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ABSTRACT

Social Relations and Remittances: Evidence from Canadian Micro Data*

We theorise that remittances to persons outside the households represent transfers to maintain social relations with relatives and friends and charitable remittances are expenditures which foster group membership. We estimate transfer functions as part of a larger expenditure system and calculate Engel elasticities for remittances to persons and to charities. We conclude that expenditures to enhance social relations with relatives and friends are a normal good for recent Asian immigrants and a luxury good for all other immigrants and Canadians. This fact indicates strong cultural differences in the remittance behaviour of the population groups included.

JEL Classification: C31, D12, F22, F24

Keywords: international migration, household behaviour, remittances

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1. Introduction

The foreign-born Canadian resident population analysed in this paper is large (5 million), diverse and growing (250,000 per year). In addition, the vast majority of these foreign-born residents are admitted to Canada on a permanent basis (96%) and are often accompanied by their immediate families.[1] Finally, Canada's family reunification policy permits sponsorship of parents and grandparents with no explicit waiting period, thus, potentially blunting the motivation to remit.[2] Under these conditions of a guaranteed permanent residence for the nuclear immigrant household and the prospect of relatively expeditious family reunification as well as quick accession to citizenship, we test the motivation to remit in the Canadian context.[3]

The literature on the behaviour of households with regard to remittances outside the household is substantial and covers the general motivation to remit and outlines specific determinants.

Cox (1987) argues that there exist two main motivations for private remittances: altruism and exchange. Becker (1974) earlier stated that a remittance represents a benevolent act which promotes well-being and equality across the extended family. In a less altruistic version of the exchange model proposed by Bernheim, Shleifer and Summers (1985), remittances are motivated by the prospect of a later exchange for services by extended family members.

Lucas and Stark (1985) more broadly addressed the range of immigrants' remittance motives and classified their intentions to remit as influenced by pure altruism, self-interest and tempered altruism or enlightened self-interest. The pure self-interest motivation includes an aspiration to inherit and a desire to invest in assets at home, especially when the immigrant intends to return to his/her home country. If remittances occur as a result of a beneficial contractual agreement between the migrant and home, they are termed by Lucas and Stark (1985) as acts of "tempered altruism or enlightened self-interest". One example is when remittances are in fact a repayment to the migrant's family for a previous educational investment in the immigrant. Migrants may also remit part of their

[1] Permanent Canadian immigrants upon admission are permitted to immediately bring with them their spouse and any minor (under age 19) children. In 2001, only 198,640 foreign-born residents were non-permanent out of a total of 5.7 million foreign-born residents (Statistics Canada, 2001).

[2] There is however a financial constraint on family reunification. Before an immigrant can sponsor a relative, the sponsor must demonstrate financial viability. This is accomplished if the immigrant household's income from non-government transfers exceeds the poverty line (LICO) in the city of residence. This value circa 2005 is approximately CA$40,000 in urban Canada and beyond the reach of the vast majority of recent Canadian immigrants.

income because of an implied co-insurance contract between them and the family. Under this system the motivation to remit is an attempt to secure the help of the family when the need arises (Stark 1991).

Limited empirical evidence tends to support some of the above hypotheses. Cox and Rank (1992) find that empirical patterns for *inter-vivo* remittances are more consistent with exchange than altruism.[4] Cox (1987) reached a similar conclusion. Duraisamy et al. (2000) observe a strong positive association between family ties and remittances and argue that this represents indirect evidence in support of the altruism hypothesis.

Other scholars report a link between remittances, intention to return home and investment in human and physical capital. Ahlburg et al. (1998) find very little evidence to support the assumption that immigrants plan to return home with significant embodied human capital. However, they note that those who plan to return remit significantly more and also accumulate far more physical capital at home than those who do not plan to return. Brown (1994) concludes that more funds are remitted when these funds are intended for savings and investment rather than when they are used for family consumption.

Shamsuddin and DeVoretz (1998) analyse the more general question of wealth accumulation of immigrant and non-immigrant households in Canada. They observe a strong transfer (bequest) motive for the Canadian foreign born and a bias toward home ownership in the investment portfolios.[5] They note that these two phenomena should act as a substitute for remittances by the foreign-born household.

This paper builds on this literature by assessing the motivations of households to remit within an explicit expenditure framework. We distinguish between two kinds of transfers made by households: to persons and to religious/charitable organisations, and we argue that these are expenses on social relations with relatives and friends and on group membership respectively. In addition, we

[3] Over 75% of Canada's foreign-born population had ascended to citizenship in 1996 (DeVoretz and Pivnenko, 2006).
[4] *Inter vivo* transfers are those between living persons (vs. bequests).
[5] Didukh (2002) also notes this possible home ownership-remittance substitution.

hypothesize that expenditures on housing foster social relations among the household members. These features are incorporated in the model developed below.

Little systematic research, if any, has been done on ethnic group cultural differences in the remittance behaviour of households. However, as reflected by the Ethnic Diversity Survey, some Canadian ethnic groups were more likely to have frequent contact with their relatives in their country of origin than others. For example, 62% of those with Filipino ancestry reported monthly or more frequent contact with their relatives compared to 46% of those with Chinese, 31% of those with Italian and 20% of those with German origin.[6] And we believe that such differences are determined, at least partially, by cultural differences in social/family norms[7], thus, affecting the remittance behaviour of households as well.

In this study, we distinguish between four Canadian population groups: Canadian-born, immigrants from North America and Western Europe, immigrants from South and Eastern Europe, and immigrants from China, Asia and Oceania. In order to estimate the importance each group gives to the two kinds of transfers (i.e. to persons and to charities), Engel elasticities for each group and type of transfer are calculated, under more or less restrictive conditions. Further, we illustrate the households' remittance experience with a series of simulations over the households' life cycle. And finally, we test for immigration, cultural and assimilation effects with respect to the remittance behaviour of immigrant households in Canada.

2. Model

This section presents a utility maximisation model which describes the way households allocate their income between the consumption of traditional goods and remittances. We theorise that household members derive utility from the consumption of traditional goods and services and three kinds of social relations: (a) social relations between family/household members, (b) social relations with

[6] See Statistics Canada (2003). These numbers are in part reflecting time of arrival in Canada.

[7] As reported by Elliott and Gray (2000), the responsibility to care for parents and grand parents are a key component of the family systems in South and South East Asia. Similarly, in Oceania young adults are expected to contribute to both nuclear and extended family commitments. On the other hand, such family obligations are less important in Western societies. Those obligations having been replaced by well developed social and financial systems.

relatives and friends living outside the household, and (c) membership in social/religious groups. Under these conditions the i[th] household's utility function is given as:

$$u_i = u\left[c_i(C_i), s_i^f(H_i), s_i^p(R_i^p), s_i^g(R_i^{ch})\right] \quad (1)$$

where u_i equals total household utility; (c_i) represents household consumption and is positively dependent on the total expenditures on consumption goods: $\partial c_i / \partial C_i > 0$; ($s_i^f$) are the social relations between family/household members which we assume to be positively dependent on accommodation or housing expenditures: $\partial s_c^f / \partial H_i > 0$; where ($s_i^p$) are the social relations with relatives and friends which we assume to be positively related to remittances to persons outside the household $\partial s_c^p / \partial R_i^p > 0$; and ($s_i^g$) denotes group membership which we assume to be positively related to the household's remittances to charities $\partial s_c^g / \partial R_i^{ch} > 0$. Further, it is assumed that the household's income equals total household expenditures (including remittances): $Y_i = C_i + H_i + R_i^p + R_i^{ch}$, i.e. no borrowing.

In order to characterise the household's remittance decisions with respect to other items in the consumption bundle, we allow for a two-stage budgeting process. Thus, in the first stage, the household may allocate total income across broad groups of expenditures. In the second stage, group expenditures determined in the first stage are distributed across the relevant expenditure classes in these groups. Under these conditions, we distinguish three cases:

Case I: no two-stage budgeting

If there is no two-stage budgeting, the household's utility function has the form presented in eq. (1). Now, we differentiate (1) with respect to first c_i and then s_i^f, s_i^p and s_i^g, which yields the first order conditions:

$$\frac{\partial u_i}{\partial c_i} = \frac{\partial u_i}{\partial s_i^f} = \frac{\partial u_i}{\partial s_i^p} = \frac{\partial u_i}{\partial s_i^g} \quad (1.1)$$

Condition (1.1) implies that household utility is now maximised if the marginal utility from one more unit of home consumption equals the marginal utility from one more unit of social relations between

household members, the marginal utility from one more unit of social relations to persons outside the household, and the marginal utility from one more unit of group membership.

Remittances to relatives and/or friends will be zero ($R_i^p = 0$) if the household's marginal utility from social relations to relatives and/or friends living outside the household is lower than the household's marginal utility from consumption or the household's marginal utility derived from social relations between household's members or the household's marginal utility gained from group membership for all possible levels of remittances to persons outside the household within the limits of the household's budget (Y_i):

$$\frac{\partial u_i}{\partial s_i^p} < \frac{\partial u_i}{\partial c_i} \bigcap \frac{\partial u_i}{\partial s_i^p} < \frac{\partial u_i}{\partial s_i^f} \bigcap \frac{\partial u_i}{\partial s_i^p} < \frac{\partial u_i}{\partial s_i^g}; \forall R_i^p \in \left(0, Y_i\right]. \tag{1.2}$$

If condition (1.2) does not hold, the household's remittances to persons outside the household will be positive ($R_i^p > 0$). Thus, the amount remitted will be determined by the equilibrium condition (1.1) subject to $c_i\left(C_i\right)$, $s_i^f\left(H_i\right)$, $s_i^p\left(R_i^p\right)$ and $s_i^g\left(R_i^{ch}\right)$.

