RESEARCH ARTICLE

EXCHANGE RATE AND ECONOMIC GROWTH, GHANA'S RESPONSE TO RODRIK 2008

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ABSTRACT

Background: The link involving exchange rates and economic development has gotten a lot of attention in recent years. Various data sets and experimental techniques were employed in the research, but a consistent conclusion emerged in virtually all of them: undervalued, i.e., competitive, exchange rates are directly related with better economic growth. At least two theories have been proposed to explain such a connection. *Method:* Considering the role that exchange rate play in an economy and the issues that comes with its fluctuations and managements especially in developing economies like Ghana, it becomes essential to statistically measure its impact on growth of an economy. This paper seeks to contribute to the knowledge on the discussion as to how exchange rate affects a country's economic growth and if the findings (Rodrik 2008) apply. *Results:* The data used in this paper was gotten from 2008 to 2017. The results confirmed the findings of Rodrik that exchange rate in the long run has a negative effect on economic growth for developing countries. *Conclusions:* The findings of this paper reveal that import is significant and that changes in a country's imports could affect it Gross Domestic Product (GDP). This is practically true because most developing economies are import driven. The paper suggests that's governments of developing economies such as Ghana put in efforts to achieve a better balance of trade so as to boost economic growth.

INTRODUCTION

Exchange rate and exchange rate regimes have been found through a number studies to have mixed impacts on the growth of an economy. Stable exchange rates are highly important to keep a stable economic growth. A fixed exchange rate leads to stability as the exchange rate between the currency and its peg does not fluctuate based on pertaining market conditions. This creates a steady business climate favorable for trade and investments as it eliminates the risk of sudden changes in currency prices. The GDP of a country captures and measures all economic activities and presents them monetary terms. All activities in the country are captured under the following; Individual consumption expenditure (C), Investments (I), Government expenditure (G) as well as import (M) and exports (X). In computing GDP often denoted by (Y) for a particular period, we add all these activities to arrive at the formula:

$$Y = C + I + G + (X - M). \qquad (eq1)$$

The paper seeks to test the hypothesis that the exchange rate of Ghana (appreciation or depreciation) has an impact on the growth of the economy measured by GDP. The economy of Ghana is a developing one which has migrated from an agro-based economy to a service driven one. However, the provisional GDP estimation showed a shift in this turn with a GDP growth rate of 8.5 percent. The industry sector recorded the highest growth rate of 16.7 percent, followed by

Agriculture (8.4%) and the Services (4.3%) sectors, (GSS, 2018). The country's GDP is highly influenced by its oil, gold and cocoa exports. There have been a series of studies on the relationship between exchange rate regimes and GDP of Ghana, the impact of GDP on exchange rate and inflation amongst other. There is however limited studies on how exchange rates affect economic growth. This study aims at determining the impact of Ghana's annual exchange rates against it the major international currency; the USD on its economic growth (GDP).

Unlike some research works that focuses on and makes decisions either on exchange rate depreciation or appreciation independently affect GDP, this paper look at the general side of it, thus; both depreciation and appreciation and how they affect GDP. This research uses the most influential Rodrik 2008 as a benchmark to see the extent to which Ghana conforms to the results of Rodrik 2008. Rodrik (2008) presents panel regressions that show a correlation of growth rates in developing countries with a measure of real exchange rate undervaluation. Finding by Rodrik state that, at least for developing economies, an undervalued real exchange rate forecasts stronger growth. His reason being that tradable economic activities are special in developing countries as tradables suffer excessively from the institutional and market failures that keep countries poor. Rodrik is of the view that depreciated exchange rates do not impact on the tradable sectors, rather boosts savings.

