IJER © Serials Publications
12(4), 2015: 1143-1157
ISSN: 0972-9380

THE EFFECTS OF CURRENCY DEVALUATION ON OUTPUT GROWTH IN DEVELOPING ECONOMIES WITH CURRENCY CRISES

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Abstract: *Currency devaluation is an important topic in the history of international economics and finance. It has proved to impact positively on some economies' growth and negatively on others. This study focuses on the real effects of devaluing the currency in short and long run using panel data analysis. Seven countries were examined, these are; Ghana, Mexico, Malaysia, Pakistan, Philippines, Singapore and South Africa. These countries devalued their currencies within the same period under consideration. The long run effects and relationships were determined by testing for co-integration using different co-integration methods, and the short run effect was determined using the Fully Modified OLS (FMOLS) and the Error Correction Model. A panel data covering the period between 1981- 2010, was used in the analysis.The empirical results show the existence of no significant relationship between currency devaluation and output growth in the short run and a negative relationship between currency devaluation and economic growth in the long run.*

INTRODUCTION

In recent years, currency devaluation has been a topic of interest in the international economy. From the 20th century until recent years, many developing economies experienced currency crises at a point, leading to the contemplation on whether devaluation of their currency is the solution or perhaps another economic and financial reform. There are several arguments on whether currency devaluation is contractionary or expansionary, whether it exerts positive or negative effects on output growth, or whether it is advisable for a country with large amount of debt denominated in foreign currency to undertake currency devaluation (Saibene & Sicouri, 2012). This study has answered the question of whether currency devaluation is contractionary or expansionary and the effects of currency devaluation on output growth in the short run and long run.

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REVIEW OF LITERATURE

Currency devaluation is the reduction of the value of a country's currency against the value of other currencies. Currencies are devalued by the government to reduce the cost of exports in foreign market. Devaluation can also be referred to as a downward adjustment of a country's official exchange rate in relation to other countries(Krugman & Obstfeld, 1999).

In a case where a country revalue its currency higher (the opposite of devaluation) in response to positive conditions in the economy to reduce inflation or to satisfy investors and trading partners, this would result to a rise in the value of an existing currency, as against the case with redenomination where a country issues a new currency to replace an old currency that had excessively declined in value (Krugman & Obstfeld, 1999).

EFFECTS OF CURRENCY DEVALUATIONS ON ECONOMIC GROWTH

According to Saibene & Sicouri (2012), the issue of currency devaluations can be answered conventionally from the analysis in the Mundell-fleming model and the result has a positive impact on the current account. Following this, in respect to GDP, devaluation is expansionary since exports rises more than imports. To examine the level of the reaction of the current account, the model can be extended by putting other important features into consideration like:

a) Variation in exports (imports) in response to a variation in real exchange rate i.e. World's prices elasticity demand for tradable goods.

b) Presence of supply shocks effects resulting from the presence of intermediate inputs and raw materials; for example, oil.

Nevertheless, considering the fact that the debts of the country are denominated in foreign currencies, variation in real exchange rate also has important effects on the balance sheets(Saibene & Sicouri, 2012). There are effects such as:

1) Significant reduction in government spending as a result of constraints by laws targeted at avoiding increased deficit since more money would be needed for payments of interest rates above sovereign debt(Saibene & Sicouri, 2012).

2) There can be a diminished private investment and consumption as though cost of servicing debts increases, profit shrinks and reduced bank lending because it depends on the collateral that can be provided by the firms. This results in an investment level that is negatively affected.

   Though banking sector can be affected negatively by currency devaluation as a result of the mismatches between the assets and liabilities of currency, hence- the chances that financial crisis rises, something that would seriously worsen the economic state of the country (Saibene & Sicouri, 2012).

3) The national investors can experience a negative wealth effect, with assets majorly denominated in national currency, foreign currency denominated debt can increase the volatility of the flow of capital and the chances of sudden stops, reversals of current account and self-fulfilling crises (Saibene & Sicouri, 2012).

FOREIGN CURRENCY DEBT

To have access to international capital markets, developing countries should denominate their debts in the currencies of the principal creditors. (Saibene & Sicouri, 2012).

