 (1.09)	0.51 (0.88)	0.62 (0.96)	0.62 (0.94)	19.43***	8.36***	3.46***
Hh members with highschool schooling	0.28 (0.67)	0.17 (0.50)	0.19 (0.53)	0.21 (0.57)	14.54***	8.70***	2.66***
Hh members over age 14 that don’t read and write	0.55 (0.86)	0.67 (0.82)	0.46 (0.74)	0.61 (0.82)	-9.78***	6.04***	-1.51
Hh members over age 59	0.33 (0.64)	0.66 (0.78)	0.50 (0.74)	0.80 (0.83)	-29.00***	-12.00***	-11.94***
Hh members below age 7	0.87 (1.04)	0.62 (0.97)	0.75 (0.99)	0.59 (1.00)	17.45***	6.45***	5.87***
Hh members with medical security	0.29 (0.61)	0.11 (0.38)	0.09 (0.35)	0.09 (0.62)	27.90***	26.91***	12.38***
Hh’s vehicles	0.28 (0.59)	0.14 (0.41)	0.40 (0.64)	0.31 (0.65)	20.39***	-10.37***	-1.00
House with public	63.6%	63.2%	73.8%	78.3%	0.50	-12.09***	-7.52***

water provided (1=yes, 0=no)	(48.1%)	(48.2%)	(44.0%)	(41.3%)			
House with public drainage provided (1=yes, 0=no)	15.8% (36.5%)	13.7% (34.4%)	21.7% (41.2%)	24.8% (43.2%)	3.97***	-7.63***	-4.42***
House with public electricity provided (1=yes, 0=no)	87.4% (33.2%)	88.3% (32.2%)	95.7% (20.4%)	97.1% (16.6%)	-1.81*	-19.87***	-12.13***
House with phone service provided (1=yes, 0=no)	8.7% (28.2%)	7.7% (26.7%)	15.5% (36.2%)	17.5% (38.1%)	2.58***	-10.03***	-4.93***
Household got a loan (1=yes, 0=no)	9.7% (29.6%)	9.8% (29.7%)	9.9% (29.9%)	14.7% (35.4%)	-0.25	-0.41	-2.99***
Observations	28,513	5,465	3,071	456			

Source: Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 1992-2005

**Table 2. Income and Remittances Data of Non-Remittance and Remittance-Receiving Households (pesos)**

	Not Remittances	Internal Remittances			External Remittances			Both Remittances					
	Total Income	Total Income	Remittances	%	Total Income	Remittances	%	Total Income	External Remittances	Internal Remittances	% Ext.	% Int.	% Total
1992	1,447.1	1,182.0	243.0	24.7	1,824.3	541.0	38.7	1,567.6	297.1	288.3	21.3	18.6	39.9
1994	1,347.5	1,256.2	280.6	24.8	1,353.8	430.5	34.1	1,407.8	274.4	200.9	23.6	15.4	39.0
1996	1,049.9	1,013.7	240.0	25.4	1,284.6	518.5	44.4	1,228.9	325.2	169.0	27.4	16.4	43.8
1998	1,229.2	930.2	219.6	27.0	1,321.3	482.3	42.0	1,563.1	358.6	203.3	25.0	14.4	39.4
2000	1,340.1	1,112.3	295.8	28.7	1,461.8	490.0	39.2	1,231.0	222.8	207.8	20.9	18.3	39.2
2002	1,183.7	1,095.5	248.0	25.4	1,486.1	548.3	40.0	1,442.8	340.5	242.3	27.3	14.2	41.6
2004	1,686.3	1,461.6	282.7	21.0	1,588.3	555.3	38.0	2,190.8	523.2	227.4	28.1	12.0	40.1
2005	1,674.8	1,456.9	273.4	20.8	1,412.2	578.6	40.8	1,963.3	411.4	223.9	24.8	12.9	37.6
All years	1,391.9	1,209.2	261.0	24.4	1,449.0	524.7	40.0	1,622.1	356.2	221.9	25.0	14.9	39.9
Obs.	28,513	5,465			3,071			456					

Source: Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 1992-2005

**Table 3. Average Budget Shares of Expenditure Categories by Non-Remittance and Remittance-Receiving Households (percentages).**

	Not Remittances	Internal Remittances	External Remittances	Both Remittances	Mean-difference t-test		
					Not remittances vs Internal remittances	Not remittances vs External remittances	Not remittances vs Both remittances
Food	41.82	42.82	34.73	35.98	-3.86***	24.20***	7.93***
Health	3.60	5.16	5.18	6.74	-11.50***	-8.95***	-6.24***
Education	2.92	2.57	2.62	2.13	4.21***	3.00***	3.57***
Durable	2.67	2.34	3.62	4.21	4.14***	-7.23***	-4.21***

