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Bodea and Hicks (2014) developed de jure CBI index for seventy-eight (78) countries between 1973 and 2008 and found a strong interaction between CBI and democracy and concluded that CBI directly had a negative effect on money supply and inflation.

Dincer and Eichengreen (2013) extended the CWN index to include provisions on the appointment/reappointment and dismissal provisions for governing board members for 100 countries for the period 1998 to 2010 and find that past inflation, financial depth, openness and CBI affect inflation. They also added measures on the reappointment of the CEO, restrictions on government representation on the board and intervention of the government in exchange rate policy formulation as suggested earlier by Bade and Parkin (1983), Eijffinger and Schaling (1993), Grilli *et al.* (1991) and Jacome and Vazquez (2008).

Garriga (2016) also extended the CWN index to cover over 182 countries from 1970 to 2014, representing the study with the most number of countries and periods covered. The study found no relationship between CBI and inflation.

These empirical findings were then followed by studies which attempted to answer questions about what is meant by CBI (Grilli, *et al.*, 1991; Debelle & Fischer, 1994; Fischer, 1995), how CBI should be measured and countries' CBI rankings (Grilli *et al.*, 1991; Cukierman, 1992). Others focused on what interpretations should be given on the empirical correlation between CBI and macroeconomic variables (Posen, 1993; Alesina & Summers, 1993; Debelle & Fischer, 1994) and the theoretical explanation for these correlations (Cukierman, 1992; Rogoff, 1985; Barro & Gordon, 1983; Sargent & Wallace, 1987; Buchanan & Wagner, 1977; Kydland & Prescott, 1977).

A concern raised about the studies done earlier was that a legal measure of independence may not be an accurate reflection of a bank's actual level of independence. And if this was true, then studies based on the legal index could have provided misleading results.

In a follow up study, Cukierman *et al.* (1992) failed to establish a negative relationship between legal CBI and inflation for developing countries and attributed it to the wide disparity that exists between legal and effective CBI in developing countries. In an effort to address this possibility, Cukierman *et al.* (1992) relied on the responses of central bankers to a questionnaire meant to determine the de facto degree of independence in the 1980s. The study's finding was that, the correlation between the legal index and this practical index of independence was 0.33 for developed countries, 0.06 for developing countries and 0.04 overall. This indicated that a legal CBI index might not be useful for studying developing countries and that it may be a weak measure of actual independence for developed countries too. However, critiques of the questionnaire approach indicated that the responses of the central bankers were subjective and not entirely uniform; it could not accurately reflect actual independence of the bank. Also, it was only some parts of the questionnaire that could be translated in clear rankings which were coded.

However, this study is of the view that, if there are high levels of rule of law, this difference between the legal and actual independence could be minimised since the law is applied to the letter, thereby reflecting accurately in de facto independence. Indeed, the Cukierman *et al.* (1992) indicate that the high level of correlation between the legal and actual independence in industrial countries could be attributed to the fact that the law is a more important determinant of actual independence than in developing countries.

According to Pollard (1996) more evidence was needed to conclude that having an independent central bank was important to improving economic performance. One was with

the difficulty in measuring CBI in which except for the index by Cukierman *et al.* (1992), all other indices applied equal weighting and therefore equal importance to each factor's determination of CBI. In calculating the Grilli, Masciandaro and Tabellini (GMT) index, one point is given if the government has no hand in the appointment of any member of the central bank board. One point is also allotted if government approval is not required when the central bank formulates a policy. Although the latter places a stronger constraint on the actions of the central bank than the former, the two are treated the same empirically by the equal weights given them in arriving at the index. Another issue of concern was the fact that studies conducted on CBI in countries having fixed exchange rate regimes during the Bretton Woods era, could not be said to prove CBI was a determinant of a country's inflation performance because monetary policy cannot be set exogenously

Posen (1995) further attributed this association between CBI and inflation to a third latent variable such as opposition to inflation either by the public or the financial system. Campillo and Miron (1997) thereafter indicated that the negative relationship obtained in Cukierman (1992) didn't hold on the introduction of additional controls, thus concluding the results were driven by omitted variable bias.

