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Critical Examination of Why Ghana's Foreign Exchange Rate of One Cedi to One Dollar is not Sustainable in Contemporary Ghana

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Abstract Every economy strives to achieve an exchange rate that augurs well for its economic growth. A country with high exchange rate tends to benefit when it imports. In like manner, a country with lower exchange rate benefits when it is able to export greatly, taking advantage of its weaker exchange rate that makes its prices attractive to the outside world. In Ghana, exchange rates have been weakening over the period since it adopted the floating exchange rate system, nonetheless, it has not successfully taken advantage of the weakening cedi to earn more from exports. Since the economy has been import-driven, adverse changes in the exchange rate is of dire consequence to the Ghanaian economy. The state after experimenting various ways to stabilize the exchange rate, introduced the one cedi to one dollar exchange rate in July 2007. The researcher, therefore, strived to examine the success rate of the one cedi to one dollar exchange rate system that was introduced in the economy and to suggest remedies that can be applied to ensure the success of that system or at least, improve on the rate of exchange of the country's currency, the cedi. The researcher provided a graphical presentation of the cedi to the dollar exchange rate and observed that from 2007 to 2013 the cedi depreciated by 100% after it was pegged at one cedi to one dollar in July 2007. It was also observed that the cedi depreciated by 180% in the next seven years, 2013 to 2020. By interpolation, the later years' depreciation became worse than the earlier years' depreciation of the currency after implementation of the one cedi to the dollar exchange rate. The researcher, in his work provides some reasons for the non–sustainability of the one cedi to one dollar exchange rate and suggests possible remedies to the problem.

Keywords: *exchange rate, purchasing power parity, exports, imports, gross domestic product*

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1. Introduction

Ghana's economy is currently import-driven, hence, foreign exchange fluctuations are of grave concern to the state and the citizens as according to Mbithi [1] financial performance of listed firms is affected by the foreign exchange rates movements, so is the financial performance of Ghana as an entity. The basic concept behind the foreign exchange according to Gaucan [2] is for trading currencies, one pair against another. The value of one currency is determined by its comparison to another currency via the exchange rate.

The state has been keen in controlling the foreign exchange rate situation since the time of independence. It primarily started by using the fixed exchange rate system whereby the central bank controlled the exchange rate and all imports were routed through and approved by the central bank. This system ensured that only fewer persons had the opportunity to import.

This phenomenon of fixing the exchange rate resulted in what was known as the 'black market' system, whereby individuals, wanting to obtain foreign currency went through the back door to exchange the local currency for the foreign one through unlicensed persons who sold the currency to them. The rate at which the black marketers traded the foreign currencies were far higher than the fixed and controlled rate operated by the central bank. The system did not help the state much, therefore, it decided to liberalize the floating of foreign currencies on the market such that the cedi would be priced at the market rate and persons licensed to trade in the currencies were taxed for their services and income accrued to the state. This system labeled the forex bureau system gained popularity and is now the operational system in the country.

Although the central bank and the forex bureau practise the floating exchange rate system the forex bureau rates are slightly higher than the central bank rates, obviously owing to the fact that the forex bureau are profitmaking entities. Speculation has also played a role in the determination of the exchange rates and as described by

Hayward [3], speculation can be viewed as stabilising or destabilizing.

Although this current system of floating exchange rate in Ghana has been quite successful, the exchange rate of the cedi to foreign currencies has not been favourable to the state over the period. The state therefore, decided to redenominate the cedi and then peg one cedi to one dollar. This action of the state worked to a certain extent but now the cedi has begun depreciating against the foreign currencies, thus, it could not hold on to the one cedi to one dollar tag. This situation has prompted the researcher to explore means to explain, why, the cedi could not maintain its hold on the dollar as was expected and to suggest remedies.

2. Literature Review

2.1. Foreign Exchange and Exchange Rate

According to Walstand and Bingham [4] foreign exchange is when residents of a nation sell goods or services or real or financial assets to receive loans or gifts or from, or are paid dividends or interest by the residents of foreign nations and obtain foreign money and sell this foreign money in return for some of their own money. That is, they exchange foreign money for their own money.

According to Gordon, the foreign exchange for a nation's currency is the amount of one nation's money that can be obtained in exchange for a unit of another nation's money. According to McEachern, foreign exchange is the currency of another country needed to carry out international transactions. The exchange rate is the price measured in one's currency of purchasing 1 unit of another country's currency [5,6].