Goods							
Non Durable Goods	13.61	12.60	13.77	12.52	8.73***	-1.04	3.15***
Other current expenditures	28.96	29.24	28.81	29.54	-1.29	0.53	-0.84
Patrimony	1.11	1.07	2.25	1.46	0.54	-7.45***	-1.25
Business	0.19	0.13	0.23	0.36	1.81*	-0.73	-1.09
Savings	3.50	2.64	5.97	4.27	7.35***	-10.76***	-1.73*
Other capital transfers	1.63	1.42	2.83	2.79	2.83***	-8.75***	-3.27***
Obs.	28,513	5,465	3,071	456			

Source: Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 1992-2005

**Table 4. List of variables used**

Logarithm of hh size: lnhsiz
Hh head's age: agehead
Hh head's age squared: agehead2
Hh head's sex: sexhead ((1=yes, 0=female)
Hh head's schooling: schoolinghead
Hh head work in agriculture: agrichead (1=yes, 0=no)
Hh members with highschool completed: highschool
A hh member over age 14 doesn't read and write: analfabetas15d (1=yes, 0=no)
A hh member attends a private school: privateschool (1=yes, 0=no)
Hh members over age 59: oldabeq60
Hh members below age 7: childrenbeeq6
Hh members with medical security: medicalsecurity
Hh rents the house: renthouse (1=yes, 0=no)
Hh pays the house: payhouse (1=yes, 0=no)
Hh has phone service: phone (1=yes, 0=no)
Service Index: (water dummy + drainage dummy+ electricity dummy/3)
Hh's vehicles: vehicles
Hh receive internal remittances: hwinter (1=yes, 0=no)
Hh receives external remittances: hwextern (1=yes, 0=no)
Hh receives internal and external remittances: hwinext (1=yes, 0=no)
Proportion of internal remittances on total income: pinternal
Proportion of external remittances on total income: pexternal
Hh got a loan: loand (1=yes, 0=no)
Logarithm of total expenditure: lntotalexpl
Year=1992
Year=1994
Year=1996
Year=1998
Year=2000
Year=2002
Year=2004
Year=2005

Region South
Region Center
Region Center-West
Region North-east
Region North-west

