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The remittance behaviour of African diaspora in Belgium

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Abstract

The Belgium International Remittance Senders Household Survey (IRSHS) is employed to investigate the factors influencing remittance behaviour of the African diaspora in Belgium. The rich information contained in the dataset makes it possible to include both senders' and recipients' characteristics in the empirical model, which is not very common in much of the applied literature on remittances. Different motivations for tranfers seem to coexist: altruistic feelings certainly play an important role but at the same time remittances might be part of an implicit contract between the migrant and the family back home. In particular, the fact that the amount remitted rises with senders' education - even after controlling for migrants' income - may be supportive of the repayment hypothesis.

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1 Introduction

Economic literature has long recognized the importance of migrants' remittances for developing countries both at the microeconomic and at the aggregate levels. If their role in poverty eradication and improvement of living conditions is rather clear[1], evidence has also been provided on the positive impact of remittance inflows on economic growth (Giuliano and Ruiz-Arranz, 2009) especially when the receiving country may rely on a sound istitutional environment (Catrinescu et al., 2009).

As a consequence, investigating the determinants of remittance behaviour is useful from a policy perspective in order to understand which factors influence the size of the transfers developing countries may receive from their diaspora abroad.

The possibility to correctly match information on migrants and on recipient households is extremely important to shed light on the motives to remit. Lucas and Stark (1985) in their often cited paper on Botswana suggest a taxonomy distinguishing three main drives of remittances: "pure altruism", when migrants derive utility from the utility of family and friends at home; "pure self-interest", when migrants are moved by the desire to inherit or to acquire material and immaterial (reputation, prestige) assets at home; "tempered altruism or enlightened self-interest", when remittances are the result of contractual arrangements between migrants and relatives left at home enforced by a mix of altruistic and self-interested forces[2]. As Rapoport and Docquier (2006) clearly show, theoretical predictions on the sensitivity of remittances to specific characteristics of either senders or receivers make it possible to discriminate among the different motivations on empirical grounds. Migrants' education (and its positive effect on remittances) for example is usually included in the model to isolate the investment motive (repayment of loans on investments in education by the origin family) from all the other motives. Instead, a positive elasticity of transfers with respect to recipients' income separates the exchange motive from the altruistic or the strategic one.

Empirical studies on remittances, however, usually rely on incomplete datasets collected either at the sending or receiving end of the transfer that prevent an exhaustive analysis on the motivation behind remittances[3]. A considerable exception is the paper by Osili (2007), in which "bilateral" information is used, but on a very limited number of observations.

The detailed information on both sides of the transfer is a distinctive feature of the Belgium International Remittance Senders Household Survey (IRSHS) used in this article. The IRSHS is a still relatively unexplored dataset and considers African migrants living in Belgium from three Sub-Saharan countries: Nigeria, Senegal and the Democratic Republic of Congo (DRC). Nigeria and Senegal are among the African top receiving countries: total remittance inflows amounted to 9.1% of GDP in Senegal in 2009 and to 5.6% in Nigeria,

[1] See Adams and Page (2005), Alvear and Yang (2007), Wagh et al. (2007), Adams (2006) and Adams and Cuecuecha (2010) among the others.

[2] Rapoport and Docquier (2006), Carling (2008) and Stark (2009) provide exhaustive reviews of modern microeconomic theoretical and empirical literature on remittances. Adams (2009) recently addressed the question on the determinants of remittances at country level.

[3] See among the others Aggarwal and Horowitz (2002) for data concerning the senders' side, or Anwar and Mughal (2012) for data concerning the receiving end.

while the average share in the Sub-Saharan region was around 2.2%[4].

Evidence on the determinants of remitting behaviour of the African diaspora is becoming richer.

In their analysis on data from Botswana, Lucas and Stark (1985) find evidence of a mix of altruistic and egoistic motivations since migrants provide, through their remittances, insurance services to the families left behind but also try to protect their inheritance rights.

Hoddinott (1994) exploits the evidence provided by a rural community in Western Kenya to integrate the decision on remittances into a migration model and gets similar results: the possibility to inherit plays an important role in determining remittances. In addition, transfers seem to be part of an implicit inter-generational contract in which parents first invest in children's education and the younger generation repays such investment through remittances later (*i.e.* after migration).

Azam and Gubert (2005), using data collected in Western Mali, illustrate how remittances conceived as an insurance mechanism may actually cause moral hazard behaviour by recipients.

