

## **Estimating Remittances in the Informal Sector Labour Market in a Developing Economy: A Micro-Level Evidence on Kayayoo Migrants in Kumasi, Ghana**

Isaac Addai

Department of Accounting Studies Education, College of Technology Education,  
University of Education, P.O. Box 1277, Winneba, Kumasi, Ghana

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**Abstract:** The study explores the determinants of informal sector migrant remittances to households in the Northern territories of Ghana, using data on Kayayoo workers drawn from the Kumasi Metropolis in Ghana from July to September, 2009. The Tobit model is used to undertake the estimation of the remittance function. The majority of Kayayoo migrants are found to retain close links with family ties back home with 72% remitting some amount of money in the 12 months preceding the survey date. The sub-stantive findings of the study are that the monthly earnings in the Kayayoo market exert predictable effects on migrant remittances and the remitting behaviour of the internal Kayayoo migrant with regards to time spent in Kumasi suggests an inverse U-shaped relationship which is more consistent with what is obtained in the migration remittance literature.

**Key words:** Kayayoo, migrants, remittance function, remittance decay, informal sector, labour market, Ghana

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### **INTRODUCTION**

In their attempt to explaining the migration flows from Northern Ghana to the Southern part, economists have always argued on (Todaro, 1976) pull and push factors as compelling northerners to migrate to the South in search of wage labour. Other experts also postulated that overpopulation on a limited land resource base in Northern Ghana continues to making it prudent for the northerners' migration to the South. This act serves as an escape-valve for a survival system. Songsore and Denkabe (1995) also asserts that the colonial policy of turning Northern Ghana labour force into a reserve to serve the interest of Southern cocoa farmers and the mining sector served as historical antecedent of the Northern to Southern Ghana migration without focusing on the increasing feminisation of Northern Ghanaian migrants.

In the very recent times, empirical migration researchers in Ghana have shifted attention to the increasing feminisation of migrant labour (Abdul-Korah, 2006). All these empirical studies being vital to the understanding of the phenomenon of North to South migration in Ghana, however have ignored the issue of internal migrant remittances and the role it affects the internal migrant decision on migration. Although, there have been a growing literature on the increasing significance of migrant remittance to the Ghanaian economy in recent times (Litchfield and Waddington, 2003; Quartey and Blankson, 2004; Adams, 2006; Adams *et al.*, 2008), these studies however have focused

on the external migrants remittances. Empirical researchers on internal migrant remittances, especially in the informal sector are yet to research attention. This study makes the effort to estimate the Kayayoos operating in the Kumasi informal sector labour market remittance function. Kayayoos who are mostly females from Northern Ghana territories of the Northern region, Upper East region and Upper West region operate in the informal sector labour market who see self employment as the only way to acquire minimum assets for either better marriage prospects or greater economic stability (Agarwal, 1994). Remittances play a major role in the sustenance of many Ghanaian households and internal informal sector migrant remittance play an important role in the prevention of poor households falling further into absolute poverty.

This study therefore, attempts to bridge the gap by estimating the internal migrant remittances function using micro-level data of Kayayoo migrants in operating in the Kumasi informal sector labour market. The internal Kayayoo migrants' remittances from Kumasi back to relatives and friends in any of the three Northern regions of Ghana is defined for the purpose of this study to only include cash to maintain at least a basic living standard and to cement the bond of friendship.

According to Becker (1974), seminal study on social interactions, the family is characterised as an income-equalising institution and private remittances are motivated by altruism. Stark (1991) also argued that migrant remittances are the outcomes of an inherent family's contractual agreement. The major theoretical models economists have suggested explaining the

motives fundamental to migrants remittance behaviour are altruism, exchange and insurance. Becker (1974) model the utility of a remitter to be derived from the consumption level of the recipients back home and he postulated that this explain the motives of migrants remittances. Cox (1987), however models a scenario where migrant private transfers represent payments for services rendered to him or her back home.

Cox opined that an increase in the remitter's income correlates positively with a higher probability of remittances back home transfers as well as the migrant remitter is ready to pay more for the services provided by the recipient back home. Recent studies by Quinn (2005) also proposed another model of remittance conduct whereby remittances are treated as both a consumption transfer to households back home and also as an alternative savings in the home country.