According to Eichengreen & Hausmann (2005), as at 2001, $84 billion of developing country's debt was held by Americans, and just $2.6 billion happens to be denominated in the developing countries' currencies. Out of the $434 billion debt securities issued in the international markets by the developing countries that was outstanding averagely from 1999 to 2001, not up to $12 billion was denominated in these countries currencies. The disparity in these figures shows that the problem can not entirely be explicable in terms of weakness of policies and institutions. It is therefore believed that the problem has much to do with other institutions' weaknesses. Irrespective of the government policies, it is just like emerging markets suffer inherited burden. This explains the reason why the hardship faced in borrowing abroad in their local currencies is called original sin. Results suggests that an economy's relative size is a major factor accounting for the incidence of original sin, and will be the same result predicted if economies of scale, network externalities or effects of liquidity were important (Saibene & Sicouri, 2012).

Another valuable point is the breakdown of a country's balance sheet analysis; thisbetter shows the vulnerability to reversals in external financing flows and helps in examining the genesis of such reversals. Really, certain sector balance sheets weaknesses can contribute to the creation of country wide balance of payment crises, though it may not still appear in the aggregate balance sheet of a country. A good example is foreign currency debt between residents melted out of the country's aggregate balance sheet. Nonetheless, if the government is not able to transfer its hard current debts to residents and have to take from its reserves to pay or service its debt, such situation can lead to external balance of payment crises. The risk that difficulties in transferring domestic debts can spread to a balance of payment crises is severe particularly in a world with liberalized capital account (Allen, Rosenberg, Keller, Setser, & Roubini, 2002).

Hausmann & Panizza (2010) in reference to current happenings updated their measures of original sin. There was growth in international bond issues of outstanding stocks by developing countries from about $200 billion in 1993 to a little more than $1 trillion in 2007, and the value of international bonds in developing countries currency denomination moved from nil in 1993 to $193 billion dollars in 2007. Their conclusion

was that emerging countries now use their domestic bond market, though original sin has only slightly diminished, and financial globalization is continuously made unattractive; showing that developing countries have chosen to abstain and not sin (Saibene & Sicouri, 2012).

EARLY CONTRACTIONARY THEORIES OF CURRENCY DEVALUATION

According to Saibene & Sicouri (2012), the Mundell-fleming model which explained the traditional point of view argued that devaluations are expansionary and exports do not only increase, but there is also an occurrence of a low aggregate demand for imports which has positive effects on trade balance.

Alejandro & Diaz (1963) and Krugman & Taylor (1978) pointed out various ways in which devaluation may have contractionary effects on aggregate demand (Saibene & Sicouri, 2012). A model was formed by Alejandro & Diaz (1963) where effects of devaluation are divided into two stages: initial effects and reversal effects. Initial effects as in the traditional view is the terms of trade improvement and this can be determined by price elasticity of demand and import and export supply. The reversal effects instead are contractionary effects and it is mainly as a result of domestic output decrease determined by the level of domestic demand. A profit favourable redistribution of income and disfavour of real wages is the result. Though, since the propensity of saving happens to be higher for profit than wages, the average propensity to save will go up and will lead to contractionary effects on demand(Saibene & Sicouri, 2012).

Furthermore, Krugman & Taylor (1978) concluded and expanded the research, showing the different channels where contractionary effects on aggregate demand may reverse the expansionary effects of the expenditures switching subsequent devaluation. Unless the trade account is balanced initially, the idea is that devaluation changes the distribution of income of the country leading to income shift from workers to capital loss and from private sector to government. By shifting income to high savers, devaluation can therefore cause an excess savings over planned investment leading to a reduction in real output and imports (Saibene & Sicouri, 2012).

CIRCUMSTANCES WHERE CONTRACTIONARY EFFECTS ARISES

The following explains the circumstances where contractionary effects arises according to (Krugman & Taylor, Contractionary effects of devaluation, 1978)

a) When there is an initial trade deficit in the country: the contractionary effects start from the facts that, as a result of the devaluation, price change of traded goods reduce the country's real income immediately while it increases it abroad. Therefore, there will be worsened terms of trade creating instant net real transfer to foreigners, if the country shows a trade deficit, thereby deteriorating the short run domestic output. Though, the more the initial deficit, the more the contractionary outcome (Saibene & Sicouri, 2012).

b) From distributional effects: the cost of traded goods is increased by devaluation in relation to home goods leading to a rise in windfall profits in export and import competing industries (Saibene & Sicouri, 2012).

c) Through fiscal effects: there is income redistribution from private to government sector after devaluation if there are ad-valorem taxes on exports or imports.