Loungani and Sheets (1997) controlled for other measures of economic policy such as fiscal performance and economic reforms and found a negative link between CBI and inflation in transition economies. By this, higher central bank independence, led to lower inflation rates. Brumm (2000) was also able to recover the negative relationship between CBI and inflation after correcting the estimation method to account for the possibility of measurement error in the CBI index. De Hann and Kooi (2000), did not find a robust relationship between CBI and inflation; though the study used the turnover of central bank governors as proxy for a more direct measure of effective CBI. The study, failed to account for other potential determinants

of inflation, thereby opening the possibility for an omitted variable bias. Their conclusions were also based on a cross-country approach, thus failing to capture the temporal dimension of central bank reforms- an issue particularly present for the case of developing countries.

Neyapti (2001) examined the trends in economic performance in eight (8) eastern European countries and the degree of central bank independence granted after reforms. The evidence indicates that CBI measured as the CWN index, and financial market development measured as the ratio of broad money to GDP, the ratio of credit to the private sector to GDP, the spread between lending and deposit interests ( $l - d$ ), real interest rates, and the ratio of time deposits (including savings and foreign deposits) to GDP show significant association with macroeconomic variables. This association meant that higher levels of central bank independence and financial development had significant impact on economic outcomes.

Cukierman (1992) and Sturm and de Haan (2001) rank independence using the average turnover rate of central bank governors. The use of the turnover rate however, has also been criticised in that, low turnover rate does not necessarily imply that the central bank governors are independent as dependent governors can be made to stay in office as long as their political authorities are in government. The turnover rate also captures retirement of central bank governors, deaths and other occurrences that do not reflect their dependence or independence. Alpanda and Honig (2014) suggested that there could be low rate of turnover in central banks that are not independent in situations where the governor of the central bank is subservient to the fiscal authority. This is meant to avoid them being forced to resign. This indicates that lower turnover rates do not always signal high levels of independence.

Kilponen (2000), in a study of the linkages between central bank independence, wage bargaining structure and macroeconomic performance in OECD countries find that, central bank independence measured as political independence and personnel independence made a

significant impact on a successful inflation policy. That is to say that the independence of the central bank governor and the central bank from political control contributed effectively to achieving lower inflation. This is because, such independence ensured that the job of the governor was guaranteed by the constitution and not subject to the pleasure of the political appointees. This enables the governor and the central bank to focus on achieving price stability and not fear political interference meant to finance government deficit for example.

Cukierman *et al.* (2002), did an extension to the work of Cukierman (1992). They considered 26 transition economies in the 1990s factoring the pre-and-post reform periods into their model. Having controlled for price liberalisation, they found no significant effect of CBI on inflation after the process of reform had gained momentum.

The issue of the possibility of central bank independence being endogenous was also identified. This is so because, countries with a commitment to price stability may have a greater propensity for independent central banks. Therefore, low inflation environments, can lead to having independent central banks as a way of maintaining a commitment to price stability. While studies such as Cukierman (1992) and De Hann and Kooi (2000) did not take into account the possible endogeneity of central bank reform, a few subsequent studies such as that by Jacome and Vazquez (2008), however, attempted to address some of these issues.

Walsh (2005) noted that causality is difficult to evaluate in using the turnover index because inflation could be high as a result of political interference resulting in high central bank officials' turnover rate. It could also be that the high turnover rate was due to the inability of central bankers to achieve low inflation. Dreher, Sturm and de Haan (2008) found evidence that high past inflation indeed increased the likelihood that a central bank governor will be replaced.

Koenker (2005) using quantile regressions in cross-sectional studies indicate that CBI's impact varies across countries. Subsequent to this, Klomp and de Haan (2010) explored the degree to which heterogeneity impacts the relationship between CBI and inflation. Using the central governor's turnover rate and an indicator based on central bank legislation, they re-examined the relationship between CBI and inflation. They adopted a random coefficient model with the Hildreth-Houck estimator for more than 100 countries over the period 1980 to 2005. Having factored in widely used controls, they found no evidence of general negative link between CBI and inflation. They therefore concluded that CBI has a significant effect only in a minority of the countries in their global sample.

