

# **An investigation of household remittance behaviour**

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## **Abstract**

Overseas remittances are a vital source of income for many households in developing economies, yet little is known about the characteristics of the sender households. We begin by examining what motivates households to send money to other households living abroad. We then model the remittance behaviour of a diverse set of ethnic minority groups living in England and Wales using survey data. Our results indicate that the propensity to remit is higher for richer households and for those containing more immigrants. There is also some evidence that altruism and social distance influence the likelihood of remittances being sent. Controlling for these factors, significant ethnic differences remain with Caribbean households most likely to remit and Indian households least. Group-specific cultural norms, experiences of migration and return-migration intentions are posited to explain these ethnic differences.

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## 1. Introduction

International remittance payments are an important component of the global economy: the World Bank estimated officially recorded remittances in 2000 at \$75 billion (Yusuf, 2001), almost 1% of total world trade in goods and services. For developing countries, the traditional exporters of labour, remittance payments are particularly significant. International Monetary Fund balance of payments statistics suggest that, while remittances amounted to less than half a per cent of exports of goods and services for industrial countries, the equivalent figure for developing countries was over 2%. This is almost certainly an underestimate of the magnitude of remittances since many, particularly developing, countries do not adequately record or report such payments.

Remittances are a major source of current account credit for countries which have traditionally sent migrants to the United Kingdom (UK). For example in 1994, when the survey data which we use were collected, remittances ranged from 0.33% of exports for China to 33% for Bangladesh. Given the impact of this type of payment on the economies of labour-exporting countries, it is important to understand the economics of remittances. In this paper we utilise survey evidence on ethnic minority households in England and Wales to explore one important and neglected aspect of the remittance process - the microeconomic behaviour of households which send payments abroad.

The paper proceeds as follows. In the next section we locate our research within the existing literature on remittances and in Section 3 we present some theoretical arguments as to why households may send money overseas. Section 4 introduces the dataset, the *Fourth National Survey of Ethnic Minorities*, focusing on the remittance information it contains. Section 5 introduces the empirical methodology and the specification of our regression equations. In

Section 6 the results from the estimated models are discussed and Section 7 contains concluding remarks.

## **2. Previous Literature**

The economic analysis of remittances has typically been conducted at the aggregate level and has usually been concerned with the importance of remittances as a vehicle for development. Several studies have attempted to model the macro-economic determinants of remittance inflows as well as quantifying the effects on the domestic economy.<sup>1</sup> Table 1 reports the total value of remittances for the world economy, industrial and developing countries as well as various individual nations which have been the main suppliers of non-white immigrants to the UK. Two time periods are considered: 1994, the year when our survey data were collected and 1999, the most recent year available.

In line with a longer-term trend, the total value of remittances increased substantially at the global level between 1994 and 1999. This rise can be entirely attributed to the increased amounts sent to developing countries since the value of remittances to industrialised countries actually showed a small fall over the period. Expressing remittances as a proportion of exports and GDP demonstrates the importance of these transfers to developing economies. With the exception of China, remittances are at least one half of one percent of GDP for all of the tabulated countries and rise to as much as 8.6% of GDP for Jamaica. By any measure these are substantial financial flows and hence remittances are of concern to policymakers in developing countries and international organisations.

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<sup>1</sup> See El-Sakka and McNabb (1999) for Egypt, Haque *et al.* (1994) for Pakistan, Glytsos (1993) for Greece, Strabhauer (1986) for Turkey and Faini (1994) for five Southern European/North African countries. There have also been a number of theoretical articles which emphasise the development role of remittances (McCormick and Wahba, 2000; Lundahl, 1985; Djajic, 1986). The microeconomic considerations behind the motivation to remit are discussed in the following section.

However not all remittances flow through official channels and the proportion varies by country.<sup>2</sup> Factors such as the difference between official and black market exchange rates lower the probability that a transfer is reported (Chandavarkar, 1980). Furthermore most countries do not include merchandise remittances or remittances below a certain level in their official statistics and these may be substantial for some countries.<sup>3</sup> This implies that official estimates are likely to be a significant underestimate of the true value of remittances. In addition, the reporting requirements in the balance of payments statistics for each country are different, and indeed remittances are not even reported for some countries, including the UK. All of these issues are potentially problematical if aggregate data are being analysed.

There are therefore good reasons for adopting a disaggregated perspective. Faini (1994) argues that microeconomic data should be used to model remittance behaviour because of the inability of macro-models to control for individual and demographic differences. Most of the existing microeconometric studies consider urban to rural transfers within developing countries rather than focusing on international flows (Johnson and Whitelaw, 1974; Rempel and Lobdell, 1978; Knowles and Anker, 1981; Banerjee, 1984; Lucas and Stark, 1985; Hoddinott, 1994). In comparison there has been little research on the remittance behaviour of immigrants in the host country, reflecting the difficulty of obtaining suitable data.<sup>4</sup>

Among those studies which do study international transfers, Funkhouser (1995) uses information on the remitter and recipient households in El Salvador and Nicaragua to model the

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<sup>2</sup> Gilani *et al.* (1981) estimate that 85.5% of Pakistani migrants used formal banking channels whilst for a sample of Sudanese migrants this was only 24% (Serageldin *et al.*, 1983). Gilani *et al.* (1981) report that 27% of remittances are carried by migrants themselves into Pakistan.

<sup>3</sup> Chandavarkar (1980) estimated that merchandise accounted for around 17% of total remittances to Pakistan and remittances below 10000 rupees were not reported in India in 1980.

determinants of remittances.<sup>5</sup> However there is only limited information on the sender household as the questions about the emigrants were only asked to the non-migrating household. Menjiver *et al.* (1998) also focus on the remittance behaviour of Latin American immigrants in the US, although their survey is confined to residents of Los Angeles county.<sup>6</sup> Ilahi and Jafarey (1999) demonstrate an informal contract exists between a migrant and their extended family using a sample of around 1000 return migrants to Pakistan. Merkle and Zimmermann (1992) analyse the effect of savings and remittances on return migration. They suggest that remittances are a special form of savings if there is an intention to return to the home country. Their study comprises exclusively of short term migrants from Southern Europe, especially Turkey, who return home immediately after their work period in Germany has been completed.<sup>7</sup> In comparison to these studies, we have access to a much larger dataset, which relates mainly to permanent, or at least long-term, migrants as well as second generation immigrants and native-born minority individuals with family abroad. This type of remitter may have motives for sending money overseas which are different to those discussed in the existing literature.

### **3. Motivations to remit**

Numerous theories have been advanced to explain why one rational household will send some level of remittances to another. Most of these explanations have viewed remittances within the context of internal or international migration. In this section we present a simple, very general model of remittances which focuses on two key reasons identified in the literature for the existence of remittance payments: altruism and exchange. We begin by positing, for potential

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<sup>4</sup> Faini (1994) argues that longitudinal data are required in order to account for real exchange rate variation; the cited studies predominantly use cross-section data.

<sup>5</sup> The sample sizes are 932 households in El Salvador and 269 households in Nicaragua.

<sup>6</sup> They use the Los Angeles Community Survey of 1991 and their results are based on 238 Filipinos and 383 Salvadorians.

<sup>7</sup> Their data are taken from the 1988 German Socioeconomic Panel and contains 721 individuals who were registered as guest-workers.

donor and recipient households, utility functions which encompass varied motives for the payment of remittances.

The utility of the potential recipient household (labelled  $R$ ) is represented as

$$V(y_R + r, s)$$

while for the potential donor household (labelled  $D$ ) we have

$$U(y_D - r, s, V(y_R + r, s)).$$

Here  $y$  is the level of household disposable income,  $r$  ( $\geq 0$ ) is the amount of remittances paid by the donor to the recipient and  $s$  ( $\geq 0$ ) is the value of some service which only the recipient household can provide to the donor. Each household derives utility from consumption thus  $V_1 > 0$  and  $U_1 > 0$  where the subscripts indicate the first partial derivative of the utility function with respect to its first argument. Note that the budget constraint is assumed to be binding - the whole of disposable income net of remittances is consumed.

Three further assumptions are made:

- (i)  $V_2 \leq 0$ . The provision of services may be at some utility cost to the recipient household.
- (ii)  $U_2 \geq 0$ . Services provided by the recipient may benefit the donor.
- (iii)  $U_V \geq 0$  where  $U_V$  is the partial derivative of the donor's utility function with respect to the utility of the recipient. This allows for the possibility of some degree of altruism on the part of the donor.

