



**FINANCIAL DEVELOPMENT AND
REMITTANCES: MICRO-ECONOMETRIC
EVIDENCE.**

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Financial development and remittances: micro-econometric evidence.

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Abstract

We estimate a behavioural model of household's remittances to investigate to what extent the level of financial development in the home country affects decisions on whether and how much to remit.

Keywords: Migrants' Remittances, Financial Development

1. Introduction

The finance-remittances nexus has recently attracted research efforts in the macroeconomic literature on remittances, with some papers showing that the financial development of receiving countries positively affects remittance inflows (Niimi and Ozden, 2006; Mookerjee and Roberts, 2011).

However, any macro-level analysis of the effects of financial development on remittances suffers from two major weaknesses. First, using aggregate variables leads to endogeneity and reverse causality problems. Unsurprisingly, a number of studies have documented a positive impact of remittance flows on financial development in receiving countries, arguing that they stimulate the demand for formal bank services, increase the supply for loanable funds and strengthen the links between banks and recipient households (Aggarwal et al., 2011). These

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effects are found to be robust to the potential endogeneity of remittances¹.

Second, a macro approach does not allow investigation of how financial development exerts its effect on migrants' remitting decisions, whether through an impact on the propensity to remit or a variation in the amount of money transferred, or both.

In this paper, we examine how far the level of financial development in the migrants' country of origin affects their remittance decisions. We circumvent both the above problems by estimating a micro-econometric model of the migrant household remittance behaviour which will enable us to shed some light on the remittance-finance relationship. In particular, we analyse remitting decisions for a sample of visaed immigrants to Australia from 125 different countries.

The rest of the paper is organised as follows. In Section 2, we describe the econometric methodology, the data and the estimated model. In Section 3, we discuss the estimation results.

2. Data and model

In this paper, we essentially employ the same setup as in Bettin et al. (2011) (BLZ henceforth), in which a structural, double-hurdle model of the behaviour of the migrant household is estimated.

By estimating a micro behavioural model we neutralise the endogeneity problems. If the structure and development of the financial system of a country may conceivably be affected by total remittances reaching the country in question, it is safe to assume that they should be exogenous with respect to the choice of the individual household. Secondly, in this model the household's decisions on *whether* and *how much* to send are split. This enables us to test through which channels the financial development of the receiving country affects remittance behaviour.

¹Another strand of the literature looks at the finance-remittances nexus by analysing their interaction in the economic growth process once again providing mixed evidence (Giuliano and Ruiz-Arranz, 2009; Bettin and Zazzaro, 2011).

The model can be briefly described as a double-hurdle model with endogenous continuous regressors. A double-hurdle model is a useful tool that allows three different scenarios to be considered: those households that are not interested in sending money, those who want to remit and actually do so, and those who would like to remit but are financially constrained².

Our empirical model is

$$y_i^* = \ln R_i^* = \beta' X_i + \varepsilon_i \quad (1)$$

$$s_i^* = \alpha' Z_i + u_i \quad (2)$$

$$y_i = \begin{cases} \ln R_i^* & \text{if } R_i^* > \underline{R} \text{ and } s_i^* > 0 \\ NA & \text{otherwise} \end{cases} \quad (3)$$

where R_i^* represents the optimal amount of remittances (y_i^* in natural logarithm), s_i^* the unobservable propensity to remit and $\underline{R} > 0$ the minimum amount of remittances³ under which there is no utility gain from remitting. The two disturbance terms ε_i and u_i may be correlated.

To deal with the presence of endogenous regressors, BLZ extended the standard double-hurdle model by following a control function approach in which the remittance equation is estimated in its structural form while the selection equation is estimated in its unrestricted reduced form. The estimation method is LIML under the hypothesis of joint normality of ε_i and u_i .

Our empirical analysis is based on the third wave⁴ of the first cohort of the Longitudinal Survey of Immigrants to Australia (LSIA) selected among legal immigrants who entered Australia between 1993 and 1995 from 125 different countries - both developed and developing countries.

X_i includes two endogenous regressors: the immigrant household's yearly

²When using the Heckman selection model, it is implicitly assumed that migrants who gain utility from remitting always do. In other words, budget constraints are not explicitly taken into account.

³In our setup, $\underline{R} = 20$ AUS \$.

⁴Data on remittances are reported as a continuous variable only in the third wave, while in the first two they are reported as a discrete ordered variable.

pre-transfer income and the yearly household's non-durable consumption expenditure (both in logarithms). We also include a set of exogenous characteristics typically considered in remittance modelling: immigrant gender; the age of the immigrant and its square; the years spent in Australia; a citizenship indicator equal to 1 if the immigrant has obtained or applied for Australian citizenship; four dummies for immigrant's education corresponding to PhD/MA degree (the base category), BA degree or diploma, 10/12 years of schooling, and 9 or less years of schooling; a dummy for close relatives living in the home country.

A further set of explanatory variables refers to the immigrant's home country. The log of the mean per capita GDP proxies the economic conditions of relatives at home while the log of the distance⁵ between Australia and the country of origin is considered because of its influence on the relations with the home country. Finally, dummies for the most represented countries were also used.

