Global Scientific JOURNALS

GSJ: Volume 10, Issue 3, March 2022, Online: ISSN 2320-9186

www.globalscientificjournal.com

EFFECT OF REMITTANCE INFLOWS ON ECONOMIC GROWTH: EVIDENCE FROM GHANA

Tandoh Rebecca, Sarfo Benjamin, Antwi David E.

Rebecca Tandoh
Department of Accounting and Finance, School of Business, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Benjamin Sarfo
Department of Agricultural Economics and Extension, Akenten Appiah-Menka University of Skills and Entrepreneurial Development (AAMUSTED), Mampong Ashanti, Ghana.

David Antwi
Department of Agricultural Economics and Agribusiness, University of Ghana, Legon, Accra, Ghana.

KeyWords
Economic growth, Economy, FDI, GDP, Remittances

ABSTRACT

The main objective of the study is to investigate how remittance inflows affect economic growth in Ghana. The study uses time series data for 41 years (1979-2019) to analyze the trend of remittance inflows and examine the effect of remittance inflows on economic growth in Ghana. The researchers adopt an explanatory research design to analyze quantitative data obtained from secondary sources. Granger causality, co-integration tests and the OLS regression model are employed in the study to achieve set-out objectives. The study establishes that Ghana's economy does not directly (significantly) benefit from remittance inflows.

BACKGROUND

Recently, the evolving level of remittances to developing nations by international migrants has piqued the interest of policymakers, researchers and scholars. This growing interest has inspired studies on the significance of remittances to developing nations and led to different views on their influence on growth and development (Nyeadi et al., 2014). It is widely believed that remittances promote the growth and development of a country's economy due to its effectiveness in boosting household purchasing power and providing more working capital to private beneficiaries, often located in low-income countries (Siddique et al., 2011). Remittances account for more than double of international donations and more than half of foreign direct investment (FDI) (Nyeadi et al., 2014).
The strong upward trend in remittances can largely be due to the fact that immigration between emerging and industrialized nations has increased spectacularly during the last two decades and has led to a reduction in transaction costs. Due to their static nature, remittances differ from various foreign capital flows, including FDI, foreign loans and subsidies. According to studies, developing nations have benefitted significantly from remittances as they received 307.1 billion dollars (in 2013 alone), representing about 27% of GDP (Nyeadi et al., 2014).

Today, remittances are the second most prevalent source of external inflows to developing nations. With 232 million migrants worldwide and nearly 70 million international migrants, remittance inflows are still increasing and were expected to reach $540 billion in 2016 (Chimhowu et al., 2005). Following the research questions (what is the trend of remittance inflows in Ghana and what effect do these inflows have on economic growth?), the study expediently sought to identify what effect remittances have on Ghana's economy.

THEORETICAL REVIEW

Numerous theoretical and empirical studies have identified theories that can be used to explain the relationship between remittances and economic growth in order to provide policy makers with suggestions on how to reduce the gap between developing and developed countries and achieve sustainable development via remittance inflows.

Endogenous Growth Theory

According to the endogenous growth theory, the growth of national production is driven by endogenous factors of aggregate factor productivity (advancement in technology), labor force and human capital, assuming a continuous income. Advocators of this theory claim that the outcome of increased remittances is driven by endogenous growth factors, i.e. the development of human capital, total factor productivity (TFP), technology innovation and physical investment (Udah, 2016). Romer (2015) argues that the increment of TFP depends on the proficiency level of human capital. Research studies are scanty on the effect that remittances and human capital advancement variables have on economic growth. Much of the prevailing literature on remittances and human capital development variables is devoted to microanalysis, which try to assess the influence of remittances on human capital development. Endogenous growth theory addresses this limitation and shows that the impact of remittances on growth is complemented by factors of TFP and technology diffusion. According to Udah (2016), endogenous growth theory identifies the source through which remittances will contribute to growth and development.

The main rationale of this theory is based on the fact that remittances can supposedly speed up economic growth by enhancing human capital or increasing production efficiency. Udah (2016) however maintains that there is a weak effect of remittance on economic growth but through its influence on human capital, there could be some significant impact of the former on the latter.

METHODOLOGY

Research Design

The study uses the explanatory research design to achieve the research objectives, by evaluating the nexus between remittance inflows and economic growth in Ghana, in an attempt to explain the causal relationship between the two variables.