The framework outlined above allows the consideration of three special cases.

#### **(a) Altruistic Preferences**

The possibility that economic agents have preferences which are other-regarding is frequently used to explain types of behaviour which might otherwise appear anomalous. The existence of income transfers between households for which there is no apparent exchange motive is one example of such behaviour and altruism has been suggested as a potential explanation of remittances (Lucas and Stark, 1985; Funkhouser, 1995). In our framework, altruism can be introduced most simply by assuming  $U_2 = 0$ ,  $U_V > 0$  and  $V_2 = 0$ . The first order condition for utility maximisation by the donor household is

$$\frac{dU}{dr} = -U_1 + U_V V_1 = 0 \quad (1)$$

which suggests that remittances are paid up to the point where the marginal utility cost in terms of foregone consumption is exactly offset by the "warm glow" afforded by altruistic behaviour. Assuming diminishing marginal utility of consumption, we would expect remittances to be an increasing function of the income differential between donors and recipients.

This is not, however, the only prediction. The weight put on the recipient's utility by the donor ( $U_V$ ) will influence the desired level of remittances at any level of the income differential. Two sets of factors are likely to affect the extent to which altruistic concerns are important. First, the 'closeness' or otherwise of the relationship between the two parties will be important, an idea which can be traced back to Edgeworth's (1881) discussion of how increased 'social distance' between individuals diminishes altruism. Second, the weight put on altruistic behaviour within a particular culture or ethnic community may differ. Dasgupta (1993) discusses how, for particular groups, other-regarding social norms may emerge as a response to strategic or information problems which would lead to market failure. In our framework each of these

considerations will affect the magnitude of  $U_V$ . Figure 1 illustrates the ‘supply of remittances’ as a function of the income differential for two different levels of this parameter.<sup>8</sup>

### **(b) Pure Self-Interest**

While altruistic motives might be sufficient to explain the existence of positive levels of income transfers between households, it is far from necessary to invoke other-regarding behaviour in order to provide a rationale for remittances. Households which are purely motivated by self-interest may find it optimal to remit as part of a, possibly intertemporal, implicit or explicit exchange contract. A variety of such models exist in the literature; the common feature is that remittances are paid in exchange for some service which the recipient household provides.

It is worth considering what kind of service the recipient household can provide to the donor. According to the literature on migration, migrant welfare might depend on actions undertaken by the residuary household in the past, at present, or in the future. This might involve strategic bequests (Bernheim, Schleifer and Summers, 1985; Lucas and Stark, 1985) of wealth or land whereby the division of the residuary household's estate is conditional on actions, including the payment of remittances, undertaken by the migrant. Another potential service provided by residuary households is the management or disposal of migrants' assets held in the home land or region which the migrant envisages enjoying on return (Lucas and Stark, 1985). Poirine (1997) views remittances as the repayment of an informal loan which migrants borrowed in order to invest in human capital, while Docquier and Rapoport (1998) view remittances as a bribe which prevents the migration of unskilled workers from the home country or region diluting the quality of the pool of migrant labour in the destination location. The service provided by the recipients need not be so tangible; where a migrant donor has a reputation as a generous remitter, this may

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<sup>8</sup> Clearly the precise shape of the curves will depend on the functional form of the utility function. The figure is intended merely for illustrative purposes.



increase their standing in the community on return to the homeland. The ‘service’ provided by the recipient might simply be to receive the remittance payments and presumably make sure that it is common knowledge that they have been received.

Whatever the precise form of the service, a purely self-interested donor will only provide remittances in exchange for some level of  $s$ . We assume  $U_2 > 0$ ,  $U_V = 0$ ,  $V_2 < 0$ . The implications for the utility functions of the two individuals can be represented in the indifference curve map in Figure 2. For the donor (recipient) higher levels of utility lie to the north west (south east). A contract curve has been drawn through the points of tangency indicating that we can consider the outcome to be the result of a Nash bargain between the two parties. An interior solution, however, must satisfy a participation constraint. There must exist gains from trade otherwise at least one party will prefer not to enter the transaction. Specifically, we require a range of strictly positive  $r$  and  $s$  such that:

$$U(y_D - r, s) > U(y_D, 0) \text{ and } V(y_R + r, s) > V(y_R, 0) \quad (2)$$

Given diminishing marginal utility of consumption, this is more likely where there exists a relatively wealthy donor and relatively poor recipient. Assuming that the participation constraint is satisfied, the precise outcome will depend *inter alia* on the bargaining power of the two parties and will entail an implicit price of the service.

This scenario might appear to be nothing more than a market transaction between the two parties wherein a service is traded at a particular price. It should be borne in mind, however, that the recipient is likely to be in a privileged position insofar as providing the required service is concerned. For example, migrants may have little or no choice over which member of their

family is left in charge of their assets, and cultural reasons may dictate that the provision of this service requires a *quid pro quo* in the form of remittance payments.

### (c) More General Cases

In general, there may be mixed motivations for remittance payments and all of the partial derivatives in the utility functions should be written as strict inequalities. This is essentially the model of *inter vivos* transfers analysed by Cox (1987). The model is illustrated in Figure 3. Indifference curves for the donor and recipient are shown. For the donor, should the warm glow associated with altruism be sufficiently high, then an interior bliss point (point *A* in the figure) can exist. Progressively lower levels of utility as we move further from *A* in any direction are represented by the contours. Indifference curves for the recipient household are similar to those before. The donor is hypothesised as choosing the level of  $r$  and  $s$  in order to maximise utility subject to a participation constraint which requires that the recipient must be at least as well off at an equilibrium as they would be were they to supply no services and receive zero remittances.

Two possible interior solutions are illustrated in the figure. In the upper panel, the constraint is binding. The bliss point is unattainable since the indifference curve associated with the threshold level of utility (the indifference curve passing through the origin) lies everywhere to the southeast of *A*. The best that the donor can do is to choose remittances and services at point *B* where the threshold indifference curve of the recipient is tangential to the highest available contour. In the lower panel, the bliss point is attainable and *A* is the outcome. The participation

constraint is non-binding: Cox describes this as ‘effective altruism’ since the recipient is more than compensated (at utility level  $R_1 > R_0$ ) for the services provided.

The comparative statics of these models have been used as the basis for a test of whether altruism or exchange motives underlie private income transfers (Cox, 1987; Cox and Rank, 1992; Liu and Reilly, 1999). This relies on the fact that the predicted response of the level of transfers to the recipient's income can be positive if the elasticity of demand for services is sufficiently low. Thus, in an equation modelling the level of transfers, a positive coefficient on recipient income is consistent with exchange, since under altruism, transfers unambiguously decline if recipient income rises. We do not test this in the empirical section of this paper since our data do not contain a measure of recipient income. Rather, our discussion of the theoretical literature is intended to inform the choice of explanatory variables in our empirical work and to inform the interpretation of the data and results.

#### **(d) The Impact of Time Since Migration**

In each of the three cases discussed above the intertemporal aspect of remittance payments has been ignored. It is likely, however, that migration and re-migration decisions are made at distinct points in the life-cycle which will have implications for the temporal flow of remittance payments. In the context of international migration, we might expect the length of residence in the host country to be a likely determinant of the level of payments to the household left behind. Lucas and Stark (1985) develop an intertemporal model which combines elements of altruism and exchange. Their ‘tempered altruism’ or ‘enlightened self-interest’ motives view remittances as part of an intertemporal, mutually beneficial contractual arrangement between the migrant and their families. Families decide which member migrates on the basis of who has the best chance of success, this is often the individual with most education. Given that the family has

typically invested in the migrant's education, the migrant repays them by remitting money back so that the family gets a return on their investment. There is also a risk aspect since the families of migrants are usually involved in agriculture, which is characterised by a high degree of income uncertainty. Therefore migration can serve to diversify the sources of income for the family.

In terms of the important parameters of the utility functions, it could be argued that, the 'social distance' between donor (migrant) and recipient (home) households might increase if migration is seen as permanent and hence the level of altruistic concern ( $U_V$ ) would decline through time. Alternatively if return migration is envisaged, altruism might increase as the anticipated return date draws closer. On the other hand, if remittances are seen as part of an exchange relation then the schedule of payments is likely to reflect the specific services which are provided. Poirine (1997), in the context of a model of informal loans, argues that remittance payments will be M-shaped. Initially repayments of the loan are made until the debt has been repaid. Subsequently, as the anticipated return date gets closer, remittance payments are made as an investment in land and property in the home country. Clearly, if return is not envisaged then the second 'peak' is not relevant and we would observe remittances declining with length of residence in the destination country.