To measure financial development, we use the three standard ratios introduced in the literature by King and Levine (1993): the share of bank deposits, the share of bank credit to the private sector or the share of liquid liabilities of the financial system, all expressed as a percentage of GDP.

The set of instruments for pre-transfer immigrants' income and consumption includes the regressors and a further vector of seven variables. Two instruments refer to events affecting the immigrants' conditions after their arrival in Australia and should be considered exogenous to their information set at the time of the migration choice: one records whether the intended State of residence upon arrival differs from the State of residence at the time of the interview; another instrument signals the existence of long-term health problems for immigrants who were healthy at the time of immigration. A third instrument identifies those immigrants whose mother tongue is English. Finally, a set of four instruments describes the composition of the immigrant household in Australia, indicating the presence of children, the presence of the partner, the number of members

⁵GDP data are from the World Development Indicators; distance data come from the CEPII database.

and its square. As widely discussed in BLZ, the first three instruments may exert a strong influence on income and consumption and be independent of any “remittance-oriented” migration strategy. In addition, the sufficiently large degree of over-identification enables us to assess the coherence of the whole set of instruments by means of a test of over-identifying restrictions.

3. Main findings

The ways financial development in the home country affect migrants’ remittances are very diverse and, *a priori*, ambiguous. On the one hand, the development of financial institutions is likely to positively affect the level of immigrants’ trust in their country of origin as a sound environment in which to invest their own savings (*i.e.*, remittances). In addition, a more developed financial system in the home country should entail lower costs of transferring money (Freund and Spatafora, 2008): these would reduce the number of households who are prevented from remitting by a budget constraint and increase the optimal amount transferred by each remitter. Finally, in countries where the banking system is well developed, remittances may complement bank credit or may act as collateral to gain access to it. Migrants might then be encouraged to transfer money to their families in the hope that it will not be wasted in unproductive consumption (Chami et al., 2005).

On the other hand, a substitution mechanism could also be at work: where credit markets do not function properly and borrowers are constrained in their access to credit, remittances might allow recipient households to bridge financial constraints (Giuliano and Ruiz-Arranz, 2009).

Our results, summarised in Table 1, confirm the importance (and the endogeneity) of immigrant income and consumption for remittance decisions. The effects of other controls and instruments are those expected *a priori*.

Moving on to our variable of interest, whatever the proxy used for financial development, a strong regularity emerges from our estimates. The propensity to remit seems unaffected by the level of financial development, since none

Table 1: Estimates

Main equation			
male	0.276 **	0.280 **	0.280 **
age	0.401	0.410	0.388
age ²	-0.061	-0.062	-0.060
time since arr.	-0.361	-0.286	-0.372
citiz_appl	-0.218	-0.308	-0.228
relatives overseas	0.471	0.502 *	0.460
education 2	-0.341 **	-0.350 **	-0.348 **
education 3	-0.440 **	-0.462 **	-0.449 **
education 4	-0.623 ***	-0.680 ***	-0.659 ***
per capita log GDP	-0.281 *	-0.194	-0.307 **
distance	0.236	-0.166	0.263
hh log income	1.227 ***	1.192 ***	1.221 ***
hh log consump	-2.145 ***	-2.190 ***	-2.148 ***
liq. liabilities	1.536 ***		
private credit		1.166 **	
bank deposits			1.603 ***
Selection equation			
male	0.162 **	0.162 **	0.163 **
age	0.274	0.273	0.272
age ²	-0.055 *	-0.055 *	-0.055 *
time since arr.	0.131	0.112	0.125
citiz_appl	0.203	0.193	0.203
relatives overseas	0.199	0.193	0.199
education 2	-0.051	-0.053	-0.051
education 3	0.027	0.022	0.025
education 4	0.221	0.215	0.220
per capita log GDP	-0.196 ***	-0.184 **	-0.199 ***
distance	-0.652 **	-0.600 **	-0.645 **
move	-0.021	-0.022	-0.021
chronic disease	-0.181	-0.190	-0.184
best language	-0.210 **	-0.206 **	-0.208 **
child_resid	-0.195 *	-0.197 *	-0.194 *
spouse_resid	0.245 **	0.248 **	0.246 **
hh members	-0.001	-0.002	-0.001
hh members ²	-0.008	-0.008	-0.008
liq. liabilities	-0.258		
private credit		-0.293	
bank deposits			-0.248
N	1935	1939	1939
Endogeneity p-value	0.00	0.00	0.00
Overidentification p-value	0.08	0.06	0.08

Note: QMLE standard errors. Country-specific fixed effects included.

of the three proxies proved significant in the selection equation. Conversely, they all exert very significant positive effects on the amount of money sent by those who actually remit: the higher the level of financial development in the country of origin, the higher the transfer. The order of magnitude of the effect is approximately the same for the three indicators considered.

These findings suggest that the choice by the individual household of whether or not to remit money is motivated by a number of factors which are linked to altruistic or “tempered altruistic” reasons (Lucas and Stark, 1985) and hence less affected by investment concerns. However, a seriously inefficient financial sector in the home country may compromise immigrants’ trust and induce them to consider it too risky to transfer large amounts. In other words, while altruistic motivations seem to matter in terms of propensity to remit, the amount of money remitted is influenced by concerns on the solidity of the country of origin and its investment opportunities.

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