

MICROECONOMIC DETERMINANTS OF MIGRANT REMITTANCES INTO ZIMBABWE: A SURVEY OF ZIMBABWEANS IN BOTSWANA AND SOUTH AFRICA

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Abstract

This study sought to identify the micro-economic determinants of remittances flows into Zimbabwe. The paper reviews the altruism theory, self interest, portfolio management theory, and family implicit contracts theory. The study was based on a survey of 294 Zimbabweans, based in South Africa and Botswana. Data for the study was collected through questionnaires using the snow balling technique. SPSS version 16.0 was used for data analysis, using the binary logit model. The results show that the older (age) and more educated migrants are more likely to remit to home country. Single migrants were less likely to remit compared to those who are divorced. We also found that married migrants are less likely to remit than divorced migrants. The number of members from the same family and the gender of migrants were found to be insignificant in predicting the likelihood of remitting money back to Zimbabwe.

Key words: remittance, determinants, microeconomic, logistic, Zimbabwe

INTRODUCTION

Migrant remittances have emerged as one of the major sources of foreign exchange flows into developing countries in recent times. According to the World Bank (2012), officially recorded remittances to developing countries totaled \$381 billion in 2011, and are estimated to have reached \$406 billion in 2012, and are projected to reach \$534 billion in 2015. Harnessing migrant remittances has therefore become a major source of development financing for remittance sending countries. Zimbabwe's decade long economic melt-down from 1999 to 2009, and political crisis which surrounded the 2008 general elections, resulted in massive emigration of both professional and non-professional Zimbabweans to neighbouring countries and abroad.

Since the turn of the century, Zimbabwe has benefited from migrant remittances from its migrant stock estimated to have reached 4 million by 2008 (Orozco and Ferro 2008). Studies have been done on micro and macro-economic impact of remittances, channels of remitting into Zimbabwe (see Bracking and Sachikonye (2006), Makina (2007), Ncube and Gomez (2011), Burgsdorff (2012), Mugumisi and Ndhlovu 2013)).

Despite the increased interest in workers' remittance since the turn of the century, relatively little or work has been done to improve the understanding of determinants of remittances flows into Zimbabwe. The question "what determines or drives remittances" is one of the most important questions in remittance literature (Havolli 2009). There is no systematic theory that explains remittance behaviour and almost no statistical evidence for the case of Zimbabwe. This paper provides empirical literature of main determinants of migrant remittances in Zimbabwe.

Remittances are decided out of the complexity of family arrangements in the migration process. Traditionally, the economic literature on migrant remittances has distinguished two types of theoretical models, namely the individual models and the "family" models (Bouoiyour and Miftah2014). Individual models include the pure altruism and self interest motives, while family models include the implicit family contracts of coinsurance and loan repayment. According to Kelly and Solomon (2009), remittance literature is also divided into microeconomic and macroeconomic determinants of remittance. Scholars like Russell (1986) categorised determinants of migrant remittances into (i) socio-demographic characteristics of migrants and their families and (ii) macroeconomic and political conditions. Social and demographic characteristics like marital status, age, gender, education levels and household income are categorised as micro economic determinants. Macroeconomic determinants comprise factors like wages in host countries, inflation and exchange rates, in both home and destination countries. It is imperative to note that aggregate remittance flows reflect the underlying microeconomic considerations which determine the individual decisions about remittances (El – Sakka and McNabb 1999). In the long run macroeconomic factors mainly affect the remittance channel used. This paper focuses on the microeconomic determinants of migrant remittances.

This study aims to provide policy-relevant information on remittances. Providing insight into the characteristics of remitters and to their motives for remitting is instrumental in creating a more favorable financial environment for remittances, i.e. an environment better aligned with the motives and needs of remitters.

LITERATURE REVIEW

The factors which affect frequency and quantity of remittance can be inferred from the motivations of remitting. In their seminal work of 1985 Lucas and Stark identified three explanations or motivations why migrants remit part of their incomes to their families at home, namely for pure altruist, self-interest and to honour implicit family. The motives of remittances largely take a microeconomic perspective, and focus mostly on the roles that families and intra-family relationships have in decisions on migration and remittances.

