Private Remittances Received and Household Consumption in Ghana (1980-2016): An ARDL Analysis with Structural Breaks

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Abstract

This study examined the short and long-run effects of private remittances on household consumption in Ghana from 1980 to 2016, controlling for structural breaks. Autoregressive Distributed Lag (ARDL) technique was used to investigate the relationship. Results showed that remittances positively impacted household consumption in Ghana in both the short and long-run howbeit, statistically insignificant. Hence, it was recommended, among other things that the government of Ghana collaborates with financial institutions to make remittance less expensive to encourage more remitting from the diaspora.

1.0   Introduction

The household is an important unit of the macroeconomy. The consumption choices of the household impact the economy in many ways such as stimulating or retarding growth, restoring or dampening investor confidence and increasing or decreasing the savings rate. In Ghana, household consumption accounts for as much as 80% to 90% of the Gross Domestic Product (GDP), hence, it is a very important macroeconomic variable worth studying. Household consumption choices often determine the direction the economy goes. Various household consumption determining factors have been studied in the past. For example, Bonsu and Muzindutsi (2017) showed that income and inflation had long-run impacts on household spending in Ghana while price level had short-run effects.

In recent times however, a form of income has come to be a significant flow to the households in Ghana, and that is, remittances. In 2015, Ghana received the second highest amount of remittances to sub-Saharan Africa, totaling $2 billion (World Bank, 2016a).

Personal remittances are the sum of two main components: compensation of employees and personal transfers remuneration in return for the labor input to the production process contributed by an individual in an employer-employee relationship with the enterprise. The definition of "personal transfers," however, is broader than the old "worker's remittances" – it comprises all current transfers in cash or in kind made or received by resident households to or from nonresident households (IMF, 2009).

Generally, remittances can create a positive impact on the economy through various channels. The general understanding among various economic thinkers is that remittances can impact on the economy through savings, investment, growth, consumption, and poverty and income distribution. The importance of remittance flows become critical in economies with credit market imperfections as is the case in most developing countries (Addison, 2004).

Most of the approaches to studying the impact of remittances on household consumption have been at the micro level (see, Quartey (2006), Parinduri and Thangavelu (2008) and Gubert, Lassourd and Mesple-Somps (2010)). This study argues for the examination of the impact of private remittances on aggregate household consumption in Ghana both in the short and long-run. The findings from this study showed that private remittances impacted positively but insignificantly on household consumption in Ghana for the period under review.

The rest of the study is organized as follows. Section 2 provides a review of related literature. In Section 3, the methodology is presented. In section 4, results are presented and discussed, including the empirical findings and finally in Section 5 we have the conclusion and recommendation of the study

2.0   Literature

Several studies have tried to establish a relationship between remittances and household consumption in Ghana and other places.

Quartey (2006) studied the impact of migrant remittances on welfare in Ghana using the General Least Square (GLS) estimation technique. Results from the study revealed that remittances improved household welfare and helped to minimize the effects of economic shocks to household welfare. They did not offset the shocks completely, however, except for food crop farmers (the Poorest in Ghana).

Gupta, Pattillo and Wagh (2007) studied the impact of remittances on poverty and financial development in sub-Sahara Africa. Using the Panel Ordinary Least Square (POLS), the study found that remittances, which were a stable, private transfer, had a direct poverty mitigating effect, and promote financial development.

Adams, Cuecuecha and Page (2008) investigated how the receipt of internal remittances (from within Ghana) and international remittances (from African or other countries) affected the marginal spending behavior of households on a broad range of consumption and investment goods, including food, education and housing using the Ordinary Least Square (OLS). Findings from the study showed that households receiving remittances in Ghana did not spend more at the margin on food, education and housing than households with similar income levels and characteristics that did not receive remittances. When the analysis controlled for endogeneity and selection bias, the findings showed that any differences in the marginal spending behavior between remittance-receiving and non-receiving households were explained completely by the observed and unobserved characteristics of households.

Parinduri and Thangavelu (2008) in a study on remittance and migrant households' consumption and saving patterns in Indonesia used matching-and difference-in-differences matching estimators. Results showed that remittances changed the household consumption patterns. However, the study did not find strong evidence that indicated remittances improved these

households' living standard. Moreover, remittance households did not enjoy better education or healthcare, which suggested that remittances may not play an important role in speeding up economic development through these two means. If anything, the result showed that remittance households managed to invest some of their income in the traditional forms of investment such as in house and jewelry (i.e., gold).