Similarly, the household's charity donations will be zero ($R_i^{ch} = 0$) if the household's marginal utility from group membership is lower than the household's marginal utility from consumption or the household's marginal utility from social relations between household's members or the household's marginal utility derived from social relations with relatives/friends living outside the household for all possible levels of charity donations given the limits of the household's budget (Y_i):

$$\frac{\partial u_i}{\partial s_i^g} < \frac{\partial u_i}{\partial c_i} \bigcap \frac{\partial u_i}{\partial s_i^g} < \frac{\partial u_i}{\partial s_i^f} \bigcap \frac{\partial u_i}{\partial s_i^g} < \frac{\partial u_i}{\partial s_i^p}; \forall R_i^{ch} \in \left(0, Y_i\right]. \tag{1.3}$$

If (1.3) does not hold, the household's charity donations will be positive ($R_i^{ch} > 0$). The amount donated will be determined by the equilibrium condition (1.1) subject to $c_i\left(C_i\right)$, $s_i^f\left(H_i\right)$, $s_i^p\left(R_i^p\right)$ and $s_i^g\left(R_i^{ch}\right)$.

Case II: two-stage budgeting – social relations

A necessary and sufficient condition for the utility maximisation in two stages is the assumption of *weak separability*.[8] We assume that the household's utility function is separable and its income is allocated in a first step on two expenditure groups: (a) consumption goods (c_i) and (b) social relations ($s_i^f + s_i^p + s_i^g$): $Y_i = Y_{i1} + Y_{i2}$. In the second step, the income assigned for social relations is then distributed across particular items in this group. The utility function, thus, takes the form:

$$u_i = u\left[u_{i1}(c_i), u_{i2}\left(s_i^f + s_i^p + s_i^g\right)\right] \tag{2}$$

and utility maximisation occurs over two steps:

First step: $$\frac{\partial u_i}{\partial c_i} = \frac{\partial u_i}{\partial\left(s_i^f + s_i^p + s_i^g\right)} \tag{2.1}$$

Second step: $$\frac{\partial u_{i2}}{\partial s_i^f} = \frac{\partial u_{i2}}{\partial s_i^p} = \frac{\partial u_{i2}}{\partial s_i^g} \tag{2.2}$$

Or, household utility is now maximised if simultaneously the marginal utility from one more unit of home consumption equals the marginal utility derived from one more unit of social relations, and the marginal utility from one more unit of social relations between household members equals the marginal utility from one more unit of social relations to persons outside the household and the marginal utility derived from one more unit of group membership.

Remittances to relatives and/or friends will be zero ($R_i^p = 0$) if: (a) the household's marginal utility derived from social relations is less than the household's marginal utility from consumption; or (b) the household's marginal utility derived from social relations is greater than the household's marginal utility derived from consumption but the household's marginal utility derived from social relations with relatives and/or friends living outside the household is less than the household's marginal utility derived from social relations between household members or the household's marginal utility from group membership, for all possible levels of remittances to persons outside the household within the limits of the household's budget allocated for social relations (Y_{i2}):

[8] See Deaton and Muellbauer (1993).

$$\frac{\partial u_i}{\partial\left(s_i^f + s_i^p + s_i^g\right)} < \frac{\partial u_i}{\partial c_i} \text{ or}$$

$$\frac{\partial u_i}{\partial\left(s_i^f + s_i^p + s_i^g\right)} > \frac{\partial u_i}{\partial c_i} \bigcup \frac{\partial u_{i2}}{\partial s_i^p} < \frac{\partial u_{i2}}{\partial s_i^f} \bigcap \frac{\partial u_{i2}}{\partial s_i^p} < \frac{\partial u_{i2}}{\partial s_i^g}; \forall R_i^p \in \left(0, Y_{i2}\right]. \quad (2.3)$$

If condition (2.3) does not hold, the household's remittances to persons outside the household will be positive ($R_i^p > 0$). The amount remitted will be determined by the equilibrium conditions (2.1) and (2.2) subject to $c_i\left(C_i\right)$, $s_i^f\left(H_i\right)$, $s_i^p\left(R_i^p\right)$ and $s_i^g\left(R_i^{ch}\right)$.

Similarly, the household's charity donations will be zero ($R_i^{ch} = 0$) if: (a) the household's marginal utility from social relations is less than the household's marginal utility derived from consumption; or (b) the household's marginal utility derived from social relations is greater than the household's marginal utility derived from consumption but the household's marginal utility derived from group membership is less than the household's marginal utility from social relations between household members or the household's marginal utility from social relations with relatives/friends living outside the household, for all possible levels of charity donations given the limits of the household's budget allocated for social relations (Y_{i2}):

$$\frac{\partial u_i}{\partial\left(s_i^f + s_i^p + s_i^g\right)} < \frac{\partial u_i}{\partial c_i} \text{ or}$$

$$\frac{\partial u_i}{\partial\left(s_i^f + s_i^p + s_i^g\right)} > \frac{\partial u_i}{\partial c_i} \bigcup \frac{\partial u_{i2}}{\partial s_i^g} < \frac{\partial u_{i2}}{\partial s_i^f} \bigcap \frac{\partial u_{i2}}{\partial s_i^g} < \frac{\partial u_{i2}}{\partial s_i^p}; \forall R_i^{ch} \in \left(0, Y_{i2}\right]. \quad (2.4)$$

If (2.4) does not hold, the household's charity donations will be positive ($R_i^{ch} > 0$). The amount remitted to charities will be determined by the equilibrium conditions (2.1) and (2.2) subject to $c_i\left(C_i\right)$, $s_i^f\left(H_i\right)$, $s_i^p\left(R_i^p\right)$ and $s_i^g\left(R_i^{ch}\right)$.

Case III: two-stage budgeting – social relations outside the household

If we assume that the household's utility function is separable on the following groups: (a) traditional household expenditures ($c_i + s_i^f$) and (b) social relations outside the household ($s_i^p + s_i^g$), total

income will be allocated in a first step on expenditures on household goods and expenditures on social relations outside the household: $Y_i = Y_{i3} + Y_{i4}$. The households utility function takes the form:

$$u_i = u\left[u_{i3}\left(c_i + s_i^f\right), u_{i4}\left(s_i^p + s_i^g\right)\right] \tag{3}$$

and utility maximisation occurs over two steps:

First step: $$\frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} = \frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} \tag{3.1}$$

Second step: $$\frac{\partial u_{i4}}{\partial s_i^p} = \frac{\partial u_{i4}}{\partial s_i^g} \tag{3.2}$$

Or household utility is now maximised if simultaneously the marginal utility derived from one more unit of traditional household expenditures equals the marginal utility derived from one more unit of social relations outside the household, and the marginal utility derived from social relations to persons outside the household equals the marginal utility derived from group membership.

Remittances to relatives and/or friends will be zero ($R_i^p = 0$) if: (a) the household's marginal utility derived from social relations outside the household is less than the household's marginal utility derived from traditional household expenditures; or (b) the household's marginal utility gained from social relations outside the household is greater than the marginal utility gained from traditional household expenditures but the household's marginal utility derived from social relations with relatives and/or friends living outside the household is less than the household's marginal utility derived from group membership, for all possible levels of remittances to persons outside the household within the limits of the household's budget allocated for social relations outside the household (Y_{i4}):

$$\frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} < \frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} \text{ or}$$

$$\frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} > \frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} \bigcup \frac{\partial u_{i4}}{\partial s_i^p} < \frac{\partial u_{i4}}{\partial s_i^g}; \forall R_i^p \in \left(0, Y_{i4}\right]. \tag{3.3}$$

If condition (3.3) does not hold, the household's remittances to persons outside the household will be positive ($R_i^p > 0$). The amount remitted will be determined by the equilibrium conditions (3.1) and (3.2) subject to $c_i(C_i),\ s_i^f(H_i),\ s_i^p(R_i^p)$ and $s_i^g(R_i^{ch})$.

Similarly, the household's charity donations will be zero ($R_i^{ch} = 0$) if: (a) the household's marginal utility derived from social relations outside the household is less than the household's marginal utility derived from traditional household expenditures; or (b) the household's marginal utility derived from social relations outside the household is greater than the household's marginal utility derived from traditional household expenditures but the household's marginal utility derived from group membership is less than the household's marginal utility derived from social relations with relatives/friends living outside the household, for all possible levels of charitable donations within the limits of the household's budget allocated for social relations outside the household (Y_{i4}):

$$\frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} < \frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} \text{ or}$$

$$\frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} > \frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} \bigcup \frac{\partial u_{i4}}{\partial s_i^g} < \frac{\partial u_{i4}}{\partial s_i^p}; \forall R_i^{ch} \in (0, Y_{i4}]. \qquad (3.4)$$

If (3.4) does not hold, the household's charitable donations will be positive ($R_i^{ch} > 0$). The amount donated will be determined by the equilibrium conditions (3.1) and (3.2) subject to $c_i(C_i),\ s_i^f(H_i),\ s_i^p(R_i^p)$ and $s_i^g(R_i^{ch})$.

