

Central Bank Independence: Evidence from Africa

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Abstract

In this paper we examine the relationship between inflation and central bank independence. A number of studies have demonstrated that the more independent a central bank is the more likely its inflation outcome will be low. Using data for 20 countries over the period 1988-2007, this paper attempts to investigate whether central bank independence can help achieve price stability in African countries where inflation is always a serious problem. The results obtained indicate that central bank independence contributes to reducing inflation rate. However, results obtained also indicate that CBI is not a sufficient condition to resolve the problem of inflation in African countries. Other accompanying measures such as the commitment for governments to hold a responsible balance budget are required.

Keywords: central bank independence, Africa, turnover rates, budget deficit, inflation

INTRODUCTION

The notion of central bank independence (henceforth referred to as CBI) lies in the fact that central banks must be able to disagree with the government when their objectives are compromised. Presently, more and more central banks are becoming independent. The interest in CBI can partly be explained by the fact that policymakers were in search of a new anchor for price stability, after the collapse of the Gold Standard in 1913 and the Bretton Woods system in the 1970s. With worldwide surge of inflation and the beginning of the stagflation era, countries had no other choice but to move from an international regime for maintaining price stability to a national one whereby monetary policies were regarded as the main instrument for combating inflation.

High inflation has been quite a plea for African countries and has contributed to the dampening of growth and a reduction in the purchasing power. The problem as identified by several papers is the tendency for developing countries to suffer from an inflationary process due to the financing of large fiscal deficits primarily through monetary creation by the central bank (Dutton, 1971; Aghevli and Khan, 1977, 1978). High inflation rates hinder the development and progress of African countries. Most economists in the world agree that an independent central bank at the control of monetary policy can help to achieve the long-standing goal of price stability. We examine the relationship between inflation and central bank independence for a sample of 20 African countries over the 1988-2007 period (The countries include Botswana, Cameroon, Central African Republic, Chad, Egypt, Gambia, Ghana,

Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Nigeria, Rwanda, South Africa, Sudan, Tanzania, Uganda and Zambia). Our objective is to assess whether central bank independence helps to achieve price stability in African countries where inflation has historically been quite a problem. A number of studies have demonstrated that the more independent a central bank is the more likely its inflation outcome will be low. The results obtained in this paper seem to indicate that central bank independence as captured by the turnover of central bank Governors and the change in budget deficit contributes to reducing inflation rate. However, results obtained also indicate that CBI is not a sufficient condition to resolve the problem of inflation in African countries. Other accompanying measures such as the commitment for governments to hold a responsible balance budget are required. The rest of this paper is organized as follows: Section 2 gives an overview of the theoretical and empirical literature review. Section 3 elaborates on the data and methodology used. Section 4 discusses the regression results and we finally conclude in section 5.

LITERATURE REVIEW

Theoretical Review

As identified by Kydland and Prescott (1977) “delegating the power of formulating monetary policy to the government which have short term objective that is applying policies based on what is best given the current situation will result in excessive level of inflation”. Given the opportunistic behaviour and political objectives of the government, policy makers have an incentive to impose a

monetary “surprise” through untimely application of monetary policies. Their aim is to create “unexpected inflation” so as to reduce real wages and boost output and employment at the approach of the election. As economic agents behave rationally, they will adjust their behavior according to their inflationary expectations. The final outcome is higher wages and prices.

One of the most important arguments for CBI is the time inconsistency problem, suggested by Kydland and Prescott (1977), and developed later by Barro and Gordon (1983). Time inconsistency occurs when the optimal plan made for some future periods is no longer best when that period actually arrives, and so the policymaker has to readjust the pre-announced path. In the framework of monetary policy, the time inconsistency problem arises because there are incentives for a politically motivated policymaker to exploit the short run trade off between unemployment and inflation. Therefore, economic agents and policymakers would make the outcome of time consistent policy sub optimal since it includes an inflationary bias. Hence, it is argued that central banks should be made independent to ensure credible pre commitment to policy targets. In this way, the inflationary bias of monetary policy can be removed by following monetary policy-making rule.