Ajayi, et al (2009) studied the well-being enhancing effect of international remittances in 38 sub-Sahara Africa countries using the Ordinary Least Square (OLS) estimation method and found that international remittances had to some extent contributed to the improvement of well-being in sub-Saharan Africa.

Gubert, Lassourd and Mesple-Somps (2010) in a study on how remittances affected poverty and inequality in Mali using the Heckman two-step approach found that remittances reduced poverty rates by about 5% to 11%.

Anyanwu and Erhijakpor (2010) studied how international remittances affected poverty in Africa. The study adopted the Ordinary Least Square (OLS) technique of estimation and found that international remittances reduced the level, depth, and severity of poverty in Africa. After instrumenting for the possible endogeneity of international remittances, it was also found that a 10 percent increase in official international remittances as a share of GDP leads to a 2.9 percent decline in the poverty headcount or the share of people living in poverty in Africa.

Combes and Ebeke (2010) analyzed the impact of remittances on household consumption instability in developing countries on a large panel of developing countries. The study estimated the relationship, using the system Generalized Method of Moments (GMM) and four main outcomes of their research are the following: Firstly, remittances significantly reduced household consumption instability. Secondly, the insurance role played by remittances is highlighted: remittances dampened the effect of various sources of consumption instability in developing countries (natural disasters, agricultural shocks, discretionary fiscal policy). Thirdly, the insurance role played by remittances is more important in less financially developed countries. Fourthly, the overall stabilizing effect of remittances is mitigated when remittances over GDP exceed 8.5%.

Medina and Cardona (2010) studied the effect of remittances on household consumption, education attendance and living standards in Columbia. Adopting the Two Stage Least Squares (2SLS), the study found no impact of remittances on household consumption in Columbia.

Clement (2011) in a study on remittance and household expenditure patterns in Tajikistan using the propensity score matching method found no evidence of a productive use of remittances since neither internal nor external remittances had a positive effect on investment expenditures.

Olowa and Awoyemi (2011) studied remittances and household expenditure in rural Nigeria using the Ordinary Least Square (OLS) estimation method. The study found that at the margin, households receiving domestic and foreign remittances spent between 45 and 58 percent more, respectively, on education and housing than do households with no remittances. However, their result showed that households receiving remittances spent less at the margin on consumption of food, consumer goods and durables than do households receiving no remittances.

Sam, Boateng and Oppong-Boakye (2013) in a study of selected suburbs of Kumasi, Ghana using structured questionnaires, found that the primary spending areas of the remittances receipts were food (consumption) and education. It was ascertained that only few respondents received remittances for the purpose of business start-ups.

Randanzzo and Piracha (2014) carried out a study on remittances and household expenditure behaviour in Senegal using the propensity score matching (PSM) and OLS methods. Results showed that there was a productive use of international remittances in Senegal. It was further discovered that the impact of remittances disappeared when the marginal spending behaviour is considered, i.e., households did not show a different consumption pattern with respect to their remittance status.

Githaiga (2014) examined the private sector stimulating effects of remittances in Sub-Saharan Africa. The study targeted fifteen Sub-Saharan Africa countries for the period between 1982 and 2012. Data was analyzed through a fixed effect regression. The study found that remittances had a positive and significant effect of private sector investment.

Salifu, Al-hassan and Sanni (2016) investigated the impact of external remittances on household expenditure patterns in Ghana using the Tobit regression model. Findings from the research showed that households that received external remittances decrease their budget shares on some consumption and investment goods but increased their budget share on particularly housing.

Alem (2018) studied the impact of shocks and remittances on a panel of households in Ethiopia using the system GMM estimation technique. Results from the study showed that international remittances played a positive and significant role in household consumption in Ethiopia

Most of these studies estimated the remittances-household consumption at a micro level, especially the studies on Ghana. This research differs by carrying out a macro impact of remittances on aggregate household consumption in Ghana for both the short and long-run to gauge the effect that inward remittances has on aggregate household consumption in Ghana.