2.2. Flexible Vr Fixed Exchange Rates

According to Gordon [5], flexible exchange rate system- Under a 'pure' version of the flexible exchange rate system, an outflow of a currency would act just like an excess supply of any commodity, the price would go down until an equilibrium price is established. In a flexible exchange rate system, the foreign exchange rate is free to change every day in order to establish an equilibrium between the quantities supplied and demanded of a nation's currency. In a fixed exchange rate system, the foreign exchange rate is fixed for long periods.

McEachern [6] defines flexible exchange rate as rate determined by the forces of demand and supply without government intervention. According to him, fixed exchange rate is the rate of exchange between currencies pegged within a narrow range and maintained by the central bank's ongoing purchases and sales of currencies.

2.3. Nominal Exchange Rate and Real Exchange Rate

According to Abel and Bernanke [7] the rate at which two currencies can be traded is the nominal exchange rate between the two currencies. When the exchange rate falls so that, a dollar buys fewer units of foreign currency, the dollar is said to undergo a nominal depreciation. This implies that the dollar has become 'weaker'. However, if the dollar's nominal exchange rate rises, then the dollar has had a nominal appreciation. This implies that the dollar has become 'stronger'.

According to them, the price of domestic goods relative to foreign goods-equivalently, the number of foreign goods someone gets in exchange for one domestic good is called the real exchange rate.

2.4. Purchasing Power Parity

According to Taylor and Taylor [8] Purchasing power parity (PPP) is a disarmingly simple theory that holds that the nominal exchange rate between two currencies should be equal to the ratio of aggregate price levels between the two countries, so that a unit of currency of one country will have the same purchasing power in a foreign country.

According to Kargbo [9], his research shows overwhelming support for long-run PPP in Africa, thus, PPP is a reliable guide for exchange rate determination and exchange rate policy reform in African countries. According to Suluk, S and Tannseven, K [10], if domestic inflation is bigger than international inflation, local currency will weaken in the long run. If domestic inflation is smaller than international inflation then it will be reflected in a corresponding strengthening of the local currency in the long run.

According to Deaton A and Dupriez O [11], poverty-weighted purchasing power parity exchange rates look very much like the regular purchasing power parity exchange rates that use weights from the national accounts, certainly when we confine ourselves to comparisons that do not involve the rich countries of the world. Although it is true that poor people have different consumption patterns from the aggregate patterns in the national accounts, the reweighting is similar in different countries, so that the price indexes between each pair do not usually change by much.

According to ACCA [12], Purchasing Power Parity is a theory that attempts to explain changes in the exchange rate exclusively by the rate of inflation in different countries. The theory predicts that the exchange value of a foreign currency depends on the relative purchasing power of each currency in its own country, also the spot exchange rate will vary over time according to relative price changes.

$$\frac{S_t - S_0}{S_0} = \frac{i_f - i_h}{1 + i_h}$$

Where

S_o is the current lower foreign currency spot exchange rate (at time 0)

S_t is the expected spot rate at time t

i_f is the expected inflation in the foreign country at time t (expressed as a decimal)

i_h is the expected inflation in the home country to time t (expressed as a decimal)

2.5. Factors that Influence Exchange Rates

According to Stafford [13], as a general rule, the currencies of countries that pay higher interest rates tend to be in demand and therefore do appreciate, while the currencies of countries that pay lower interest rates tend to be demanded less, therefore, depreciate. He also asserts

that people and businesses usually invest their money in countries that have expanding economic systems. Another factor is expectations; if many people believed that the value of a currency would soon increase, they would sell their local currency and buy the other currency. The result is that the value of the foreign currency would appreciate and the value of the local currency would depreciate.

Hubbard and O'brien [14] also opine that three main factors that cause the supply and demand curves in the foreign exchange market to shift are changes in the demand for a country's produced goods and services; changes in the expectations of currency traders-particularly speculators concerning the values of the local currency and the likely future values of foreign currencies; changes in the desire to invest in the domestic currency and changes in the desire to invest in foreign currency. According to Khan [15] monetary policy uses the interest rate and targets the domestic and CPI inflation to control the exchange rate.

According to Rajkovic M et al [16], during an economic crisis those countries that use their own currency cannot substantially adjust their trade deficit by depreciating their currency. Moreover, it is suggested that during the global economic crisis, the balance of payments deficit is not impacted significantly by the exchange rate, any more. In such cases, other factors play a more significant role, like government spending, followed by foreign demand and direct investments.