MATERIALS AND METHODS

Considering the importance or relevance of GDP in making analysis of critical issues concerning a nation, it becomes essential to analyze how various variables affect GDP in order for governments and stake holder to determine where to channel attention and resources. Various work has been done on how foreign exchange rates (its appreciation of depreciation) contribute to a country achieving a better domestic production capability or not. There are divergent views of whether Exchange rate affects GDP. The case differs by country and region. This section brings together some resent published literature of the topic. (Klein and Shambaugh 2010) is of the view that; exchange rates and the choice of the exchange rate regime retain a center stage in the post crisis environment especially for emerging economies. Glüzmann, Levy-Yeyati and Sturznegger, (2012) where a weak exchange rate leads to higher saving and investment through lower labor costs and income re-distribution. By shifting resources from consumers to financially-constrained firms, real devaluation boosts savings and investment. Similarly, Hausmann, Pritchett, and Rodrik (2005) demonstrate that rapid growth accelerations are often correlated with real exchange rate depreciations. According to Di Nino, Eichengreen, and Sbracia (2011), there is a positive relationship between undervaluation and economic growth for a panel dataset covering the period 1861-2011. Their research also shows that undervaluation supported growth by increasing exports, especially from high-productivity sectors, in Italy in 1861-2011.

In a study conducted by Kappler, Reisen, Schularick, and Turkisch (2011) using a sample of 128 countries of developing and advanced economies between 1960 and 2008, they found that the effects exchange rates on output are limited. The negative effect on the level of output is only 1 percent after six years, and results are statistically insignificant. Their study revealed that exchange rate appreciation can have strong effects on current account balances. Within three years after the appreciation event, the current account balance on average deteriorates by three percentage points of GDP. Findings from Habib, Mileva and Stracca (2016) revealed that by applying instrumental variables, a strong and statistically significant positive (negative) effect of real exchange rate depreciation (appreciation) exists on real per capita growth over five-year average periods and that the effect is stronger for developing countries for pegs. It is important also to note that some economic conditions or variables also affect exchange rate and productivity (GDP). Woodford (2008) found that, country-specific shocks, for instance productivity shocks, has an effect on real exchange rate leading to reverse causality. Tybout, J. 2000 is of the view that Imports of capital goods and intermediate goods that cannot be produced domestically enable domestic firms to diversify and specialize, further enhancing their productivity. The findings of Sameti, Jalaee and Sadeghi (2005), show that the variable coefficient of import relative price in the import demand model is not a significant linear form. Their findings tell that is seems that the globalization process and global economic integration makes an increase in Iranian imports. In the discussions of Mahmoodzadeh and Mohseni (2006), they argue that import of the right technology is the basis of industrial and social evolution for transferring from traditional production to industrial production and moving through the stages of economic development.

Studies conducted by Tehranchian (2006), on the impact of import of investment, intermediate and consumer goods on Iranian economic growth used Rati Ram's model for the analysis of the impact of import types on economic growth and collected his data on a library-based research. He presented that notwithstanding an increase in the import of said three groups of goods, particularly after implementation of development plans, the composition of imported goods is changed to the benefit of intermediate and investment goods. The results of Adegboyega R.R (2017), in his article; the impact of export and import on economic growth in Nigeria: evidence from VAR approach show that the predominant sources of Nigeria economic growth variation are due largely to "own shocks" and import-export trade innovations.

RESULTS

The research used secondary data. Using secondary data means using datasets that were not collected for the hypothesis being tested (Quoc-Dien T, 2007). For the purpose of this research, data of the variables GDP, imports and inflation of Ghana from 2006 to 2016 was gathered from the World Bank database.

Data description

Table 1. Summary statistics

	GDP	IMPORTS	EX	INF
Mean	11.91872	10.54416	14.10152	-4.265397
Median	15.22504	15.62479	12.86865	3.990755
Maximum	47.41887	29.96472	32.62069	38.91452
Minimum	-22.30540	-14.51330	1.537386	-79.78610
Std. Dev.	18.57302	14.03187	10.09198	37.02121
Skewness	-0.088048	-0.596316	0.454203	-0.712460
Kurtosis	3.311203	2.227251	2.106261	2.684564
Jarque_Bera	0.053274	0.841463	0.676654	0.887458
Probability	0.973715	0.656566	0.712962	0.641639
Sum	119.1872	105.4416	141.0152	-42.65397
Sum Sq. Dev.	3104.613	1772.041	916.6333	12335.13
Observation	10	10	10	10

Source: World Bank and E-view computation

Where EX represents exchange rate and INF represents inflation Table 1 presents the data for a period of ten years from 2008 to 2017. The value of standard deviation for inflation of 37.02 is the largest amongst the variable even than exchange rate. This means the hypothesis that a change in exchange rate affect GDP cannot hold. The variables satisfied the normality test using Skewness and Kurtosis with the threshold of ± 3 except GDP having a Kurtosis of 3.311203.