Altruism

In this model the migrant derives satisfaction from the welfare of his or her family in country of origin. In the altruistic motive transfers are motivated by the migrant's unselfish concern with the welfare of family members and loved ones. Migrants' delight in family welfare makes remittances a rather stable source of income for the migrants' families (Bouhga-Hagbe 2006:6). This implies a utility function in which the migrant cares about the consumption of the other members of his/her household. Altruistic migrants will remit more the poorer their family in country of origin. The model is premised on a number of assumptions; Funkhouser (1995) in his behavioural model of remittances suggested five testable implications under the altruistic ; (i) the amount of remittances should increase with migrant's earnings(see Lucas and Stark, 1985, Vanwey, 2004) (ii) the amount of remittances are expected to decrease as domestic family income increases, or low income household receive more (iii) The duration of stay is expected to have a negative impact on remittances; it is assumed that attachment to family weakens gradually.(iv) remittances by a given migrant should decrease with the number of emigrants from the same household. Moreso, family unifications also reduce remittances as there are less people left behind to look after. (v) Remittances depend on the migrant's marital status; they tend to increase if the migrant is married and his spouse and /or children are in the home country. Holst and Schrooten (2000) found that remittances are positively are positively related with income and negatively with the number of dependents in host country.

Self interest

In the pure self interest model, the migrant chooses an individual strategy of transfers. Migrants may send remittances to native country to accumulate physical and/or financial assets back home. A migrant with aspirations to inherit parents' estate may remit, especially if it is assumed that bequests are conditioned by behaviour (SOPEMI 2006). According to Havolli (2009), remitters are expected to have a higher chance to inherit assets, and the higher the value of assets to be inherited the higher the remittances are likely to be. Garip (2006) found that male

emigrants remit significantly more compared to female emigrants possibly due to the inheritance seeking motive. Migrants who left behind valuable assets in home country may remit in order to make sure their assets are taken care of. Moreso, the desire to return home may promote remittances for investment in real estate, financial assets or even public assets in order to gain prestige and political influence in the community (SOPEMI 2006). Such remittances linked with a desire to return are used to “buy” what Lucas and Stark (1985) called social assets i.e. the relationship with family members and friends. The self interest model therefore highlights three reasons of migrant’s remittances, namely the desire to return to country of origin, investment in community of origin, and desire to inherit assets in family of origin Lucas and Stark (1985).

Implicit family Agreements

In this model, remittances determination is placed in a family framework of decision making, with remittances being endogenous to the migration process. Here migration is treated as means of diversifying sources of family’s income (Stark 1991) or a risk spreading strategy to allocate certain members of the family as migrants and remittances as a way of redistributing the gains (Lucas and Stark 1985). The intra-family agreements can be in form of “implicit co-insurance agreement” or “implicit loan agreements”.

In the co-insurance model, it is assumed that there are intra-family agreements /understandings which are safeguarded against breach. In the first phase the migrant plays the role of insuree and the family left behind as insurer. The family will finance the initial cost of the migration process partially or wholly. In the second phase the migrant will have settled down, secured employment and will be remitting to improve the livelihood of family and even undertake investment.

The loan agreement model was theorized as displaying three waves. In the first stage, remittances are assumed to be repayments of an informal and implicit loan contracted by the migrant for education and migration costs. In the second stage loans are made by migrants to young relatives to finance their education, until they are ready to migrate. In the third stage, before returning to the country of origin migrants invest accumulated capital at home therefore the amount of remittances increases. In this model educated migrants are likely to remit more. Ilahi and Jafarey (1999) found that the level of migrant education and amount remitted are positively correlated.

Portfolio management decisions

Savings not needed for personal and consumption may be remitted for reasons of relative profitability of savings in the home and host country. In this case remittances depend on interest

rates, exchange rates, inflation and relative rate of return on financials. Scholars however argue that it's the microeconomic factors that are more significant in determining remittance flows in the long run, while macroeconomic factors affect the remittance channel used.