Rogoff (1985) observes that when central banks are under the influence of the government, this indeed creates a time inconsistency problem which can result in an inflationary bias. In order to limit politically-motivated monetary policy surprises and reduce inflationary expectation, he recommends that central banks should be insulated from political influence. This has given rise to a well developed literature known as CBI. Extensive research has been undertaken on this topic, in several countries such as Germany, United States and Switzerland which have independent central banks (Cukierman *et al*, 1992; Alesina and Summers, 1993; Gilli *et al*, 1991).

A second argument in favour of CBI is put forward by Sargent and Wallace (1981) who argue that if monetary policy is dominant, fiscal authorities will be compelled to bring down the budget deficit of the government or at least, reduce the government debt. However, if the dominant party is fiscal authorities, this means that monetary authorities cannot impact on the size of the government’s budget deficit. They will have to finance it by printing money (We assume here that government bonds are no longer absorbed by the market). The more the central bank is independent; the lower is the pressure on monetary authorities to finance the budget deficit.

Measures of Central Bank Independence

Alesina (1988, 1989) extends the work of Bade and Parkin (1982) and uses the latter’s codified version of

the legal independence of central banks and also take into account whether the central bank has final authority over monetary policy, whether government officials sit on the governing board of the bank and whether more than half of the board members are appointed by the government.

Eijffinger and Schaling (1992, 1993) construct an index based on the location of the final responsibility for monetary policy, the absence or presence of a government official on the board of central banks and the percentage of board appointees made by the Government.

Grilli *et al* (1991) have broken down CBI into two categories, political independence and economic independence. Political independence refers to the capacity of the central bank to set its own monetary goal such as inflation targeting, while economic independence focuses on the ability of the central bank to select its monetary instruments to pursue its objectives. Their results confirm the inverse relationship between CBI and inflation while they find no significant link with the real growth rate of real output.

Cukierman *et al* (1992) suggests that CBI can be divided into 4 major components: first, the appointment, term and dismissal of the governor and board members, second, how free the central bank is to construct monetary policy and whether decisions taken are final, third, the extent to which the central bank considers price stability as its most important goal, and finally, the degree to which central bank lending is limited. In addition to legal independence, Cukierman also lays emphasis on the turnover rate of governors which, in his opinion, is a measure of actual independence. In general, a low turnover rate is indicative of a central bank insulated from political influences. Cukierman *et al* (1992) define CBI based on the charters of central banks (A charter of central bank means the act setting the rules and regulations of the central bank)

EMPIRICAL EVIDENCE

Empirical evidence shows that countries with independent central banks tend to have lower inflation (see Cukierman, 2008). Some examples are the United Kingdom, United States and Norway. Cukierman *et al* (1992) use a sample size of 72 countries (21 industrial countries and 51 developing countries) and a sample period 1950 to 1980. They observe that for developing countries, the turnover rate of central bank governors is the most important and statistically significant determinant of price stability while for developed countries it is legal independence. The Granger causality test suggests that there is a vicious circle between inflation and low levels of CBI.

Alesina and Summers (1993) analyze the effect of CBI on several real economic variables over the sample period 1955-1988. Their measure of CBI is based on a combination of an extended version of Bade and Parkin (1982) index provided in Alesina (1988) and the index applied in GMT (1991). The results obtained are consistent with that of GMT (1991) i.e. CBI reduces the level and variability of inflation and it does not have any cost to the economy. Surprisingly apart from inflation, no link was found between CBI and the real interest rate. This was also the case for the other macroeconomic variables.

Eijffinger, Van Rooji and Schaling (1996) base their study on 10 industrial countries and a sample period ranging from 1977 to 1990 and find that their new measure of actual CBI corresponds highly to the legal indices employed in earlier papers. They observe that high CBI is accompanied by low money market rates, low inflation rates and current account surpluses without having a negative impact on growth.

Banaian *et al* (1998), find that caution should be exercised when applying the Cukierman index. Using the principal component analysis on the different components forming part of the Cukierman index, they observe that the latter might be subject to some coding problems. They find that some of the attributes of CBI in this index are insignificant and also tend to have a positive sign instead of a negative one. This problem could originate from an improper classification of the degrees of independence in monetary policy formation.