Table 2. OLS estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IMPORTS	1.011568	0.370742	2.728497	0.0343
EX	-0.058686	0.549788	-0.106743	0.9185
INF	-0.005379	0.149798	-0.035910	0.9725
C	2.057198	11.03908	0.186356	0.8583

Source: World Bank and E-view computation

R-squared 0.592	F-statistic 2.902	Prob (F-statistic…) 0.124
R-squared	Durbin-Watson….	
Adjusted 0.388	Statistic 1.811	

$$GDP = 2.027 + 1.011m - 0.059ex - 0.005inf \qquad (eq2)$$

The OLS estimation shows that contrary to the hypothesis of the paper, import is statistically significant (positive) to GDP whilst Exchange rate and inflation negatively affect GDP. This tells that the imports of the country contributes much to its GDP than the fluctuations in exchange rate and that changes in imports values affect economic growth of Ghana.

The estimation gave an adj. R squared of 0.388; thus 38.8%. This implies that 38.8% of the variations in the GDP growth rate is explained by the joint contribution of all the variables; this Imports, Exchange rate and Inflation.

Table 3. Breusch-Godfrey Serial Correlation LM Test

F-statistics	0.043265	Prob. F(2,4)	0.9581
Obs*R-squared	0.211746	Prob.	0.8995
		Chi-Square(2)	

Source: World Bank and researcher's computation

The null hypothesis for the Breusch-Godfrey is that there is no serial correlation with a prob. value of 0.9 so we fail to reject the null hypothesis.
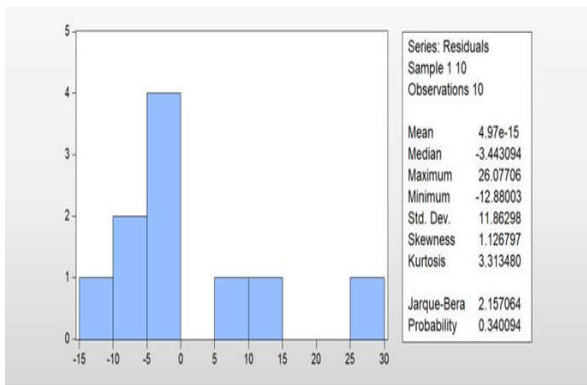
Figure 1. Residuals plot

Table 4. Heteroskedasticity Test: Breusch-Pagan_Godfrey

F-statistic	0.222153	Prob. F(3,6)	0.8777
Obs*R-squared	0.999719	Prob. Chi-square(3)	0.8013
Scaled explained SS	0.416309	Prob. Chi-square(3)	0.9369

Source: World Bank and E-view computation

The null hypothesis is that there is no heteroskedasticity. The prob. Value of 0.877 which is greater than the acceptance level of 0.05, we therefore fail to reject the null hypothesis saying there is no heteroskedasticity in the model.

CONCLUSION

This paper aimed at assessing how exchange rate impacts on Ghana's GDP and to make conclusion using or comparing to the renowned results of Rodrik 2008. The finding from the OLS estimation tells that amongst the three variables used, imports have a positive significant relationship with economic growth. Whilst exchange rate and inflation showed to have a negative impact on economic growth. This means a decrease in exchange rate will negatively affect GDP by 5.86%. This is practically true for a developing economy as a change in exchange rate affect almost all economic activities of that economy as these economies often require foreign exchange to engage in trade foreign trade, thus imports and at times even local transactions.

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