3. Data and Descriptive Statistics

The data sets used for this analysis with their respective sample sizes are taken from the 1992 (9,492) and 1996 (10,417) Family Expenditure Surveys (FAMEX), Income Statistics Division, Statistics Canada. Data were collected in the form of a detailed questionnaire during one or several interviews. Thus, income, expenditure and remittance data in the surveys are self-reported.

The focus of the empirical part of this study is to investigate the possible differential patterns of private remittances by Canadian-born and foreign-born households. The Canadian-born population

is used as reference group since presumably its members have no immediate attachments abroad. The survey years 1992 and 1996 are of interest because they encompass a dynamic period of expanding Canadian immigration inflows which dramatically shifted to Asian source countries. This shift in turn may affect the size and distribution of foreign-born remittances.[9]

These surveys, while extensive, have certain shortcomings. The 1992 survey includes a variable indicating the immigrant's year of arrival, while the 1996 survey does not report it. We run the main analysis with pooled data for the 1992 and 1996 surveys. However, when controlling for time spent in Canada since immigration, we use the 1992 survey only.

The focus is on households over their normal economic life and limits the sample to those households whose head is older than 25. Only observations with positive and non-zero income, total expenditures and total remittances were kept in the regressions.[10] Observations with negative expenditures for the different expenditure groups were excluded. Other observations with "masked" or "non-stated" responses (i.e. education, region of residence, country of birth etc.) were excluded as well. In addition, the head of household is chosen as the highest income earner.[11] This definition of the household head will allow us to categorize a foreign-born (Canadian-born) household as one in which the highest earner is foreign-born (Canadian-born). The data from the pooled 1992 and 1996 surveys, given the above screening yields 16,318 surveyed households.

Data used in this study does not allow us to differentiate between transfers sent inside or outside Canada. However, we can distinguish between a transfer to a person and to a charity. An inspection of the actual remittance data indicates that some households specialise in the type of transferred funds. Specifically, 11% of the households remit money exclusively to charitable organisations while over 18% remit money only to persons with the remaining 71% of the sample remitting to both individuals and charitable groups. We hypothesise that charitable remittances should respond differently to household income since these donations are tax deductible in Canada and do not imply a contractual motive to extended family members.

[9] In 1968 75% of Canadian immigrants came from Western Europe and North America, by 1992 25% came from these regions.
[10] Less than 10% of the households did not make any remittance to persons or charities, thus minimizing the possibility of a self-selection bias.
[11] We assume that the highest earner is the person who determines the household's expenditure patterns.

Table 1 reports some descriptive statistics by birth status for the two survey years we included in our analysis: 1992 and 1996. The data only allow us to distinguish between Canadian-born and four foreign-born groups: North American and West European, South and East European, China, Asia and Oceania, and Others and Non-Stated. The last foreign-born group was excluded from the analysis since it was deemed too heterogeneous.

Table 1: Some Descriptive Data by Population for the 1992 and 1996 surveys (mean values)

Variable	Population Group							
	Canadian		N.Am&W.Eu.		S&E Europ.		Ch.,Asian&Oc.	
	1992	1996	1992	1996	1992	1996	1992	1996
Female as HH head (prop.)	0.43	0.45	0.42	0.46	0.31	0.40	0.31	0.40
Age of HH head	47.85	48.42	55.13	54.79	53.41	54.70	45.86	44.83
Education	2.74	2.93	3.09	3.05	2.39	2.47	3.30	3.51
Married with HH member (prop.)	0.65	0.64	0.63	0.65	0.73	0.75	0.79	0.75
Single – never married (prop.)	0.13	0.13	0.07	0.07	0.04	0.04	0.10	0.12
Separated/Divorced/Widowed (prop.)	0.22	0.23	0.30	0.28	0.23	0.21	0.11	0.13
HH size	2.61	2.54	2.41	2.35	2.75	2.74	3.31	3.49
Home ownership (prop.)	0.64	0.66	0.68	0.69	0.76	0.75	0.56	0.71
Years since immigration	n.a.	n.a.	31.52	n.a.	28.89	n.a.	13.88	n.a.
HH income after taxes	38,382	40,012	38,887	41,435	36,905	39,535	40,831	45,156
Income per HH member	14,695	15,769	16,136	17,595	13,425	14,403	12,332	12,953
Net change in assets	2,014	3,839	2,048	4,500	1,581	2,334	2,623	2,877
Remittances to persons	1,177	1,352	1,861	1,855	1,455	1,875	1,402	1,369
Remittances to charities	370	397	645	588	339	407	393	381
Observations	6,893	7,077	545	631	289	343	196	344

Source: Own calculations; Family Expenditures Survey 1992 and 1996, Statistics Canada.
Notes: Education levels are 1 = less than 9 years, 2 = some or completed secondary, 3 = some post-secondary, 4 = Post secondary degree, 5 = University degree; Monetary values in 1992 dollars

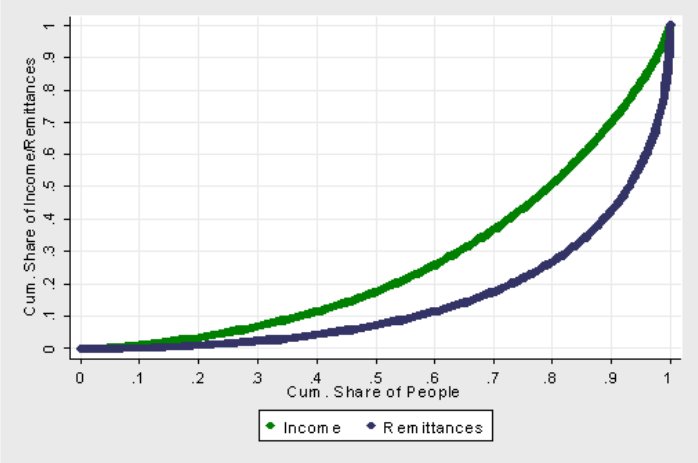
The data show that the Asian immigrant population is younger, contains more males and has a significantly shorter immigration history in Canada than the remaining foreign-born groups. Also, Asian immigrant heads of households are more highly educated than the other foreign-born groups. However, Asians live in larger households and most of them have a spouse present. As a consequence, Asian immigrants remit on average the least absolute amounts either to other households or charities. In contrast, the group with the largest absolute remittances, both to persons and charities, are the North American and West European immigrant households. They remitted about 35% more than Asian immigrant households in 1996. We note that the North American and West European group have the greatest proportion of household separated or divorced (which we assume to positively affect

remittances to persons) and the greatest income per household member (which we assume to positively affect both remittances to persons and charities).

The patterns of remittances as a percentage of income per household vary across the defined immigrant groups. For example, regardless of foreign-born status households remitted about 1% of their income as charitable donations. In contrast, their remittances to persons differ by place of birth. Canadian and Asian immigrant households remitted about 3% of their income, while North American and West European and South and East European immigrant households remitted 4.5% of their income to individuals outside the household.

A further, more in-depth analysis of the household remittances data in two particular areas adds context to our earlier developed model and will ultimately condition the form of our empirical tests.

Figure 1: Lorenz curves for income and remittances



Source: Own calculations; Family Expenditures Survey 1992 and 1996, Statistics Canada.

First, a preliminary analysis of the data indicates that the mean values for remittances are dominated by a limited number of households. Figure 1 plots the cumulative rank against the cumulative share of remittances by all households which made a positive remittance in 1992 and 1996.[12] We observe that some 30% of these households transferred about 80% of all remittances. The remaining 70% of the households transferred only 20% of the observed remittances in the pooled 1992/1996 sample. The

[12] We omitted zero values to calculate this Gini index, which is thus a lower bound estimate of the true degree of inequality.

Gini coefficient thus, assumed a high value of 0.70. Households, regardless of their foreign-born status, revealed a nearly identical distribution pattern which indicates that a only few donate most of the observed remittances. The question is: how does this distribution compare with the distribution of households' after-tax income that presumably determines the ability to remit? Figure 1 reports a much more equal size distribution of income (Lorenz curve) with a calculated Gini equal to 0.46 and with the highest 30% of earners receiving about 60% of total cumulated income.

Thus, we conclude that given this disparity in remittances across income groups any econometric test must group the data by income class.