METHODOLOGY

The research utilised primary data gathered through questionnaires. Participation was voluntary after the research objectives were explained. Data from the senders (migrant workers) was gathered from two main regional migrant destination countries of South Africa and Botswana in November and December 2012. Zimbabweans in Johannesburg and Pretoria cities of South Africa, and Gaborone and Lobatse in Botswana were surveyed. Postal questionnaires were also sent and received from other parts of both South Africa and Botswana mainly using e-mail service. To reach out to the respondents the snowballing technique was used. Probability sampling could not be used because there is no sampling frame of Zimbabwean migrant in Botswana and in South Africa. The snowballing technique involved the use of respondents to identify other respondents through their own networks. The process began by identifying a few migrants whom we had contacts with, as initial sampling points. Considerable effort was made to ensure that the initial sampling points were of varied backgrounds in terms of age, occupation, gender and legal status. The survey included only respondents who were willing to participate after the research objective was explained to them. Through this snowball referral method, we managed to obtain a sizeable sample.

The questions were closed ended questions. There could have been selection bias resulting from the fact that news of the surveys was spread, mostly, by word of mouth, emails and telephones. Such a 'snowballing' effect may have resulted in a bias towards a certain income, or age group. In Gaborone we tried to reduce bias by working with leaders of civil society groups who linked us with Zimbabweans of various age groups and professions. In South Africa, this challenge was mitigated by targeting a wide range of professions which included nurses, teachers, security guards, caterers, engineers, domestic workers and other technocrats. This enabled us to reach out to a wider Zimbabwean population with a diverse background in terms of skills and the earnings.

Econometric model

This study employs a binary logistic regression model in order to identify the impact of socio demographical factors on the probability of sending money abroad from South Africa and Botswana. The binary dependent variable in the model is whether a person is remitting money to the Zimbabwe or not, specifically 1 denotes the individual is remitting and 0 denotes

otherwise. Previous scholars like Holst and Schrooten (2006) and Richard(2001), used the probability model, namely probit or logistic model to estimate the likelihood of decision to migrate or to remit. The logistic model is used when the categorical dependent variable has two levels i.e. “yes or no” in this case. It is used to analyse relationships between a non-metric dependent and metric (age, length of stay in foreign country, years of schooling, number of migrant from same family) as well as dichotomous independent variables (gender, marital status, intention to return employment status). Logistic regression combines the independent variables to estimate the probability that a particular event will occur, i.e. a subject will be a member of one of the groups defined by the dichotomous dependent variable.

This study employs SPSS version 16 for data analysis. In SPSS the dichotomous independent variables are called factors and the metric or continuous independent variables are called “covariates”. Binary logit models analysis requires one to select a reference category, a decision that should be informed by your research agenda. The general rule of the thumb is that the most populated response should be the reference category; we overruled this and set “no” as the reference category.

Logistic regression uses maximum-likelihood estimation to compute the coefficients for the logistic regression equation. This method attempts to find coefficients that match the breakdown of cases on the dependent variable. The Maximum-likelihood estimation is an iterative procedure that successively tries to get closer and closer to the correct answer. When SPSS reports the “iterations,” it is telling us how many cycles it took to get the answer. The Logistic function was specified as:

$$G(z) = \frac{\exp(z)}{1 + \exp(z)}$$

Where $G(z)$ is the standard logistic distribution function, and

$$z = \alpha + \beta_1 \text{Age} + \beta_2 \text{Length} + \beta_3 \text{Education} + \beta_4 \text{Members} + \beta_5 \text{Marital} + \beta_6 \text{Gender} + \varepsilon$$

The logit model above estimates the response probability, i.e. the probability of remitting given the independent variables above. The logistic function $G(z)$ is a non linear function that produces probabilities between 1 and 0.

Variables in the Model

Age- is the migrant's age in years, according theoretical literature, the age of the remitter plays a positive role in remittance. Holding all things constant, years should be positively related to years of experience and income. We therefore expect a positive sign for the coefficient of age. However, beyond a certain age this tends to decline, this applies as productivity will decline with age and the sign becomes negative.