Data Type and Sources

The study uses quantitative data. This data was gathered from Bank of Ghana (BOG) statistical reports, GSS (Ghana Statistical Service), IMF and World Development Indicators. Time series data on remittance inflows and Gross Domestic Product (GDP) for the period of 1979 to 2019 are used to analyze the association between remittance inflows and economic growth in Ghana. The choice of period of the study was informed by what data was available.

Data analysis and model specification

A trend analysis was used to analyze the trend of remittance inflows in Ghana, and to establish the link between remittance inflows and economic growth in Ghana. The research employed the use of the ARIMA model and Classical linear regression model in its analyses.

Auto-Regressive Integrated Moving Average (ARIMA) Model

The ARIMA model is defined using three ordering parameters, that is, *p, d & q*. The parameter p here indicates the number of lags used in the ARIMA model. The d represents the variation rate of the incorporated component (I (d)). The model errors as combined with previous error terms e_t are denoted by the component of the moving average (MA (q)). Also, the actual terms integrated in the model are denoted by the order, q. The differentiated auto-regressive and components of moving average form a non-seasonal ARIMA model, that can be described using the following linear equation:

$$\hat{y} = u + \varphi_1 y_{t-1} + \ldots + \varphi_p y_{t-p} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where $\hat{y}$ is equal to *d* - different time, and *u* is constant. The model is based on non-seasonal series and so the researchers had to deseasonalise the series within which modulation could occur. The ARIMA method has its limits. Merely past values are used in formulating the model and hence, the efficiency of the ARIMA method can be achieved once using a long and stable series.

Classical Linear Regression (CLR) Model

The functional relationship between the variable and proxies can be expressed as:

GDP = f (R, IR, ER, ITR, IFR) …….. (2)

The CLR model is presented as:

$Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$…… (3)

Where Y = Gross Domestic Product (GDP)

X_1 = Remittance inflow (R)

X_2 = Inflation Rate (IFR)

X_3 = Exchange Rate(ER)

X_4 = Interest Rate (ITR)

ε = Error Term

β_1, β_2, β_3, β_4 = Slopes of the regression equation

Justification of Variables

In this study, real GDP per capita represents the dependent variable. The reason for this is that it is primarily an indicator of economic development from which other components of the economy are derived, for instance personal income, investment and employment growth. It also measures the impact of population growth on economic output, generating aggregate demand for goods and services. Remittance inflows, one of the independent variables, is measured using the revenue of migrant employees returning from the country of employment to the country of origin. These are stated differently in the balance of payments' sections (Ahmad & Abdul, 2016). Interest rate, exchange rate and inflation are used as *control variables* due to their significant effect on GDP. Interest rate is measured as cost of capital based on Bank of Ghana policy rates. According to Idris (2019), there is a significant negative relationship between interest rates and GDP. Thus, as cost of borrowing increases, entrepreneurs are not able to access adequate funds to run their businesses hence reducing economic activities and consequently, the GDP. Also, those who borrow are not able to pay back due to high interest charges on capital thereby increasing non-performing loans of banks, which is their main source of income.

Exchange rate is measured as the price of other currencies in terms of the Ghana Cedi. According to Habib, Mileva & Stacca (2016), there is a significant negative relationship between exchange rate and GDP.