4. Econometric Specification

It is a basic premise of this paper that the act of private remittances is embedded in the household's utility maximisation framework and is, thus, a part of the household's allocation process across a general expenditure system. To reflect this, the chosen demand system estimated is the Linear Approximate/Almost Ideal Demand System (LA/AIDS) since it conforms to most of the underlying utility maximization restrictions.[13] Hence, for the i^{th} commodity, the model can be specified as follows:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \ln p_j + \beta_i \ln\left(y / p^*\right) + \varepsilon_i \qquad (4)$$

where $w_i = p_i \times q_i / y$ is the budget share of the i^{th} good, p_j is the price of the j^{th} good, y represents total expenditures, and p^* is a Stone price index (i.e. $\ln p^* = \sum w_i \ln p_i$). To insure that this demand system conforms to the recognised properties of the utility maximisation model outlined in (1), equation (4) must satisfy the adding up, homogeneity and symmetry conditions:

a) *adding up*: $\sum_{i=1}^{n} \alpha_i = 1;\ \sum_{i=1}^{n} \beta_i = 0;\ \sum_{i=1}^{n} \gamma_{ij} = 0$ (4.1)

b) *homogeneity*: $\sum_{j=1}^{n} \gamma_{ij} = 0$ (4.2)

[13] Later, these conditions are formally tested to insure that the expenditure functions are consistent with utility maximisation conditions.

c) *symmetry*: $\gamma_{ij} = \gamma_{ji}$ (4.3)

Provided that (4.1), (4.2), and (4.3) hold, equation (4) represents a system of demand functions that are homogenous of degree zero in prices and total expenditures and also satisfy the Slutsky symmetry conditions. The LA/AIDS is simple to interpret: in the case of constant relative prices and "real" expenditure (y / p^*), the budget shares are constant. This is the natural starting point for the predictions using the model. Changes in relative prices work through the terms γ_{ij}; each γ_{ij} represents 100 times the effect on the i^{th} budget share of a 1% increase in the i^{th} price with y / p^* held constant. Changes in real expenditures operate through β_i; these add to zero and are positive for luxuries and negative for necessities. Using the estimate β_i, Engel elasticities can be calculated as follows:

$$e_i = 1 + \frac{\beta_i}{w_i^*} \tag{4.4}$$

where e_i is the Engel elasticity and w_i^* is the mean share of expenditures on the i^{th} good for the entire sample. The Engel elasticity is greater than unity for luxuries, less then unity for necessities, and equal to one for normal goods.

A demographically enhanced demand system can be written as follows:

$$w_i = \alpha_i + \sum_{j=1}^{n} \gamma_{ij} \ln p_j + \beta_i \ln\left(y / p^*\right) + \delta_{ik} X_k + \varepsilon_i \tag{4.5}$$

where X_k represents a set of demographic control variables, drawn from the model, that depict the life-cycle stage of the immigrant and Canadian households.

Finally, we augment our demand system to allow us to estimate both entry and assimilation effects with respect to the immigrant remittance behaviour:

$$w_i = \alpha_i + \sum_{j=1}^{n} \gamma_{ij} \ln p_j + \beta_i \ln\left(y / p^*\right) + \delta_{ik} X_k + \sum_s \left(\phi_{is} + \theta_{is} D\right) \times IG_s + \varepsilon_i \tag{4.6}$$

where IG_s is a dummy variable that is equal to one if the household belongs to immigrant group *s* and zero otherwise. *D* denotes the duration of the foreign-born household residence (i.e. vintage of an

immigrant household). This extended model is designed to match the description of the behaviour of immigrants in the sociology literature. There, immigrants are assumed to arrive with a set of cultural values and tastes which are different from those of the natives; this is reflected by possible non-zero values for ϕ_{is}.[14] Over time, via assimilation, the behaviour of immigrants may become more similar to that of the host group. In our model this would be the case when the sign of θ_{is} is opposite to the sign of ϕ_{is}. In this case, the immigration and/or cultural effects would vanish after ϕ_{is}/θ_{is} years of residence in the host country.[15]

Two-stage budgeting and weak separability

Given the above model specification, we invoked the concept of weak separability of a utility function over a given set of commodities to characterize the household expenditure process. This condition in turn implies that the marginal rate of substitution between any two goods within one group of goods is independent of the level of consumption of any other group of goods. If this condition holds, then it is correct to specify the demand for these product groups separately. The sole connection between the commodity groups is then via the income or expenditure effect.

Allen's partial elasticities of substitution allow us to test for the existence of weak separability. The utility function is weakly separable into the commodity groups (A) and (B) if:

a) the partial substitution elasticities between different commodities of the group (A) and of the group (B) are identical, i.e. $\sigma_{lm} = \sigma$ for all $l \in A$ and $m \in B$, and

b) the utility sub-functions are homothetic, i.e. $\sum_l \beta_l = 0$ and $\sum_m \beta_m = 0$.

From the relation between substitution elasticities and compensated price elasticities we have: $\sigma_{lm} = 1/w_m \times \Theta^*_{lm}$. The compensated price elasticities are calculated as $\Theta^*_{ij} = w_j + \gamma_{ij}/w_i w_j$ for $i \neq j$. Thus, we have:

$$\sigma_{lm} = 1 + \gamma_{lm}/w_l w_m . \qquad (4.7)$$

[14] Thus, the set of parameters ϕ_{is} can be interpreted first as a general *immigration entry effect*. If ϕ_{is} differs significantly

To test if restriction (4.7) is satisfied with the data used, we apply a likelihood ratio test comparing the system of equations with and without the restriction imposed.

5. Empirical Results

LA/AIDS is a system of seemingly unrelated equations with identical regressors and cross-equation restrictions, e.g. $\gamma_{ij} = \gamma_{ji}$. For its estimation we, thus, use Zellner's Seemingly Unrelated Regression (SUR). For the dependent variable the following must hold: $\sum_{i=1}^{n} w_i = 1$. This restriction implies further restrictions on the right hand side, in particular $\sum_{i=1}^{n} \varepsilon_i = 0$. The residuals are linear dependent and their covariance matrix is singular.[16] Green (2003) shows that the solution to the singularity problem is to arbitrarily drop one of the equations and estimate the remainder. The residuals covariance matrix of the system with $n-1$ equations is non-singular. The coefficients of the n^{th} equation result from the "adding-up" restriction. Furthermore, in the SUR-model, when all equations have the same regressors, the efficient estimator is single-equation ordinary least squares; i.e. GLS is the same as OLS. Thus, we use in this analysis SUR and OLS alternatively: SUR in most cases, in particular when we impose cross-equation restrictions and OLS for single equation estimations.

Furthermore, structural breaks may occur in the sample since the data set is pooled. To account for this we estimated the system of equations with variables which captured the interaction between year dummies and the expenditure variable. However, the difference between the coefficients of these interaction variables is quite small, implying that the expenditure elasticity is about the same for 1992 and 1996 (as supported by the F-test). Thus, it is reasonable to run the analysis with the pooled sample.[17]

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across immigrant groups, we interpret this as evidence for country specific *cultural effects* as well.

[15] See Carroll et al. (1994) for this interpretation.

[16] See Hansen (1993).

[17] The system exhibits heteroskedasticity. Tests like White and Breusch-Pagan/ Cook-Weisberg reject the null hypothesis of homoskedasticity. The source of heteroskedasticity is uncertain. Moreover, weighting the OLS regressions by the deflated logarithm of expenditure does not eliminate heteroskedasticity.

5.1 Homogeneity and symmetry

One of the tasks of this empirical analysis is to test if the restrictions implied by utility theory hold for the demand equations when including the unique expenditure items relating to remittances. The homogeneity restriction is first tested by running separate OLS regressions for each commodity group in the study, with and without the restriction imposed. Then, we tested for homogeneity, symmetry and both homogeneity and symmetry by running SUR for the whole system, with and without the restrictions imposed. A likelihood ratio test is used to check the restrictions in the uncontrolled for demographics LA/AIDS model (eq. 4).[18]

Table 2: Homogeneity and Symmetry

Commodity Group	**Population**							
	Canadian		**N.Am.&W.Eu.**		**S&E Eu.**		**Ch.,As.&Oc.**	
	chi^2(1)	**p-value**	**chi^2(1)**	**p-value**	**chi^2(1)**	**p-value**	**chi^2(1)**	**p-value**
Food	0.03	**0.867**	0.01	**0.933**	0.00	**0.973**	0.62	**0.433**
Shelter	32.06	0.000	7.16	0.008	1.16	**0.281**	0.13	**0.719**
HH op&fur	0.83	**0.362**	0.06	**0.800**	3.71	0.054	2.39	**0.122**
Clothing	1.51	**0.220**	6.71	0.010	10.53	0.001	0.66	**0.416**
Transportation	0.54	**0.464**	1.20	**0.274**	0.64	**0.425**	0.23	**0.632**
Heath&Pers.Care	22.42	0.000	0.80	**0.370**	0.69	**0.408**	4.53	0.033
Recreation	0.19	**0.659**	0.00	**0.993**	0.09	**0.768**	0.26	**0.611**
Tabacco&Alcohol	34.39	0.000	0.54	**0.461**	0.40	**0.527**	3.80	0.051
Remit. to persons	0.00	**0.966**	0.07	**0.797**	0.14	**0.705**	2.67	**0.102**
Remit. to charities	15.24	0.000	0.01	**0.923**	4.53	0.033	0.61	**0.433**
System								
Homogeneity	100.89	0.000	14.93	0.093	20.25	0.016	14.10	**0.119**
Symmetry	7673.65	0.000	260.85	0.000	110.91	0.000	101.86	0.000
Homog.&Symmetry	7826.70	0.000	267.43	0.000	131.07	0.000	116.22	0.000

Note: Significant results appear in bold type.

The test results for the homogeneity and symmetry conditions are presented in Table 2. Since we assumed different expenditure patterns for the four population groups in the study, we ran the tests for each group separately. In fact, different results are generated by the restriction tests. By running separate OLS regressions, the hypothesis of homogeneity cannot be rejected in six out of ten equations in the system for the Canadian-born population, seven out of ten equations for the South and East European immigrant population, and eight out of ten equations for the North American and West

[18] For the prices used for estimating the system see Appendix A.