Table 5. Household expenditure shares, Tobit regressions

	Food		Education		Health		Durable Goods		Non Durable Goods		Other	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	-3.915	***-19.1	11.765	***64.31	2.536	***18.21	3.840	***29.35	0.959	***9.64	-6.866	***-38.0
agehead	-0.191	***-6.04	0.152	***5.63	-0.119	***-5.60	-0.177	***-8.87	-0.081	***-5.3	0.423	***15.15
agehead2	0.002	***6.11	-0.002	***-7.89	0.001	***6.96	0.001	***5.48	0.0003	**1.89	-0.004	***-13.0
sexhead	0.375	1.49	-2.021	***-10.93	-0.048	-0.29	0.358	**2.27	-0.205	*-1.68	-0.001	0.00
schoolinghead	-0.216	***-7.08	0.215	***10.27	-0.070	***-3.45	-0.038	**2.10	0.042	***2.84	0.229	***8.51
agrichead	0.014	0.08	-0.721	***-5.78	-0.202	*-1.71	0.413	***3.82	0.362	***4.22	-2.267	***-14.5
highschool	-0.929	***-6.04	-0.259	**2.54	-0.233	**2.30	-0.313	***-3.43	0.264	***3.53	0.792	***5.84
analfabetas15d	1.295	***6.46	-0.971	***-6.84	-0.212	-1.58	-0.035	-0.29	-0.698	***-7.2	-0.867	***-4.91
privateschoold	-2.134	***-3.81	10.005	***29.71	-1.582	***-4.28	-1.835	***-5.56	-0.894	***-3.3	0.453	0.92
oldabeq60	-1.078	***-5.7	-1.366	***-9.54	0.980	***8.14	-0.041	-0.36	-0.424	***-4.8	0.803	***5.03
childbeeq6	0.705	***6.99	-1.664	***-24.52	0.752	***11.14	0.101	*1.65	-0.474	***-9.7	-0.543	***-6.10
medicalsecurity	-0.568	***-3.67	-0.685	***-6.60	-0.748	***-7.24	0.180	**1.99	0.480	***6.38	1.734	***12.68
renthouse	2.155	***3.71	0.095	0.23	-0.540	-1.40	-0.001	0.00	0.486	*1.72	-0.951	*-1.85
payhouse	-3.062	***-3.60	1.163	**2.12	-2.000	***-3.57	0.002	0.00	-1.497	***-3.7	-0.346	-0.46
phone	-2.116	***-6.83	-0.340	-1.57	-0.435	**2.14	-1.377	***-7.53	-0.436	***-2.9	5.448	***19.91
serviceindex	-1.265	***-3.94	1.272	***5.50	0.684	***3.16	0.874	***4.36	0.487	***3.13	2.134	***7.53
vehicles	-3.684	***-22.5	-1.038	***-9.00	-1.097	***-10.1	1.644	***17.17	-0.507	***-6.4	3.484	***24.09
loand	-2.198	***-8.15	0.372	**2.05	3.378	***19.23	0.401	**2.52	-0.693	***-5.3	-1.741	***-7.31
pinternal	-0.038	***-5.80	0.036	***7.51	0.019	***4.17	0.011	**2.57	0.014	***4.22	0.0004	0.06
pexternal	-0.106	***-17.6	0.013	***3.09	0.012	***3.01	0.026	***7.23	0.023	***7.74	-0.010	*-1.85
Intotalexpoll	-5.769	***-41.5	0.780	***7.65	3.339	***35.43	4.380	***49.86	-2.611	***-38.7	-2.953	***-24.0
Year=1994	-3.509	***-11.0	1.386	***6.03	0.171	0.79	-0.546	***-2.80	-0.031	-0.20	1.198	***4.23
Year=1996	0.888	***2.71	2.681	***11.53	0.030	0.13	-1.204	***-5.96	-0.203	-1.28	-4.280	***-14.8
Year=1998	0.066	0.19	2.483	***10.08	0.666	***2.87	-0.451	**2.14	0.741	***4.45	-4.867	***-16.0
Year=2000	-2.196	***-6.10	3.518	***13.76	1.394	***5.76	0.629	***2.89	1.840	***10.52	-4.766	***-15.0
Year=2002	-1.773	***-5.39	2.984	***12.55	2.189	***9.91	-0.190	-0.94	2.112	***13.23	-4.293	***-14.8
Year=2004	-1.624	***-4.98	3.602	***15.37	2.196	***10.05	-0.612	***-3.08	0.960	***6.06	-4.140	***-14.4
Year=2005	-4.508	***-13.8	3.387	***14.32	3.133	***14.31	-0.031	-0.16	1.447	***9.12	-3.220	***-11.2
Center	-2.435	***-10.4	0.919	***5.67	-0.576	***-3.67	-1.370	***-9.40	-0.672	***-5.91	3.973	***19.20
Center-West	-3.635	***-16.6	-0.496	***-3.22	-0.048	-0.33	-0.747	***-5.52	1.108	***10.41	2.767	***14.30
North-east	-5.411	***-17.1	-0.194	-0.86	-0.592	***-2.79	0.002	0.01	2.352	***15.31	4.526	***16.21



Nort-west	-6.309	***-23.8	-1.176	***-6.04	-0.577	***-3.23	0.157	0.97	3.022	***23.47	3.444	***14.71
Constant	103.702	***74.18	-26.91	***-25.13	-27.83	***-29.3	-35.48	***-40.0	34.339	***50.61	49.028	***39.74
Pseudo R <sup>2</sup>	0.03		0.07		0.01		0.04		0.02		0.02	
Censored Obs	208		21,257		11,365		17,019		87		37	
Obs.	37,505		37,505		37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