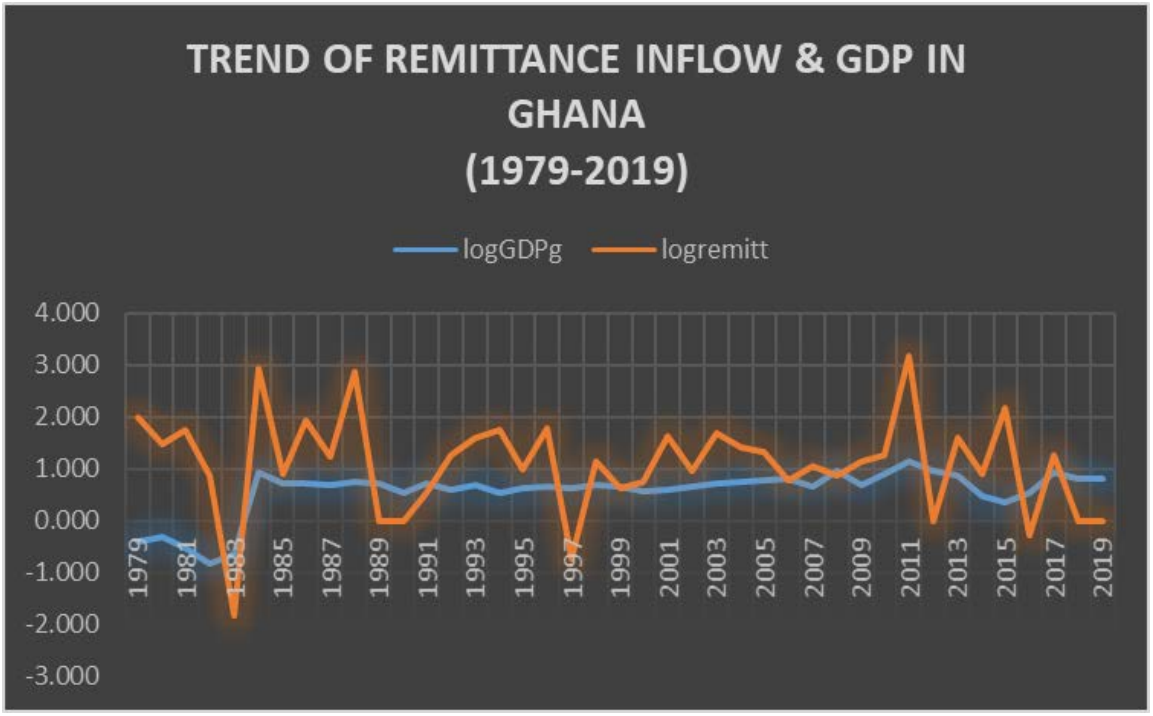
Inflation is measured using the consumer price index in Ghana. Saymeh and Abu Orabi (2013) reveal a significant negative relationship between inflation and GDP. Thus, as prices of goods and services increase, the purchasing power of consumers decreases thereby limiting their contribution to the GDP.

RESULTS AND DISCUSSION

Trend of Remittance Inflow in Ghana

From Figure 1.1, the growth rate of remittance inflows in Ghana has been undulating between 1979 and 2019. It dropped significantly from 1983 and experienced a sharp increase in 1984. It dropped again in 1985 and increased marginally in 1986. It again experienced a marginal decrease in 1987 followed by a rise in 1988. 2011 experienced the highest peak in remittances. Additionally, with the exception of a rise in GDP from 1983 to 1984, GDP maintained a fairly stable pattern until a decrease between 2012 and 2015 and a rise between 2015 and 2017. It is evident from these trends that there is very little correlation, if any, between remittance inflows and the GDP. This is especially evident for the period between 1983 and 1984 where a clear dip in remittances coincided with a sharp rise in GDP, and also explained by the erratic behavior of the remittances trend as compared to the relatively gentle behavior of the GDP trend.

Figure 1.1: Trend of remittance inflows and GDP in Ghana



Source: Authors' Computation

Data Investigation

Test of Normality

Table 1.1 provides information on the skewness and kurtosis: the values of the distribution of the variables used. Whiles, the skewness value focuses on the symmetricalness of distributions, the kurtosis provides information on the peakedness of the distribution. A zero value for both skewness and kurtosis means a perfect and normal distribution. As illustrated in Table 1.1, all the scores obtained for skewness and kurtosis were almost zero and hence the distribution can be viewed as perfect and normal.

Furthermore, obtaining a positive value for skewness, as is the case in the results of this study, implies that there is a positive skew, i.e. the scores are clustered to the left at the low values whiles when the skewness value achieved is negative, it implies a clustering of scores at the high end, on the right-hand side of the graph. In addition, a positive kurtosis value means that the distributions are peaked, and therefore clustered in the centre with long thin tails. Finally, a score of Kurtosis that is below zero shows a relatively flat distribution.

Table 1.1: Skewness and Kurtosis Test of Normality

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	joint adj chi2(2)	joint Prob>chi2
logGDPg	41	0.0000	0.0067	18.61	0.0001
logremitt	41	0.2178	0.0943	4.41	0.1103
loginflat	41	0.0541	0.5670	4.19	0.1230
logexcrate	41	0.0264	0.7947	4.93	0.0849
loginterest	41	0.2704	0.4944	1.78	0.4098

.