European and Asian immigrant population. When running the entire system, the homogeneity restriction cannot be rejected in the case of the Asian immigrant case. Finally, the symmetry restriction is rejected by the chi-squared statistics for all population groups.

5.2 Expenditure elasticities

Given the earlier reported stylised facts, we will estimate Engel elasticities for Canadian-born, and foreign-born residents across income groups in an LA/AIDS system and under an **uncontrolled** as well as a **controlled** setting.[19]

The model includes controls for gender, age, household size, marital status, education, house ownership and savings variables to capture the main socio-economic life-cycle arguments which may influence the household's decision to remit money outside the household. If the model is correct and demographic arguments condition remittances then significant differences should arise between the controlled and uncontrolled elasticity measures.

Table 3: Expenditure Elasticities for Remittances to Persons Calculated from LA/AIDS, 1992/1996

	Population Group	Uncontrolled			Controlled		
		Income Group			Income Group		
		all	top Y/2	bottom Y/2	all	top Y/2	bottom Y/2
Unrestricted	**Canadian**	1.07	1.27	1.19	1.88	1.73	1.83
	N.Am.&W.Eu.	1.29	1.43	1.67	2.28	2.14	2.23
	S&E European	1.01	1.11	1.09	2.07	1.59	2.29
	Ch.,As.&Oc.	1.09	1.12	1.09	1.10	1.13	1.09
Restricted for Homogeneity and Symmetry	**Canadian**	1.09	1.25	1.20	1.86	1.70	1.78
	N.Am.&W.Eu.	1.29	1.43	1.66	2.25	2.10	2.18
	S&E European	0.98	1.06	1.08	2.08	1.60	2.36
	Ch.,As.&Oc.	1.09	1.12	1.10	1.10	1.13	1.09

Notes: Elasticity is computed through the formula $e_i = 1 + (\beta_i / w_i^*)$, where w_i^* is the actual mean expenditure share and β_i is the estimated household income coefficient.

[19] Test results for weak separability of expenditure groups suggest that expenditures on social relations (i.e. housing, remittances to persons and remittances to charities) are not weakly separable from expenditures for consumption (Case II of the theoretical model), for all population groups. We thus found no evidence that housing is a direct substitute for remittances. However, Asian households treat remittances to persons and remittances to charities as weakly separable from the other expenditures, implying that only in the case of Asian households remittances to charities act as a direct substitute to remittances to persons. Therefore, we include in the LA/AIDS estimates for the Asian group only two equations (one for the share of remittances to persons and one for the share of remittances to charities) and total remittances as an independent argument (instead of total expenditures).

Table 3 reports the estimated expenditure elasticities for the pooled 1992 and 1996 surveys with and without imposing restrictions for homogeneity and symmetry. We separate our results further by foreign-birth status and income group to capture any effects owing to the immigrant origins or their position in Canada's income distribution. Given these categories, the range of calculated values for the expenditure elasticities indicates that remittances to persons (i.e. expenditures on social relations with relatives and/or friends) appear as a normal good or a luxury item across the sampled households.[20]

The results indicate significant differences in the remittance activity of the four population groups across the cited income classes and imply that cultural differences affect expenditures to maintain relationships with relatives and/or friends. The uncontrolled elasticity estimates are above unity for the Canadian-born and North American and West European immigrant households and close to unity for South and East European and Asian immigrant households. North Americans and West Europeans seem to treat expenditures on social relations with relatives/friends as a luxury item, while South and East European and Asian immigrants treat these expenditures as a normal good. Once controls for gender, age, education, marital status, number of persons in the household, house ownership and saving activity are added, the elasticity values regardless of foreign-birth status (except Asian) greatly exceed unity. This implies that in general in this controlled environment expenditures on social relations with relatives/friends are treated as luxury goods too. The exception is the Asian group which considers expenditures on kinship ties as a normal good regardless of the imposition of controls. Expenditure elasticities with the homogeneity and symmetry restrictions mimic those of the unrestricted estimation.

Table 4 focuses on charitable donations of households by their income class. In an uncontrolled setting, across all population and income groups, the households handled charitable donations as a necessity. These results are repeated in a controlled setting (North American and West European and South and East European immigrant households in the bottom half of the sample's income distribution are an exception).

[20] For expenditure elasticities for the entire system see Appendix B. Canadian elasticity estimates as reported by Didukh (2001, 2002) and Geiger (2002) over a wide variety of commodities are within the range reported here with the exception of

Table 4: Expenditure Elasticities for Remittances to Charities Calculated from LA/AIDS, 1992/1996

	Population Group	Uncontrolled			Controlled		
		Income Group			Income Group		
		all	top Y/2	bottom Y/2	all	top Y/2	bottom Y/2
Unrestricted	Canadian	0.60	0.48	0.47	0.93	0.72	0.89
	N.Am.&W.Eu.	0.78	0.65	1.03	1.10	0.76	1.20
	S&E European	0.54	0.97	0.32	1.25	0.95	1.27
	Ch.,As.&Oc.	0.79	0.76	0.78	0.77	0.73	0.79
Restricted for Homogeneity and Symmetry	Canadian	0.67	0.56	0.50	0.92	0.75	0.87
	N.Am.&W.Eu.	0.79	0.66	1.02	1.08	0.73	1.14
	S&E European	0.56	0.97	0.40	1.27	0.96	1.28
	Ch.,As.&Oc.	0.79	0.75	0.77	0.77	0.73	0.78

Notes: Elasticity is computed through the formula $e_i = 1 + (\beta_i / w_i^*)$, where w_i^* is the actual mean expenditure share and β_i is the estimated household income coefficient.

Some tentative conclusions are in order. The cultural background of the head of household is a key determinant of the household's expenditures aimed to maintain different types of social relations. On the one hand, Canadian-born and immigrant households from North America and Europe treat remittances to persons outside the household (i.e. kinship relations) as a luxury good. Thus, for North Americans and Europeans the relationship within a household (i.e. the core family) is of primary importance and only when total household consumption is large enough do these households become more generous with other relatives and friends.

On the other hand, Asian households consider expenditures on kinship relations (i.e. remittances to persons) mainly as a normal good: the remitted share being more stable when related to total expenditure changes. It seems, therefore, that Asian immigrants have stronger ties with their extended families and share a greater fraction of their incomes with them, irrespective of their income level.

Finally, most foreign households (i.e. North American, West European and Asian) regarded religious/charitable remittances as a necessity, since these transfers are small and fall as a share of total expenditures when total household expenditures rise. This is actually in line with the general experience, that religious participation weakens while a person/household becomes wealthier. Exceptions are North American and European immigrant households in the bottom income half, who

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the Chinese values.

seem to be more attached to their social/religious group. They may be using charitable/religious spending as a means to improve their status in the group as their household income rises.

5.3 Socio-economic controls

We now turn to the effects of household demographic characteristics on remittance behaviour. We argue that remittances are embedded in the household's life cycle experiences and illustrate the household's remittance experience with a series of simulations over time. These simulations are depicted in the Figures 2 and 3 and are constructed from the reported estimates for remittances to persons and to charities in Appendix C. In short, for each representative household we place the mean values for all the model's variables (except age) and cross multiply by the relevant coefficients. This produces the household's estimated remittances share by age for its constituent parts.[21]

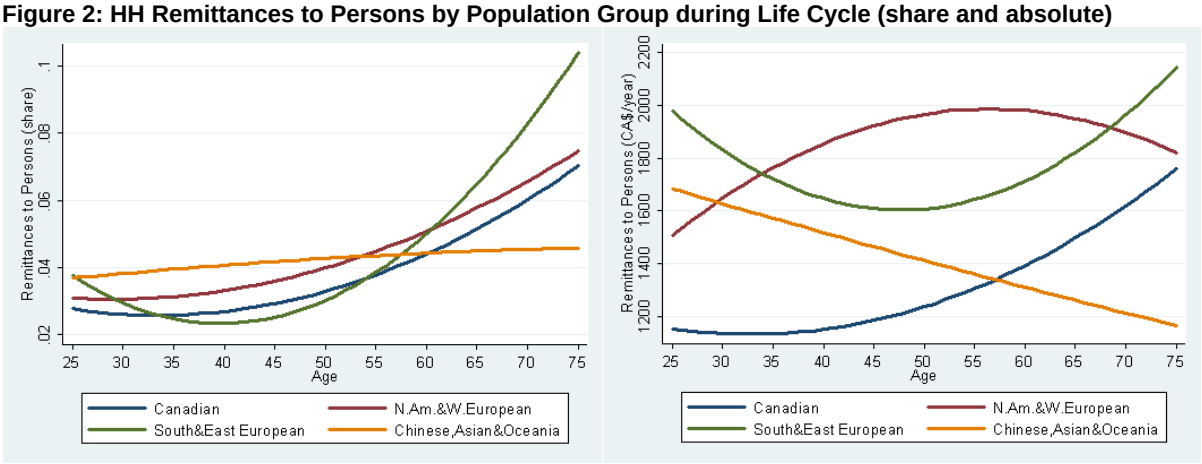
Figure 2 reveals several important features of the remittance experience over time and across various population groups. First, there exists a substantial difference in remittances to persons as a share of household expenditures between Asian immigrants and all other groups. The share of remittances to persons as a fraction of total expenditures rises with the age of the household head for all other groups from about 2.5-3.0% at age 25 to over 6% after age 65. Given our theoretical model, this would mean that the preference of the households of these groups for social relations with persons outside the household increases with age. This is probably owing to the fact that the number of nuclear family members (with whom we argue that North Americans and Europeans have stronger ties) living outside the household changes over time. Thus, remittances increase while the household head ages and his/her own children move outside the household, and rise further when he/she has grandchildren.