This model predicts that the migrant's remittance/saving behaviour is affected by the relative rate of return on savings. He asserted that that an improved access to savings and investment mechanisms for recipient households in the home country might induce increase remittance inflows from migrants.

## MATERIALS AND METHODS

**Data:** A unique survey comprising 209 Kayayoo migrants in Kumasi was conducted by the researcher. The time spent by the Kayayoo migrant in Kumasi and her remittance behaviour is of particular importance to this study so also is her coinsurance behaviour and the remittance decay hypothesis. The survey was conducted from July to September, 2009. The Kayayoo migrants were interviewed of their migration history, demographic characteristics, region of origin, remitting and savings behaviour and marital status.

The problem associated with a survey of this type in a developing country concerns the representative nature of the sample. It has always been difficult gathering reliable estimates on the number of Kayayoos residing and operating in the Kumasi metropolis as they hardly had residential addresses.

The Kumasi Metropolitan Assembly (KMA) was however, handicapped in providing reliable estimates regarding the number of Kayayoo migrants in Kumasi to the researcher. The key informant sampling methodology was adopted using members of the migrant Kayayoos who are fluent in Twi to elicit extensive useable array of information from the respondents. About 12 respondents were excluded as there could not provide appropriate responses. The sample mean age is 21.7 years and the

average Kayayoo has spent up to the date of interview, 14.5 months operating in the Kumasi informal sector labour market.

**Empirical model:** The empirical model estimated in this study is guided by some theoretical considerations that characterised the informal sector labour market in Ghana. Hence, a very general model of Kayayoo migrant remittances for this study is expressed as follows:

$$RM = f(\text{motearn, gender, nothreg, upeast, upwest, age, age2, married, primary, timespent, timespent2, susu, child})$$

Where:

- Motearn = The Kayayoo donor's monthly earnings in Ghana cedis
- Gender = Captures the sexual characteristic of the individual Kayayoo donor
- Nothreg = Captures whether the migrant Kayayoo = From the Northern region
- Upeast = Captures whether the migrant Kayayoo is from the Upper East region
- Upwest = Captures whether the migrant Kayayoo is from the Upper West region
- Age = The migrant Kayayoo's age
- Married = Captures the marital status of the migrant
- Primary = Captures whether the Kayayoo migrant has primary education
- Susu = Captures whether the individual Kayayoo migrant saves money by the susu system
- Child = Captures whether the individual Kayayoo migrant has a child. The dependent variable to be used in this study (RM) is estimated annual gross Kayayoo remittance

The age effect would be expected to enter as a quadratic term as well as the time spent in the Kumasi informal sector Kayayoo labour market. The time spent may provide an indication of the relevance of the Remittance Decay Hypothesis (RDH) as reported by Brown (1997) to a sample of Pacific island remitters.

The level of Kayayoo migrant's education is taken as an indication of household investment requiring a future payback in terms of higher remittances. In the case of the Kayayoo labour market, the highest education acquired is up to the primary level and the robustness of this variable is not expected. The marital status and the dependent child variables provide controls to ensure that intra-generational transfer effect are captured. The inclusion of the susu variable is to capture the effect of permanent income as influencing the remittance behaviour of the Kayayoo migrant. The expectations are that:

Table 1: Description of variables

Variables	Description	Mean
Amount	Total value of money Kayayoo migrant sent back to relatives in the 12 months period prior to the survey interview date	53.72792
Gender	1 if Kayayoo is male; 0 if female	0.3451777
Motearn	The total monthly informal sector market earnings for the last month in GH cedis	53.7533
Nothreg	1 if Kayayoo comes from the Northern region; 0 otherwise	0.7208122
Upeast	1 if Kayayoo comes from the Upper East region; 0 otherwise	0.2639594
Upwest	1 if Kayayoo comes from the Upper West region; 0 otherwise	0.2335025
Age	The age of the Kayayoo respondent expressed in years	21.6599
Age2	Age squared	476.736
Married	1 if Kayayoo is married; 0 otherwise	0.1218274
Primary	1 if Kayayoo has primary education; 0 otherwise	0.4873096
Timespent	The total time spent in the Kumasi Kayayoo market expressed in months	14.54315
Timespent2	Timespent squared	236.5025
Susu	1 if Kayayoo is involved in the susu operation; 0 otherwise	0.6497462
Child	1 if Kayayoo has a child; 0 otherwise	0.6091371