Osili (2007) considers a matched sample of migrants in the U.S. and their origin families in Nigeria. Being able to distinguish between transfers to the origin family and migrants' own savings in the home country, he shows that the former are motivated essentially by altruistic considerations, while investment motives drive the latter.

The aim of this article is to offer further evidence on the remitting behaviour of African diaspora by exploiting the most original and useful feature of the Belgium IRSHS dataset: detailed information on both sides of remittance transfers.

Section 2 offers a detailed description of the dataset while empirical strategy is illustrated in Section 3. Section 4 discusses the estimation results and Section 5 concludes.

2 Description of the data

The International Remittance Senders Household Survey was implemented in Belgium during March-April 2005 by interviewing African migrants of three nationalities: Senegalese, Nigerian and Congolese (from the Democratic Republic of Congo).

A common questionnaire was administered to collect information both about remittance senders who live in Belgium and about the receivers in the home country[5]. Basic characteristics such as age, education level, household size, employment status are reported together with detailed information about transfers (amount remitted, channels used, currency of the transfer).

On a total sample of 1084 migrants, 988 individuals declare to have sent remittances; 490 of these also gave more detailed information[6] on the actual amount of money they

[4]Estimates come from the World Bank Migration and Remittances Factbook 2011. No official aggregate data are available instead for the Democratic Republic of Congo.

[5]Information on recipients are therefore based on senders' answers to the questionnaire, not directly collected from origin households in the home country.

[6]In fact, four individuals identified themselves as remitters, but then reported a zero amount. These four individuals, however, do not present problems as missing values for other relevant variables prevent their inclusion in the sample anyway. In the questionnaire the precise question is "Over the past 12 months did you or anyone living in this residence send money to anybody in your home country?".

sent home, the average yearly transfer being around 1145 Euros (see Figure 1). Differences among nationalities are considerable: Senegalese make the highest transfers (1567 Euros on average) while Nigerian migrants (1174 Euros) are in line with the overall sample's average. Congolese migrants instead remit far less than the other two groups, with yearly transfers amounting to 791 Euros.

The main channels used by migrants are either Western Union - the widest known money transfer operator - (Senegalese and Nigerian), or direct delivery through friends and/or relatives travelling home (Congolese).

The section about recipients is rich and contains detailed information about households in the home country which on average comprise at least six people. Around 30% of receivers have completed secondary education and most of them are either employed or retired. In particular, only 5% of interviewees state that recipients are unemployed and looking for work; the possibility of moral hazard behaviour by recipients, who could consider remittances as a form of regular income and a substitute for their own working efforts (Chami et al., 2005; Funkhouser, 2006), is thus reduced. In all three countries, more than 90% of recipients live in an urban area. Differences between nationalities instead emerge when considering the living conditions in detail (see Table 1): families in Congo are less likely to have electricity at home compared to those in Senegal in Nigeria; on the other hand, water facilities are more widespread among Congolese and Senegalese recipients. The same holds true for mobile phone ownership while the biggest disparities are related to the access to bank accounts. Only 11% of families in DRC have their own bank account, compared to 45% in Senegal and almost 60% in Nigeria.

3 Empirical methodology

The estimated model is given by Equation (1):

$$R_i = \alpha + \beta_1 X_i + \beta_2 Z_i + \varepsilon_i \tag{1}$$

where R_i represents the log remittance sent by the i^{th} migrant.

A nearly unique feature of this dataset is that it contains data on migrants and the families of origin: these would be indicated by X_i and Z_i, respectively.

X_i includes the migrant's yearly income (in logarithm)[7], a gender dummy (1 for male), age (in logarithm), the number of household members in Belgium, a dummy for the migrant having completed tertiary education and another dummy that takes value 1 if the migrant has completed his/her studies in the home country.

Z_i, instead, contains: a dummy for the kind of family relationship to the sender (1 stands for a close relative, i.e. partner, children, parents, siblings), the size of the recipient's household, a dummy for the recipient's education level (1 equals low) and another dummy for the recipient having access to a bank account. Data on the living conditions on receiving households (urban/rural environment, electricity and water facilities at home) were employed to classify them into four different groups: urban upper class, urban middle class, urban poor and rural. Dummies for urban middle class, urban poor and rural

[7]Since migrants' income is reported in six different classes, the midpoint value for each class is considered in the estimation.

recipients' groups are included in the model, the reference group being higher-income urban recipients.