Farrag and Kamaly (2007) find that the Central Bank of Egypt (CBE) has a relatively low degree of independence when compared to some Latin American countries. They deduce that a modification of the CBE laws can be the key to institutional development of the central bank of Egypt. Also, they opine that monetary policy must be the sole duty of the central bank if it is to achieve price stability.

Lucotte (2009) provides a detailed analysis of the relationship between CBI and budget deficit in developing countries by using the panel data technique. His sample data is made up of 56 developing countries and his sample period ranges from 1995-2004. His findings indicate that the legal index used as proxy for CBI is not statistically significant and thus is an irrelevant indicator of CBI for developing countries. On the other hand, the turnover rate of central bank governors proves to be a very good measure of CBI with strong empirical evidence at 1 or 5 percent level of significance. This strongly supports the hypothesis that there exists a negative relationship between primary budget surplus and CBI.

There are very few studies that have examined the issue of central bank independence in Africa. In developing countries especially, politicians tend to twist monetary policy to suit themselves and their electoral ambitions. Weak central banks enable governments to manipulate monetary policy. Presnak (2005) studies informal and legal independence of central banks in sub-Saharan African countries including Tanzania, Kenya, Zaire, Ethiopia, Uganda, Nigeria, Botswana, Zambia, Ghana, South Africa and Zimbabwe. Findings indicate that legal autonomy of a central bank in sub-Saharan Africa cannot solely account for its policy-making capacity. The measure of informal central bank independence termed as behavioural independence shows that central bank turnover and the level of government deficit have little explanatory power in explaining variation in informal central bank authority.

DATA AND METHODOLOGY

The data for our sample of 20 African countries was hand-collected and obtained from various sources including the World Bank, IMF Financial Statistics, Central Statistical Offices and the websites of central banks. We use two proxies of central bank independence including the turnover rate of central bank governors and the size of the government budget deficit. Other real variables affecting inflation rates in these countries are also included into our study such as the change in exchange rate, the real GDP per capita, trade openness and the unemployment rate. Data on these variables were collected from 1988 to 2007 which gives us a maximum of 400 observations.

Our regression is specified as follows:

$$INF_{it} = \beta_0 + \beta_1 TOR_{it} + \beta_2 ExRate_{it} + \beta_3 LnGDP_{it} + \beta_3 OPEN_{it} + \beta_3 UNEMP_{it} + U_{it} \quad (1)$$

$$INF_{it} = \beta_0 + \beta_1 BUD_{it} + \beta_2 ExRate_{it} + \beta_3 LnGDP_{it} + \beta_3 OPEN_{it} + \beta_3 UNEMP_{it} + U_{it} \quad (2)$$

$$INF_{it} = \beta_0 + \beta_1 TOR_{it} + \beta_1 BUD_{it} + \beta_2 ExRate_{it} + \beta_3 LnGDP_{it} + \beta_3 OPEN_{it} + \beta_3 UNEMP_{it} + U_{it} \quad (3)$$

Where *INF* is the transformed inflation rate calculated as 1 divided by 1 plus the inflation rate, *TOR* is the turnover rate of central bank governors, *ExRate* is the change in exchange rate, *LnGDP* is the log of real gross domestic product and *OPEN* captures for openness of the economy, *UNEMP* captures for unemployment. These variables are discussed in turn below.

Turnover rates of central bank governors (TOR)

The computation of the turnover rate is based on the study of Cukierman *et al* (1992). The turnover rate is an informal indicator of independence which is found to be a statistically significant proxy for measuring CBI in developing countries. To determine whether a central bank is independent or not, a threshold based on the electoral cycle is set. Usually the threshold

value is 0.2 and 0.25 changes a year (for an electoral cycle of 4 to 5 years). A turnover rate above this threshold indicates central bank dependence while a value below exhibits independence. To capture the trend between inflation rate and TOR figures, a scatter plot for a two decades period has been plotted. Figure 1 in the Appendix indicates that the two variables seem to be positively related confirming Cukierman *et al* (1992) hypothesis, that is, inflation and TOR are positively related.