$$\begin{aligned} &\partial RM/\partial MOTEARN > 0, \partial RM/\partial GENDER < 0, \\ &\partial RM/\partial NOTHREG > 0, \partial RM/\partial UPWESTREG > 0, \\ &\partial RM/\partial UPEASTREG > 0, \partial RM/\partial AGE > 0, \\ &\partial RM/\partial AGE2 < 0, \partial RM/\partial MARRIED < 0, \\ &\partial RM/\partial PRIMARY > 0, \partial RM/\partial TIMESPENT > 0, \\ &\partial RM/\partial TIMESPENT2 < 0, \partial RM/\partial SUSU < 0, \\ &\partial RM/\partial CHILD > 0 \end{aligned}$$

**Empirical variables:** The key dependent variable is the amount expressed in Ghanaian cedis and is defined as the total value of money a Kayayoo migrant sent back home to relatives in the 12 months, period prior to the interview date. A variety of explanatory variables are used (Table 1).

**Characteristics of individual Kayayoo migrants:** A set of individual characteristics capturing the Kayayoo migrant's age, gender and marital status are included in the regression analysis. The primary education variable is also included to inform on the theory of contractual arrangement (Lucas and Stark, 1985). It is expected that a positive relationship between the amount of remittances and the primary school education as the Kayayoo migrant's primary education have seen the importance of education and will want to help in household investment to ensure that family members back home are now offered the needed education. The effect is however not however expected to be robust.

**Regional-level characteristics:** Variables relating to the regional and geographic characteristics of the Kayayoo migrants at the destination are also included in the analysis. The set include dummy variable for whether the migrant comes from the Northern, Upper East, Upper West, Ashanti, regions or otherwise. In addition, variables representing the age and the age squared of migrants are also included.

**Duration of stay at the destination:** In an attempt to examine the relevance of the remittance decay hypothesis

for Kayayoo migrants, variables for the time spent at the destination and the time spent squared are included. The susu is designed to capture among other things whether there is any financial mechanism that captures the informal sector employees notably, the Kayayoo labour market. A negative relationship between the susu variable and the level of remittances is anticipated as Kayayoo migrants who are engaged in the susu operations will see it as a form of insurance to continue to stay on in their place of current abode.

Because the sample comprises both remitters and nonremitters, using the Ordinary Least Squares (OLS) regression analysis in estimating the determinants of Kayayoo remittances may become problematic due to a restriction on the values taken by the regressand. If the Kayayoo migrants do not remit, there is no data on their remittance levels, although there exists data on the regressors. The use of linear OLS in this context will clearly result in bias and inconsistency estimates. The nature of the censored regression nature could be overcome by the use of the Tobit model (Tobin, 1958). Banerjee (1984) research first drew attention to the censoring of remittances in the migration literature.

The Tobit model overcomes the censoring problem by modelling the remittances as a single equation estimated by using data on both the remitting and non-remitting Kayayoo migrants. The maximum likelihood estimation of this model yields parameter estimates that are consistent but in the context of modelling remittance behaviour has the disadvantage that a given determinant is restricted to having the same sign effect on both the decision and the level of the transfer (Liu and Reilly, 2004; Markova and Reilly, 2007). From the foregoing, the remittance equation is specified as:

$$RM_i^* = x_i'\beta + u_i \tag{1}$$

Where:

$RM_i^*$  = A partial latent dependent variable that captures the  $i$ th Kayayoo individual's propensity to remit

$x_i$  = A vector of remittance determining variables for individual Kayayoo  $i$   
 $\beta$  = A vector of fixed unknown coefficients to be estimated and:

$$u_i \sim N(0, \sigma^2)$$

Thus:

$$RM_i = RM_i^* \text{ if } x_i'\beta + u_i > 0 \quad (2)$$

and:

$$RM_i = 0 \text{ if } x_i'\beta + u_i \leq 0 \quad (3)$$

where,  $RM_i$  represents the actual amount remitted home by the  $i$ th Kayayoo individual and  $RM_i^*$  is either positive ( $RM_i^* > 0$ ) or zero ( $RM_i^* = 0$ ). The Log-likelihood function (L) may be expressed as:

$$L = \sum_{i=1}^n [Remit_i \times \ln \frac{\phi[(y_i - x_i'\beta) / \sigma]}{\sigma} + (1 - Remit_i) \times \ln \left[ 1 - \Phi \frac{x_i'\beta}{\sigma} \right]] \quad (4)$$

where,  $Remit_i = 1$  if the individual remits and 0 otherwise and  $\Phi(\cdot)$  and  $\phi(\cdot)$  denote the Cumulative Distribution Function (CDF) and Probability Density Function (PDF) operators, respectively. The parameter values for the  $\beta$  vector and the ancillary parameter ( $\sigma$ ) are chosen to maximise L using the Newton-Raphson non-linear iterative method (Liu and Reilly, 2004; Markova and Reilly, 2007).