The hypothesis, that the share of expenditures remitted to persons outside the households increases for North American and European households with the number of the nuclear family members living outside the household, is also confirmed by reference to the estimates reported for the marital status variables. In other words, if the spouse lives outside the household or the household

[21] When simulating the absolute amount of remittances, we use estimates derived from the controlled LA/AIDS model with the dependent variable and the independent variables of the basic model multiplied by total expenditures.

head is divorced[22], the household remits a significantly greater share of its expenditures to persons outside the household.[23]

Figure 2: HH Remittances to Persons by Population Group during Life Cycle (share and absolute)



Source: Own calculations; Family Expenditures Survey (FAMEX) 1992 and 1996, Statistics Canada.

The pattern of remittances to persons for Asian immigrant households remains, however, relatively flat over their whole life cycle at about 4% of total expenditures. We believe that this is due to the fact that in the case of Asians the extended family plays an important role in their social life, and the number of the extended family members living outside the household is more stable over lifetime. This hypothesis is also confirmed by noting that Asian households where the spouse or ex-spouse lives outside the household do not remit significantly different amounts when compared to Asian married couples or singles.[24]

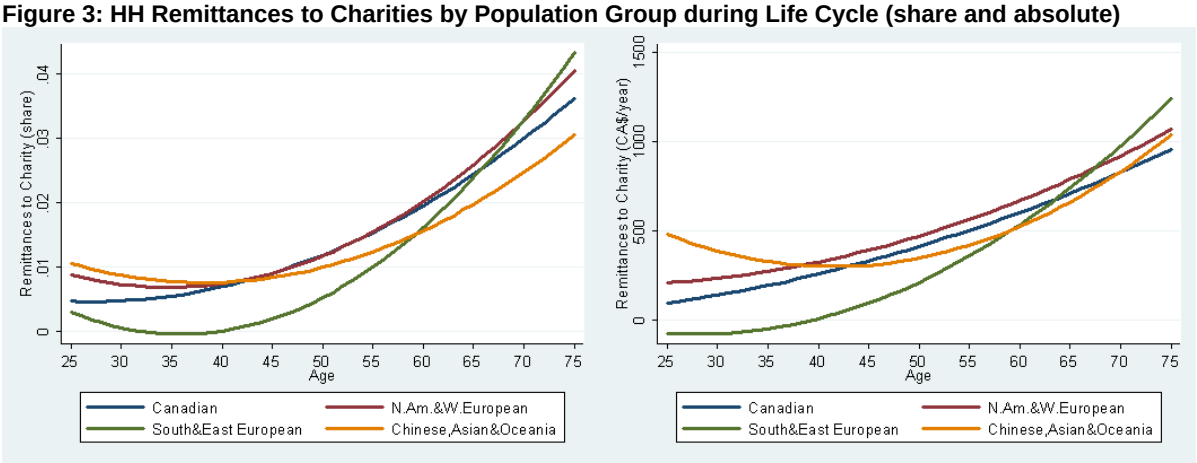
If we now turn to the simulated **absolute** values remitted, we generate patterns which conform to our earlier reported stylised facts. In short, North American and West European immigrant households remit the greatest absolute amounts and Canadian-born households the least.

We can further recognise important differences in the households' remittance patterns. The remittance pattern of North American and West European immigrant households is concave and reaches a maximum (CA$2,000/year) at about age 57. The remittance pattern of South and East

[22] The FAMEX marital status group includes widowed persons as well. However, we expect that this will not bias our results. Both separated, divorced and widowed household heads might have a greater propensity to remit. Separated and divorced household heads might remit more because they have a greater number of close relatives (i.e. [ex]spouse, children) living outside the household. At the same time, widowed household heads might invest more in relations to persons outside the household (i.e. remit more) in order to substitute for their loss of social relations within the household.
[23] See Appendix C, Table C-1.

European immigrant households it is convex with a minimum of about CA$1,600/year at age 50. Canadian-born remittances are almost constant between age 25 and 40 (CA$1,200/year) and than rise to over CA$1,600/year at age 75. Finally, the remittance pattern of Asian immigrant households is linear and falling from about CA$1,200/year at age 25 to about CA$1,200/year at age 75.

Figure 3: HH Remittances to Charities by Population Group during Life Cycle (share and absolute)



Source: Own calculations; Family Expenditures Survey (FAMEX) 1992 and 1996, Statistics Canada.

Figure 3 depicts the simulated charitable remittances by various households. In general all household groups (except Asian) increase their minuscule charitable donations from 0.5% at age 25 to around 4% at age 75. Additionally, charitable donations, both as a share and in absolute values, tend to converge over the life cycle across various population groups.

5.4 Entry and Assimilation Effects

Table 5 reports the results of estimating the augmented share equation with the entry and assimilation effects in 1992.[25] The reported standard errors are corrected for heteroskedasticity.[26]

The ϕ_{is} coefficient for remittances to persons is significant only for the Asian immigrant group. The ϕ_{is} coefficients are significantly different between immigrant groups (see F-test, Table 5), implying the existence of *cultural effects* in the remittance behaviour of households. Moreover, there exists no evidence for convergence to the Canadian-born norm over time.

[24] See Appendix C, Table C-1.
[25] The 1996 survey data do not contain a question on the number of years in Canada, so only the 1992 data was employed.

With respect to remittances to charities, the ϕ_{is} coefficient is significant for North American and West European and Asian households. In addition, the result of the F-test shows that ϕ_{is} is significantly different across immigrant groups, which suggests that there is evidence for *cultural effects* affecting charitable donations at time of entry too. Assimilation to the Canadian-born norm occurs only in the case of North American and West European households after about 28 years.

Table 5: Entry and Assimilation Effects, 1992

	Remittances to Persons				Remittances to Charities			
	Entry		Assimilation		Entry		Assimilation	
Population Group	ϕ_{is}	**F-test (p-val.)**	θ_{is}	**F-test (p-val.)**	ϕ_{is}	**F-test (p-val.)**	θ_{is}	**F-test (p-val.)**
N.Am&W.Eu.	0.0065		-0.0002		-0.0108		0.0004	
	[0.0079]		[0.0003]		[0.0040]***		[0.0002]**	
S&E European	-0.0078	0.1826	0.0006	0.2793	-0.0030	0.2425	-0.000003	0.1332
	[0.0097]		[0.0004]		[0.0024]		[0.0001]	
Ch.,Asian&Oc.	0.0192		-0.0003		-0.0057		0.0002	
	[0.0114]*		[0.0008]		[0.0031]*		[0.0002]	

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Conclusions

This study illustrates the effect of Canada's immigration policy on remittances. Since permanent immigration is encouraged, only modest levels of remittances occur in this context, amounting to less than 5% of the overall household expenditures. In addition, these transfers were highly concentrated with the highest 30% of earners remitting 80% of all remittances. However, only 9% of the households did not remit to persons outside the household or charities. Finally, only 25% of the foreign-born transfers were in the form of charitable donations, while the other 75% were in the form of remittances to persons.

We offered a utility maximising household model to explain the remittance options. The model argued that these alternatives were a by-product of the head of household's preferences for different kinds of social relations, i.e. with other household members, with relatives and/or friends living outside the household and group membership.

[26] The results without adjusting for heteroskedasticity are similar.

Further, we use a traditional expenditure framework with a unique composition of goods to illustrate the motivations to remit by immigrants. We theorise that remittances to persons outside the household represent transfers to maintain social relations with relatives and friends and religious/charitable remittances are expenditures which foster group membership. In addition, we hypothesize that expenditures on housing enhance social relations between household members.

By testing first for weak separability, we found no evidence for a direct substitution relationship between housing and remittances, for any of the population groups included in this study (i.e. Canadian, North American and West European, South and East European, and Asian). However, Asian households treat remittances to persons and remittances to charities as weakly separable from their other expenditures, implying that for them remittances to charities act as a direct substitute for remittances to persons.

Estimated Engel elasticities with an LA/AIDS model, in both a naive formulation and a formulation with extended demographic controls, confirmed in general that (with the important exception of Asian sourced immigrants) remittances outside the household were considered a luxury good. Thus, for the North American and European groups[27], the relationship among the household members (i.e. the core family) is of primary importance. Only when total household consumption expenditures are large enough do these households become more altruistic towards other relatives and friends.

However, we also found evidence that the preference of North American and European households for social relations with persons outside the household increases with age. This is probably due to the fact that the number of nuclear family members living outside the household changes over time. Thus, remittances would increase while the household head ages and his/her own children move outside the household, and rise further when he/she becomes a grandparent. A robustness check involves a check of the estimated results employing the marital status variables. If the spouse lives outside the household or the household head is divorced, the household remits a significantly greater share of its expenditures to persons outside the household.

[27] Canadian-born, immigrants from North American and Western Europe, and immigrants from South and Eastern Europe.