As robustness checks, additional control variables are also considered in Equation (1) to verify the stability of our results. In particular, the length of stay in Belgium and the place of birth (origin country vs. Belgium) are added to the set of migrants' characteristics X_i while Z_i is expanded by including a dummy for employed recipients. In addition, the channels used to transfer money are coded into five categories: friends/relatives travelling home, money transfer operators, financial intermediaries, import/export companies and other channels not further specified. Definitions for all variables are provided in Table 2.

3.1 Estimation issues: dealing with selection

Given the continuous nature of the remittance variabile, we use OLS. Potentially, selection effects may arise and influence OLS results, since 96 out of 1084 individuals in the sample declared they did not send any money to their families back home. Therefore, estimation of Equation (1) has also been carried out by employing Heckman's selection model. Since results were not sensibly different and the Likelihood Ratio test always accepted the null hypothesis of independent equations (test statistic for the full sample: 0.37; p-value: 0.54), OLS results do not appear to be affected by selection bias[8].

Another check has been carried out to assess to what extent results might be conditioned by another potential selection mechanism. As a matter of fact, only half of individuals who declare to remit give information on the amount of money sent home. A preliminary probit of the probability to answer to the question on the remittance amount has been therefore estimated to control for the presence of systematic differences among the two groups. However, the inverse Mills ratio added to the main specification in Equation (1) never proved significant and the results were qualitatively unchanged, so that no significant selection effects and no systematic differences seem to exist between those who declare the amount and those who do not.

4 Results

Table 3 shows the estimates for Equation (1). Results are presented for the full sample, for the single nationalities (Senegal, Nigeria and DRC, respectively) and for the pooled sample of Senegal and DRC which are Francophone countries. Standard errors reported in the table are robust to control for unobserved heterogeneity.

When comparing results across subsamples the reader should always take sample size into account, as it becomes rather small for the single nationality groups, given the number of covariates considered in the specification. Significance levels, in fact, are more similar between column 1 and 5 where the number of observations considered is larger.

As far as the migrants' characteristics are concerned, the elasticity to income turns out to be strongly significant across all sample definitions although its size ranges from the

[8]Results obtained by employing the Heckman's selection procedure are not reported for the sake of brevity but readily available from the author upon request.

lowest value of 0.444 for Senegal to the highest peak of 0.919 for DRC. Other things being equal, an increase by 1% in sender's current income causes an average increase by 0.7% in the amount transferred to the home country[9]. Such a result mimics the positive effect of income found by Osili (2007) for Nigeria and more in general by the majority of empirical studies on the topic (Bollard et al., 2011; Brown, 1997; Dustmann and Mestres, 2010).

Migrant personal characteristics (age, gender and household size) do not seem to play any significant role, but tertiary education positively affects remittances. The result found for the full sample seems to be driven mainly by what happens amongst Nigerian migrants for whom the coefficient on tertiary education is significant at 5% level. Similar evidence on skilled migrants transferring larger amounts to the origin families is provided also in Bollard et al. (2011), who also employ the IRSHS among the others datasets in their analysis[10]. A higher propensity to remit by better educated migrants might be a crucial element to mitigate the potential adverse effects of the brain drain, especially when migrants completed their education before leaving. The coefficient associated to the dummy for studies completed in the home country is indeed positive and significant in the full sample and for DRC. This could hint at the repayment hypothesis for which Congolese migrants who had the origin family pay for their education might be inclined to send more remittances (Lucas and Stark, 1985).

Compared to migrants' characteristics, recipients' characteristics as a whole seem to exert a stronger influence in determining remittances. The closer the relationship to recipients, the higher the amount transferred (Sinning, 2011). Such effect is particularly strong in the case of Senegal. In addition, transfers increase with the number of potential recipients. It is interesting to note that Osili (2007) finds a positive and significant relation between remittances and the size of the origin family for the Nigerian case while our results can be mainly ascribed to the Congolese sample.

Less educated recipients seem to get more money. This is an original result since few other empirical studies include such a variable among the determinants of remittances. To the extent that the level of recipients' education acts also as a proxy for income, this result may indicate altruistic motivations behind transfers[11].