According to Saibene & Sicouri (2012), Wijnbergen (1986) completed the scenario of Alejandro & Diaz (1963) and Krugman & Taylor (1978) where he focused on supply side. He stated three ways in which there are direct negative impacts of devaluation on aggregate supply:

a) Costs of intermediate Imports in domestic currency

b) Indexation of real wage.

c) Volume of firm's real credit.

A PANEL DATA ANALYSIS OF CURRENCY DEVALUATION AND OUTPUT GROWTH

From the work of Christopoulos (2004) where he examined currency devaluation effects on output in eleven Asian countries, The results showed that currency devaluation affects the growth of output in the long run in most countries examined and in the whole panel. This result is different from other studies conducted recently where devaluation was concluded not to have any major influence on aggregate output. His results showed that out of eleven countries examined, five will in the long run show a negative effects on output growth by currency devaluation for the whole panel whereas, in three countries, growth prospects rises. His results show much disparity from the ones of Chou & Chao (2001) and Upadhyaya (1999) where depreciation of currency had no inpact on output growth (Christopoulos, 2004).

In summary, Currency crisis leads to reduced investment as a result of rise in burden of debt and this leads to reduced economic activity in the following period thereby leading to less demand for money. It is believed that devaluation is expansionary according to the traditional point of view, but it may have contractionary effects on the aggregate demand. Recent studies show that in the long run, contractionary effects of devaluations are exhausted and have neutral impact in the short run. Similarly, Christopoulos (2004) result showed five countries where currency devaluation has negative impacts on output growth and with three countries showing positive effects out of eleven countries examined. Obviously, all results so far show no consensus among researchers on these issues and a stand will be taken based on the result derived from the subsequent chapters where similar models used by Christopoulos (2004) and Saibene & Sicouri (2012) will be employed on different countries with different time frame.

METHODOLOGY

The model will follow the model specified by Christopoulos (2004) to check for the effects of currency devaluation on output growth but with different countries and a different time frame.

The model of interest will be examined to check for the effects of currency devaluation on the growth of output as in the literature review following the steps below:

- Time series unit root tests and panel unit root tests will be used to test for stationarity. The Phillips-Perron test (PP) Perron (1989) and Im, Pessaran and Shin (IPS) panel unit root test procedure for panel data will be employed.
- Two Co-integration techniques will then be used to test for co-integration. Co-integrating framework of Pedroni (1999) and Johansen (1988) will be used to test for co-integration. These two tests will be carried out to expand on the earlier studies and gain wider knowledge.
- The vectors that are co-integrated are estimated using the Fully Modified OLS (FMOLS) estimation technique for heterogeneous co-integrated panels and this methodology allows for consistency and estimation of co-integrating vectors efficiently (Christopoulos, 2004).
- An Error Correction Model (ECM) that is suitable for panels that are heterogeneous is adopted to check for the effects of depreciation on output growth in the short run.

The Variables to be used are:

Real Gross Domestic Product (GDP) = Y

Real Effective Exchange Rate = R

The variables are converted to logarithmic forms and the following steps will then be carried out:

- The Analysis of the data requires a unit root inference and the stationarity of the data is thereby examined with Phillips-Perron test (PP) Perron (1989) and Im, Pessaran and Shin (IPS) panel unit root test procedure.
- The time series span is (T=30 years) and since this is short, more tests would be carried out to overcome difficulties of lower power of individual unit root tests. An increase in power will be ascertained by bringing individual time series and carrying out panel unit root tests and the fisher type test will be adopted (Christopoulos, 2004). Fisher has shown how to put many independent tests together and this test is therefore given by $FS = -2\Sigma^{N}_{i=1} lnP_{I,}$ and this combines p-values from each PP tests.
- A trace statistics is used to confirm that there is long run equilibrium relationship between Ln (Y) and Ln (R). Another panel Co-integration ADF

tests will then be done to ascertain that there is long run equilibrium relationship between output growth and currency devaluation.