On the other hand, Asian households treat kinship relations (i.e. remittances to persons) mainly as a normal good: the remitted share being more stable when related to total expenditure changes. It seems, therefore, that Asian immigrants have stronger ties with the extended family and not predominantly with the core family like the North American and European population groups. Thus, they share a given fraction of their income with their relatives, irrespective of their income level.

This outcome is reinforced by the observation that the share of expenditures remitted to persons by Asian immigrant households remains relatively flat over their whole life cycle, probably because the number of extended family members living outside the household is more stable over lifetime. Additionally, we observe that Asian households where the spouse or ex-spouse lives outside the household remit similar amounts when compared to Asian married couples.

A robustness proof for the existence of cultural differences in the remittance behaviour of households is the fact that only Asian households remit significantly more of their expenditures to persons upon arriving in Canada. Furthermore, there is no evidence for convergence of transfers to the Canadian-born-norm over time.

With respect to charitable donations, these are regarded as gifts by most foreign-born households, since they are small and fall as total expenditures rise. The only exception to this finding are North American and European immigrant households in the bottom income half, which are more altruistically inclined toward charitable/religious groups. They perhaps use charitable/religious spending to improve their own status in the group, as the household income rises. Moreover, when controlling for entry and assimilation with respect to the remittance behaviour to charities, we found evidence for cultural differences between the four population groups.

In sum, the cultural background of the household members and thus the social/family norms of the group they belong to is a key determinant of the households remittance behaviour.

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Appendix A: Regional Price Indices

Year	Region	Expenditure Group							
		Food	Shelter	HH Operation & Furnishing	Clothing	Transpor-tation	Personal & Health Care	Recreation, Education & Reading Mat.	Tobacco & Alcoholic Beverages
1992	**Atlantic**	98.2	80.4	98.1	96.5	75.9	88.7	101.3	104.5
1992	**Quebec**	97.8	72.0	96.7	99.7	90.1	90.7	100.1	101.1
1992	**Ontario**	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1992	**Prairies**	98.6	75.1	92.1	102.8	77.5	92.2	94.6	95.1
1992	**BC**	104.7	102.0	99.2	99.8	97.9	88.0	97.1	104.4
1996	**Atlantic**	109.7	84.1	106.0	101.3	90.0	101.9	104.5	90.2
1996	**Quebec**	102.8	75.5	101.1	97.9	92.8	102.6	97.1	72.7
1996	**Ontario**	105.4	108.1	105.4	105.3	112.1	98.7	104.1	73.8
1996	**Prairies**	104.0	79.0	95.2	105.2	80.7	94.4	95.7	89.8
1996	**BC**	114.3	109.9	102.8	103.4	129.9	92.2	101.3	100.4

Base: Ontario 1992.
Source: Pendakur (2001), Didukh (2001), and Browning and Thomas (1998a,1998b).

Prices variables used for eight (out of ten) commodity groups (1. Food, 2. Shelter, 3. Household Operations and Furnishing, 4. Clothing, 5. Transportation, 6. Personal and Health Care, 7. Recreation, Education and Reading Material , 8. Tobacco and Alcoholic Beverages) included in this study are Consumer Price Indices that vary over time and across five regions (Atlantic Provinces, Quebec, Ontario, Prairies, and British Columbia) and are assumed to be fixed within the regions. For the other two expenditure groups (9. Remittances to Persons Outside the Household, and 10. Remittances to Charities) we computed prices indices based on the CPIs of the eight commodity groups mentioned before. We argue that the value of one remitted dollar to a person outside the household equals to the forgone consumption of the household for that dollar. Thus, we calculated for each household in our sample the CPIs of Remittances to Persons as sum of the CPIs of the eight expenditure groups presented above, weighted by the respective share of the expenditure group in total expenditures. Charitable donations are tax deductible. Thus, the price for one dollar donated to charities equals to value of forgone consumption minus the tax deduction received for the donation of that one dollar. The CPIs for Remittances to Charities are computed by the following formula $CPI_{chaor,i} = 100 + \left(CPI_{poh,i} - 100\right) \times \left(1 - Taxr_i\right)$. Where: $CPI_{chaor,i}$ is the CPI of Remittances to Charities for the i^{th} household; $CPI_{poh,i}$ is the CPI of Remittances to Persons for the i^{th} household; and $Taxr_i$ stands for the tax rate applicable for the i^{th} household.[28]

[28] The tax rates are computed distinctively for each household through a combination of the federal and provincial tax rates. Tax rates are progressive. Data for tax rates are from Statistics Canada.

Appendix B

Table B-1: Expenditure Elasticities Calculated from LA/AIDS, Unrestricted (1992/1996)

Population Group	Expenditure Group	Uncontrolled			Controlled		
		Income Group			Income Group		
		all	top Y/2	bottom Y/2	all	top Y/2	bottom Y/2
Canadian	Food	0.74	0.67	0.72	0.62	0.60	0.62
	Shelter	0.68	0.70	0.64	0.68	0.69	0.67
	HH op&fur	1.02	1.06	0.96	0.99	1.08	0.96
	Cloth	1.30	1.20	1.30	1.23	1.19	1.28
	Transport	1.58	1.49	1.89	1.57	1.45	1.78
	Heath&Pers.Care	0.85	0.77	0.90	0.85	0.75	0.96
	Recreation	1.41	1.32	1.42	1.32	1.29	1.32
	Tabacco&Alcohol	0.95	0.88	1.11	1.02	1.04	1.07
	Rem. to persons	1.07	1.27	1.19	1.88	1.73	1.83
	Rem. to charities	0.60	0.48	0.47	0.93	0.72	0.89
N. American & W. European	Food	0.77	0.73	0.69	0.63	0.66	0.55
	Shelter	0.68	0.70	0.67	0.69	0.66	0.74
	HH op&fur	1.07	1.16	1.03	1.05	1.18	0.98
	Cloth	1.31	1.27	1.20	1.14	1.18	1.16
	Transport	1.44	1.27	1.66	1.42	1.31	1.57
	Heath&Pers.Care	0.79	0.74	0.77	0.75	0.59	0.86
	Recreation	1.50	1.46	1.63	1.33	1.32	1.49
	Tabacco&Alcohol	1.01	0.67	1.15	0.94	0.81	0.98
	Rem. to persons	1.29	1.43	1.67	2.28	2.14	2.23
	Rem. to charities	0.78	0.65	1.03	1.10	0.76	1.20
S&E European	Food	0.77	0.69	0.72	0.64	0.62	0.68
	Shelter	0.60	0.62	0.53	0.60	0.67	0.53
	HH op&fur	0.99	0.99	1.01	0.90	0.99	0.95
	Cloth	1.29	1.25	1.14	1.16	1.24	1.09
	Transport	1.57	1.52	2.04	1.52	1.43	1.73
	Heath&Pers.Care	0.95	0.87	0.91	1.02	0.87	1.01
	Recreation	1.47	1.35	1.40	1.25	1.24	1.16
	Tabacco&Alcohol	1.22	1.12	1.39	1.17	1.39	0.99
	Rem. to persons	1.01	1.11	1.09	2.07	1.59	2.29
	Rem. to charities	0.54	0.97	0.32	1.25	0.95	1.27
Chinese, Asian & Oc.	Rem. to persons	1.09	1.12	1.09	1.10	1.13	1.09
	Rem. to charities	0.79	0.76	0.78	0.77	0.73	0.79

Table B-2: Expenditure Elasticities Calculated from LA/AIDS, Restricted (1992/1996)

Population Group	Expenditure Group	Uncontrolled			Controlled		
		Income Group			Income Group		
		all	top Y/2	bottom Y/2	all	top Y/2	bottom Y/2
Canadian	Food	0.77	0.66	0.74	0.61	0.57	0.61
	Shelter	0.67	0.76	0.63	0.73	0.78	0.72
	HH op&fur	1.04	1.03	0.97	0.96	1.02	0.93
	Cloth	1.33	1.18	1.31	1.20	1.14	1.24
	Transport	1.53	1.53	1.87	1.59	1.52	1.81
	Heath&Pers.Care	0.85	0.72	0.91	0.81	0.69	0.92
	Recreation	1.43	1.26	1.44	1.27	1.19	1.27
	Tabacco&Alcohol	0.91	0.79	1.08	0.95	0.95	0.99
	Rem. to persons	1.09	1.25	1.20	1.86	1.70	1.78
	Rem. to charities	0.67	0.56	0.50	0.92	0.75	0.87
N. American & W. European	Food	0.78	0.72	0.70	0.62	0.65	0.54
	Shelter	0.67	0.72	0.66	0.71	0.70	0.77
	HH op&fur	1.08	1.15	1.03	1.04	1.18	0.97
	Cloth	1.31	1.25	1.20	1.14	1.16	1.15
	Transport	1.44	1.28	1.67	1.42	1.31	1.56
	Heath&Pers.Care	0.79	0.72	0.76	0.75	0.58	0.84
	Recreation	1.50	1.43	1.62	1.32	1.29	1.47
	Tabacco&Alcohol	1.00	0.68	1.17	0.93	0.82	0.99
	Rem. to persons	1.29	1.43	1.66	2.25	2.10	2.18
	Rem. to charities	0.79	0.66	1.02	1.08	0.73	1.14
S&E European	Food	0.77	0.69	0.71	0.64	0.62	0.66
	Shelter	0.59	0.63	0.53	0.60	0.67	0.56
	HH op&fur	1.00	0.99	1.03	0.91	0.99	0.91
	Cloth	1.28	1.25	1.11	1.16	1.24	1.08
	Transport	1.59	1.52	2.02	1.52	1.42	1.73
	Heath&Pers.Care	0.97	0.88	0.94	1.02	0.87	1.01
	Recreation	1.49	1.35	1.43	1.26	1.24	1.11
	Tabacco&Alcohol	1.20	1.12	1.35	1.16	1.39	0.97
	Rem. to persons	0.98	1.06	1.08	2.08	1.60	2.36
	Rem. to charities	0.56	0.97	0.40	1.27	0.96	1.28
Chinese, Asian & Oc.	Rem. to persons	1.09	1.12	1.10	1.10	1.13	1.09
	Rem. to charities	0.79	0.75	0.77	0.77	0.73	0.78