Heteroskedacity Test

Table 1.2: Heteroskedacity Test

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of growth

         chi2(1)      =    1.00
         Prob > chi2  =   0.3179
```

The research employed the Breusch-Pagan and Koenker test to check for heteroscedasticity. The null hypothesis denotes the absence of heteroscedasticity (and thus the presence of homoskedasticity); another hypothesis is that there are no constant errors (heteroskedasticity). Based on the results, there was no heteroscedasticity (p-value > 0.05) in the residuals of the variables.

Test for Stationarity

The Augmented Dickey-Fuller (ADF) was used to test for stationarity. The ADF test needs to discover a unit root that is stationary for the two time series variables, that is remittances and economic growth.

Table 1.3: Augmented Dickey-Fuller (ADF) Test for the Stationery

```
. dfuller growth, lags(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        39

                                 ------------ Interpolated Dickey-Fuller ------------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic          Value             Value            Value
------------------------------------------------------------------------------
 Z(t)                -2.890           -3.655            -2.961           -2.613
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0466

.
. dfuller remitt, lags(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        39

                                 ------------ Interpolated Dickey-Fuller ------------
                    Test         1% Critical       5% Critical      10% Critical
                  Statistic          Value             Value            Value
------------------------------------------------------------------------------
 Z(t)                -5.235           -3.655            -2.961           -2.613
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.0000
```

Co-Integration and Granger-Causality Tests

Using the Vector Autoregressive Regression (VAR), the co-integration and Granger-causality tests were conducted. This analysis was conducted primarily to determine the causal variations between the variables employed as well as to ascertain the long term variations of the variables.

Co-Integration Test

The results of the Johansen co-integration test which encompasses both max statistics and traces statistics values are presented in Table 1.4. They revealed that majority of max and trace statistics values exceeded 5% critical values. This suggests that the null hypothesis indicating no long term co-integration relationship between the variables is rejected. Thus, the alternate hypothesis which states that there is a long term co-integration relationship between the variables is accepted.

Table 1.4: Co-integration Test

Johansen tests for cointegration

Trend: constant — Number of obs = 40
Sample: 1980 - 2019 — Lags = 1

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	5	-4.6074124	.	117.3432	68.52
1	14	23.422003	0.75377	61.2844	47.21
2	21	40.631248	0.57703	26.8659*	29.68
3	26	46.893454	0.26883	14.3415	15.41
4	29	51.523615	0.20666	5.0811	3.76
5	30	54.064186	0.11929		

maximum rank	parms	LL	eigenvalue	max statistic	5% critical value
0	5	-4.6074124	.	56.0588	33.46
1	14	23.422003	0.75377	34.4185	27.07
2	21	40.631248	0.57703	12.5244	20.97
3	26	46.893454	0.26883	9.2603	14.07
4	29	51.523615	0.20666	5.0811	3.76
5	30	54.064186	0.11929		

Granger-Causality Test

Table 1.5: Granger Causality Test

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
logGDPg	logremitt	11.276	2	0.004
logGDPg	loginflat	.25193	2	0.882
logGDPg	logexcrate	10.178	2	0.006
logGDPg	loginterest	1.8928	2	0.388
logGDPg	ALL	36.061	8	0.000
logremitt	logGDPg	4.1793	2	0.124
logremitt	loginflat	4.4531	2	0.108
logremitt	logexcrate	2.893	2	0.235
logremitt	loginterest	2.7549	2	0.252
logremitt	ALL	18.919	8	0.015
loginflat	logGDPg	18.478	2	0.000
loginflat	logremitt	14.497	2	0.001
loginflat	logexcrate	16.932	2	0.000
loginflat	loginterest	16.986	2	0.000
loginflat	ALL	69.856	8	0.000
logexcrate	logGDPg	14.326	2	0.001
logexcrate	logremitt	.61892	2	0.734
logexcrate	loginflat	17.927	2	0.000
logexcrate	loginterest	4.8988	2	0.086
logexcrate	ALL	33.263	8	0.000
loginterest	logGDPg	1.4223	2	0.491
loginterest	logremitt	3.1192	2	0.210
loginterest	loginflat	8.3405	2	0.015
loginterest	logexcrate	14.366	2	0.001
loginterest	ALL	18.546	8	0.017

.

The results show that in the first row (to measure the hypothesis 0, H_0: economic growth ≠>Remittance), the p-value is 0.004, which is lower than the significance level at the critical level of 0.05. Therefore, the study does not reject the zero hypotheses. In this regard, economic growth (GDP) causes 5% variations in remittance inflows.