3. Methodology

The researcher used secondary data for his work. He obtained data from Ghana Statistical Service and Bank of Ghana regarding Ghana's inflation rates, exports value and exchange rates from 2007 to 2020 The research design used was quantitative; using graph to depict the trend of foreign exchange rate in the country over the period 2007 to 2020 and computing coefficient of correlation figures.

Since the country's Gross Domestic Product (GDP) is mainly denominated in dollars and cedis, the researcher based his work on the exchange rates between the dollar and the cedi over the period 2007 to 2020. The researcher used 2007 as the starting point because in that year the state pegged one cedi to one dollar as its exchange rate. The researcher therefore, endeavoured to ascertain how the cedi was able to hold on to this exchange rate of one cedi to one dollar. He also produced a graph showing the relationship between these two currencies over the period under review and produced the gradient of the line 2007 to 2013 and 2013 to 2020 to depict the rate at which the local currency depreciated against the dollar over these two distinct periods and suggested extrapolations of the graph and recommended remedies that could help lessen the worsening depreciation of the local currency to the dollar.

The researcher as well provided a table that showed the percentage changes in exports to GDP for the period 2007 to 2020 to explain the cause of declining exchange rates over the period. He also provided a table that showed the percentage of changes in inflation for the period 2007 to 2020 in order to ascertain the effect of both exports and inflation on the country's exchange rate.

The researcher used the percentage change in exports and percentage change in inflation rates as the independent variables, while the percentage change in foreign exchange rate was used as the dependent variable. He therefore, computed the coefficient of correlation between the percentage change in exports and percentage change in foreign exchange rate. In addition, he computed the coefficient of correlation between the percentage change in inflation and the percentage change in the foreign exchange rate and deduced the implications of these results on the country's foreign exchange rate.

The researcher also seized the opportunity to explain, why, in his view, the cedi cannot be at par with the dollar in this era of the nation's development. It is envisaged that results from this work will assist policy makers in economic planning.

4. Case Study of the Ghanaian Currency, the Cedi

Prior to 1st July 2007, the exchange rate was ₡9,200 to US$1. On 1stJuly2007, the state changed the exchange rate to GH₡1 for US$1 through change of currency, stating that ₡10,000 was equivalent to GH₡1.This implied that on the very day of currency change the cedi was devalued from ₡9,200 to ₡10,000 for US$1(instead ofGH₡0.92 toUS$1 it was GH₡1 to US$1. At the time of writing this article the exchange rate is US$1 to GH₡6.0, depreciation in the currency from 30th June 2007 to date is (GH₡6-0.92)/ 0.92 i.e. 552%.

Postulants of the Purchasing Power Parity (PPP) theory assert that 1 unit currency of country A can only be equivalent to 1 unit currency of country B, if 1 unit currency of country A can buy the same quantity of goods in country B. They continue by asserting that the value of the currency of one country is equivalent to that of another country if they all use the same quality of tools to produce their goods and services.

The average farmer in Ghana uses his hands to press the cow's breast for milk whereas the US farmer uses hi-tech equipment to produce milk. The US farmer, therefore, produces milk many more times what the Ghanaian counterpart produces in a day. Efficiency in production is key to PPP. The average farmer in Ghana uses cutlasses, hoes and pickaxes for crop production; his crops are rain-fed and only few farmers apply fertilizers to their crops, whereas the US farmer uses sophisticated farming equipment such as tractors, combined harvesters etc to produce on commercial basis. The US farmers use fertilizers to enhance crop production and their farms are well irrigated.

The US farmer's yield is, therefore, more than hundred times that of the Ghanaian counterpart. Based on these analyses of efficiency in production, one cedi cannot presently, be equivalent to one US dollar. Lee [17] corroborates this by asserting that the capital stock of a society - its machinery, structures, vehicles, roads etc. makes it possible for a given labour to produce more goods and services. He continues that the more capital there is per worker, the higher the output per worker will be and that people in the United States enjoy a higher

standard of living than those in the developing world primarily because capital (both physical and human) per worker is much higher in the US. This implies that since the capital per worker in the US is higher than the capital per worker in Ghana, US$1 presently cannot be equivalent to GH₵1. There is therefore, more work to be done if one cedi would be equivalent to the dollar in the near future.