Appendix C

Table C-1: Regression Equation Coefficients (OLS) Predicting the Expenditure Share of Remittances to Persons, 1992/1996

	Canadian		N. Am. & W. Eu.		S&E European		Ch., Asian & Oc.	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Log of Total Expenditures	0.003	0.033	0.015	0.064	0.001	0.054		
	[0.001]*	[0.002]***	[0.006]**	[0.011]***	[0.008]	[0.015]***		
Log of Total Remittances							0.066	0.072
							[0.012]***	[0.011]***
Log of Price for Food	0.172	0.175	0.450	0.232	-0.262	-0.140		
	[0.064]***	[0.060]***	[0.253]*	[0.233]	[0.477]	[0.449]		
Log of Price for Shelter	0.056	0.020	0.102	0.080	0.024	0.051		
	[0.010]***	[0.010]**	[0.052]**	[0.048]*	[0.127]	[0.131]		
Log of Price for HH op&furn	-0.099	-0.243	0.090	0.062	0.888	0.338		
	[0.128]	[0.119]**	[0.491]	[0.459]	[1.261]	[1.118]		
Log of Price for Clothing	0.084	0.012	0.335	0.167	0.617	0.291		
	[0.056]	[0.052]	[0.214]	[0.210]	[0.491]	[0.470]		
Log of Price for Transportation	-0.037	-0.083	-0.033	-0.036	0.036	0.039		
	[0.009]***	[0.008]***	[0.042]	[0.039]	[0.070]	[0.068]		
Log of Price for Health&Pers. Care	0.009	0.022	0.004	-0.020	-0.289	-0.236		
	[0.023]	[0.021]	[0.088]	[0.085]	[0.223]	[0.198]		
Log of Price for Recreation	0.048	0.147	-0.094	-0.099	-0.749	-0.287		
	[0.092]	[0.085]*	[0.347]	[0.327]	[0.958]	[0.844]		
Log of Price for Tabacco&Alcohol	-0.015	-0.028	-0.041	0.003	0.0413	-0.020		
	[0.017]	[0.016]*	[0.065]	[0.061]	[0.124]	[0.120]		
Log of Price for Rem. to Persons	0.144	0.223	-0.057	-0.117	0.366	0.401	2.187	2.143
	[0.131]	[0.121]*	[0.534]	[0.502]	[0.667]	[0.667]	[2.722]	[2.631]
Log of Price for Rem. to Charities	-0.300	-0.121	-0.201	0.077	-0.890	-0.832	-3.034	-2.864
	[0.194]	[0.181]	[0.873]	[0.791]	[0.979]	[0.950]	[3.925]	[3.793]
Female		-0.004		-0.003		0.014		0.032
		[0.001]***		[0.006]		[0.008]		[0.030]
Age x 100		-0.172		-0.119		-0.513		-0.075
		[0.032]***		[0.146]		[0.205]**		[0.931]
Age squared x 1,000		0.026		0.021		0.065		-0.029
		[0.003]***		[0.015]		[0.022]***		[0.095]
Education		-0.001		-0.006		-0.002		-0.036
		[0.001]		[0.002]***		[0.003]		[0.011]***
Married (with HH member)		0.002		-0.003		0.023		-0.040
		[0.002]		[0.008]		[0.010]**		[0.047]
Separated/Divorced/Widowed		0.019		0.025		0.021		-0.088
		[0.002]***		[0.009]***		[0.012]*		[0.057]
No. Of Persons a Member		-0.012		-0.018		-0.018		-0.021
		[0.001]***		[0.002]***		[0.004]***		[0.013]
House Ownership		-0.001		0.003		-0.006		-0.076
		[0.001]		[0.006]		[0.008]		[0.035]**
Net change in A&L x 100,000		-0.019		0.001		0.021		-0.109
		[0.009]**		[0.026]		[0.036]		[0.104]
Constant	-0.262	-0.687	-2.584	-1.873	1.040	1.672	4.487	4.264
	[0.409]	[0.386]*	[1.729]	[1.649]	[2.603]	[2.838]	[5.645]	[5.479]
Observations	13970	13970	1176	1176	632	632	540	540
R-squared	0.01	0.14	0.02	0.16	0.02	0.17	0.07	0.13

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%

Table C-2: Regression Equation Coefficients (OLS) Predicting the Expenditure Share of Remittances to Charities, 1992/1996

	Canadian		N. Am. & W. Eu.		S&E European		Ch., Asian & Oc.	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Log of Total Expenditures	-0.006	-0.001	-0.005	0.002	-0.007	0.004		
	[0.001]***	[0.001]	[0.002]*	[0.003]	[0.003]**	[0.004]		
Log of Total Remittances							-0.066	-0.072
							[0.012]***	[0.011]***
Log of Price for Food	0.142	0.121	-0.036	-0.050	-0.024	0.002		
	[0.032]***	[0.031]***	[0.160]	[0.158]	[0.195]	[0.181]		
Log of Price for Shelter	0.050	0.041	0.006	0.007	0.040	0.023		
	[0.005]***	[0.004]***	[0.020]	[0.019]	[0.032]	[0.038]		
Log of Price for HH op&furn	-0.274	-0.263	0.178	0.046	0.109	0.151		
	[0.059]***	[0.058]***	[0.242]	[0.243]	[0.385]	[0.382]		
Log of Price for Clothing	-0.015	-0.025	0.208	0.097	0.225	0.244		
	[0.025]	[0.024]	[0.104]**	[0.105]	[0.167]	[0.186]		
Log of Price for Transportation	-0.041	-0.038	-0.026	-0.007	-0.018	-0.008		
	[0.004]***	[0.004]***	[0.015]*	[0.016]	[0.024]	[0.026]		
Log of Price for Health&Pers. Care	0.055	0.050	0.028	0.042	-0.001	-0.001		
	[0.011]***	[0.010]***	[0.045]	[0.043]	[0.057]	[0.056]		
Log of Price for Recreation	0.183	0.185	-0.120	-0.053	-0.275	-0.287		
	[0.042]***	[0.041]***	[0.176]	[0.175]	[0.289]	[0.289]		
Log of Price for Tabacco&Alcohol	-0.023	-0.021	0.040	0.032	0.067	0.057		
	[0.008]***	[0.008]**	[0.045]	[0.044]	[0.049]	[0.045]		
Log of Price for Rem. to Persons	-0.274	-0.102	0.609	0.604	-0.538	-0.412	-2.187	-2.143
	[0.071]***	[0.067]	[0.308]**	[0.297]**	[0.386]	[0.345]	[2.722]	[2.631]
Log of Price for Rem. to Charities	0.376	0.147	-0.904	-0.895	0.710	0.554	3.034	2.864
	[0.105]***	[0.100]	[0.461]*	[0.439]**	[0.560]	[0.499]	[3.926]	[3.793]
Female		0.001		0.004		0.004		-0.032
		[0.001]		[0.003]		[0.004]		[0.030]
Age x 100		-0.074		-0.143		-0.205		0.075
		[0.014]***		[0.073]*		[0.083]**		[0.931]
Age squared x 1,000		0.014		0.021		0.029		0.029
		[0.002]***		[0.008]***		[0.009]***		[0.095]
Education		0.003		0.002		0.003		0.036
		[0.001]***		[0.002]		[0.001]***		[0.011]***
Married (with HH member)		-0.004		-0.013		-0.005		0.040
		[0.001]***		[0.010]		[0.010]		[0.047]
Separated/Divorced/Widowed		-0.007		-0.016		-0.013		0.088
		[0.001]***		[0.011]		[0.011]		[0.057]
No. Of Persons a Member x 100		0.033		0.075		0.007		2.081
		[0.025]		[0.120]		[0.010]		[1.302]
House Ownership		0.003		0.011		-0.001		0.076
		[0.001]***		[0.003]***		[0.004]		[0.035]**
Net change in A&L x 100,000		0.013		-0.001		0.014		0.109
		[0.003]***		[0.008]		[0.009]		[0.104]
Constant	-0.778	-0.425	0.132	0.830	-1.312	-1.477	-3.487	-3.264
	[0.217]***	[0.206]**	[0.957]	[0.998]	[1.114]	[1.207]	[5.645]	[5.479]
Observations	13970	13970	1176	1176	632	632	540	540
R-squared	0.02	0.11	0.02	0.08	0.07	0.18	0.07	0.13

Robust standard errors in brackets
* significant at 10%; ** significant at 5%; *** significant at 1%