## RESULTS AND DISCUSSION

The Tobit estimates for the remittance equation shown in Table 2 were obtained using STATA Corp (2008) (Version 10) statistical software package. The goodness-of-fit measure is satisfactory by the standards of cross-sectional models. Most of the reported effects are all not well determined at a conventional level of statistical significance using two-tailed tests. However, most of the variables do have the anticipated signs.

**Age and gender effect:** The volume of Kayayoo remittances was found to rise with age in a linear fashion. This finding is resonant of that reported by Markova and Reilly (2007). A quadratic specification of the age term was experimented with. On average and *Ceteris paribus* remittances were also found to be lesser for Kayayoo males than their female counterparts.

**Earnings effect:** The monthly Kayayoo labour market earnings informs on the relationship between the informal sector labour market earnings in Kumasi and the annual remittances back home. Monthly Kayayoo labour

Table 2: Tobit model maximum likelihood estimates for Kayayoo remittance functions

Variables	Marginal effects	SE
Gender	-.0881743	0.7754138
Motearn	0.9904886*	0.0206529
Nothreg	-.4636075	0.8499342
Upeast	0.3225333	0.8324466
Upwest	0.621164	0.9081562
Age	1.268073	0.9846189
Age2	-.0284171	0.0223225
Married	-.0239577*	0.7019361
Primary	-1.148363	0.7159819
Timespent	0.4682389	0.2137489
Timespent2	-.0167561*	0.0074974
Susu	-.0333867	0.9970258
Child	0.1536491	0.8648275
Constant	-15.7818	11.17744
Pseudo R2-ANOVA	0.36	┆
Log-likelihood value	-496.08337	┆
Number of observations	197	┆

\*denote statistical significance at the 0.05 level, respectively using two-tailed tests. ┆ denote not applicable

earnings as anticipated are a positive determinant of remittances. This finding seems to render support to Niimi *et al.* (2009).

**Marginal and impact effects:** The marginal effect suggest that a one GH cedi rise in monthly Kayayoo earnings raises the annual remittances by another one GH cedi, suggesting a unitary elastic response of annual remittances to informal sector labour market earnings in Kumasi. Thus, a 1% rise (fall) in monthly Kayayoo earnings yields a 1% rise (fall) in annual Kayayoo remittances on average and *Ceteris paribus*. The impact effect for the gender control suggests that, on average and *Ceteris paribus* a male Kayayoo migrant remitted about 0.09 GH cedi less annually than a female Kayayoo migrant.

The impact effect for the Northern region Kayayoo migrant control suggests that on average and *Ceteris paribus* a Northern Kayayoo migrant remitted about 0.46 GH cedis less annually than her other counterparts. The impact effect for the upper west region Kayayoo migrant control suggests that on average and *Ceteris paribus* remitted about 0.62 GH cedis more annually. A 1 month increase in the time an average Kayayoo migrant spends in Kumasi increases the annual remittances home by 0.47 GH cedi. The estimates for the linear and quadratic terms in time spent in Kumasi suggest an inverse U-shaped relationship between remittances and time. The turning point is computed at approximately 14 years. This is broadly consistent with the remittance decay hypothesis (Liu and Reilly, 2004) but the turning point is somewhat later than generally found in the literature, albeit the fact that the remittance literature mostly deal with the formal sector as against this study, dealing with the informal sector labour market. The marginal effect for

susu suggest that on average and *Ceteris paribus* Kayayoo who are engaged in the susu operations remitted about 0.03 GH cedi less annually as a result of the migrant having a form of insurance cover from the susu operation. Kayayoo migrants with children remitted 0.15 GH cedi on average and *Ceteris paribus* more back home annually than those without children and this finding seem to render some support for the altruistic motive with respect to remittance behaviour.