#### **4. Data**

The *Fourth National Survey of Ethnic Minorities* was undertaken in England and Wales in 1993/4 and intentionally over-sampled ethnic minority households.<sup>9</sup> Out of an achieved sample of 6302 households, 2809 comprised solely of whites while the remainder consisted wholly of individuals from the main ethnic minority groups or were mixed households. We make use of

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<sup>9</sup> See the Data Appendix for sampling details and for definitions of the ethnic groups.

only households with at least one non-white member because of the small number of all white households that contain immigrants and the correspondingly small proportion who remit.

Table 2 provides a preliminary description of the data relating to the incidence of remittance payments. Across the whole sample almost a quarter of ethnic minority households send money overseas. The table also shows that there is substantial variation between different ethnic groups in the propensity to remit. All Caribbean households have the highest percentage of remitters closely followed by all Pakistani households. The Chinese, one of the smaller minority groups in the UK, have the third highest remittance rate. The ethnic variation is interesting and difficult to explain in terms of the different migration experiences of the groups. The Caribbeans, as a group, arrived in Britain earlier than other minorities and consequently are characterised by having a relatively high proportion of native born individuals. Therefore it is by no means the case that those groups which arrived most recently exhibit higher remittance rates. For instance there is a lower proportion of remitters among the groups that arrived most recently such as the Pakistanis, Bangladeshis and Chinese than among the Caribbean households. The raw figures also suggest that Indians have the lowest remittance rate, which provides an interesting contrast with the Pakistanis group who have a similar pattern of arrival but have a remittance rate which is over twice as high.

The dataset contains a question on the regularity of remittance payments and Table 2 further reveals that, apart from the mixed households, Caribbeans are also the most likely to send money abroad regularly. Over a third of Caribbean remitters sent money regularly compared with just over 10% of Chinese households. The three South Asian groups are very similar with regards to how often remitters send money abroad. As might be expected, the overwhelming majority of the remitters send money back to the country of their birth/ancestors. It is noticeable,

however, that the Chinese have a lower propensity to do this compared to the other non-mixed minority groups. This is explained by the long history of diasporic migration from China, which has led to global extended family ties for members of this group (Pan, 1999). For the mixed group, the Caribbean is the most favoured destination, which reflects the composition of mixed households in the UK.

The different minority groups reported a variety of reasons for sending money abroad, as recorded in Table 3. At least 20% of each group indicated that parents were the recipients of remittance payments, with Pakistanis and the mixed group most likely to send money for this reason. Other relations were common recipients for all groups save the Chinese. Amongst the Chinese, a large proportion reported sending money for special occasions which is consistent with Table 2 insofar as this group does not send money regularly.<sup>10</sup> There are also a number of common features across the groups, for example, more than 10% of each group's remitters reported that there was no real reason why they sent money and sending money to children in the home country was not important for any of the groups. Glytsos (1997) using time series data on Greek emigrants in Germany and Australia also reports different motives for remitting. He attributes this to different types of migrants since he argues that remittances of temporary migrants are typically regular income streams to close family whereas remittances from permanent migrants are more typically gifts. However, as mentioned previously, the majority of respondents in our data will be permanent or long-term migrants.

Table 4 contains some limited information pertaining to the average amount the remitting household sends abroad each month. The obvious limitation of the data is that the question asked for responses to be given within bands and the bands were chosen to be too wide. The

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<sup>10</sup> It should also be noted that sample sizes are small for both the Chinese and Bangladeshis.

implication is that the majority of responses are clustered in the *less than £100, can't say* or the *amount varies* categories. Some respondents did report that they sent over £100 a month abroad but these were few in number. As a result, no real comparisons can be made between the different groups with regards to the amount sent abroad.

## 5. Modelling

The standard approach to modelling household remittances is to postulate an unobservable latent variable  $r_i^*$  which represents the desired level of remittances for household  $i$ . This variable is related to the household's observable characteristics according to the regression function:

$$r_i^* = x_i\beta + \varepsilon_i \quad i = 1, \dots, n \quad (3)$$

where  $x$  is a vector of household characteristics,  $\varepsilon$  a random error term and  $\beta$  a vector of parameters to be estimated.

The observation rule relating the model to the data depends on the nature of the remittance information available. Specification of  $d_i = 1$  if the individual remits ( $r_i^* > 0$ ) and zero otherwise, together with normality of the random error term, leads to the probit model, where  $d_i$  is a binary dependent variable. In principle our data allow us to go a little further. We can assume that if  $r_i^* \leq 0$  then the actual level of remittances  $r_i = 0$  while if  $r_i^* > 0$  then  $r_i = r_i^*$ . Thus we observe the censored grouped data:

$$d_i = 0 \text{ if } r_i^* \leq 0$$

$$d_i = 1 \text{ if } 0 < r_i^* < 100$$

$$d_i = 2 \text{ if } 100 \leq r_i^* < 500$$

$$d_i = 3 \text{ if } 500 \leq r_i^* < 1000$$

$$d_i = 4 \text{ if } r_i^* \geq 1000.$$

Assuming normality of the random error term leads to a tobit-type estimator with the slight complication that the non-zero observations are observed as grouped data. In practice, the likelihood function for this model can be easily maximised. There are, however, three problems with this estimator in the current application. First, in our dataset, as Table 4 illustrates, a relatively large proportion of the remitting sample did not specify how much they sent. Second, the width of the bands in the questionnaire implies little variation in the dependent variable. Third, and in common with all applications of the simple tobit model, the effect of a particular regressor on the probability of a zero observation is restricted to be of the same sign as the effect of that regressor on the expected value of the dependent variable conditional on it being strictly positive.

Given these drawbacks we estimate probit models on the entire sample of remitters and non-remitters to investigate the factors which lead minority households to remit. For a restricted sample comprising non-remitters and those remitters who reported the amount sent, we also estimate tobit-type models. We experimented with estimating a variant of the truncated regression model on the remitters only in order to deal with the third of the problems identified above, however the lack of variation in the banded amounts reported prevented meaningful estimates from being obtained.<sup>11</sup>

It is important to note at this juncture that the remittance information is only recorded at the household level (which may include one or more family unit). This should not be perceived as a problem and indeed it may have some advantages. For example Stark (1991) emphasises that the household is the relevant decision making unit, comprising a worker and their dependants.

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<sup>11</sup> The same problem precludes the use of Heckman-type models similar to those estimated by Funkhouser (1995), Hoddinott (1994) or Banerjee (1984).



Mincer (1978) also analyses migration from the perspective of the household. Merkle and Zimmermann (1992) use a household dataset but model remittance behaviour from the individual's perspective. Therefore the majority of their explanatory variables relate to the individual but they also include some household variables. We model remittances at the household level but include a mixture of household and individual-level regressors. We have detailed information on the characteristics of the individual who completed the questionnaire (the responding individual) but only very limited information on other household members.<sup>12</sup> The vast majority of the responding individuals are heads of household and we incorporate their relevant characteristics into the model. Appendix Table A1 reports descriptive statistics for the explanatory variables in the dataset.

Two main specifications of each model are estimated. The first includes a set of variables intended to capture the key influences suggested by the earlier theoretical discussion. Since a larger income differential between the donor and recipient households should lead to a higher level of remittances, a measure of household income is included. This variable is recorded in a banded format hence we measure income through a series of dummy variables, each corresponding to a different income level.<sup>13</sup> Around a quarter of our useable sample failed to answer the income question, as reported in Table A1, therefore specifications which included proxies for income were also estimated.<sup>14</sup> Since remittances are taken out of disposable income, we would expect the number of children in the household to be negatively related to remittances. We include, as an explanatory variable, the total number of children in the

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<sup>12</sup> For further details of how the individual and household variables were constructed, see the Data Appendix.

<sup>13</sup> Five income categories are included in the various equations to be estimated. These are constructed from the original household income variable which contained 16 categories. Experimentation with a larger number of income dummies produced almost identical results, therefore the more parsimonious specification was chosen.

<sup>14</sup> These estimates are shown in Table A2 in the Appendix. The income proxies are the total number of full-timers, part-timers and females in the household and controls for household tenure.

household to capture this effect. We do not, however, observe the recipient household's income as our data refer purely to donor households.