Length- is the number of years since emigration or migration duration. It is expected that length of stay abroad has a positive but decreasing effect on remittance. Initially early years after migration will help the migrant settled and regularize stay in host country and this has a positive effect on remittances. But as the years go by, the migrant will establish new social links in host country and his/her attachment will weaken and this will tend to reduce the migrant's propensity to remit (Havolli 2009).

Gender- numerous empirical studies report a significant influence of gender on the amount of remittances. Theory suggests that male migrants would generally be expected to remit more in order to ensure the right of inheriting assets in country of origin. While Lucas and Stark (1985) found in their seminal work on remittances that women show a higher propensity to remit, more recent studies have produced the opposite finding. Vanwey (2004) found that women compared to men send more money before the wedding for escaping the social sanctions of the family.

Education – is the number of years of schooling, used to proxy the migrant's qualification. Education tends to improve the migrant's chances to secure a decent job in host country, allowing then to get more income and remit more. It is also easier for educated migrant works to secure worker's permit and officially enter the labour market in the host country. Durand et al. (1996), for example, found that migradollars (or remittances) of Mexican migrants increase by 4.3% with their years of education until a certain age (40s) that make older migrants less likely to remit.

Members- is the number of migrants from the same family living and working in the diaspora. We expect that as that as the number of migrants from the same family increases, the amount and frequency of remitting will decrease. This is because the migrants will share the responsibility of supporting parents and even take turns to remit or make contributions.

Marital- is a categorical variable to capture the migrant's marital status. Empirical studies have found that married migrants are more likely to remit more. Married migrants have a responsibility to support children and the spouse back home and therefore tend to remit more especially if family and children are still in the country of origin. We expect a positive sign for married, divorce (with children in home country) and widowed (with children in home country).

DATA ANALYSIS AND FINDINGS

This section presents the results and interpretation of logistic model estimated. The first step taken was to establish the number of variables included in the model, the case processing summary Table 1.

Table 1:Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	292	99.3
	Missing Cases	2	.7
	Total	294	100.0
Unselected Cases		0	.0
Total		294	100.0

a. If weight is in effect, see classification table for the total number of cases.

The case processing summary show the number of cases that were included in the model, the logit model had 294 cases. Of the 294, 99.3% of the cases were included in analysis while 0.7% was missing.

Table 2 Dependent variable

Original Value	Internal Value
No	0
Yes	1

The dependent variable for the model was remit, which is categorical. Table 2 above indicates the coded values for the categories of the dependent variable, the response category “no” was coded as 0 and “yes” 1. Response category “no” is the reference category, while the response category coded 1 is the outcome we are trying is to predict.

Table 3 Classification Table^{a, b}

			Predicted		
			do you remit funds to home country		Percentage Correct
			no	yes	
Step 0	Observed				
	do you remit funds to home country	no	0	137	.0
		yes	0	155	100.0
	Overall Percentage				53.1

a. Constant is included in the model.

The Table 3 above indicates that if we knew nothing about our variables and guessed that a person would remit we would be correct 53.1% of the time. The benchmark that is used to characterize a logistic regression model as useful is a 25% improvement over the rate of accuracy achievable by chance alone. Table 4 below shows the accuracy of the populated model, i.e. the model that includes the explanatory variables.

Table 4 Classification Table^a

			Predicted		
			do you remit funds to home country		Percentage Correct
			no	yes	
Step 1	Observed				
	do you remit funds to home country	no	87	50	63.5
		yes	45	110	71.0
Overall Percentage					67.5

a. The cut value is .500

Table 4 above shows how the classification error rate has changed from the original 53.1%. By adding the variables we can now predict with 67.5% accuracy. The proportional by chance criteria is 66.375% ($53.1 \times 1.25 = 66.375\%$). Since the accuracy rate in this case; 67.5%, is greater than the 66.375% by chance accuracy criteria, this model is characterized as useful.

We also checked whether our intended variables would improve the model. The variable not in the equation table above tells us whether each independent variable improves the model.