**Table 5. Household expenditure shares, Tobit regressions (continued)**

	Patrimony		Business		Savings		Outtransfers	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	10.264	***22.02	19.706	***9.62	10.346	***24.33	5.044	***17.67
agehead	-0.151	**2.14	0.135	0.41	-0.097	-1.48	0.145	***3.22
agehead2	0.001	1.09	-0.002	-0.70	0.001	1.17	-0.001	***2.69
sexhead	0.904	*1.68	3.622	1.33	0.107	0.21	1.170	***3.32
schoolinghead	-0.102	*-1.69	-0.564	**2.02	-0.128	**2.15	0.016	0.39
agrichead	0.110	0.29	9.252	***5.54	2.466	***6.90	3.360	***13.95
highschool	-0.014	-0.05	-2.389	-1.63	-0.102	-0.35	0.333	*1.71
analfabetas15d	-0.123	-0.28	2.242	1.23	1.229	***3.02	0.183	0.67
privateschoold	-6.567	***-5.95	-7.524	-1.50	-4.530	***-4.27	-2.171	***-3.02
oldabeq60	-0.234	-0.58	-0.390	-0.23	0.975	**2.67	0.917	***3.80
childbeeq6	0.038	0.17	0.322	0.36	0.763	***3.76	0.286	**2.08
medicalsecurity	-0.137	-0.47	-13.913	***-6.79	0.335	1.16	-0.924	***-4.48
renthouse	-6.705	***-5.44	-9.087	-1.39	-1.913	*-1.70	-1.088	-1.38
payhouse	19.688	***16.51	-12.384	-1.18	-2.861	*-1.83	-0.072	-0.07
phone	-2.965	***-5.10	-2.716	-1.01	-2.911	***-4.95	-0.554	-1.42
serviceindex	-0.122	-0.17	-5.977	**1.99	-3.359	***-5.10	-1.254	***-2.83
vehicles	-1.547	***-4.92	-0.563	-0.44	-1.149	***-3.69	0.768	***3.76
loand	3.457	***6.72	8.595	***4.40	-1.181	**2.25	11.665	***37.22
pinternal	0.048	<b>***3.21</b>	-0.056	-0.74	-0.071	<b>***-4.73</b>	0.018	<b>*1.93</b>
pexternal	0.097	<b>***8.62</b>	-0.056	-1.04	0.071	<b>***6.23</b>	0.058	<b>***7.67</b>
lntotalexpoll	12.441	***39.25	23.835	***16.38	15.215	***51.57	6.412	***33.41
Year=1994	1.851	***2.58	0.515	0.19	4.803	***7.30	7.303	***15.17
Year=1996	4.227	***5.76	5.625	**2.07	7.423	***11.06	6.165	***12.38
Year=1998	1.802	**2.28	-2.352	-0.73	6.671	***9.42	7.790	***15.20
Year=2000	3.247	***4.00	-0.317	-0.10	7.768	***10.62	6.014	***11.13
Year=2002	4.346	***5.85	-0.089	-0.03	1.144	1.62	6.937	***13.93
Year=2004	7.459	***10.56	-1.659	-0.56	4.973	***7.39	9.014	***18.52
Year=2005	8.663	***12.23	-0.309	-0.10	4.799	***7.10	9.513	***19.48
Center	-0.052	-0.10	1.454	0.67	-1.538	***-3.21	-1.123	***-3.40
Center-West	-0.247	-0.52	-2.008	-0.98	-1.016	***-2.29	1.457	***4.93
North-east	-1.311	**2.02	-13.462	***-3.84	-4.194	***-6.59	-1.478	***-3.44
Nort-west	0.361	0.65	3.628	1.58	-2.013	***-3.76	-0.432	-1.19

Constant	-136.65	***-40.53	-306.385	***-17.4	-151.455	***-49.7	-85.475	***-41.5
Pseudo R <sup>2</sup>	0.06		0.08		0.04		0.05	
Censored Obs	32,670		37,034		28,121		29,358	
Obs.	37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