For migrants, we would expect the length of residence to be an important determinant of remittances. It was suggested that remittances may be M-shaped over the duration of the migrant's residence if they intend to return to the home country. It is generally held that the overwhelming majority of UK ethnic minority immigrant households are permanent residents hence an inverse U-shaped relationship between remittances and length of time in the host country may be more appropriate.<sup>15</sup> The data contain information on years since migration for the responding individual in the household. Due to the fact that some of the individuals are natives, we decided to include immigrant cohort dummies rather than a continuous 'years since migration' variable. We have also added the number of residents born abroad as a regressor since household members other than the responding individual may have been born abroad. Another interesting issue is whether controlling for the above factors removes the large ethnic differences in propensity to remit shown in Table 2. Ethnic dummy variables corresponding to the composition of the household were therefore also included.

As far as the other theoretical determinants of remittances are concerned, they involve the parameters of the utility functions which are difficult to observe in practice. To proxy altruistic concerns we use responses to a question on voluntary activity. Specifically, the question asked the responding adult "In the last year, have you done any unpaid voluntary work to help people or benefit the community through some organisation?". To proxy the 'distance' between respondents and potential recipients overseas we used responses to a question on whether the responding individual had visited their family's country of origin within the last five years.

These variables may also affect the degree of altruism. We also include dummy variables which reflect whether the responding adult has family (specifically adult children, parents, aunts or uncles) living abroad. Unfortunately the questions on voluntary work, visits to country of origin and family members abroad were asked only to a randomly chosen subset of the sample, comprising around half of the respondents. Therefore we estimate separate models using the reduced sample and include each of the altruistic and distance proxies as regressors.

A second specification is estimated in which the baseline specification is augmented with other variables that have been suggested in the literature as potential influences on remittance payments. It has been noted that the repayment of loans borrowed by the migrant for human capital investment is a possible element of the exchange motive for remitting. While this explanation is typically not supported by empirical evidence (Chandavarkar, 1980; Merkle and Zimmermann, 1992), we augment the model with information relating to the highest educational qualifications of the responding individual. The survey also distinguishes between UK qualifications and those obtained overseas, hence a single dummy variable is also used to identify those individuals who obtained at least some of their education abroad.

Most empirical studies of remittances also include the age of a migrant as an explanatory variable, although the relationship between remittances and age is not clear. Remittances may increase with age as the individual or household are likely to have accumulated savings or made investments over time. In contrast younger migrants may be able to send more money overseas if they have no families of their own to support in the host country. Rather than including the age of the household's responding individual, our age control relates to average age of all adults

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<sup>15</sup> Stark (1978) suggested such a relationship in the context of rural migrants' length of stay in urban areas since remittances initially increase with length of residence as migrants adjust to their new environment and as fixed costs decline before remittances begin to decrease over time as attachments become looser.

in the household. We have also included the square of this variable to capture possible non-linearities that may result from the opposing influences.

One final possible influence on remittances is the ethnic composition of the neighbourhood in which the household resides. Altruistic cultural norms, of the type described by Dasgupta (1993), may be enforced by the geographical proximity of co-ethnics. These influences are captured by the percentage of co-ethnics in the local authority ward in which the household is found. This was recorded in the dataset as a categorical rather than a continuous variable.

## **6. Results**

For each of the specifications discussed above, the probit marginal effects of the explanatory variables on the probability of remitting are displayed in Tables 5 and 6.<sup>16</sup> Table 5 reports a number of interesting results based on full-sample estimation of the baseline and augmented specifications. As theory predicts, higher income households are much more likely to remit. Households in the upper income band (those earning more than £674 per week) have a probability of remitting almost twenty percentage points higher than those in the lowest band (those earning less than £116 per week). In each of the specifications, moving down through the income bands monotonically reduces the probability of sending money overseas. For any level of income, the presence of children is likely to reduce the disposable income available to the household and we find that the propensity to remit declines significantly with the total number of children in the household. From the perspective of recipient households, it is clearly in their pecuniary interest for donors to succeed in the host country's labour market. Recipient households, however, will receive less remittances when migrants form families in their

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<sup>16</sup> Table A2 reports probit and tobit estimates of the augmented specification for the whole sample by replacing the income dummies with the income proxies, of which only the total number of full-timers in household and owner occupiers have a significantly positive effect on the propensity to remit. The remainder of the estimates are not affected to any great extent.

destination. We should note that in a more fully-specified model, the process of family formation ought to be considered as endogenous and determined jointly along with labour market, place of residence and remittance decisions.

Immigrant households are more likely to remit than their native-born counterparts. This is consistent with exchange motives whereby immigrants are paying for services received from their relatives overseas or altruistic motives where concerns for others are stronger the closer are familial ties. We find that the greater the number of foreign-born individuals in the household, the stronger is the household propensity to remit. The immigrant status of the responding adult is also important with native-born respondents much less likely to belong to remitting households. While this is an unsurprising finding, it does confirm that remittances and the process of migration are intrinsically linked and need to be considered together in theoretical and empirical work.

With respect to years since arrival in Britain, however, there is no strong increasing or decreasing pattern in the coefficients, with no significant differences between those who arrived prior to the 1960s and those who arrive in later decades up to the 1990s. Households headed by very recent arrivals (1990-94) exhibited a propensity to remit somewhere between households headed by the native born and those headed by earlier arrivals. While it should be noted that, due to the small number of such households, this coefficient is imprecisely estimated, this may provide some evidence that, initially at least, remittances increase with length of residence although we find little evidence that remittances decline by much after a long period of residence or of a M-shaped relationship between remittances and length of residence, as Poirine (1997) suggests. To further investigate this issue, we experimented with regression equations containing a continuous measure of years since migration estimated on a sample of immigrants

only. However, the results suggested that, once income and ethnic group were controlled for, length of residence was insignificant in the remittance regressions. There are two possible explanations for these findings. First, the effect of years since migration may operate in different directions for different immigrants or groups and these effectively cancel each other out. Second, in cross-sectional data the estimated coefficient on the years since migration variable will combine the effect of increasing experience with the effect of qualitative differences in immigrant cohorts. Again, these may operate in different directions and contribute to insignificance of the estimated coefficients.

In the augmented specification, variables relating to the average age of the household, the educational level of the responding adult and the ethnic concentration of the neighbourhood are added. The results suggest that younger households are the least likely to remit but the sign on the squared term is negative and significant. Education level had no significant effect on remittance propensity, however those households where the responding adult had foreign qualifications were more likely to remit. There is therefore somewhat mixed evidence on whether remittances can be thought of as the repayment of a loan which was used to undertake education. One might expect remittances to increase with a higher level of education. On the other hand, any loan may already have been repaid by the time that the individuals in our sample were observed.

While there were no strong effects of ethnic concentration or enclave effects, households located in areas with the highest proportion of co-ethnics had a lower propensity to remit and this was statistically significant at the 10% level. This is contrary to the view that co-ethnic proximity is a reinforcing factor for those cultural norms which encourage remittances and may

reflect unmeasured wealth differences since more concentrated wards in England and Wales tend also to be relatively poor.

Significant differences between ethnic groups in the propensity to remit remain even after controlling for other covariates. Table 5 shows that all of the groups remit to a significantly greater extent than the excluded all Indian household group. In fact, compared to the raw data some of these ethnic differences are accentuated. For example, in the regression estimates all Caribbean households have a remittance rate, controlling for other factors, almost thirty percentage points higher than the Indian group, compared with 23 percentage points in the raw data (Table 2).

The coefficients on the ethnic dummies reflect unobserved, and possibly unobservable, influences on the propensity to remit which vary between the ethnic groups. These may involve cultural traditions such as norms of altruistic or reciprocal behaviour which differ by ethnicity, by religious affiliation or degree of assimilation with the majority white culture. For example, Islam, a religion which emphasises gift exchange within a *biraderi* or brotherhood across international frontiers, is the dominant religion of the Pakistani and Bangladeshi groups and is only followed by a minority of UK's Indian population. Similarly, some groups may choose to conduct their personal and professional lives in some degree of isolation of the majority community, a choice which one might expect to cement ties with family or friends overseas.