### CONCLUSION

The main objective of this study is to explore some key aspects of the remittance behaviour of current Kayayoo migrants in Ghana using individual micro-level data. Migrant remittances have assumed increased significance in the Ghanaian economic development in recent times. Unfortunately, empirical studies on Ghanaian migrant remittances have mostly focused on the remittances from the external and overseas sources of which data are readily available to the total neglect of the internal sector and most especially internal remittances from the informal sector labour market. Internal Kayayoo migrant earnings in the informal sector labour market are vital not only to the livelihoods of the migrants and their immediate dependants but also to the non-migrant relatives and communities back home in the three northern territories of Ghana and the quest of all and sundry in alleviating poverty.

The sub-stative findings of this study are that the monthly earnings in the Kayayoo market exert predictable effects on migrant remittances and the remitting behaviour of the internal Kayayoo migrant with regards to time spent in Kumasi suggests an inverse U-shaped relationship which is more consistent with what is obtained in the migration remittance literature. However, the channel through which the Kayayoo remittances are sent back home, the potential impact they exert on households and whether the feminisation of migration from Northern Ghana to South Ghana in recent times is a brain gain rather than a brain drain was not explored and remains an agenda for future research.

### REFERENCES

- Abdul-Korah, G.B., 2006. Where is not home: Dagaaba migrants in the Brong Ahafo Region, 1980 to the present. *Afr. Affairs*, 106: 71-94.
- Adams, Jr. R., A. Cuecuecha and J. Page, 2008. The impact of remittances on poverty and inequality in Ghana. World Bank Policy Research Working Paper 4732, World Bank, Washington, DC. USA.
- Adams, R.H. Jr., 2006. Remittances and poverty in Ghana. World Bank Pol. Res. WP 3838. <http://www.imf.org/external/pubs/ft/op/259/op259.pdf>.
- Agarwal, S., 1994. Bearing the weight: The Kayayoo, Ghana's working child. UNICEF Working Paper, Delhi.
- Banerjee, B., 1984. The probability, size and uses of remittances from urban to rural areas in India. *J. Dev. Econ.*, 16: 293-311.
- Becker, G.S., 1974. A theory of social interactions. *J. Political Economy*, 82: 1063-1093.
- Brown, R.P.C., 1997. Estimating remittance functions for pacific island migrants. *World Dev.*, 25: 613-626.
- Cox, D., 1987. Motives for private income transfers. *J. Political Econ.*, 95: 508-546.
- Litchfield, J. and H. Waddington, 2003. Migration and poverty in Ghana: Evidence from the Ghana living standards survey. Sussex Migration Working Paper No. 10, Sussex Centre for Migration Research, University of Sussex, Sussex, UK.
- Liu, Q. and B. Reilly, 2004. Income transfers of Chinese rural migrants: Some empirical evidence from Jinan. *Applied Econ.*, 36: 1295-1313.
- Lucas, R.E.B. and O. Stark, 1985. Motivations to remit: Evidence from Botswana. *J. Political Economy*, 93: 901-918.
- Markova, E. and B. Reilly, 2007. Bulgarian migrant remittances and legal status: Some micro-level evidence from Madrid. *South-Eastern Eur. J. Econ.*, 1: 55-69.
- Niimi, Y., T.H. Pham and B. Reilly, 2009. Determinants of remittances: Recent evidence using data on internal migrants in vietnam. *Asian Econ. J.*, 23: 19-39.
- Quartey, P. and T. Blankson, 2004. Do migrant remittances minimize the impact on macro volatility on the poor in Ghana. The Global Development Network Working Papers.
- Quinn, M.A., 2005. Remittances, savings and relative rates of return. *J. Dev. Areas*, 38: 1-23.
- STATA Corp, 2008. Stata Statistical Software: Release 10. Stata Press, College Station, Texas.
- Songsore, J. and A. Denkabe, 1995. Challenging rural poverty in Northern Ghana: The case of the Upper West region. CED, University of Trondheim, Report No. 6/95.
- Stark, O., 1991. The Migration of Labor. Blackwell Publishers, Massachusetts, pp: 406.
- Tobin, J., 1958. Estimation of relationships for limited dependent variables. *Econometrica*, 26: 24-36.
- Todaro, M., 1976. Internal Migration in Developing Countries. International Labour Office Publications, Geneva, Switzerland.