Table 5 Variables not in the Equation

			Score	Df	Sig.
Step 0	Variables	Gender(1)	3.985	1	.046
		Age	5.915	1	.015
		Marital	18.963	2	.000
		Marital(1)	1.293	1	.255
		Marital(2)	8.605	1	.003
		Education	27.174	1	.000
		Length	2.828	1	.093
		Members	.060	1	.807
Overall Statistics		64.184	7	.000	

The variable not in the equation Table 5 above tells us whether each independent variable improves the model. The table show that the variables, Gender, Age, Marital (2), Education and length (at 10 level of significance) are significant and if included would add to the predictive power of the model. If they had not been significant and able to contribute to the prediction, then termination of the analysis would obviously occur at this point.

The populated model overall significance was tested using the Omnibus Tests of Model Coefficients, in Table 6 below.

Table 6 Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	74.902	7	.000
	Block	74.902	7	.000
	Model	74.902	7	.000

The Omnibus Test tells us whether our model is a significant improvement on the 'empty model' (like the *F-test* in linear regression). In this analysis, the test of the full model versus a model with intercept only was statistically significant, χ^2 (7, N = 292) = 74.902, $p < .001$. The null hypothesis that there is no difference between the model with only a constant and the model with independent variables was rejected. The existence of a relationship between the independent variables and the dependent variable was supported.

Another test for the validity of model the Hosmer and Lemeshow test was also done. The model divides subjects into 10 ordered groups of subjects and then compares the number actually in the each group (observed) to the number predicted by the logistic regression model (predicted). A probability (p) value is computed from the chi-square distribution with 8 degrees of freedom to test the fit of the logistic model. If the H-L goodness-of-fit test statistic is greater than .05, we fail reject the null hypothesis that there is no difference between observed and model-predicted values, implying that the model's estimates fit the data at an acceptable level Table 7 below show the Hosmer and Lemeshow test.

Table 7 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	14.705	8	.065

In Table 7 above we fail to reject the null hypothesis, at 5% level of significance. Thenon-significance is desirable; it indicates that the model prediction does not significantly differ from the observed.

Although there is no close analogous statistic in logistic regression to the coefficient of determination R^2 the Model Summary Table 8 provides some approximations. *Cox and Snell's R-Square* attempts to imitate multiple R-Square based on 'likelihood'.

Table 8 Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	328.786 ^a	.226	.302

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

The Cox and Snell R square in Table 8 above indicates that 22.6% of the variation in the dependent variable is explained by the logistic model. The Nagelkerke' R Square is a more reliable measure of the relationship. *Nagelkerke's R^2* will normally be higher than the *Cox and Snell* measure. *Nagelkerke's R* is the most-reported of the R-squared estimates. In this case it is 0.302, indicating that 30.2% is explained by the model.

Although the model appears good, we need to evaluate whether each of the independent variables included make a significant contribution to the model. Table 9 below show the significance of the variables in the model.

Table 9 Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a	Age	.069	.021	10.969	1	.001	1.072
	Length	-.236	.062	14.557	1	.000	.790
	Education	.309	.061	25.953	1	.000	1.362
	Marital			16.731	2	.000	
	Marital(1)	-1.414	.357	15.703	1	.000	.243
	Marital(2)	-1.085	.419	6.694	1	.010	.338
	Members	-.033	.132	.063	1	.801	.967
	Gender(1)	-.553	.291	3.609	1	.057	.575
	Constant	-3.934	1.000	15.470	1	.000	.020

a. Variable(s) entered on step 1: Age, Length, Education, Marital, Members, Gender.

After testing the validity of the model, interpretation of the predictor variables was done.

Age:-The probability of the Wald statistic for the independent variable “age” (χ^2 (1, N = 292) = 10.969, p = .001) was less than or equal to the level of significance of .05. The null hypothesis that the beta coefficient for age was equal to zero was rejected. The value of Exp (B) for the variable age was 1.072 which implies an increase in the odds of 7.2% (1.072-1=.072).For each unit increase in age, survey respondents were 7.2% more likely to remit than not to. As age increases there is likely to be an increase in responsibility (due to marriage and increased family size) which increases the odds of remitting. The results are consistent with the finding of Havolli (2009).