Equally, there are clearly variables that influence the propensity to remit which, while potentially observable, we do not have access to given the available data. The simple model of altruism suggests that recipient income is negatively related to the propensity to remit, however we know very little about recipient households. While it is difficult to generalise, Indian

immigrants to the UK are often considered to have originated from wealthier backgrounds than other South Asian groups (Ballard, 1994) and this may explain some of the differences between the Indians and the other groups. Some South Asians, particularly Indians, are also more likely to have arrived in the UK as part of the exodus of Asians from East Africa which occurred in the early 1970s. Such individuals are therefore very unlikely to have family members who remain in East Africa, closing down one potential remittance channel.

The return-migration intentions of minority individuals are also a potential explanation for differential remittance rates. Studies have emphasised how return migration is increasingly important for the Caribbean group (Byron, 1994; Goulbourne, 1999), which contrasts with some Asian groups such as the Pakistanis (Anwar, 1979). On the basis of case study evidence, Byron and Goulbourne suggest that remittances are a form of saving for retirement by intending returners. Those Asians who arrived from East Africa - the so-called 'twice migrants' - are also less likely to leave Britain. Ballard (1994) describes them as "settlers rather than sojourners right from the outset" (p. 23).

Table 6 contains some evidence on the effect of some additional variables, namely those concerning connections with individuals overseas and voluntary work. These results are based on equations estimated on a restricted sample. We find, unsurprisingly, that remitting is more likely in households with parents living abroad. While the marginal effects associated with having children and aunts and uncles in other countries are positive, they are not statistically significant in this relatively small sample. Having visited the country of origin in the recent past is also associated with a higher propensity to remit and could be interpreted as evidence that some form of 'social distance' is negatively related to the extent of altruistic preferences and hence the likelihood of remittance payments. Finally, households were more likely to remit



where the responding adult undertook voluntary work.<sup>17</sup> We interpret this as providing some evidence in favour of altruism as a motivation for remittance payments.

While we do not report the full results here, adding these variables to the model estimated on the restricted sample does explain a small proportion of the ethnic differences between the groups discussed above. Indians are least likely to have parents abroad partly because the majority of Asians who arrived in the UK from East Africa were of Indian origin. Nevertheless, despite the inclusion of these additional variables, large and significant inter-ethnic differences in remittance probabilities remain. It would be therefore be of interest to estimate separate models for each of the minority groups. However, the resulting small samples for some of the groups would provoke questions about the reliability of the estimates. Nevertheless when such an exercise is undertaken many of the findings from the pooled regressions also apply to each of the groups.<sup>18</sup> In particular, income remains an important influence on the probability of remitting for each of the groups, although the effect is weakest for the mixed group. The finding that education is only weakly associated with remittances again receives support. The immigration variables are also important, especially for Caribbeans and the mixed group. Furthermore, when the probit model is estimated for natives and immigrants separately it is found that the marginal effect on the Caribbean dummy is much larger in the sample of immigrants than it is for natives. This suggests that Caribbean migrants may have a higher propensity to remit because of the intention to return to their home islands in the future.

The bulk of the discussion in this section has focussed on the probit estimates. We also estimated grouped data tobit models and since, broadly speaking, the signs of the coefficients and the levels of significance were similar to the probits, we briefly report and discuss the

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<sup>17</sup> This marginal effect is significant at the 10% level but just fails to reach significance at the 5% level, however, the sample size in these regressions are much smaller compared to those in Table 5.

results here. Table 7 contains the marginal effects of the explanatory variables on the amount of remittances conditional on remittances being paid, which is given by:

$$\frac{\partial(r_i^* | r_i^* > 0)}{\partial x} = \hat{\beta}\{1 - \lambda(\hat{\alpha})[\hat{\alpha} + \lambda(\hat{\alpha})]\} \quad (4)$$

where  $\lambda(\hat{\alpha}) = \frac{\phi(\hat{\alpha})}{\Phi(\hat{\alpha})}$  and  $\hat{\alpha} = \frac{\bar{x}\hat{\beta}}{\hat{\sigma}}$ .

In these expressions, ‘hats’ denote maximum likelihood estimates, ‘bars’ the sample mean values,  $\phi$  and  $\Phi$  are the standard normal density and distribution functions respectively and  $\sigma$  is the standard deviation of the error term in equation (3).<sup>19</sup>

The results suggest that income is a strong determinant of monthly remittance payments with the movement from the lowest income band to the highest associated with a £13.27 monthly increase in payments. Each additional child in the household reduces remittances by around £1.13 per month. Strong ethnic differences also remain with a £15.81 estimated differential in monthly remittances between all Caribbean households and all Indian households.

While the total number of foreign born members of the household is not a significant determinant of the amount of remittances, households in which the responding adult was native born remit around £10 less per month than households in which the respondent was an immigrant. There are no clear differences in amount sent by immigrant cohort. There are also some differences with respect to education, with those with foreign qualifications sending significantly more.

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<sup>18</sup> Results available from the authors on request.

## 7. Conclusion

Our results illustrate that the remittance behaviour of ethnic minority households in England and Wales is characterised by some empirical regularities which can be rationalised within the context of economic theory. Remittances are increasing in disposable income and are greater where there are more migrants in the household. These are unsurprising findings and support the orthodox view of remittances as utility-enhancing and intrinsically linked to the migration process. While our data do not allow a clean test of whether remittances are mainly paid as a result of altruism or exchange motives, there is some evidence to suggest that those whose lifestyles exhibit evidence of concerns for others are more likely to remit and that the 'distance' between minority households and the country of their ancestry is negatively related to the propensity to remit. A simple model of altruism, in the spirit of Edgeworth, would predict such results.

Ethnic communities in England and Wales exhibit considerable diversity and the ethnic differences which remain after controlling for other influences indicate that there are unexplained relationships between ethnicity and remittance behaviour. While these might reflect purely cultural or religious differences in behavioural norms, traditions or forms of economic activity which are difficult to measure, we should not ignore the potential influence of other, more tangible, factors. In particular we have drawn attention to return-migration intentions which seem to be less prevalent among Asian groups than among the Caribbeans, the likely differences in the income levels of recipient households and the specific nature of the process of migration of Asians, particularly Indians, from Africa, a process distinct from the traditional pattern of chain-migration of Asians or Caribbeans from their homeland. Isolating

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<sup>19</sup> We also computed the marginal effects of the explanatory variables on the probability of a positive amount of remittances. Given the proportion of zeroes and the lack of variation in the recorded amounts, these estimates were very similar to the probit results of Table 5 and are not reported here.

the influences of these considerations is clearly a topic for future research, an agenda which would benefit greatly from data which can match donor and recipient households.

From a development perspective, there are implications of our findings for policymakers in origin countries. Notwithstanding our remarks about the Caribbeans, the vast majority of ethnic minority households in Britain are comprised of permanent migrants and their children. Thus as parents and relatives overseas age and die, streams of remittance payments to these countries will be reduced. Current UK immigration policy is considerably more restrictive than in recent decades and it is highly unlikely that the countries which have traditionally sent migrants to Britain will be able to send replacement cohorts to maintain the flow of remittances. Indeed Pakistan, India and Bangladesh now export labour to the Middle East rather than to the West.<sup>20</sup> Thus the maintenance of financial flows, which we have shown are significant for many countries, will depend on the extent to which extended family ties can prolong the remittance relationships which exist between households. Amongst ethnic communities in Britain themselves, remittances can be viewed as one aspect of their behaviour, economic and otherwise, which maintains links with the country of ancestry and hence reinforces ethnic or cultural norms. Whether remittances grow or decline in future may thus be related to the extent to which minorities are assimilated.

One of the most significant influences on donor behaviour is income and this has consequences for those countries whose trade balances rely heavily on remittance payments. Flows of remittance payments are likely to be highly sensitive to changes in economic conditions which impact on the incomes of donor households. Viewing migrants and other potential donors as a financial asset of the labour-exporting country provides a useful perspective on this income risk.

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<sup>20</sup> IMF estimates for Pakistan suggest that in 1999/2000, 70% of remittance payments came from the Middle East compared with 7% from the UK and 8% from the US.

A 'portfolio' of migrants concentrated in one country or region is likely to expose the labour-exporting country to a greater degree of income risk than a more diversified set of destination countries or regions. This has policy implications for how labour-exporting countries promote or encourage migration in an increasingly globalised economy.