Nonetheless, the benefit to Ghana, currently, is that businesses do not need to carry large sums of money in 'sacks' to transact business any longer since the local currency is now of relatively higher value in relation to value of foreign currencies. For example, the current cedi equivalent of US$10,000 is handier than the cedi equivalent in the old currency.

4.1. Results

The graph in Figure 1 indicates that for the first six years of the implementation of one cedi to one dollar foreign exchange, the local currency depreciated by 100%, thus, from one cedi to one dollar in 2007 to 2 cedis to one dollar in the year 2013. From 2013 to 2020, thus, the following seven years, the cedi depreciated by 180%, thus, from two cedis to the dollar to 5.6 cedis to the dollar. This increase is quite exponential. Incidentally, over the period under review there has not been any drop in the graph, there was only a repeated exchange rate, once, thus, 2009 and 2010. The gradient of the line 2007 to 2013 was 0.17, however, the gradient of the line 2013 to 2020 was 0.51. The gradient of the exchange rate line 2013 -2020 was thus, steeper than the line 2007-2013. This depicts the precarious nature of the foreign exchange rate position in contemporary Ghana. Judging from the graph, extrapolations indicate that subsequent years 'exchange rates are bound to worsen if the necessary remedies are not applied to either slow down the rate of depreciation or reverse the trend ultimately. From the literature above, especially Hubbard and O'brien [14] and Khan [15], among the factors that determine foreign exchange rates are exports and inflation rates. In Table 2, the country recorded positive percentage changes of exports to GDP from 2008 to 2012 throughout the period and the gradient of the country's foreign exchange line for that period was 0.17, however, percentage changes of exports to GDP from 2013 to 2020 were mostly negative hence, the gradient of the foreign exchange line was 0.51. This implies that Ghana's worsening exchange rate situation against the dollar from 2013 to 2020 can be attributed to worsening exports position of the country for that period and Ghana's moderate performance of the exchange rate from 2008 to 2012 can be attributed to the positive changes in the percentage of exports to the GDP (improvement in exports).

The analysis from Table 3 indicates that the coefficient of correlation between percentage changes in exports and percentage changes in foreign exchange is 0.04. This showed that percentage change in exports and percentage change in foreign exchange rates were positively related during the period under consideration. An increase in percentage change in exports, therefore, resulted in an increase in percentage change in foreign exchange rates and a decrease in percentage change in exports resulted in a decrease in percentage change in foreign exchange rates. However, an increase in the percentage change in foreign exchange rates according to the statistics, denotes greater deviation from the one cedi to one dollar exchange rate. Therefore, with a low coefficient of correlation between the two variables, i.e. percentage changes in exports and percentage changes in foreign exchange rate, it implied that the exports position of the country was moderate and only required an upgrade to put it in a desirable position.

The coefficient of correlation between percentage changes in inflation rates and percentage changes in foreign exchange rate was 0.76. This implied that percentage changes in inflation and percentage changes in foreign exchange rates were highly positively related. An increase in percentage change in inflation, therefore, greatly resulted in foreign exchange rate that highly deviated from one cedi to one dollar exchange rate as shown in Table 1 below. It also implied that a decrease in the percentage change of inflation resulted in foreign exchange rate that was closer to one cedi to one dollar exchange rate. Both percentage changes in exports and percentage changes in inflation were positively related to percentage changes in foreign exchange rates within the period under review. However, the percentage change in inflation was highly correlated to the percentage change in foreign exchange rates within the survey period than the percentage changes in exports. This signified that, for Ghana's currency, the cedi, to gain strength against the dollar, or to be at par with the dollar as initially intended in 2007, the rate of inflation should be significantly controlled because an increase in inflation rate greatly pushes the exchange rate farer away from the ideal exchange rate of one cedi to one dollar. Ghana should have lower inflation rates, preferably below 10% as the US, if Ghana wants its currency, the cedi to be at par with the US dollar. Research showed that the highest inflation rate recorded within the same survey period in the US was 3.8%, whereas, that of Ghana was 19.3%.

Table 1.

Years	Cedi equivalent of one dollar	% change in exchange rate
2007	1.0	-
2008	1.1	10
2009	1.4	27.3
2010	1.4	0
2011	1.5	7.1
2012	1.8	20
2013	2.0	11.1
2014	2.9	45
2015	3.7	27.6
2016	3.8	27.0
2017	4.0	5.3
2018	4.5	12.5
2019	5.2	15.6
2020	5.6	7.7

Source: Ghana Statistical Service [18].