When looking at the proxies for recipients' income level, both the dummy for urban middle class and that for lower income recipients are significant in the full sample, respectively at 1% and 5% level. Poorer urban households receive significantly higher transfers compared to wealthier households, again in line with an altruistic motivation behind transfers. At the same time, however, middle income households receive significantly less money compared to richer ones. Although we do not have any test to empirically discriminate among motives, this sort of U-shaped relationship between the amount of transfers and the living conditions of receiving households might be read as the simulta-

[9] An endogeneity test has been employed to verify if the migrants' income can be considered exogenous in the model above. The test statistic has been computed from an IV regression where the employment status and the place of birth have been used as instruments. The value of the test statistics always allowed to reject the hypothesis of endogeneity.

[10] Osili (2007) does not exploit information on the level of education; nevertheless, he finds evidence that after controlling for income migrants with skilled occupations remit higher amounts.

[11] Curiously, Anwar and Mughal (2012) and Aggarwal and Horowitz (2002) show that in Pakistan and in Guyana, respectively, higher levels of education increase the probability to receive remittances.

neous presence in the sample of both altruistic and inheritance motives (Lucas and Stark, 1985; Hoddinott, 1994) or it might hint at an exchange bargaining type of model[12]. In the Nigerian subsample, rural households are less likely to receive transfers from their relatives abroad, consistently with the findings by Osili (2007)[13].

Interestingly, other things being equal, recipients with a bank account receive larger transfers. Higher remittances towards bank account's owners might translate into more resources for worthy investment projects and thus a positive and significant impact on economic development[14].

When looking at the dummies for the different nationality groups in column 1, descriptive statistics presented in Section 2 are confirmed. The intensity of transfers by Senegalese migrants is significantly higher than that for the other two nationalities.

Robustness checks have been run by adding other possible determinants of remittances to the baseline specification for the full sample (Table 4). Results remain substantially unchanged and all the main determinants of remittances keep the signs and significance levels discussed above.

The first extension to our baseline model considers possible non-linearities in income effects[15]. The elasticity of remittance to income appear to be increasing in migrants' earnings, even if at decreasing rates. Figure 2 illustrates the elasticities of remittances to income calculated from the results presented in column 1. For different levels of yearly income, the net effects on remittances are reported with their respective confidence intervals at the 95% significance level. At the very low levels of income, the elasticity is not significantly different from zero, while it becomes significant and progressively larger in magnitude as income rises, up to a value of 1.59 for the highest income class. Such figures have an obvious economic interpretation: poorest migrants are forced to allocate a large part of their earnings to household's primary needs in Belgium, so the responsiveness of remittances to small increases in income is plausibly limited. On the contrary, better off migrants are less constrained by basic consumption needs and hence more likely to increase remittances as income rises.

Columns 3-8 offer some evidence on the channels used for the transfer: official channels (banks, import/export societies) intermediate more substantial flows compared to direct delivery through friends or relatives (the omitted reference category) but also to money transfer operators. The more secure the channel migrants use to send money, the higher the amount sent. This result needs of course to be cautiously interpreted, since the size of the remittance may influence the channel chosen to actually transfer it. Migrants who need to send large amounts would probably choose the safer - although more expen-

[12]In contrast to the pure altruism hypothesis, Cox et al. (1998) show that for exchange motivated migrants an increase in the income of recipients may raise the amount transferred, as the bargaining power of the origin household is higher.

[13]Aggarwal and Horowitz (2002) instead find that the rural location of receiving households negatively affects both the probability to receive transfers and the amount received although the latter effect is not statistically significant.

[14]Bettin and Zazzaro (2012) shows that in fact Senegal is a country where the joint effect of substantial remittance inflows and the efficiency of the national financial system is positive in terms of economic growth.

[15]I am deeply indebted to an anonymous referee for suggesting me to address the point.

sive - channel. At the same time, higher transaction costs related to the use of financial intermediaries to send remittances may justify the need to send higher amounts (maybe on a less frequent basis)[16].

When removing recipient's variables from the specification, results concerning sender's characteristics remain substantially unchanged. The other controls added in Columns 4-8 (length of stay in Belgium, second generation migrant, recipient's age and working status) never significantly affect remittances. In particular, there seems to be no relationship between the length of stay in Belgium and the amount transferred. Brown (1997) also got the same result when testing for the "remittance decay" hypothesis on a sample of Pacific Islands migrants in Australia[17].

5 Conclusions

The Belgium IRSHS analysed in this article offers rich information on both remittance senders and recipients, which represents a rare and invaluable asset when trying to investigate the motives to remit.