3.0   Methodology

3.1   Theoretical Framework

This study is framed around the Friedman's (1957) permanent income hypothesis. The theory posits that current consumption is related to both permanent and transitory income, with the permanent component of income more significant in determining consumption. For many households in Ghana, remittances form the bulk of their income, hence, the quest by many to emigrate through both legal and illegal means. Furthermore, the theory is adopted for this study because it allows for the dynamic determination of consumption. That is, it allows for the lag in consumption. Unlike the Keynesian consumption function that relates present consumption to present income.

The functional form of the theory is presented thus:

$$c = f(y^{p}, y^{t}) \qquad\qquad (1)$$
Where:
C = current consumption; y^{p} = permanent income; y^{t} = transitory income

For the purpose of this study, and in line with Friedman's hypothesis, the following functional relationship will be explored:

$$c = f(c_0, c_{t-1}, y^p) \qquad (2)$$

Where:

c = current consumption; c_0 = autonomous consumption; c_{t-1} = lag in consumption
y^p, as earlier defined

3.2 Analytical Framework

Following the theoretical framework and functional relationship in equation 2, this study employed the autoregressive distributed lag (ARDL) estimation technique to study the relationship between consumption and private remittances in Ghana. The functional form of the model to be estimated is presented thus:

$$HFCE = f(PRR, EXR, INF) \qquad (3)$$

In the equation, PRR is the main independent variable while EXR and INF are control variables in line with Bonsu and Muzindutsi (2017). The econometric form of the functional equation (eq. 3) is specified in ARDL below to capture the short and long-run effects of private remittances received on household final consumption expenditure in Ghana, following Pesaran, Smith and Shin (1996, 2001).

$$\Delta(HFCE_t) = \beta_0 + \beta_1 trend + \beta_2(HFCE_{t-1}) + \beta_3(PRR_{t-1}) + \beta_4 \log(EXR_{t-1}) + \beta_5(INF_{t-1})$$

$$+ \sum_{i=1}^{p} \alpha_{0i}\Delta(HFCE_{t-1}) + \sum_{j=0}^{q1} \alpha_{1j}\Delta(PRR_{t-j}) + \sum_{j=0}^{q2} \alpha_{2j}\Delta\log(EXR_{t-1}) + \sum_{j=0}^{q3} \alpha_{3j}\Delta(INF_{t-j}) + \alpha_4 dummy + \varepsilon_t$$

(4)

Where:

$HFCE_t$ = Household Final Consumption Expenditure at time t
PRR_t = Private Remittances Received at time t
EXR_t = Exchange Rate at time t
INF_t = Inflation Rate at time t
β_0 = Constant Term
β_i where (i= 1-5) = Parameter Estimates
Δ = Lag Operator Term
(p,q) = Lag length of the dependent and independent variables respectively.
dummy = dummy variable to control for period(s) of structural breaks in the economy.
ε_t = Error Term at time t
It is expected, a priori that α_0, $\alpha_1 > 0$, α_2, $\alpha_3 < 0$;
β_0 - $\beta_3 > 0$, β_4 and $\beta_5 < 0$

All data for the study was sourced at World Bank's World Development Indicators (WDI). Data on private remittances received and household final consumption are measured as shares of GDP. Inflation is measured as change in consumer price index (CPI) while exchange rate is cedi to dollar.

4.0 Results

4.1 Pre-estimation Tests

4.1.1   Descriptive statistics

Table 1: Descriptive Statistics of EXR, HFCE, INF and PRR

	EXR	HFCE	INF	PRR
Mean	0.656858	80.69126	28.23307	1.202201
Median	0.217981	83.16476	20.77314	0.395437
Maximum	3.668025	90.82200	122.8745	13.27117
Minimum	0.000275	59.77689	8.726837	0.010476
Std. Dev.	0.871322	7.331925	25.76282	2.551735
Skewness	1.733476	-1.287861	2.571719	3.400386
Kurtosis	5.912853	3.988807	9.567161	15.32007
Jarque-Bera	30.75671	11.41813	104.3738	297.0520
Probability	0.000000	0.003316	0.000000	0.000000
Observations	36	36	36	36

Source: Author's computation, 2018

The level form of each series has been used in the descriptive analysis. From the table, maximum household final consumption expenditure was about 91% of GDP while its mean stood at about 81%. This shows how large the share of household consumption in the GDP of Ghana is. In the period under review, private remittances received was highest when it was about 13% of GDP and fell to as low as 0.01% of GDP. All the variables (including the control variables), from the formal test of normality using the Jarque-Bera test are non-normal for the study period.