- Heterogeneous panels Fully Modified OLS (FMOLS) technique will be used to estimate co-integrating vector and we will consider the co-integrated panel data systems below;

  $Y_{it} = \alpha_i + x'_{it}\beta + u_{it}$

  $X_{i,t} = x_{i,t-1} + e_{it}$

  $\xi_{it} = [U_{it}, e'_{it}]$, this is stationary and has a covariance matrix Ω_i.

Building on (Phililips & Hansen, 1990), a correlation that is semi parametric can be carried out on the OLS estimator to remove the bias of the second order caused by the endogeneity of the regressors depending on the results derived.

To explain the effects in short run, an Error Correction Model (ECM) is specified for individual countries with ECM suitable for panels that are heterogeneous.

Below is the ECM panel:

$$\Delta(\ln Y)_{it} = \partial_I + \Sigma^m_{l=1}\beta_l \Delta(\ln Y)_{it-l} + \Sigma^m_{l=1}\phi_l \Delta(\ln R)_{it-1} + \xi[(\ln Y)_{it-1} - \alpha_i - \beta(\ln R)_{it-1}] + U_{it} \quad (1)$$

- Δ is the first difference operator, $[(\text{Ln } Y)_{it-1} - \alpha_i - \beta (\text{Ln } R)_{It-1}]$, this shows the equilibrium error which is the long run relationship deviation.
- ∂_I are fixed effects.
- M is number of lags.
- U_{it} is statistical noise.
- ξ is long-run equilibrium speed of adjustment.

The model is a dynamic panel model and such estimation technique like Least Square Dummy Variables model (LSDV) produce biased and inconsistent estimators in panel data. An instrumental variable estimator will be used to solve the problem of correlation between lagged dependent variables $\Delta (\text{Ln } Y)_{it-1}$ and the error term. The classical assumptions on error term requires m = 2; therefore $\Delta (\text{Ln } Y)_{it-2}$ and $\Delta (\text{Ln } Y)_{it-3}$ are instruments used for lagged dependent variables (Christopoulos, 2004).

SOURCE OF DATA

All the primary data used for this model which are Real GDP and Real Effective Exchange Rates are from the World Bank databank (World Bank, 2013). All data were then edited using the Microsoft Excel programme and EViews 7 programme by inputting the appropriate formulas. The data covers the period of 1981-2010. The countries to be examined are Ghana, Mexico, Malaysia, Pakistan, Philippines, Singapore and South Africa. These countries embarked on the process of currency devaluation around the same period under investigation and data availability was one of the major

criteria for selecting them as necessary data were accessible on the World Bank databank.

This methodology can be employed to show the relationship between Currency Devaluation and growth of output in the short run and long run in the economies under study.

Empirical Results and Analysis

UNIT ROOT TESTS

Table 1
Phillips-Perron (PP) Unit root test at level (With Intercept and trend)

Country	*Ln Y*		*Ln r*	
	T. Stat.	*P. Value*	*T. Stat.*	*P. Value*
Ghana	-4.1713	0.0137**	-1.6383	0.75023
Malaysia	-1.3051	0.08665	-1.8815	0.6381
Mexico	-3.3175	0.0834	-3.9795	0.0211**
Pakistan	-2.1344	0.5062	-0.7970	0.9544
Philippines	-2.7042	0.2422	-2.0012	0.5763
Singapore	-1.7663	0.6947	-1.5492	0.7881
South Africa	-1.4380	0.8270	-1.7640	0.6959
Panel Unit root tests	19.1375	0.1598	11.5833	0.6397

A (**) indicates rejection at 5% level of significance.

Table 1 illustrates the time series and panel unit root tests results for GDP and Real effective exchange rate at level. The null hypothesis states that all panels have a unit root while the alternate hypothesis is that some or no panel have a unit root for the individual countries and no unit root for the panel unit root test.

The result in table 1 indicates that both variables have a unit root at levels for all the individual countries at 1% level of significance and at 5% therefore we do not reject the null hypothesis with the exception of GDP (Ln *Y*) in Ghana and Real exchange rates (Ln *r*) in Mexico at 5% level of significance. For Ghana's GDP and Mexico's Real Effective Exchange Rate, we reject the null hypothesis at 5% level of significance.

For the panel unit root tests, both variables have a unit root at all levels of significance so we do not reject the null hypothesis.