Budget deficit (*BUD*)

The budget deficit is a good proxy for measuring central bank dependence especially in African countries where it is easier for the government to finance its expenditures through seignorage rather than tax revenues. Because of time lags, the effects of seignorage are not immediately felt on the inflation rate. Therefore, it is preferable to use the lag of the budget deficit instead of current budget deficit. The budget deficit is expected to be positively related with inflation, that is, the greater the budget deficit, the greater the dependence of the central bank and the higher is the inflation rate. Figure 2 in the Appendix shows a scatter plot of government budget deficits and the inflation rates in our sample of African countries. We include a number of control variables in our regression to take into account other factors that affect inflation. These are:

Exchange rate (*ExRate*)

Discrete devaluation in African countries generates cost-push inflation and given the incapacity of African countries to substitute key imports in their production process, there is a direct cost-push effect from the exchange rates to domestic prices (Chhibber and Shafik 1990; Chhibber *et al* 1989). Studies also confirm that the pass-through effect is very consequent in almost all African countries given they have high inelasticity of imports. We use the change in exchange rate in the regression. A positive change in the exchange rate would mean either a depreciation or devaluation of the domestic currency and would lead to higher inflation while a negative change would represent an appreciation. The sign on the coefficient of exchange rate is expected to be positive, that is, there is a direct relationship between inflation and changes in exchange rate.

Trade openness (*OPEN*)

In some studies of CBI, the degree of trade openness is included in the inflation model (Oatley, 1999). Al-Mahrubi and Willett (1995), find that the degree of trade openness is related to the inflation rate. Their hypothesis is based on the belief that in highly open economies, domestic prices will be influenced by world prices. Therefore, these countries will be subject to imported inflation. The degree of trade openness is expected to have a positive effect on inflation.

Real GDP (*LnGDP*)

According to the Keynesian model, the relationship between inflation and growth can be explained by the Aggregate Demand (AD) and Aggregate Supply (AS) curves. The short run model comprises of an upward sloping AS curve and a downward sloping AD curve, therefore, changes in AD will be affecting both prices and output (Dornbusch *et al*, 1996). To meet increasing demand firms will employ unutilized resources in the economy. As the supply of these resources becomes scarce and their demand keeps increasing, this will create inflation. This explains the positive relationship between inflation and growth. However, in the long run this scenario is different. The AS curve is vertical: it is completely inelastic such that shifts in the AD curve will only affect prices. When the economy overheats by operating beyond its capacity, this will create high level of inflation which will mitigate growth. The inflation rate might be so high that output might fall such that the initial positive relationship turns to a negative one. This situation is described as a period of stagflation whereby inflation rises while output falls or remains constant. For African countries, the expected sign for real GDP is positive as they are expected to be producing below their full capacity.

Unemployment rate (*UNEMP*)

Based on the Phillip's curve, the unemployment rate is also included into our model. Data on unemployment for some African countries in our sample was unavailable and so a proxy was used. We used the literacy rate to first calculate the level of illiteracy. By multiplying the share of GDP accounted for by the primary sector by the illiteracy rate, we obtained a proxy for employment of illiterate people in the primary sector. We then assumed that the portion of illiterate population not employed in the primary sector were unemployed. This gave us a proxy of unemployment for countries for which we could not obtain unemployment data.

DISCUSSION OF RESULTS

Panel data is a data set in which the behavior of variables is observed across time. For the panel data analysis, three techniques are used. We use pooled Ordinary Least Squares (OLS), the fixed effects and the random effects methodology. Pooled OLS consists of grouping the data altogether and running the regression. Fixed effects technique, however, considers the link between the predictor and the outcome variables within an entity such as country. On the other hand, the basis of the random effects model is that the variation across entities is assumed to be arbitrary and not correlated with the regressors in the model. To decide between the fixed and random effects, we perform the Hausman test. Columns (1), (2) and (3) of Table 1 report the results of Regression (1) where turnover of central bank governors is used as a proxy for central bank

independence. Columns (4), (5) and (6) report the results of Regression (2) where the budget deficit is used as a proxy for central bank independence. The results obtained in Table 1 indicate that *TOR* has a positive coefficient significant at 1% level, which gives support to our hypothesis that there is a relationship between central bank independence and inflation rate. This suggests that higher turnover rates of central bank governors is associated with higher inflation rate. As for the unemployment rate, the results indicate that its coefficient is positive and highly significant. This suggests that there is a positive relationship between inflation and unemployment however we also have to bear in mind that the proxy we used to estimate unemployment might not be reliable. We allow for the second possibility.