Table 6. Household expenditure shares, Seemingly Unrelated Regressions 1

	Food		Education		Health		Durable Goods		Non Durable Goods		Other	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	-4.034	***-20.0	3.575	***21.56	1.009	***7.29	1.543	***12.55	0.888	***8.76	-6.877	***-38.1
agehead	-0.188	***-6.04	0.057	***5.25	-0.070	***-4.39	-0.120	***-10.1	-0.084	***-5.45	0.422	***15.12
agehead2	0.002	***6.14	-0.001	***-5.75	0.001	***5.89	0.001	***7.36	0.0003	**2.15	-0.004	***-13.0
sexhead	0.366	1.47	-0.754	***-8.59	0.033	0.26	0.178	*1.89	-0.197	-1.61	0.002	0.01
schoolinghead	-0.211	***-7.04	0.086	***8.14	-0.061	***-4.05	-0.012	-1.02	0.041	***2.78	0.229	***8.50
agrichead	0.020	0.12	-0.400	***-6.68	-0.181	**2.07	0.264	***4.01	0.348	***4.07	-2.266	***-14.6
highschool	-0.919	***-6.08	0.051	0.98	-0.123	-1.60	-0.135	***-2.36	0.263	***3.54	0.795	***5.86
analfabetas15d	1.279	***6.49	-0.443	***-6.48	-0.057	-0.57	0.082	1.10	-0.691	***-7.13	-0.865	***-4.90
privateschoold	-2.088	***-3.79	7.658	***38.81	-1.167	***-4.19	-0.944	***-4.47	-0.874	***-3.22	0.458	0.93
oldabeq60	-1.087	***-6.11	-0.596	***-9.52	0.751	***8.30	-0.056	-0.84	-0.436	***-4.98	0.801	***5.03
childbeeq6	0.706	***7.11	-0.807	***-21.91	0.516	***10.03	0.065	*1.74	-0.466	***-9.54	-0.544	***-6.12
medicalsecurity	-0.562	***-3.69	-0.319	***-6.01	-0.471	***-5.99	0.141	**2.45	0.480	***6.40	1.735	***12.69
renthouse	2.187	***3.82	0.063	0.32	-0.366	-1.27	0.054	0.25	0.487	*1.73	-0.954	*-1.86
payhouse	-2.930	***-3.50	0.560	**1.94	-1.459	***-3.45	0.315	1.00	-1.497	***-3.64	-0.345	-0.46
phone	-2.065	***-6.77	-0.269	**2.57	-0.221	-1.43	-0.897	***-7.72	-0.404	***-2.69	5.451	***19.94
serviceindex	-1.374	***-4.35	0.337	***3.07	0.223	1.38	0.294	**2.43	0.463	***2.98	2.127	***7.52
vehicles	-3.627	***-22.5	-0.520	***-9.23	-0.795	***-9.62	1.437	***23.28	-0.504	***-6.35	3.484	***24.11
loand	-2.198	***-8.29	-0.002	-0.02	2.495	***17.34	0.040	0.39	-0.687	***-5.26	-1.741	***-7.32
pinternal	-0.038	***-5.88	0.013	***5.90	0.013	***3.98	0.007	***2.97	0.013	***4.00	0.0004	0.06
pexternal	-0.105	***-17.8	0.004	*1.74	0.009	***3.10	0.017	***7.34	0.022	***7.65	-0.010	*-1.86
lntotalexpcall	-5.883	***-42.8	0.065	1.27	1.843	***16.80	2.174	***21.03	-2.632	***-38.9	-2.964	***-24.1
Year=1994	-3.555	***-11.3	0.461	***4.18	0.006	0.04	-0.381	***-3.19	-0.052	-0.33	1.197	***4.24
Year=1996	0.837	***2.60	1.049	***0.09	0.149	0.91	-0.689	***-5.57	-0.217	-1.36	-4.279	***-14.8
Year=1998	0.068	0.20	0.977	***8.17	0.493	***2.89	-0.364	***-2.85	0.724	***4.36	-4.868	***-16.1
Year=2000	-2.238	***-6.32	1.476	***11.57	0.872	***4.82	0.063	0.46	1.805	***10.33	-4.767	***-15.0
Year=2002	-1.795	***-5.55	1.445	***12.75	1.329	***7.82	-0.291	**2.38	2.094	***13.15	-4.294	***-14.8
Year=2004	-1.689	***-5.26	1.766	***15.51	1.276	***7.49	-0.653	***-5.38	0.932	***5.89	-4.109	***-14.3
Year=2005	-4.559	***-14.2	1.623	***14.30	2.035	***11.83	-0.216	*1.78	1.429	***0.03	-3.220	***-11.3
Center	-2.413	***-10.5	0.639	***8.05	-0.133	-1.11	-0.836	***-9.33	-0.658	***-5.79	3.974	***19.2
Center-West	-3.591	***-16.7	-0.184	**2.48	0.179	1.62	-0.404	***-4.90	1.129	***10.62	2.771	***14.3

North-east	-5.310	***-17.1	-0.139	-1.30	0.096	0.59	0.125	1.07	2.383	***15.52	4.530	***16.2
Nort-west	-6.157	***-23.6	-0.341	***-3.73	0.162	1.14	0.238	**2.41	3.045	***23.67	3.457	***14.8
Inverse Mill Ratio	-2.376	***-5.10	0.434	***3.32	0.210	0.60	0.783	***3.33	-2.856	**_-2.31	-0.167	-0.20
Constant	104.735	***75.95	-3.996	***-5.71	-12.31	***-10.6	-13.842	***-12.7	34.681	***50.66	49.159	***39.6
R <sup>2</sup>	0.25		0.15		0.05		0.10		0.14		0.16	
Obs.	37,505		37,505		37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

Table 6. Household expenditure shares, Seemingly Unrelated Regressions 1 (continued)