Breitung and Pesaran (2008) argued that a pooled estimation procedure for dynamic panel models could produce inconsistent and misleading estimates of the long-run coefficients. Later studies (Bai, 2009; Lee, Moon & Weidner, 2012; Bai & Li, 2014) found that even without instrumental variables, panel data models with common shocks could be consistently estimated. Kapetanios, Pesaran and Yamagata (2011) noted that, if the underlying coefficients are heterogeneous, misspecification of homogeneity would lead to inconsistent estimation. By using pooled estimators, these studies implicitly imposed a general effect of CBI on inflation across all countries.

Farraj and Kamaly (2007) captured the discrepancies between the degree of independence conferred to the Central Bank of Egypt and many other central banks by law and actual practice. They found that there were discrepancies in the level of independence of the central bank as found in the central bank charter and as was actually practiced. This buttresses the suggestion by some authors that discrepancies exist between *de jure* and *de facto* central bank independence, particularly in African countries due to lack of credible institutions to respect and enforce the rule of law.

Jacome and Vazquez (2008), further exploited both the cross-sectional and temporal dimensions data for a regional sample of Latin American and Caribbean countries. The study examined the effects of broader structural reform policies that usually accompany changes in the legislation of central banks including trade liberalisation, labour market reforms, privatisations, and other structural policies that could potentially affect inflation. This was intended to eliminate the problem of omitted variable bias. They modify Cukierman *et al.* (1992)'s legal index by focusing not only on the rules for the appointment and dismissal of the central bank's governor, but also on the entire central bank's board. They used lagged CBI values as instrumental variables in a Generalised Two Stage Least Squares (G2SLS) developed by Balestra and Varadharajan-Krishnakumar (1987) and Error Correction Two-Stage Least Squares (EC2LSL) described in Balgati and Chang (2000). Their results showed a strong negative relationship between increased CBI and inflation after controlling for international inflation, banking crises and exchange regimes in the sampled countries.

According to Arnone and Romelli (2013), Cukierman (1992) in assessing the autonomy of the central bank only focuses on the legal provisions on the appointment and dismissal of the central bank governor, ignoring that of the other board members. This, Arnone and Romelli (2013) says, does not accurately capture the independence of the central bank since monetary policy decisions are more of a collective effort than that of the central bank governor alone. Government's influence of the central bank could also be reflected in the proportion of government appointees and the frequency of appointment or dismissal of other government appointees on the board (Arnone & Romelli, 2013). Hielscher and Markwardt (2012) however, identified a non-linear relationship between CBI and inflation and as such supported calls for limitations on the independence of the central bank

According to Berggren, Daunfeldt and Hellström (2014), there is a problem of credibility inherent in monetary policy. In a study of 149 countries, they identify two factors that help explain their finding: the need for a monetary policy reform as well as the capacity with which the reform will be implemented. According to the study, low trust levels/credibility come with a strong desire for central bank independence whether or not the capacity to truly have an independent central bank exists. At high trust levels, the capacity to reform the central bank is higher than a need for the reform. At intermediate levels of trust, neither the capacity to reform nor the need for the reform dominate the other.

- **Financial systems, Central Bank Independence and Inflation**

Doubts about the bank lending channel have been raised by empirical work including those by Peek and Rosengren (1995, 1997). Kashyap and Stein (1995) and Gertler and Gilchrist (1993, 1994). However, findings by Lown and Morgan (2002) suggest that the bank lending may have an important role in macroeconomic fluctuations, however, for monetary policy changes, the bank lending channel may not be much effective. Iacoviello and Minetti (2008) also show that there is a bank-lending channel for households in countries where mortgage finance is more reliant on bank finance. To put two and two together, studies on the bank lending channel has mainly focused on evidence that shows its potential importance, however little work has been developed to provide an overall assessment of the macroeconomic importance of this channel, rather than its importance for certain classes of firms or banks, or for certain episodes.