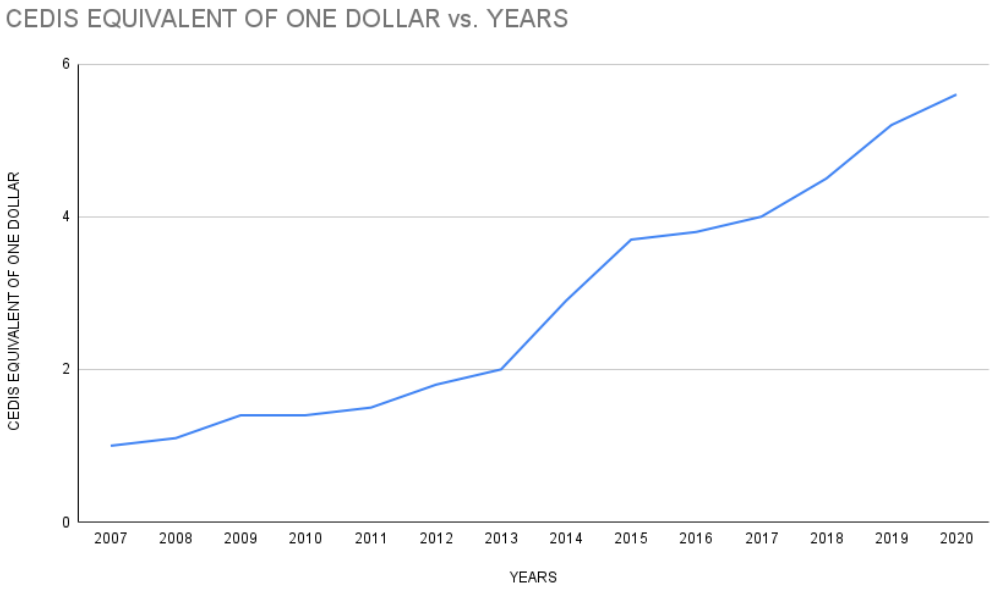

Figure 1. Ghana's Foreign Exchange Rate Graph; One dollar to the cedi

Table 2.

Years	Exports $bn	Ghana's GDP	Exports as % of GDP	Percentage Change in exports as % of GDP
2008	5.27	26.68	19.75	-
2009	5.84	26.05	22.41	13.50
2010	7.96	35.00	22.74	1.47
2011	12.79	39.34	32.50	42.92
2012	13.55	41.27	32.80	0.92
2013	13.75	62.82	21.89	(33.26)
2014	13.22	51.72	25.56	16.77
2015	10.32	47.50	21.73	(14.98)
2016	11.14	54.50	20.44	(5.94)
2017	13.84	58.85	23.52	15.07
2018	14.94	65.32	22.87	(2.76)
2019	15.67	67.23	23.31	1.92
2020	14.48	72.35	20.01	(14.16)

Table 3. CORRELATION ANALYSIS OF PERCENTAGE CHANGE IN EXPORTS TO PERCENTAGE CHANGE IN EXCHANGE RATE

Percentage Change in exports (x_i)	**Percentage Change in Exchange rate (y_i)**	$U_i =$ $X_i - 1.789$	$V_i =$ $Y_i - 17.18$	$u_i v_i$	U_i^2	V_i^2
13.5	27.3	11.711	10.12	118.52	137.15	102.41
1.47	0	-0.319	-17.18	5.48	0.10	295.15
42.92	7.1	41.131	-10.08	-414.60	1691.76	101.61
0.92	20.0	-0.869	2.82	-2.45	0.76	7.95
-33.26	11.1	-35.049	-6.08	213.10	1228.43	36.97
16.77	45.0	14.981	27.82	416.77	224.43	773.95
-14.98	27.6	-16.769	10.42	-174.73	281.20	108.58
-5.94	27.0	-7.729	9.82	-75.90	59.74	96.43
15.07	5.3	13.281	-11.88	-157.78	176.38	141.13
-2.76	12.5	-4.549	-4.68	21.29	20.69	21.90
1.92	15.6	0.131	-1.58	-0.21	0.02	2.50
-14.16	7.7	-15.949	-9.48	151.20	254.37	89.87
Mean:1.789	**Mean:17.18**					
TOTALS		**0.002**	**0.04**	**100.69**	**4,075.03**	**1,778.45**