	Patrimony		Business		Savings		Outtransfers	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	1.558	***9.16	0.213	***4.75	2.352	***16.42	0.629	***7.90
agehead	-0.031	***-2.80	-0.006	-1.19	-0.013	-0.71	0.023	**2.02
agehead2	0.0002	*1.69	0.00004	0.87	0.0001	0.71	-0.0001	-1.15
sexhead	0.113	1.26	-0.023	-0.57	0.087	0.59	0.143	1.58
schoolinghead	-0.013	-1.20	-0.017	***-3.48	-0.045	**_-2.53	0.011	1.04
agrhead	0.097	1.57	0.106	***3.32	1.096	***10.60	0.764	***11.73
highschool	0.077	1.43	-0.060	**_-2.43	-0.007	-0.08	0.012	0.22
analfabetas15d	0.160	**2.27	0.020	0.63	0.371	***3.16	0.035	0.49
privateschoold	-1.234	***-5.69	-0.091	-1.02	-1.239	***-3.78	-0.541	***-2.71
oldabeq60	0.000	0.00	-0.003	-0.11	0.386	***3.66	0.147	**2.28
childbeeq6	0.066	*1.86	0.016	1.02	0.301	***5.11	0.102	***2.84
medicalsecurity	-0.052	-0.95	-0.092	***-2.75	-0.432	***-4.75	-0.367	***-6.66
renthouse	-1.122	***-4.91	-0.128	-1.37	-0.532	-1.57	0.084	0.40
payhouse	7.734	***18.50	-0.107	-0.78	-1.013	**_-2.04	-0.166	-0.55
phone	-0.572	***-5.02	-0.081	*_-1.64	-1.078	***-5.95	0.066	0.60
serviceindex	-0.335	***-2.98	-0.113	**_-2.17	-1.270	***-6.76	-0.158	-1.38
vehicles	-0.180	***-2.91	0.099	***3.79	0.089	0.92	0.493	***8.46
loand	0.579	***5.26	0.151	***3.35	-1.203	***-7.65	2.546	***21.35
pinternal	0.008	<b>***3.40</b>	0.001	1.24	-0.015	<b>***-3.81</b>	0.001	0.41
pexternal	0.027	<b>***11.83</b>	-0.002	<b>***-2.34</b>	0.030	<b>***8.56</b>	0.012	<b>***5.40</b>
Intotalexpoll	2.227	***12.16	0.332	***7.84	4.050	***30.06	1.199	***19.60
Year=1994	0.213	*1.82	-0.096	*_-1.88	1.181	***6.22	0.892	***7.25
Year=1996	0.766	***5.95	-0.010	-0.20	1.601	***8.02	0.664	***5.37
Year=1998	0.393	***3.21	-0.040	-0.73	1.659	***8.06	0.839	***6.33
Year=2000	0.643	***4.87	0.006	0.10	1.714	***7.86	0.457	***3.38
Year=2002	0.648	***4.87	-0.098	*_-1.87	0.408	**2.13	0.659	***5.23
Year=2004	1.086	***6.48	-0.046	-0.89	0.712	***3.64	0.896	***6.84
Year=2005	1.271	***7.11	-0.004	-0.07	0.864	***4.43	0.999	***7.54
Center	-0.022	-0.27	-0.057	-1.53	-0.354	**_-2.58	-0.160	*_-1.91
Center-West	-0.207	***-2.69	-0.053	-1.50	-0.213	*_-1.66	0.570	***7.29
North-east	-0.501	***-4.51	-0.128	**_-2.36	-0.624	***-3.31	-0.238	**_-2.11
Nort-west	-0.304	***-3.19	0.085	*1.99	-0.169	-1.08	0.074	0.78

Inverse Mill Ratio	1.112	***3.16	-0.283	***-4.14	-0.421	*-1.86	-0.394	***-3.81
Constant	-20.034	***-8.75	-1.589	***-2.80	-31.36	***-21.0	-10.522	***-14.0
R <sup>2</sup>	0.07		0.02		0.10		0.08	
Obs.	37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