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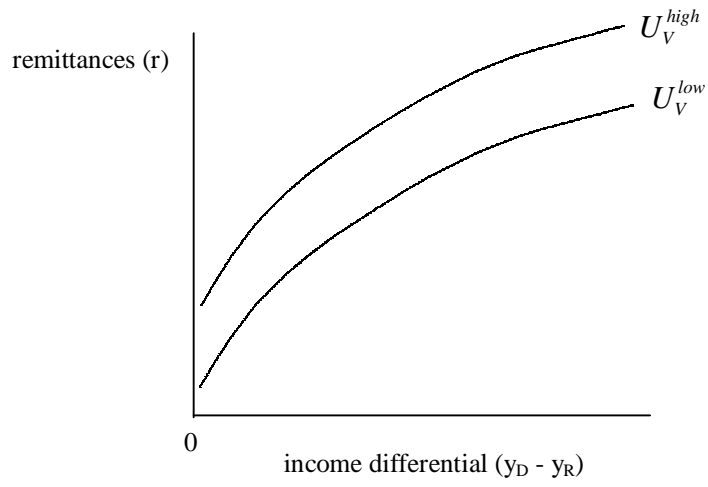
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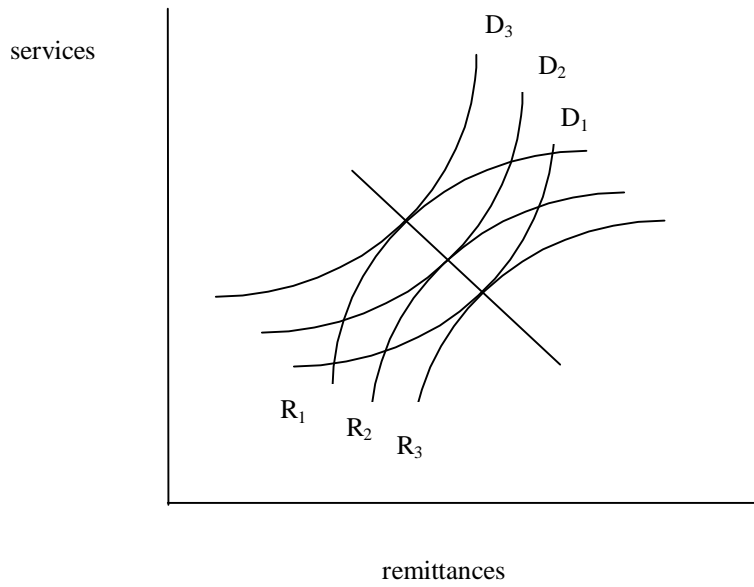
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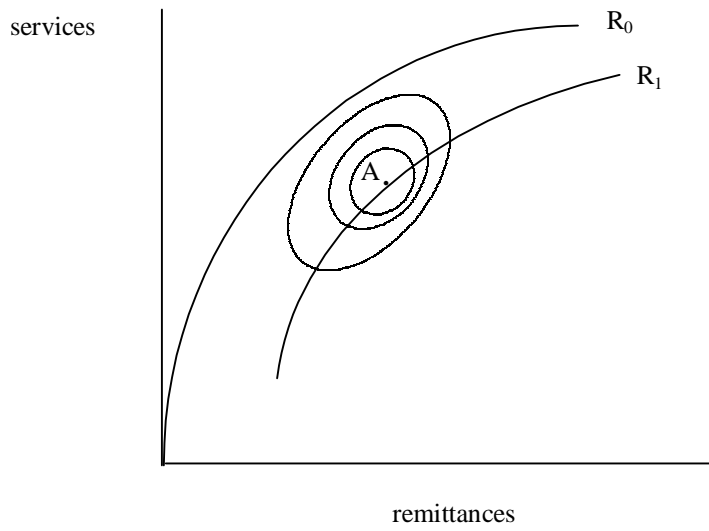
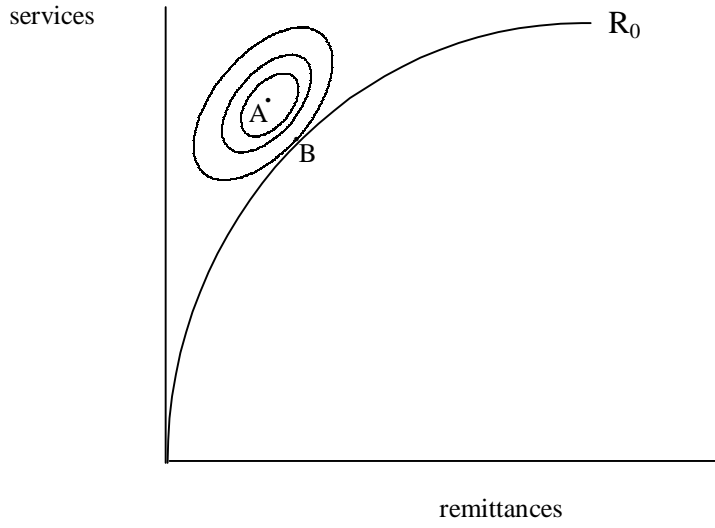
**Figure 1. The Supply of Remittances under Altruism**



**Figure 2. An Exchange Solution Set**



**Figure 3. A More General Case**



**Table 1****Aggregate remittance data for selected countries and country groups**

<b>Country/country group</b>	<b>Remittances (millions of dollars current prices)</b>		<b>Remittances/ Exports of Goods and Services (%)</b>		<b>Remittances/ GDP (%)</b>	
	<b>1994</b>	<b>1999</b>	<b>1994</b>	<b>1999</b>	<b>1994</b>	<b>1999</b>
World	47598	62976	0.90	0.90	-	-
Industrial Countries	12162	11766	0.33	0.25	-	-
Developing Countries	35436	51211	2.15	2.25	-	-
<i>Caribbean Islands</i>						
Barbados	37	61	3.69	4.76	2.19	2.52
Jamaica	458	679	15.04	20.23	7.12	8.56
St Kitts and Nevis	14	-	11.57	-	6.31	-
St Lucia	20	22	5.92	6.18	3.87	3.44
St Vincent and the Grenadines	15	16	13.27	10.96	6.17	4.87
Trinidad and Tobago	26	45	1.24	1.54	0.53	0.65
<i>Asia</i>						
Bangladesh	1151	1797	32.66	28.81	3.21	3.84
India	5782	11002	18.32	21.17	1.87	2.49
Pakistan	1749	1707	19.72	17.11	3.11	2.86
China (excluding Hong Kong)	395	384	0.33	0.18	0.07	0.04

*Sources:*

IMF Balance of Payments Yearbook 2000, IMF World Economic Outlook database.

*Notes:*

1. Countries were selected on the basis of their history of migration to Britain and data availability. Country groupings are IMF definitions.
2. Remittance data for 1999 were not available for all countries and data from earlier years were substituted where appropriate.
3. See Russell and Teitelbaum (1992) for a discussion of conceptual issues in the measurement of remittances.

**TABLE 2**  
**Households sending money abroad by household ethnic mix**

Household ethnic mix	Whole Sample		Remitters only	
	N	% remitting	% sending regularly	Country sent to mostly %
All Caribbeans	990	36.48	33.54	West Indies/Guyana 97.48
All Indians	993	13.59	15.77	India 93.53
All Pakistanis	423	30.13	17.56	Pakistan 99.19
All Bangladeshis	136	20.69	17.43	Bangladesh 100.00
All Chinese	187	26.45	10.63	China/Hong Kong 69.94
Mixed or Not Known	742	16.13	33.59	West Indies/Guyana 44.58
Whole Sample	3471	23.65	26.21	West Indies/Guyana 49.39

*Notes:* 1. Table uses weighted data.

2. Mixed refers to all households with at least one person from a different ethnic background to the remainder of the household. Not known refers to those households which contain at least one person for whom ethnicity question was not answered. See Data Appendix for further details.

**TABLE 3**

**Reasons for sending money abroad by household ethnic mix (in percentages)**

<b>Household ethnic mix</b>	<b>No real</b>	<b>Parents</b>	<b>Children</b>	<b>Other relations</b>	<b>Special Occasions</b>	<b>Other</b>	<b>N</b>
All Caribbeans	18.03	20.42	5.23	51.41	12.64	0.95	361
All Indians	10.91	34.63	4.99	42.70	15.45	0.00	134
All Pakistanis	13.72	45.80	3.62	40.24	24.18	2.38	127
All Bangladeshis	11.21	29.94	0.00	43.05	36.51	0.00	28
All Chinese	17.94	23.40	9.92	18.27	51.30	0.00	50
Mixed or Not Known	12.30	43.24	2.85	28.19	17.55	1.14	120
Whole Sample	15.12	30.52	4.70	42.57	18.77	0.96	820

*Notes:*

1. See notes to Table 2.
2. Children includes school fees and other relations includes spouse.
3. The household could give more than one reason for sending money abroad so row totals may not add to 100.