Table 2 illustrates the individual countries' unit root and panel unit root test results for Real exchange rate and GDP using the Phillips-Perron's procedure at first differences, we can reject the null hypothesis that individual countries have unit root at 5% level of significance for all countries except for Philippines where the result shows that there is unit root in GDP at 5% but not at 10% and Singapore where there is unit root in Real effective exchange rates at all levels of significance.

Table 2
Phillips-Perron (PP) Unit root test at first differences (With Intercept and trend)

Country	*Ln Y*		*Ln r*	
	T. Stat.	*P. Value*	*T. Stat.*	*P. Value*
Ghana	-6.2546	0.0001***	-6.1893	0.0001***
Malaysia	-4.2805	0.0110**	-6.6145	0.0000***
Mexico	-5.1187	0.0016***	-7.4588	0.0000***
Pakistan	-3.6508	0.0433**	-4.6127	0.0051***
Philippines	-3.2497	0.0956*	-5.5684	0.0005***
Singapore	-4.1752	0.0140**	-3.0491	0.1376
South Africa	-4.1403	0.0151**	-5.3648	0.0009***
Panel Unit root tests	68.2644	0.0000***	107.268	0.0000***

A (***), (**) and (*) indicates rejection of the unit root hypothesis at 1%, 5% and 10% level of significance respectively.

For the panel unit root test, the results indicate that we can reject the null hypothesis that there is unit root test. From the result, it can be concluded that both log of GDP (Ln *Y*)and log of Real exchange rate (Ln *R*)are integrated of order one *I*(1).

It can further be said that the null hypothesis of a panel unit root can be rejected at first difference. Likewise, the null hypothesis that a unit root can be rejected for all the seven countries under study with the exception of GDP in Philippines and Real exchange rate in Singapore where there are unit roots.

CO-INTEGRATION TESTS

Co-integration tests were used to determine whether any long-run relationship exists between output growth and real exchange rate movements. By so doing, a better understanding of the effect of currency devaluation on real output growth can be gained. Two co-integration techniques were used to carry out the test as indicated in the methodology, and fully modified OLS was used to estimate co-integrating vectors.

PEDRONI CO-INTEGRATION TEST

Table 3
Pedroni (1999) Residual Co-integration Test

Series	*Panel v-Statistic*		*Panel rho-Statistic*		*Panel PP-Statistic*		*Panel ADF-Statistic*	
	Statistic	*P-value*	*Statistic*	*P-value*	*Statistic*	*P-value*	*Statistic*	*P-value*
Within Dimension	-0.0213	0.5085	-6.2996	0.0000*	-6.6625	0.0000*	-5.0889	0.0000*
Between Dimension	n/a	n/a	-4.6298	0.0000*	-7.5109	0.0000*	-3.4494	0.0003*

A (*) indicates rejection at 1% level of significance

The Pedroni residual co-integration method tests the null hypothesis that the variables are not co-integrated against the alternative hypothesis that the variables

are co-integrated. The Pedroni co-integration test results for the changes in the real exchange rate and GDP are presented in table 3. The panel PP-statistics and panel ADF statistics were used to determine whether there is co-integration between changes in the real exchange rate and changes in output. It can be observed that the null hypothesis of no co-integration can be rejected at all levels of significance. This shows that the real exchange rate and output have a long-run equilibrium relationship.

JOHANSEN CO-INTEGRATION TEST

Table 4
Johansen Co-integration Test

Country	*Trace statistics under* $r = 0$	*Ho: rank = r* $r \leq 1$
Ghana	66.7362***	12.6787***
	[0.0000]	[0.0004]
Malaysia	22.4963***	5.9324*
	[0.0037]	[0.0149]
Mexico	41.7695***	11.6278***
	[0.0000]	[0.0006]
Pakistan	16.9742*	4.9605*
	[0.0297]	[0.0259]
Philippines	30.6115***	7.6729***
	[0.0001]	[0.0056]
Singapore	17.8996*	4.5055*
	[0.0213]	[0.0338]
South Africa	24.2155***	7.7865***
	[0.0019]	[0.0053]
Panel Co-integration	118.4***	73.85***
	[0.0000]	[0.0000]

A (***) and (*) indicates rejection of the unit root hypothesis at 1% and 5% level of significance respectively.

From table 4, *r* represents the number of co-integrating vectors. The values in parenthesis are the P- values.