Table 7. Household expenditure shares, Seemingly Unrelated Regressions 2

	Food		Education		Health		Durable Goods		Non Durable Goods		Other	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	-3.539	***-18.3	1.456	***6.55	-0.246	*-1.72	0.416	***3.18	0.680	***6.53	-6.562	***-37.8
agehead	-0.079	***-2.79	0.137	***6.09	-0.020	-0.89	-0.271	***-12.5	-0.105	***-6.88	0.395	***15.02
agehead2	0.001	***3.43	-0.001	***-6.17	0.001	***2.62	0.002	***10.46	0.001	***3.75	-0.003	***-12.8
sexhead	0.636	***2.76	-0.322	** -2.24	0.150	0.88	0.247	1.53	-0.173	-1.43	-0.051	-0.24
schoolinghead	-0.211	***-7.52	0.075	***4.63	-0.075	***-3.76	-0.022	-1.26	0.026	*1.80	0.192	***7.47
agrhead	0.691	***4.26	-0.397	***-4.06	-0.428	***-3.58	0.165	1.53	0.419	***4.92	-1.802	***-12.1
highschool	-1.114	***-7.83	0.272	***3.50	-0.025	-0.26	-0.054	-0.67	0.261	***3.53	0.784	***6.03
analfabetas15d	1.428	***7.77	-0.344	***-3.17	0.205	1.49	0.036	0.28	-0.670	***-6.96	-0.870	***-5.17
privateschoold	-2.724	***-5.22	6.689	***26.56	-1.112	***-3.19	-0.685	** -2.33	-0.879	***-3.27	0.144	0.30
oldabeq60	-0.939	***-5.68	0.034	0.28	0.885	***7.28	-0.453	***-3.79	-0.448	***-5.15	0.891	***5.88
childbee6	0.874	***9.43	-0.725	***-12.36	0.539	***8.31	-0.035	-0.59	-0.438	***-9.03	-0.542	***-6.37
medicalsecurity	-1.078	***-7.50	-0.382	***-4.84	-0.365	***-3.61	0.321	***4.05	0.397	***5.34	1.397	***10.63
renthouse	1.774	***3.31	0.443	1.37	-0.272	-0.73	-0.121	-0.40	0.387	1.39	-1.334	***-2.72
payhouse	-2.629	***-3.27	0.021	0.05	-1.568	***-2.95	0.564	1.38	-1.454	***-3.56	-0.191	-0.26
phone	-2.872	***-9.99	-0.394	** -2.40	-0.181	-0.95	-0.980	***-6.05	-0.372	** -2.48	5.100	***19.47
serviceindex	-2.739	***-9.31	0.518	***2.88	-0.041	-0.18	0.514	**2.51	0.233	1.51	1.537	***5.70
vehicles	-3.370	***-22.1	-0.623	***-7.38	-0.911	***-8.94	2.040	***24.24	-0.457	***-5.82	3.540	***25.94
loand	-2.656	***-10.5	-0.117	-0.84	2.488	***14.11	-0.106	-0.72	-0.696	***-5.36	-1.962	***-8.52
pinternal	-0.033	***-5.40	0.010	***2.92	0.018	***3.93	0.008	*1.86	0.009	***2.88	-0.003	-0.49
pexternal	-0.085	***-15.4	-0.001	-0.36	0.007	*1.83	0.015	***4.34	0.024	***8.34	0.003	0.55
Intotalexpl	-4.328	***-32.5	0.087	1.44	1.002	***14.78	1.233	***23.10	-2.478	***-36.5	-1.964	***-16.6
Year=1994	-3.783	***-12.0	0.053	0.49	-0.107	-0.67	-0.274	** -2.31	-0.154	-0.99	1.142	***4.04
Year=1996	0.887	***2.76	0.440	***3.96	0.270	*1.66	-0.469	***-3.85	-0.252	-1.59	-4.184	***-14.5
Year=1998	0.348	1.04	0.480	***4.16	0.386	**2.28	-0.396	***-3.13	0.688	***4.14	-4.728	***-15.7
Year=2000	-2.131	***-6.03	0.785	***6.45	0.500	***2.81	-0.258	*-1.94	1.689	***0.65	-4.651	***-14.7
Year=2002	-1.527	***-4.73	1.115	***10.16	0.717	***4.39	-0.414	***-3.42	2.064	***12.95	-4.138	***-14.3
Year=2004	-1.670	***-5.22	1.213	***11.15	0.623	***3.81	-0.741	***-6.16	0.834	***5.26	-3.973	***-13.8
Year=2005	-4.313	***-13.5	1.197	***11.27	1.306	***8.08	-0.356	***-3.00	1.389	***8.78	-3.094	***-10.8
Center	-2.471	***-10.6	0.465	***5.92	0.239	**2.04	-0.530	***-6.13	-0.610	***-5.36	3.924	***19.0
Center-West	-3.867	***-18.0	-0.242	***-3.35	0.412	***3.79	-0.153	*-1.90	1.165	***10.93	2.537	***13.2

North-east	-5.679	***-18.3	-0.226	** -2.18	0.711	***4.51	0.303	***2.61	2.433	***15.82	4.200	***15.1
Nort-west	-6.404	***-24.5	-0.090	-1.03	0.867	***6.48	0.481	***4.96	3.061	***23.77	3.132	***13.4
$\phi(X_h)$	-34.757	***-25.0	2.298	***7.32	3.998	***4.51	5.436	***12.80	-30.87	***-15.4	-10.77	***-6.3
Constant	89.358	***69.04	-0.901	***-8.13	-4.088	***-8.13	-1.285	***-6.52	34.440	***49.63	41.944	***35.8
R <sup>2</sup>	0.25		0.16		0.05		0.10		0.14		0.15	
Obs.	37,505		37,505		37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