4.1.2   Correlation Test

Table 2: Correlation Matrix EXR, HFCE, INF and PRR

	EXR	HFCE	INF	PRR
HFCE	-0.7244	1	0.3462	-0.7198
PRR	0.8650	-0.7198	-0.2375	1
EXR	1	-0.7244	-0.3746	0.8650
INF	-0.3746	0.3462	1	-0.23757

Source: Author's computation, 2018

In Table 2, inflation and household consumption are seen to be negatively correlated with remittances while exchange rate is positively correlated. This correlation outcome may be reflected in the eventual sign of the coefficients of the estimated model. It must be noted that inflation and household consumption are weakly correlated.

4.1.3   Unit Root Test

Table 3: Unit root test for individual series

Variable	Level			First Difference			I (d)
	None	Constant	Constant and Trend	None	Constant	Constant and Trend	
HFCE			-2.3556	-6.0534***	-6.0836***	-6.0124***	I (1)

	-0.7597	-1.2614					
PRR	5.1857	4.7351	1.4725	-1.5180	-1.8265	-3.8343**	I(1)
LOG (EXR)	-4.0238***	-3.3136**	-1.7392	-	-	-	I (0)
INF	-2.8902***	-4.6624***	-6.4001***	-	-	-	I (0)

Source: Author's computation, 2018

Note: "*", "**" and "*" indicates significance at the 1%, 5% and 10% levels respectively.**
I (d) represent the order of integration of the series

Table 3 is the table of the stationary time series test. The Augmented Dickey-Fuller (ADF) stationary test was used to examine each series' order of integration. Results show mixed order of integration. While household final consumption expenditure and private remittances received are integrated of order 1, exchange rate and inflation rate are integrated of order 0; thus making the use of the autoregressive distributed lag (ARDL) estimation technique appropriate.

4.1.4 Structural Break Test

Table 4: Break Test

Multiple breakpoint tests			
Bai-Perron tests of L+1 vs. L sequentially determined breaks			
Breaking variables: EXR INF PRRG C			
Break test options: Trimming 0.15, Max. breaks 5, Sig. level			
0.05			
Sequential F-statistic determined breaks:			2
		Scaled	Critical
Break Test	F-statistic	F-statistic	Value**
0 vs. 1 *	7.337255	29.34902	16.19
1 vs. 2 *	9.796955	39.18782	18.11
2 vs. 3	2.148388	8.593550	18.93
* Significant at the 0.05 level.			
** Bai-Perron (Econometric Journal, 2003) critical values.			
Break dates:			
	Sequential	Repartition	
1	2011	1997	
2	1997	2011	

Source: Author's computation, 2018

The break date of 2011 may not be unconnected to the boom in the production and exportation of crude oil in Ghana which boosted the economy dramatically. In 1997, Ghana was settling down to an election the previous year which helped consolidate its democracy. These events impacted the macroeconomy in various ways (it is beyond the scope of this paper to study how these break periods impacted the economy). Controlling for these breaks is essential to obtaining robust coefficient estimates.

4.1.5 Test of Cointegration

Table 5: Bounds test of cointegration

Bounds test for cointegration		
Test Statistic	Value	k

F-statistic	2.427190	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
1%	3.41	4.68

Source: Author's computation, 2018

The result of the long-run tests of cointegration as shown in Table 5 is inconclusive at the 10% level of significance as the value of the F-statistics lie between the lower and upper bounds. However, the long-run and short-run cointegration equation indicates an error correction term that is both negative and statistically significant; thus, we went ahead to interpret a long-run outcome for the model.