The Johansen co-integration method tests the null hypothesis that the variables are not co-integrated against the alternative that they are co-integrated. It used the Trace and maximum Eigen value test statistics to determine whether the null hypothesis should be rejected or not. The advantage of the Johansen co-integration tests over the Pedroni and Kao residual tests is that the Johansen co-integration test in addition to providing across all panels, it also takes into account the co-integration across the individual panels. Table 4 illustrates the Johansen co-integration results for the relationship between real exchange rate movements and output growth. From the table, the null hypothesis that there is no co-integration across all the panels can be rejected at 1%. This shows that output and real exchange rates exhibit an equilibrium relationship in the long run.

Table 4 further reports the Johansen co-integration test results for the individual countries. It can be observed that the null hypothesis of "no co-integrating vector" can be rejected for each of the countries under study at 5% level of significance. This means that there is at least [1] co-integrating vector across each of the countries under study. Furthermore, the null hypothesis of "at most one co-integrating vector" is also rejected for all the countries under study. Since both the hypotheses of "no co-integrating vector" and "at most one co-integrating vector" are rejected, it means that each of the individual countries have more than one co-integrating vector for the relationship between currency devaluation and output growth. The Johansen co-integration tests not only confirm the results obtained through the Pedroni co-integration tests but also provide evidence of co-integration between the real exchange rate and output in the individual countries under investigation. This evidence is an indication that in equilibrium, the real effective exchange rate exhibits a long-run relationship with output in each of the countries under investigation.

FULLY MODIFIED OLS

Table 5
Fully modified OLS estimates of output growth-devaluation equation: dependent variable Ln Y

Country	*Ln r*	*T-stat*
Ghana	-0.3171***	-3.4438
Malaysia	-2.4121***	-8.1959
Mexico	0.9491**	2.2635
Pakistan	-1.2923***	-7.2092
Philippines	-1.2250**	-2.6170
Singapore	-1.7068	-0.6678
South Africa	-0.9130***	-4.5221
Panel	-2.0730**	-2.4516

A (***) and (**) indicate statistical significance at 1% and 5% level respectively.

Table 5 illustrates the fully modified OLS (FMOLS) results for each of the countries under study and the panel. It can be observed that there is a negative and significant relationship between the movement in the real effective exchange rate index and output growth for five countries (Ghana, Malaysia, Pakistan, Philippines and South-Africa) and panel as a whole. In Mexico, output growth shows a positive relationship with real effective exchange rate and in Singapore, It is not possible to conclude as it is equally negative but insignificant at all levels.

ERROR CORRECTION MODEL (ECM)

To analyse the impact of currency devaluation on output growth in the short run, an error correction model (ECM) was employed.

Table 6
Error Correction Model (ECM)

Country	β_1	ϕ_1	ξ	R^2
Ghana	0.3999***	0.0088	0.0205	0.2950
	(2.8391)	(0.7615)	(1.2753)	
Malaysia	-0.0237	0.2022	-0.1257***	0.3755
	(-0.1143)	(1.3944)	(-3.5532)	
Mexico	-0.3396	0.1065	0.0340	0.1189
	(-1.2080)	(1.6080)	(0.9290)	
Pakistan	0.3697*	-0.0569	-0.0065	0.1782
	1.9795	-0.7611	-0.2465	
Philippines	0.4998**	0.08460	-0.0046	0.2716
	(2.7216)	(1.1136)	(-0.1521)	
Singapore	0.1213	-0.2269	-0.0118	0.1007
	(0.5337)	(-1.1739)	(-0.7398)	
South Africa	0.3873**	0.0812*	-0.0013	0.2451
	(2.0978)	(1.8602)	(-0.0343)	
Panel	0.3060***	0.0127	-0.0040***	0.1829
	(4.5449)	(0.9362)	(-3.2064)	

Figures in parentheses are t-statistics.
(***), (**) and (*) indicate statistical significance at 1%, 5% and 10% level respectively.

It can be observed from table 6 that in the panel and all the individual countries except for South-Africa, there is no evidence of any effects of currency devaluation on output growth. This indicates that in the short-run, the effects of currency devaluation on growth of output is neutralised except in South Africa where there is a positive relationship between currency devaluation and output growth.