Table 7. Household expenditure shares, Seemingly Unrelated Regressions 2

	Patrimony		Business		Savings		Outtransfers	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
lnhsize	0.507	1.48	5.100	***4.78	1.205	***3.93	-0.542	** -2.43
agehead	0.018	0.30	0.065	0.29	-0.107	** -2.13	-0.039	-1.08
agehead2	-0.001	-1.12	-0.003	-1.15	0.001	**2.25	0.001	**2.14
sexhead	-0.014	-0.04	6.559	***3.19	-0.914	** -2.38	-0.262	-0.87
schoolinghead	-0.098	** -2.32	-0.450	***-2.62	0.007	0.17	0.102	***3.39
agrichead	-1.814	***-5.47	2.330	**2.08	1.503	***5.40	1.076	***5.36
highschool	0.718	***3.81	-4.325	***-5.25	0.161	0.86	-0.024	-0.18
analfabetas15d	1.416	***3.47	-3.151	***-2.72	-0.039	-0.12	-0.395	* -1.80
privateschoold	-1.356	** -2.13	11.252	***4.08	0.801	1.19	-0.700	-1.35
oldabeq60	0.438	1.21	-1.350	-1.34	0.667	**2.36	-0.163	-0.83
childbee6	0.453	***2.58	-0.542	-0.97	0.110	0.72	0.032	0.30
medicalsecurity	0.115	0.59	3.896	**2.11	-0.662	***-3.63	-0.308	** -2.03
renthouse	-0.308	-0.31	-16.881	***-4.28	0.504	0.70	2.273	***3.59
payhouse	3.713	***6.39	-1.026	-0.12	-2.182	** -2.32	-0.205	-0.30
phone	-0.052	-0.15	0.945	0.65	-0.450	-1.18	0.959	***3.34
serviceindex	0.148	0.26	-10.068	***-5.18	0.704	1.38	1.056	***2.91
vehicles	-1.104	***-5.56	1.173	**2.21	0.521	***2.68	1.229	***8.60
load	0.895	**2.50	7.882	***7.80	-4.740	***-12.6	3.785	***14.08
pinternal	0.015	1.10	0.191	***2.87	-0.054	***-3.77	0.0001	0.01
pexternal	0.066	***7.53	-0.212	***-5.63	0.025	***3.04	0.012	**2.03
lntotalexpall	0.902	***6.75	1.764	***4.23	1.103	***9.06	0.056	0.60
Year=1994	-0.037	-0.33	-0.077	-1.55	0.640	***3.47	0.443	***3.79
Year=1996	0.233	**2.06	-0.020	-0.40	0.300	1.59	0.161	1.37
Year=1998	0.112	0.95	-0.019	-0.36	0.442	**2.26	0.151	1.23
Year=2000	0.256	**2.07	0.048	0.86	0.367	*1.78	-0.072	-0.56
Year=2002	-0.009	-0.08	-0.066	-1.30	-0.072	-0.39	0.022	0.19
Year=2004	-0.097	-0.86	0.030	0.61	-0.364	*-1.97	0.152	1.28
Year=2005	-0.054	-0.49	0.038	0.78	-0.233	-1.30	0.189	1.63
Center	0.024	0.29	-0.020	-0.56	-0.009	-0.07	-0.018	-0.22

Center-West	-0.091	-1.22	0.001	0.04	0.305	**2.49	0.690	***9.06
North-east	-0.167	-1.56	-0.009	-0.19	0.644	***3.67	0.152	1.41
Nort-west	-0.223	**2.47	0.069	*1.73	0.810	***5.50	0.387	***4.26
$\phi(X_h)$	2.362	***3.75	-1.126	-0.90	6.092	***9.72	4.292	***9.21
Constant	-0.185	*1.79	-0.008	-0.17	-0.676	***3.52	-0.325	***3.02
R <sup>2</sup>	0.07		0.06		0.09		0.08	
Obs.	37,505		37,505		37,505		37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively

**Table 8. Marginal effects of the Probit model for the probability of a household getting a loan**

Dependent Variable = Loan (hh got a loan=1, 0=No)		
lnhsize	0.062	***15.95
agehead	-0.001	*1.86
agehead2	0.000002	0.27
sexhead	0.005	1.03
schoolinghead	-0.001	-1.48
agrichead	0.027	***8.56
highschool	-0.002	-0.77
analfabetas15d	-0.004	-1.21
privateschool	-0.022	***2.61
oldabeq60	-0.003	-0.96
childrenbeeq6	0.005	***2.60
medicalsecurity	-0.014	***4.97
renthouse	-0.008	-0.80
payhouse	0.053	***2.76
phone	-0.027	***5.58
serviceindex	0.015	**2.56
vehicles	-0.021	***6.67
hwinter	0.018	***3.82
hwextern	-0.008	-1.58
hwinext	0.042	***2.64
Intotalexpoll	0.055	***21.80
Year=1994	-0.039	***9.44
Year=1996	-0.028	***6.14
Year=1998	-0.031	***6.73
Year=2000	-0.032	***6.47
Year=2002	-0.005	-1.01
Year=2004	-0.040	***9.41
Year=2005	-0.039	***8.76
Center	-0.025	***6.41
Center-West	0.020	***4.76
North-east	-0.007	-1.31

Nort-west	-0.008	*-1.77
R <sup>2</sup>	0.0512	
Obs.	37,505	

Note: \*\*\*, \*\* and \* indicate significance of parameters at 0.01, 0.05 and 0.1 respectively