The findings are in line with most empirical studies on the topic and reveal that different motives may lie behind remittance behaviour of this sample of African migrants living in Belgium. If, on the one hand, factors such as recipients' household size and living conditions and the proximity of familial relationship hint at altruistic feelings, on the other hand the repayment hypothesis might be implicated by the variables concerning migrants' education. In addition, a kind of U-shaped relationship between recipients' standard of living and remittances received is also compatible with an exchange bargaining type of model.

Although the number of observations is rather limited, results on the Nigerian sample partly confirm the results obtained by Osili (2007) for Nigerian migrants in the US. In both cases, migrants' income and their qualifications positively influence remittances.

The indication concerning the future of empirical research on remittances is clear: a further incisive effort needs to be done when collecting survey data on remittances to better integrate both senders' and recipients' detailed characteristics in the same questionnaire. This is essential to help scholars in verifying predictions from theoretical models on the motives behind transfers.

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[16]Unfortunately, the survey does not offer adequate instruments to run IV estimates and take potential reverse causality into account. A proper investigation of this aspect is therefore left for future research.

[17]See also Amuedo-Dorantes and Pozo (2006) and Dustmann and Mestres (2010) for similar findings.

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Table 1: Recipients' living conditions (%)

	Senegal	Nigeria	DRC	Total
Urban residence	97.58	92.31	95.31	95.25
Electricity at home	99.52	99.42	88.67	95.11
Water at home	100.00	71.01	86.61	86.83
Mobile phone	76.33	69.01	86.96	78.61
Bank account	44.74	58.28	10.93	34.50

Figure 1: Average yearly total remittances (Euros)

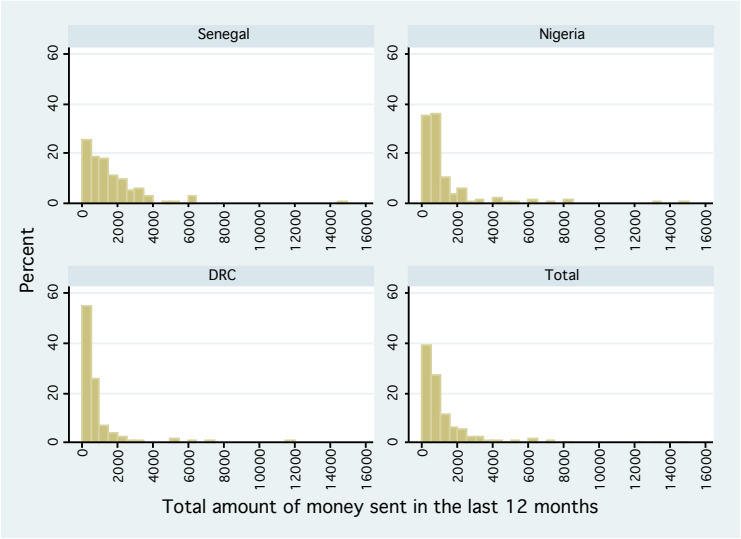

Table 2: Definition of variables

Remittances	Logarithm of yearly amount sent
Sender's characteristics	
Income	Logarithm of migrant's yearly income
Sex	Migrant's gender (1 male, 0 female)
age	Logarithm of migrant's age (years)
Household size	Number of people in migrant's household
Tertiary education	Dummy=1 if migrant completed tertiary education
Studied home country	Dummy=1 if migrant completed education in home country
Length of stay	Migrant's length of stay in Belgium (years)
Born in home country	Dummy=1 if migrant was born in home country
Recipient's characteristics	
Close relatives	Dummy=1 if the recipient is a close relative (partner, children, parents, siblings)
Household size	Number of people in recipient's household
Low skilled	Dummy=1 if recipient is low skilled
Working	Dummy=1 if recipient is working
Age	Logarithm of recipient's age (years)
Bank account	Dummy=1 if recipient has a bank account
Urban rich	Dummy=1 if recipient lives in a city and has both water and electricity at home
Urban middle	Dummy=1 if recipient lives in a city and has either water or electricity at home
Urban poor	Dummy=1 if recipient lives in a city and has neither water nor electricity at home
Rural	Dummy=1 if recipient lives in rural environment
Channels	
Friends/relatives	Dummy=1 if money is sent through friends or relatives traveling home
Money transfer operators	Dummy=1 if money is sent through money transfer operators
Bank	Dummy=1 if money is sent through banks or post
Import/Export company	Dummy=1 if money is sent through imp/exp company
Other	Dummy=1 if money is sent through other channels