As expected, the variables *ExRate* and *LnGDP* have a positive coefficient which are significant at 1% level.

For the first one, this proves that a change in exchange rate significantly affects *INF*. In other words, a depreciation of the currency will contribute to an increase in inflation. As for *LnGDP*, the results imply that growth in the real sectors of the economy will bring a rise in the inflation rate. On the other hand, the variable *OPEN* is insignificant even though being correctly signed. One possible reason is that *OPEN* is only an efficient determinant of inflation when the exchange rate is fixed. This is not the case in most African countries as they have either floating or adjustable-peg exchange rate system. Therefore, the extent to which domestic prices in these countries will be affected by world prices will be limited. Moreover, in many African countries there are extensive price controls which act as neutralizer to the effects of imported inflation. This might also explain the insignificance of this variable.

Table 1: Regression Results

<i>Independent variables</i>	(1) <i>Pooled OLS</i>	(2) <i>Fixed effects</i>	(3) <i>Random effects</i>	(4) <i>Pooled OLS</i>	(5) <i>Fixed effects</i>	(6) <i>Random effects</i>
<i>TOR</i>	0.369*** (0.060)	0.258*** (0.074)	0.296*** (0.0670)	---	---	---
<i>BUD</i>	---	---	---	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)
<i>ExRate</i>	0.001*** (0.000)	0.0003*** (0.000)	0.001*** (0.000)	0.001*** (0.00)	0.001*** (0.000)	0.001*** (0.000)
<i>LnGDP</i>	0.052*** (0.007)	0.064*** (0.016)	0.063*** (0.011)	0.051*** (0.007)	0.078*** (0.014)	0.070*** (0.010)
<i>OPEN</i>	0.034 ^v (0.018)	0.042 ^v (0.016)	0.043 ^v (0.028)	0.060*** (0.018)	0.074** (0.016)	0.073*** (0.028)
<i>UNEMP</i>	0.001** (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.003** (0.001)	0.003*** (0.001)
<i>Constant</i>	-0.545*** (0.076)	-0.697*** (0.138)	-0.671*** (0.103)	-0.464*** (0.076)	-0.777*** (0.138)	-0.683*** (0.103)
<i>Observations</i>	400	400	400	400	400	400
<i>R-Squared</i>	0.340	0.291	0.324	0.306	0.270	0.331

Source: computed,

Note: The dependent variable is the transformed inflation rate *INF*, *TOR* is the turnover rates of central

bank governors, *EXRate* is the annual percentage change in exchange rate, *LnGDP* is the log of real GDP, *OPEN* is the summation of exports and imports as a percentage of GDP and *UNEMP* is a proxy for the unemployment. The significance levels are given by *significant at 10%; **significant at 5%; ***significant at 1%; ^v insignificant; Standard errors in brackets. *BUD* is the budget deficit as a percentage of GDP* -1.

The R² obtained under random effects is 0.324 meaning that our model is able to explain about 32% of variation in inflation. The Wooldridge test for

autocorrelation in panel data is used to test for autocorrelation and we also test for panel level heteroskedasticity. The results suggest that our model does not suffer from these problems. (The test is derived by Wooldridge (2002) to test for autocorrelation in panel data models. Drukker (2003) affirms that the test is reasonably good in plausibly sized samples) The Hausman test indicates that the random effects technique is most appropriate to use. In Columns (4), (5) and (6), we regress *INF* on the second proxy *BUD* and other macroeconomic variables. As expected, the CBI proxy *BUD* has a positive coefficient meaning that an increase in the government's budget deficit adds pressures on the central bank to manipulate monetary policy and hence, deviate from the primary objective of price stability. Again, the variable *UNEMP* does not have

the expected negative sign, suggesting that the proxy might be unreliable. The Hausman test indicates again that the random effects technique is more appropriate to use. All other variables in the model are correctly signed and significant. The R^2 is 0.331 indicating that the model can explain around 33% of variation in *CINF*. Once more, the Wooldridge test for autocorrelation and the test of heteroskedasticity were performed indicating that there is no such problem in our model.