In the second row (to verify the 0 hypothesis, H_0: remittance ≠> Economic growth), it was established that the p value is 0.124, that is beyond the significance threshold at the critical 0.05 level. Therefore, the null hypothesis is not rejected. Remittances therefore do not lead to a significant (at 5% critical level) economic growth (GDP).

Similarly, on the first row of table 1.5 (to assess the 0 hypothesis, H_0: economic growth ≠> exchange rate), a p-value of 0.006 is ob-

tained which is within the acceptable range of the significance level (p-value < 0.05). Therefore, the null hypothesis is not rejected. Thus, economic growth (GDP) leads to a 5% variation in the exchange rate.

On row 3 of table 1.5, (for testing the null hypothesis, H_0: inflation ≠>Remittances, GDP, exchange rate and interest rate), the p-values are all less than the level of significance at the 0.05 critical level. Hence, the null hypothesis is not rejected. Thus, inflation causes changes in remittances inflow, GDP, exchange rate and interest rate at the 5% level of significance. The result is the same for causality effect of exchange rate on remittances, GDP, inflation and interest rate. The same applies to the causality effect of interest rate on remittances, GDP, exchange rate and inflation.

The contribution of remittances towards the economic development of developed countries is controversial. Most remittances are therefore actually used for consumption purposes, contrary to investments and savings made in the case of an emerging economy (Siddique et al., 2012). The remittances turned out to be of little importance for the Ghanaian economy.

Regression analysis between economic growth and remittance

The results reveal that R^2, which depicts total fitness of model, had a value of 0.61. This suggests that 61% of the variations in the dependent variable is caused by the independent variables. Other variables that are not included in the model cause 39% variations in the dependent variable. Additionally, the variables under consideration are all significant (p-value=0.000) at 5% critical value which means that remittances, as the key independent variable, is significant at 5% and so are the control variables. All of them with the exception of inflation have positive coefficients. The variables (except for inflation) are therefore positively and significantly related indicating any amount of unit increase in the independent variables will in turn cause a proportionate increase in the dependent variable. Thus, a unit augmentation in remittance will in turn boost economic growth at a rate of 0.006. The Granger-causality test however suggests that remittances do not cause any significant growth in the Ghanaian economy. Thus, economic growth is based on other factors which are not included in the model.

Table 1.6: Estimates of Regression Parameters

Source	SS	df	MS		Number of obs =	41
					F(4, 36) =	14.31
Model	343.068233	4	85.7670583		Prob > F =	0.0000
Residual	215.740042	36	5.99277894		R-squared =	0.6139
					Adj R-squared =	0.5710
Total	558.808275	40	13.9702069		Root MSE =	2.448

growth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
remitt	.0055274	.0013771	4.01	0.000	.0027344	.0083204
inflation	-.0809751	.0169253	-4.78	0.000	-.1153011	-.046649
excrate	.9372383	.4170466	2.25	0.031	.0914286	1.783048
interestrate	.1221871	.0503113	2.43	0.020	.020151	.2242232
_cons	2.835901	1.534729	1.85	0.073	-.2766735	5.948475

Conclusion

The main objective of the study was to assess what influence remittance inflows has on economic growth in Ghana. The study establishes that remittances do not lead to economic growth in Ghana and concludes that Ghana's economy does not significantly benefit from the inflow of remittances.

References

[1] Chimhowu, A., Piesse, J. and Pinder, C. 2005. "The socio-economic impact of remittances on poverty reduction". In Remittances: Development Impact and Future Prospects, Edited by: S.M., Maimbo and D.; Ratha. 83-103.Washington, DC: World Bank.

[2] Nyeadi, J.D., Atiga, O. and Atogenzoya, C.A (2014) the impact of exchange rate movement in export: empirical evidence from Ghana. International Journal of Academic Research in Accounting, Finance and Management Sciences, Vol. 4, No. 3, 41-48.

[3] Siddique, A. Selvanathan, E. A. and Selvanathan, S. (2016). Remittances and economic growth: empirical evidence from Bangladesh, India and Sri Lanka. Journal of Development Studies.Vol. 45, No. 8, 1045-1062.