Table 3: Baseline specification

	All	Senegal	Nigeria	DRC	Senegal+DRC
Sender's characteristics					
income	0.722 ***	0.444 **	0.750 ***	0.919 ***	0.678 ***
sex	-0.003	-0.005	-0.161	0.108	0.159
age	0.078	0.137	0.176	-0.509 *	-0.162
household size	0.029	-0.055	0.060	0.062	0.001
tertiary education	0.254 **	0.381	0.370 **	0.156	0.165
studied home country	0.311 **	0.167	0.330	0.542 **	0.253
Recipient's characteristics					
close relatives	0.454 *	1.348 ***	0.258	-0.081	0.417
household size	0.025 ***	0.031	0.013	0.034 ***	0.043 ***
low skilled	0.338 ***	0.329	0.293 *	0.369	0.623 ***
bank account	0.425 ***	0.353	0.281 *	0.490	0.657 ***
urban middle	-0.343 ***	0.000	-0.306 **	-0.428	-0.729 ***
urban poor	0.653 **	0.000	0.000	0.701 **	0.323
rural	-0.226	0.072	-0.546 *	-0.090	-0.139
Country dummies					
Nigeria	-0.915 ***				
Congo, Dem. Rep.	-0.660 ***				
N obs	317	80	121	116	196
R^2	0.41	0.38	0.39	0.44	0.40

* Significant at 10% level; ** significant at 5% level; *** significant at 1% level.
Robust Standard errors are calculated.

Table 4: Alternative specifications

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Sender's characteristics								
income	-5.271 **	0.711 ***	0.668 ***	0.683 ***	0.689 ***	0.704 ***	0.695 ***	0.680 ***
$income^2$	0.327 **							
sex	-0.041	0.051	0.052	-0.005	-0.009	-0.006	-0.034	-0.049
age	0.047	0.107	0.111	0.057	0.053	0.029	0.029	0.027
household size	0.015	0.052	0.059 *	0.034	0.030	0.043	0.044	0.038
tertiary education	0.212 *	0.317 **	0.315 **	0.233 *	0.247 *	0.227 *	0.223 *	0.225 *
studied home country	0.303 **	0.384 ***	0.396 ***	0.307 **	0.349 ***	0.350 **	0.319 **	0.335 **
length of stay						0.001	0.001	0.000
born in home country							0.218	0.217
Recipient's characteristics								
close relative	0.458 **			0.475 **	0.428 *	0.483 **	0.487 **	0.545 **
household size	0.024 ***			0.027 ***	0.026 ***	0.025 ***	0.025 ***	0.023 ***
low skilled	0.366 ***			0.372 ***	0.355 ***	0.332 ***	0.339 ***	0.293 **
employed					-0.037	-0.049	-0.038	-0.041
age								0.095
bank account	0.403 ***			0.406 ***	0.417 ***	0.424 ***	0.427 ***	0.438 ***
urban middle	-0.287 **			-0.338 **	-0.328 **	-0.331 **	-0.332 **	-0.334 **
urban poor	0.659 ***			0.638 **	0.642 **	0.636 **	0.634 **	0.659 **
rural	-0.205			-0.201	-0.192	-0.192	-0.186	-0.189
Country dummies								
Nigeria	-0.947 ***	-1.044 ***	-1.041 ***	-0.863 ***	-0.889 ***	-0.889 ***	-0.881 ***	-0.906 ***
Congo, Dem. Rep.	-0.645 ***	-0.948 ***	-0.956 ***	-0.638 ***	-0.640 ***	-0.621 ***	-0.636 ***	-0.692 ***
Channels								
money transfer operator			-0.224 *	-0.122	-0.116	-0.117	-0.119	-0.117
bank			0.907 **	1.138 ***	1.128 **	1.132 ***	1.123 **	0.808 **
import/export company			0.384 *	0.468 **	0.467 **	0.508 **	0.507 **	0.519 **
other			-0.192	-0.018	-0.036	-0.029	-0.040	-0.018
N obs	317	317	313	313	306	300	300	299
R^2	0.43	0.32	0.35	0.45	0.44	0.44	0.44	0.44

* Significant at 10% level; ** significant at 5% level; *** significant at 1% level.
Robust Standard errors are calculated.

Figure 2: Non-linear effects of income