**TABLE 4**

**Average amount of money sent monthly by household ethnic mix (in percentages)**

<b>Household ethnic mix</b>	<b>Less than £100</b>	<b>£100 - £499</b>	<b>£500 - £999</b>	<b>£1000 or more</b>	<b>Varies</b>	<b>Can't say</b>
All Caribbeans	58.21	2.40	0.50	0.00	23.40	15.49
All Indians	61.92	2.85	0.96	0.00	18.54	15.73
All Pakistanis	49.69	5.49	0.00	0.00	27.73	17.09
All Bangladeshis	44.55	1.94	0.00	0.00	38.15	15.37
All Chinese	46.81	13.36	0.00	0.00	12.92	26.91
Mixed or Not Known	57.74	4.38	0.87	0.78	21.26	14.96
Whole Sample	56.25	3.90	0.51	0.11	22.83	16.40

*Notes:*

1. See notes to Table 2.
2. The amount sent for some respondents includes those who admitted to sending money to people in the UK as well as abroad.

**TABLE 5**

**Marginal effects for the incidence of remitting**

	Baseline Specification		Augmented Specification	
	M.E.	P-value	M.E.	P-value
Total children	-0.016	0.012	-0.016	0.019
Weekly income £116-231	0.062	0.025	0.060	0.023
Weekly income £231-£443	0.138	0.000	0.138	0.000
Weekly income £443-£674	0.163	0.000	0.150	0.000
Weekly income ≥ £674	0.199	0.000	0.191	0.000
Total born abroad	0.019	0.011	0.014	0.076
Arrived pre-1960	0.164	0.000	0.086	0.098
Arrived in 1960s	0.155	0.000	0.098	0.004
Arrived in 1970s	0.156	0.000	0.105	0.005
Arrived in 1980s	0.141	0.001	0.083	0.070
Arrived in 1990s	0.097	0.152	0.025	0.704
Caribbean	0.286	0.000	0.289	0.000
Pakistani	0.198	0.000	0.225	0.000
Bangladeshi	0.072	0.071	0.106	0.017
Chinese	0.178	0.003	0.204	0.002
Mixed household/not known	0.069	0.040	0.108	0.005
Degree			0.013	0.711
Vocational qualifications			0.001	0.983
‘A’ levels or equivalent			-0.025	0.526
‘O’ levels or equivalent			-0.040	0.120
Other qualifications			-0.001	0.993
Foreign qualifications			0.062	0.039
Average age of adults			0.012	0.018
(Average age of adults) <sup>2</sup>			-0.0001	0.030
Area has 2-4.99% own group			-0.005	0.881
Area has 5-9.99% own group			0.029	0.342
Area has 10-14.99% own group			0.047	0.169
Area has 15-24.99% own group			0.025	0.437
Area has 25-32.99% own group			0.010	0.798
Area has ≥ 33% own group			-0.068	0.058
N	2544		2366	

Notes:

1. The table reports the marginal effect of a unit change in the explanatory variable on the probability of remitting a positive amount. Numerically estimated heteroscedastic consistent standard errors for the marginal effects were used to compute the p-values.
2. The underlying regression model used unweighted data and the constant term referred to a native born member of an all-Indian household with a weekly income of less than £116 (in 1994 prices), with no formal qualifications and living in a local authority ward where less than 2% of the population are from the same ethnic group.
3. Sample sizes differ between the two specifications due to item non-response.

**TABLE 6****Additional marginal effects for the incidence of remitting**

	<b>Baseline Specification</b>	<b>Augmented Specification</b>
Does voluntary work	0.070 (0.066)	0.072 (0.064)
Been back to home country in last 5 years	0.088 (0.001)	0.086 (0.001)
Parent(s) abroad	0.126 (0.000)	0.122 (0.000)
Children abroad	0.077 (0.187)	0.063 (0.303)
Aunts/uncles abroad	0.024 (0.374)	0.027 (0.340)
N	1165	1163

*Notes:*

1. The table reports probit marginal effects and p-values (in parentheses) for selected variables. Full results available on request.
2. For details of the baseline and augmented specifications see Table 5.



**TABLE 7**

**Censored marginal effect on amount remitted**

	Baseline Specification		Augmented Specification	
	Coef.	P-value	Coef.	P-value
Total children	-1.130	0.012	-1.064	0.024
Weekly income £116-231	3.183	0.062	3.198	0.074
Weekly income £231-£443	8.751	0.000	9.269	0.000
Weekly income £443-£674	7.856	0.002	7.229	0.006
Weekly income ≥ £674	13.273	0.001	13.481	0.002
Total born abroad	0.544	0.309	0.060	0.913
Arrived pre-1960	11.894	0.000	3.558	0.251
Arrived in 1960s	10.713	0.000	4.962	0.031
Arrived in 1970s	11.120	0.000	5.597	0.024
Arrived in 1980s	12.397	0.000	6.558	0.034
Arrived in 1990s	11.332	0.026	4.956	0.275
Caribbean	15.813	0.000	16.274	0.000
Pakistani	9.962	0.000	10.936	0.000
Bangladeshi	-0.939	0.728	0.800	0.783
Chinese	9.182	0.018	10.598	0.019
Mixed household/not known	5.205	0.040	7.559	0.012
Degree			-1.105	0.619
Vocational qualifications			-0.760	0.749
‘A’ levels or equivalent			-3.382	0.176
‘O’ levels or equivalent			-4.434	0.008
Other qualifications			-1.800	0.732
Foreign qualifications			4.201	0.037
Average age of adults			0.914	0.008
(Average age of adults) <sup>2</sup>			-0.009	0.019
Area has 2-4.99% own group			-5.148	0.020
Area has 5-9.99% own group			0.693	0.731
Area has 10-14.99% own group			0.983	0.662
Area has 15-24.99% own group			0.831	0.720
Area has 25-32.99% own group			2.902	0.291
Area has ≥ 33% own group			-14.726	0.336
N	2320		2150	

*Note:*

1. The table reports the marginal effect on the amount of remittance payment conditional on remittances being positive (see equation (4)). See also notes to Table 5.

## Appendix

### Data Appendix

#### Background information

The *Fourth National Survey of Ethnic Minorities* was undertaken between November 1993 and December 1994. The intention of the survey was to investigate the social and economic conditions of Britain's ethnic minorities eg family structures, employment, income, education, housing, racial harassment, health and cultural identities. The vast majority of ethnic minority respondents were selected as a result of a large scale screening process, in which 80,000 addresses were identified. The remainder of the ethnic minority respondents, mainly those residing in very low ethnically concentrated areas, were selected by focussed enumeration techniques.<sup>21</sup> Some white respondents were also sampled in the survey for comparative purposes. A total of 6302 households were eventually included in the survey.

#### Definition of Ethnic Groups

Respondents were asked a question on their family origin in addition to the standard ethnicity question used in the UK, as defined in the *Census*. Responses from the two separate questions were then used to construct the ethnic group variable. For example, the Caribbean group not only refers to those born in the Caribbean but also to others whose parents originated from the Caribbean. The main minority households that can be identified in the data set are Caribbeans, Indians, Pakistanis, Bangladeshis and Chinese. We have also included a separate group which includes households containing individuals from at least two different ethnic groups and those households in which at least one individual did not reveal their ethnic group. Over 80% of the mixed households included at least one white person. Analysis of the country of birth and ethnicity questions suggests that the Not Known households consist mainly of ethnic minority individuals. A separate African Asian group, who mainly entered the UK in the early 1970s after being expelled from East Africa, can be identified in the individual data but there is no African Asian identifier in the household data. The majority of African Asians are found in All Indian households.

#### Details of household and individual variables

Both the individual and household questionnaires are used to construct the explanatory variables used in the econometric models.

Household interviews were conducted with the person who knew most about the household's housing arrangements. This person then gave responses for themselves and the other household members on a range of characteristics such as age, sex, country of birth, ethnic group, economic position, marital status and relationship to responding householder as well as to questions on the house itself.

Individual interviews take place with one or two randomly selected household residents. We can be fairly certain that the majority of these individuals are the heads of their households as nearly 94% of them completed the household questionnaire, whereas only 15 of the household interviews were conducted with the other household member selected for the individual questionnaire.