Length:-is the number of years a person has been living and working outside the country. The probability of the Wald statistic for the independent variable “length” (χ^2 (1, N = 292) = 14.557, p = .000) was less than or equal to the level of significance of .05. The null hypothesis that the beta coefficient for length was equal to zero was rejected. The variable had a negative coefficient (-0.236).A negative beta coefficient results in a decrease in the likelihood of the expected outcome (remitting). The value of Exp (B) for the variable length was 0.79 which implies a decrease in the odds of 21% (0.79-1=.021). For each unit increase in years of living and working outside the country, survey respondents were 21% less likely to remit to home

country. The results are consistent with the altruistic theory of remittances, which posits duration of stay is expected to have a negative impact on remittances; it is assumed that attachment to family weakens gradually. As the years of living and working outside the home country increase, the migrant will establish social networks in host country and the migrant's intention to return weakens leading to a decline in remittances.

Education: -Is the number of years of education the migrant had undergone. The probability of the Wald statistic for the independent variable "education" ($\chi^2 (1, N = 292) = 25.953, p = .000$) was less than or equal to the level of significance of .05. The null hypothesis that the beta coefficient for education was equal to zero was rejected. The variable has a positive coefficient (0.309). A positive beta coefficient means an increase in education increases the likelihood of the expected outcome (remitting). The value of Exp (B) for the variable length was 1.362 which implies an increase in the odds of 36.2% ($1.362-1=0.362$). For each unit increase in years of education, survey respondents were 36.2% more likely to remit to home country. The value of the migrant's human capital is reflected in years of education. Theoretical models relying on altruism and intra-family-investment schemes, predict that better education leads to higher transfers. The Results are consisted to the findings of Agarwal and Horowitz (2002) and Holst and Schrooten (2006). Educated migrants are likely to secure decent rewarding jobs and will be able to remit more.

Marital status: -is a categorical variable, to denote the marital status of migrants living and working outside the country. The probability of the Wald statistic for the independent categorical variable "Married" ($\chi^2 (1, N = 292) = 15.703, p = .000$) was less than or equal to the level of significance of .05. The null hypothesis that the beta coefficient for "married" was equal to zero was rejected. The variable had a negative coefficient (-1.414). A negative beta coefficient results in a decrease in the likelihood of the expected outcome (remitting). This is somewhat unexpected, since married people are expected to send back money to support families' bank home. The value of Exp (B) for the variable length was 0.243 which implies a decrease in the odds of 75.7% ($0.243-1=-0.757$). This means that survey respondents who are married were 75.7% less likely to remit to home country compared to those who were divorced. The explanation may be due to fact that some married migrants having migrated with their families to the regional destinations, leaving no close relatives in home country.

Single-migrant's Wald Chi square of 6.694, with a (0.000) p value less than or equal to the level of significance of 0.05. The null hypothesis that the beta coefficient for "single" was equal to zero was rejected. The variable had a negative coefficient (-1.085). A negative beta

coefficient results in a decrease in the likelihood of remitting. The value of Exp (B) for the variable “single” was 0.338 which implies a decrease in the odds of 66.2% ($.338-1=0.662$). The results mean that survey respondents who are single were 66.2% less likely to remit to home country compared to those who were divorced. Divorced migrants may be having children back home and are therefore expected to remit more than single migrants.

CONCLUSION

This paper provides micro-level evidence on the determinants of remittances in Zimbabwe. The objective of the study was to provide a better understanding of transfer behavior of Zimbabwean migrants by analyzing empirically the determinants of their remittances. The major strength of the study was that it was based on a fairly large sample of Zimbabweans in two major regional migrant destinations of South Africa and Botswana. The findings of the study suggest that age, length of stay in a foreign country, marital status and education level has significant influence on the migrant's chances/ probability of remitting to home country. Gender and the number of members of same family living and working outside the country were found to be insignificant in influencing probability of remitting to home country. The results of our analysis confirm that remittances of Zimbabwean migrants are remarkably driven by pure altruism. This study only focused on the determinants of remittances, there is scope for further studies to look at factors affecting the frequency of migrant remittances into Zimbabwe.

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