$$u = \frac{0.002}{12} = 0.0002,\ v = \frac{0.04}{12} = 0.003$$

$$\sum u_i \mathbf{v_i} - 12uv = 100.69,\ \sum U_i^{\,2} - 12u^2 = 4,075.03,\ \sum V^2 - 12v^2 = 1,778.45$$

$$r = \frac{100.69}{\sqrt{(4,075.03 \text{ x} 1,778.45)}} = 0.04$$

CORRELATION ANALYSIS OF PERCENTAGE CHANGE IN INFLATION RATES TO PERCENTAGE CHANGE IN EXCHANGE RATE

Table 4.

YEAR	Inflation Rates	% Change in inflation rates	Deviation from MEAN $U_i =$ $X_i - 0.67$	Percentage change in exchange rate	Deviation from MEAN $V_i =$ $Y_i - 17.18$
2009	19.3	17.0	16.33	27.3	10.12
2010	10.8	-44.0	-44.67	0	-17.18
2011	8.7	-19.4	-20.07	7.1	-10.08
2012	8.8	1.1	0.43	20	2.82
2013	9.0	2.3	1.63	11.1	-6.08
2014	16.2	80	79.33	45	27.82
2015	17.8	10.0	9.33	27.6	10.42
2016	17.45	-1.97	-2.64	27.0	9.82
2017	12.37	-29.11	-29.78	5.3	-11.88
2018	7.81	-36.86	-37.53	12.5	-4.68
2019	7.18	-8.07	-8.74	15.6	-1.58
2020	9.84	37.05	36.38	7.7	-9.48
MEAN		**0.67**		**17.18**	
TOTALS			**0**		**0.04**

Table 5.

Percentage Change in Inflation rate (x_i)	**Percentage Change in Exchange rate (y_i)**	$U_i =$ $X_i - 0.67$	$V_i =$ $Y_i - 17.18$	$u_i v_i$	U_i^2	V_i^2
17.0	27.3	16.33	10.12	165.26	266.69	102.41
-44.0	0	-44.67	-17.18	767.43	1,995.41	295.15
-19.4	7.1	-20.07	-10.08	202.31	402.80	101.61
1.1	20.0	0.43	2.82	1.21	0.18	7.95
2.3	11.1	1.63	-6.08	-9.91	2.66	36.97
80	45.0	79.33	27.82	2,206.96	6,293.23	773.95
10.0	27.6	9.33	10.42	97.22	87.05	108.58
-1.97	27.0	-2.64	9.82	-25.92	6.97	96.43
-29.11	5.3	-29.78	-11.88	353.79	886.85	141.13
-36.86	12.5	-37.53	-4.68	175.64	1,408.50	21.90
-8.07	15.6	-8.74	-1.58	13.81	76.39	2.50
37.05	7.7	36.38	-9.48	-344.88	1,323.50	89.87
0.67		0	0.04	3,602.92	12,750.23	1,778.45

$$u = \frac{0}{12} = 0,\ v = \frac{0.04}{12} = 0.003$$

$$\sum u_i \mathbf{v_i} - 12\text{uv} = 3,602.92,\ \sum U_i^{\,2} - 12\text{u}^2 = 12,750.23,\ \sum V^2 - 12\text{v}^2 = 1,778.45$$

$$\text{r} = \frac{3,602.92}{\sqrt{(12,750.23\text{x}\ 1,778.23)}} = \frac{3,602.92}{4,761.60} = \mathbf{0.76}$$

Coefficient of correlation is 0.76.

5. Recommendations

Recommendations for improving Ghana's exchange rate position are as follows:

1. Ghana should plan its economy such that inflation rates should be low, preferably below 10%.
2. Ghana should improve on its exports position.
3. Ghana should embark on Information Technology (IT) drive to ensure that its exports are competitive on the market to earn it substantial amount of foreign exchange. Information Technology will also enhance efficiency in production.
4. There is the need for improved and effective revenue collection system to make the economy self-reliant and reduce deficit financing. This is because according to Akoto D [19], Ghana's average revenue collection as at 2016 was 14.56% of GDP which is too low for running an economy effectively. In addition, according to Akoto D [20], Ghana's deficit financing results in excessive borrowing by the state, aggravating inflation and leading to the weakening of the local currency which adversely affects the country's foreign exchange rates.

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