ECONOMIC IMPLICATION OF RESULTS

Following the FMOLS result of a negative long run relationship between currency devaluation and output growth, it can however be deduced that the following economic implications are likely in the long run;

1. In the long run, income will shift from private sector to government sector according to (Krugman & Taylor, Contractionary effects of devaluation, 1978). Furthermore, income will shift to high savers and this means devaluation will lead to excess savings in the long run over planned investment, thereby causing a reduction in real output(Saibene & Sicouri, 2012).
2. The price change of traded goods as a result of currency devaluation will lead to a reduction in the country's real income while it increases outside the country. This leads to a worsened terms of trade as it creates instant net real transfer to foreigners.
3. Looking at the case of Mexico which shows a positive relationship in the long run, this can be attributed to the low external debts compared to other countries except for South Africa which has relatively lower external debt.

4. Inflation rate will rise in the long run.

Following the results from the ECM which shows no short run relationship, it can be deduced that there is no economic advantage of carrying out currency devaluation in the short run. In the case of South Africa which shows a positive relationship, the positive relationship can be attributed to the low foreign currency denominated debt. Of all the countries under study, it has the lowest foreign currency denominated debt in respect to GDP, therefore in the short run, there are such positive effects as increased output growth, increased investment and increased export which will lead to improved terms of trade. The long run negative effect can therefore be attributed to inconsistency in government policy resulting from political instability.

CONCLUSION

This concludes this study by discussing the results, make recommendations based on the results and highlighting areas of further studies.

DISCUSSION OF RESULTS

The findings of the fully modified OLS are similar to the findings of Christopoulos (2004) and Saibene & Sicouri (2012)which sugests that real exchange rates depreciation has negative long run effects on aggregate output. The results are also consistent with evidence provided by Diaz (1963); and Krugman and Taylor (1978) who argue that currency devaluation can have a positive as well as negative impact on output growth. This is totally different from the analysis of the evidence from Asian economies by Upadhyaya (1999) and Chou & Chao (2001) where results showed that devaluation has no impact on aggregate output. It should be noted that methods used to estimate co-integrating relationship is of utmost importance.

The results for the ECM are also consistent with those of Christopoulos (2004) and Saibene & Sicouri (2012)who observed that currency devaluation has no short-run effect on output growth except in the case of South Africa for individual countries.

The contrary nature of these results and other recent studies from popular believe can be attributed to the fact that earlier studies were performed using slightly different econometric techniques. Recent techniques have been developed that may produce better results. Furthermore, the impact of devaluation in developing countries such as the ones under study cannot be the same as those of developed countries. For example, the popular believe that output growth is positively affected by currency devaluation through its impact on lower imports and higher exports might not work in developing countries (That is expansionary effects of currency devaluation). These countries may not manufacture products of a quality that are desired by the rest of the world. Furthermore, the manufactured products in the home country may not be perfect substitutes to products imported from abroad. Under such circumstances, currency devaluation may not positively affect growth in output which makes it contractionary.

From all these points, it can therefore be concluded that:

1. Currency devaluation is contractionary in developing economies.
2. There is no short run relationship between currency devaluation and economic growth.
3. Currency devaluation has negative long run effects on economic growth.

RECOMMENDATION

1. Policy makers need to be sponsored to do more research on the effectiveness of devaluation of their country's currency. They should ascertain if it is going to be a tool for an improvement in the trade balance or not as suggested by Christopoulos (2004).
2. Policy makers of any country that wants to undertake currency devaluation should examine the factors responsible for the successful devaluation of currency in countries where currency devaluation has been successful and check whether the same criteria can be met in their economy before proceeding.
3. Countries that have high foreign currency denominated debts should not undertake currency devaluation as it is going to have contractionary effects as shown in previous studies.
4. The financial sector of the economy needs to be regulated. It should be understood that if no full adjustment is made to domestic prices in relation to change in the rate of exchange, currency devaluation will lead to a rise in the burden of debt thereby making the economy worse off.

AREAS OF FURTHER STUDIES

Other areas of studies that would be examined in future are;

- What are the causes of reoccurring currency crises in some economies? (This has happened in India, Ghana, Nigeria and some other countries).
- What are the economic requirements for successful implementation of currency devaluation?

Further studies in these areas will add value to this present study and when put together will answer so many unanswered questions associated with currency crises and currency devaluation.

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