Next we present the results for Regression (3) in Table 2 where we include both *TOR* and *CBUD* proxies for central bank independence. The results presented in Columns (1), (2) and (3) indicate that the proxies of CBI are statistically significant at 1% level and correctly signed. This indicates that CBI does influence inflation and can be a long term solution to this chronic problem in Africa. Of the two CBI proxies, it is *TOR* which seems to have a greater weight on inflation as it has a higher coefficient. This means that for Africa the time inconsistency problem constitute a greater threat to inflation than seignorage. Therefore, the main problem is the lack of credibility of African central banks vis-à-vis private agents, that is, central bank governors are unable to stick to their long term objectives of price stability which in turn, helps fuel the inflationary expectations of economic agents. As highlighted by Rogoff (1985) a conservative central banker can be the answer to this problem. The latter can help restore the credibility of the central bank and also limit the level of seignorage.

Table 2: Regression Results

<i>Independent variables</i>	(1) <i>Pooled OLS</i>	(2) <i>Fixed effects</i>	(3) <i>Random effects</i>
<i>TOR</i>	0.333*** (0.061)	0.230*** (0.073)	0.260*** (0.067)
<i>BUD</i>	0.003*** (0.001)	0.003*** (0.000)	0.003*** (0.000)
<i>ExRate</i>	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
<i>LnGDP</i>	0.050*** (0.007)	0.060*** (0.015)	0.060*** (0.011)
<i>OPEN</i>	0.045** (0.018)	0.055 ^v (0.016)	0.055* (0.028)
<i>UNEMP</i>	0.001** (0.001)	0.004** (0.001)	0.003*** (0.001)
<i>Constant</i>	- 0.531*** (0.076)	- 0.654*** (0.136)	- 0.641*** (0.103)
<i>Observations</i>	400	400	400
<i>R-Squared</i>	0.356	0.313	0.348

Source: computed,

Note: The dependent variable is the transformed inflation rate *INF*, *TOR* is the turnover rates of central bank governors, *BUD* is the budget deficit as a percentage of GDP* -1, *ExRate* is the annual

percentage change in exchange rate, *LnGDP* is the log of real GDP, *OPEN* is the summation of exports and imports as a percentage of GDP and *UNEMP* is a proxy for the unemployment. The significance levels are given by *significant at 10%; **significant at 5%; ***significant at 1%; ^v insignificant; Standard errors in brackets.

For this model the Breusch and Pagan Lagrange-multiplier test for random effects was performed. A large value for Chi2 (1) was obtained suggesting that we have to reject the null hypothesis h_0 in favor of h_1 . This result tells us that the random effects is more suitable to use. The model was also tested for autocorrelation and panel level heteroskedasticity. None of these problems were identified.

Overall, the results obtained indicate that CBI is a relatively good means to combat inflation in Africa. However, even though it is a necessary instrument it is not a sufficient measure. As can be seen from our model, the R-squared is not sufficiently high to explain all the variation in the inflation rate. There are other sources which generate inflation in Africa. This is why other accompanying measures are needed to bring back the inflation rate to a satisfying level. The adoption of a responsible balance budget combined with an efficient application of price control can help restrain inflationary pressures. However, if price controls are done improperly, then this could encourage the development of parallel markets as is the case in certain African countries like Ghana, Nigeria, Zambia and Angola. If this happens, then the economic activity would shift to the hidden economy which in turn will negatively affect economic growth in Africa.

With increasing access to data in Africa, more studies can be undertaken on this interesting topic. The possibilities for further research are still vast. For example, a comparison of the different proxies, that is, the Cukierman index (1992), the GMT index (1991) and the Alesina index (1988) can be made, which could help to identify which measure of CBI is more appropriate for Africa. Another avenue for research is the measurement of the effectiveness of monetary policy committees in managing inflation. However, it will take some time before this becomes possible as monetary policy committees are still at an infant stage in Africa .