4.2   Estimation

4.2.1   Short-run and Long-run model

Table 6: Short-run and Long-run Estimates
Dependent Variable: HFCE

Short Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PRR)	0.491107	0.373509	1.314846	0.1992
DLOG(EXR)	-1.628499	0.429170	-3.794528	0.0007
D(INF)	-0.007359	0.024634	-0.298721	0.7674
D(DUMMY1)	-14.312979	3.035641	-4.714978	0.0001
D(DUMMY2)	5.589324	1.750599	3.192807	0.0035
CointEq(-1)	-0.723818	0.121392	-5.962645	0.0000

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PRR	0.678495	0.533194	1.272510	0.2137
LOG(EXR)	-2.249873	0.553643	-4.063763	0.0004
INF	-0.010166	0.033713	-0.301556	0.7652
DUMMY1	-19.774278	3.891790	-5.081024	0.0000
DUMMY2	7.722001	2.496124	3.093597	0.0045
C	73.946726	2.492511	29.667560	0.0000

Adjusted R-squared	0.850861
F-statistic	28.71079
Prob(F-statistic)	0.000000

Short-run estimate
Table (6) shows the result of the estimated short-run and long-run models. From the estimate, private remittances received exerted a positive but insignificant impact on household consumption in Ghana. As expected, exchange rate and inflation rates both exerted negative impact on household consumption. While the effect of the former is significantly negative, the negative impact of the later on household consumption is not statistically significant. The dummies for the two break periods of 2011 and 1997 were statistically significant.

From the analysis, a 1% increase in private remittances received induced about 0.5% growth in household consumption. On the other hand, a 1% rise in exchange rate will bring about a 1.6% fall in household consumption; similarly, a 1% rise in inflation rate will reduce household consumption by about 0.007.

Results also show that the error correction term is negative and significant, as expected in a system with long-run cointegration. From the analysis, a shock to the system in the short run will return the series to about 72% of its equilibrium position in the previous year; this indicates a very high speed of adjustment.

Long-run estimate
The outcome of the estimated model in the long-run is similar to the short-run estimate in both sign and statistical significance. However, if short-run conditions are sustained, the coefficients of the variables indicate larger impacts in the long-run. It is seen that in the long-run, a 1% increase in private remittances received will induce about 0.7% increase in household consumption in Ghana while exchange rate will reduce household consumption in the long-run by as much as about 2.2%. Finally, the inflation effect on household consumption is more sever in the log-run; from results, for a 1% increase in inflation, household consumption reduced by about 0.01%

Overall, about 85% of changes in household consumption is explained by changes the changes in the independent variables; this shows a good fit. This leaves about 15% of changes in household consumption to other factors not included in the model. Furthermore, the probability of the F-statistics indicates that at the both the 1%, 5% and 10% levels of significance, private remittances received inflation rate and exchange rates explain household consumption in Ghana.

4.3   Post Estimation Tests

Table 7: Post estimation result

Diagnostics	Statistics	Interpretation
Linearity (Ramsey RESET)	$F_{stat} = 0.1420$ (0.7092)	Model is properly specified in linear form
Serial Correlation (Breusch-Godfrey Serial Correlation LM Test)	$F_{stat} = 0.0325$ (0.9680)	No evidence of serial correlation
Heteroscedasticity (ARCH LM Test)	$F_{stat} = 0.6415$ (0.6963)	Residual is homoscedastic
Normality Test	Jarqu-Berra = 0.8404	Model residual

	(0.6569)	is normally distributed

Source: Author's computation, 2018
Note: Figures in parenthesis are probability values.

5.0   Conclusion and Recommendations
Empirical results from the study showed the impact of private remittances received on household consumption in both the short-run and long-run are negative though insignificant. This result showed that in both the short and long-run, private remittances received exerted positive but insignificant impacts on household consumption in Ghana for the period under review. the magnitude of impact becomes more in the long-run. Given the size of household consumption in the GDP of Ghana, sustaining this must be sought because of the potential impact it will have on investment, and production.

The government of Ghana must collaborate with financial institutions to make remitting funds less expensive so that more can be remitted so as to make its impact on household consumption more significant.

Since private remittances are an inflow to the household, more proportion of it will be spent on consumption if its purchasing power increases. Thus, this study proposes a special exchange rate, below the market rate, granted to recipients of remittances through official channels. This will increase the flow of remittances through the official channels, increase the purchasing power of remittances received and increase household consumption in both the short and long-run.

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