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<sup>21</sup> For further information on the sampling techniques and the data set itself, see Smith and Prior (1996) and Smith (1997).

### Weights

Both household and individual weights were added to the final data file so that the survey represents the groups under consideration as closely as possible. The weighting factors correct for known discrepancies in the probability of selecting individuals within households and wards within strata. Observed variations in response rates between enumeration districts at the screening stage and by age, sex, ethnic group and stratum at the fieldwork stage were also corrected. Finally, adjustments were made to ensure that the sample matched the 1991 Census by age within each ethnic group and that the weighted sample size was equal to the actual number of interviews.

In the paper we use the weights in descriptive tables only in order to approximate behaviour in the underlying population as closely as possible. The regression estimates are based on unweighted data since we are maintaining the assumption of common coefficient vectors across sampling strata in the underlying data generation process (DuMouchel and Duncan, 1983).

### Further information on explanatory variables

*Qualification Level:* The highest qualification that the responding individual has attained is used to measure their level of education. Both qualifications obtained in the UK and the comparable achievements abroad are used to construct this variable. Six categories are identified. Degree refers to those individuals who have a first or higher degree. Vocational qualifications mainly consist of apprenticeships and professional qualifications. 'A' levels or equivalent are the typical examinations taken by 18 year olds in the UK or equivalent qualifications attained overseas. 'O' levels or equivalent are the typical examinations taken by 16 year olds in the UK or equivalent qualifications attained overseas. Other qualifications are those qualifications not covered by the categories above. The final category relates to those individuals who stated that they had no formal educational qualifications.

*Housing Tenure:* Five separate categories are identified. Owner occupied refers to those households who have either purchased their house outright or have a mortgage. Rents from council refers to those households who live in Local Authority housing. Rents from housing association refers to those households which rent from a housing association or new town, which are a partnership of public and private sector bodies. Other renters mainly consist of private renters. Other housing relates to those households who rent their properties free of charge and those who live in shared accommodation (with other families).

*Enclave variables:* Defined as the proportion of individuals from the same ethnic group living in the same local authority ward as the responding individual. There are 9527 wards in England and Wales, with an average population of 5327 residents, implying that wards approximate neighbourhoods. Mixed households with a white responding individual had to be excluded from the regression estimates.

**TABLE A1**

**Descriptive Statistics**

	<b>Non-remitting households</b>		<b>Remitting households</b>	
	<b>Mean</b>	<b>St. Dev.</b>	<b>Mean</b>	<b>St. Dev.</b>
<i>Household Variables (full sample)</i>				
Total children	1.458	1.578	1.299	1.540
Total full-time employees	0.839	0.927	1.012	0.891
Total part-time employees	0.148	0.400	0.150	0.376
Total females	1.973	1.281	1.931	1.217
Owner occupied	0.637	0.481	0.720	0.450
Rents from council	0.201	0.401	0.156	0.363
Rents from housing association	0.067	0.251	0.062	0.241
Other rent	0.069	0.254	0.047	0.213
Other housing	0.026	0.160	0.015	0.121
Total born abroad	1.963	1.456	2.112	1.275
Average age of adults	37.540	11.559	39.950	11.495
Caribbean	0.191	0.393	0.348	0.477
Indian	0.347	0.476	0.179	0.383
Pakistani	0.194	0.395	0.245	0.431
Bangladeshi	0.099	0.299	0.084	0.276
Chinese	0.029	0.169	0.041	0.198
Mixed household/not known	0.139	0.346	0.104	0.306
Area has 0-1.99% own group	0.192	0.394	0.192	0.394
Area has 2-4.99% own group	0.128	0.334	0.126	0.332
Area has 5-9.99% own group	0.206	0.405	0.243	0.430
Area has 10-14.99% own group	0.128	0.334	0.157	0.364
Area has 15-24.99% own group	0.157	0.364	0.171	0.376
Area has 25-32.99% own group	0.099	0.299	0.066	0.249
Area has ≥ 33% own group	0.090	0.286	0.043	0.204
Weekly income not known	0.265	0.441	0.237	0.426
Weekly income ≤ £116	0.226	0.418	0.161	0.368
Weekly income £116-231	0.246	0.431	0.243	0.429
Weekly income £231-£443	0.153	0.360	0.201	0.401
Weekly income £443-£674	0.072	0.258	0.099	0.299
Weekly income ≥ £674	0.038	0.190	0.060	0.237
<i>Individual variables (full sample)</i>				
Degree	0.120	0.325	0.141	0.348
Vocational qualifications	0.053	0.169	0.084	0.276
'A' levels or equivalent	0.073	0.260	0.058	0.234
'O' levels or equivalent	0.318	0.465	0.276	0.448
Other qualifications	0.010	0.099	0.014	0.116
No qualifications	0.425	0.494	0.427	0.495
Foreign qualifications	0.216	0.412	0.257	0.437
UK Born	0.229	0.420	0.137	0.343
Arrived pre-1960	0.065	0.247	0.104	0.306
Arrived in 1960s	0.302	0.459	0.400	0.490

**Table A1 (continued)**

Arrived in 1970s	0.250	0.433	0.230	0.421
Arrived in 1980s	0.120	0.325	0.100	0.301
Arrived in 1990s	0.033	0.179	0.028	0.166
N	2446		738	
<i>Additional variables (restricted sample)</i>				
Done voluntary work in last year	0.132	0.339	0.201	0.401
Visited family's country of origin in last 5 years	0.433	0.496	0.624	0.485
Parent(s) living abroad	0.264	0.441	0.441	0.497
Children abroad	0.047	0.215	0.086	0.281
Uncles or aunts abroad	0.571	0.495	0.659	0.475
N	884		279	

*Notes:*

1. Table uses unweighted data.
2. Full sample refers to the data used to estimate the probit in Table A2. Restricted sample refers to the data used to estimate the probit (augmented specification) in Table 6.
3. For details of the variables, see the Data Appendix.

**TABLE A2****Remittance estimates using income proxies**

	<b>Probit</b>		<b>Tobit</b>	
	<b>M. E.</b>	<b>P-value</b>	<b>M. E.</b>	<b>P-value</b>
Total children	-0.006	0.334	-0.508	0.260
Total full-time employees	0.047	0.000	2.349	0.000
Total part-time employees	0.026	0.167	0.787	0.543
Total females	0.001	0.889	0.006	0.992
Rents from council	-0.062	0.002	-4.121	0.003
Rents from housing association	-0.029	0.335	-1.635	0.439
Other rent	-0.038	0.198	-1.949	0.358
Other housing	-0.075	0.072	-6.231	0.055
Total born abroad	0.012	0.109	0.371	0.451
Arrived pre-1960	0.089	0.048	4.088	0.148
Arrived in 1960s	0.083	0.004	4.557	0.022
Arrived in 1970s	0.085	0.008	5.122	0.016
Arrived in 1980s	0.061	0.112	4.950	0.057
Arrived in 1990s	0.051	0.375	4.184	0.266
Caribbean	0.338	0.000	18.600	0.000
Pakistani	0.240	0.000	11.231	0.000
Bangladeshi	0.184	0.000	4.487	0.112
Chinese	0.252	0.000	12.743	0.003
Mixed household/not known	0.137	0.000	9.017	0.001
Degree	0.044	0.156	0.876	0.662
Vocational qualifications	0.029	0.406	1.376	0.521
'A' levels or equivalent	-0.013	0.709	-2.835	0.180
'O' levels or equivalent	-0.023	0.295	-3.443	0.019
Other qualifications	0.015	0.823	-1.329	0.776
Foreign qualifications	0.044	0.069	3.048	0.065
Average age of adults	0.011	0.012	0.582	0.048
(Average age of adults) <sup>2</sup>	-0.0001	0.029	-0.005	0.084
Area has 2-4.99% own group	0.008	0.786	-3.905	0.040
Area has 5-9.99% own group	0.046	0.082	2.099	0.239
Area has 10-14.99% own group	0.048	0.110	1.141	0.566
Area has 15-24.99% own group	0.022	0.441	0.251	0.900
Area has 25-32.99% own group	-0.002	0.949	0.607	0.789
Area has ≥ 33% own group	-0.066	0.031	-4.330	0.054
N	3184		2873	

Notes: 1. P-values are calculated using heteroscedastic consistent standard errors.

2. Table reports unweighted estimates.