CONCLUSION

Central Bank Independence (CBI) has long been a topic of interest given the association that has been found between central bank independence and low inflation. A number of studies have demonstrated that the more independent a central bank is the more likely its inflation outcome will be low. Recently, a number of countries in Africa have tried to improve central bank independence and transparency in their

monetary policy making. However, in Africa research on the issue of CBI this has been quite problematic given the lack of data. In this paper, we examine the relationship between inflation and central bank independence using data for 20 countries over the period 1988-2007, and it attempts to investigate whether central bank independence can help achieve price stability in African countries where inflation is always a serious problem. We use two main measures to proxy for central bank independence. The first measure involves the turnover rates of central bank governors based on the computation of the turnover rate taken from the study of Cukierman *et al* (1992). It is an informal indicator of independence which is found to be a statistically significant proxy for measuring CBI in developing countries. Our next proxy for central bank independence is the budget deficit which is believed to be a good proxy especially in African countries where it is easier for the government to finance its expenditures through seignorage rather than tax revenues. In addition we also control for other factors such as the exchange rate, log of GDP, trade openness and employment.

The results obtained indicate that central bank independence contributes to reducing inflation rate. The two proxies capturing central bank independence, that is, the turnover rates of central bank governors and the budget deficit are positively related to inflation. This suggests that the higher the turnover rates of central bank governors is, the higher will be the rate of inflation. Similarly, higher budget deficit also implies higher inflation. However, results obtained also indicate that CBI is not a sufficient condition to resolve the problem of inflation in African countries. Other accompanying measures such as the commitment for governments to hold a responsible balance budget are also required.

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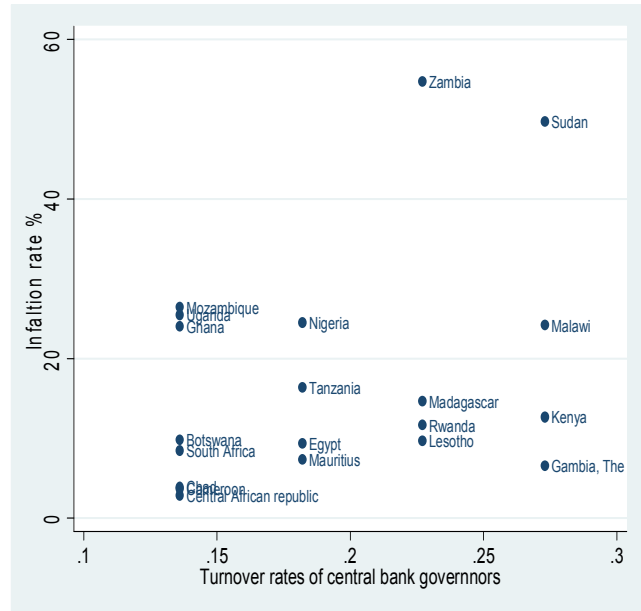


Figure 1- Inflation rate against TOR
Source: Calculated

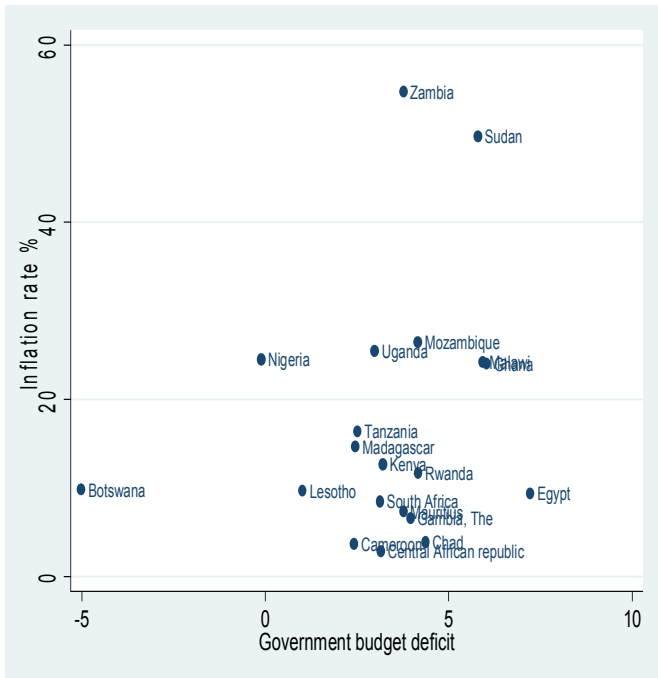


Figure 2- Inflation rate against CBBDD
Source: Calculated