Evidence of a clear impact of financial system development's impact on stabilisation policies abound:

According to Fischer (1995), in financially repressed systems, interest rates are often very low and very inflexible. As a result, this key channel of monetary policy transmission

mechanism becomes ineffective. Coupled with lack of fiscal discipline, this can result in endemic inflation and frequent balance of payments or exchange rate weaknesses. Financial liberalisation measures are therefore often needed to improve the effectiveness of monetary policy (Fischer, 1995).

Cecchetti and Krause (2001) noted that higher levels of financial sector depth and an improvement in the intermediation process (measured by a less centrally controlled banking system), significantly reduced inflation and the variability of output. Coenen, Mohr and Straub (2008) also emphasised the role of deeper financial markets in allowing private agents to smooth expenditure, thereby reducing fluctuations in economic activity. Bittencourt, Gupta and Stander (2014) noted that deeper financial markets allowed private agents to smooth expenditure, subsequently leading to a reduction in variability of economic activity. Ma and Lin (2016) also established the interdependence of monetary policy and financial systems.

This study argues that the financial system is important in assessing the relationship between CBI and inflation for various reasons:

Posen (1995) argued that, the causal relationship between CBI and inflation, is explained by a third factor which he termed financial opposition to inflation. According to Posen, central banks are more able to enforce an anti-inflationary policy, when given a coalition of interests, politically capable of protecting the central bank's anti-inflationary policy. This coalition is represented in developed countries, by the financial sector. He claimed that effective financial opposition to inflation (FOI) is relevant for successful stabilisation objectives. Therefore, the success of central banks in guaranteeing price stability is enhanced when the financial sector can provide support for such policies associated with the reduction of inflation. This support from the financial sector is dependent on its level of development. Therefore, more developed financial sectors make stabilisation policies more successful. Posen posits that since CBI has

distributive consequences and does not please all the people all the time, CBI is not self-enforcing. The distributive consequences of CBI come as a result of disinflation cost, which comes in the form of higher unemployment (Debelle & Fischer, 1994; Posen, 1995; Posen, 1993; Cukierman, 1992).

This study posits that, more developed financial sectors are well able to participate effectively and efficiently in the monetary policy transmission mechanism, whereby they are able to operate at low cost and therefore pass on lower interest rates to customers. This results in lower interest rates compared to other jurisdictions whose financial sectors are underdeveloped and operate at higher costs. These higher operating costs are passed on to customers thereby resulting in higher cost of credit, which feeds into higher prices, leading to higher inflation rates. In such circumstances, the central bank is less effective in achieving lower inflation rates.

Another way by which the financial sector improves the effectiveness of central bank independence is in the form of the financial sector providing good corporate governance checks on the central bank. In well-developed financial sectors, the block can provide a more effective check on the central banks' decisions and policies and keep a close eye on the bank meeting its targets as well as abiding by the independence provisions granted it. This enables the central bank to be practically independent and focused on achieving its price stability objectives.

Also, in poorly developed financial systems, the central bank cannot target as much lower inflation levels than it would have, because of the unemployment it stands to create (Mehrotra & Yetman, 2015). When lower inflation rates are desired, the tightening of monetary policy results in lower credit available to borrowers, resulting in lower investment, production, and output. In poorly developed financial sectors, the effect of monetary policy

tightening will be that relative to demand, lower amounts of credit will be available due to the small size of the financial sector. This will result in the possibility of higher variability in investment, consumption, output, and unemployment. However, in highly developed financial markets, the availability of credit will mean that when monetary policy rates are tightened in order to achieve price stability, the financial markets can provide enough credit to still stimulate investment, smoothen consumption, and generate employment. So independent central banks in such jurisdictions can desire and achieve lower inflation rates relatively. A well-developed financial sector also reduces the crowding out effect of limited finance which can lead to higher interest rates on loans, which feed subsequently into higher cost of production, and higher prices of goods and services.

In addition, a well-developed financial sector that has a strong capital base is able to withstand periods of default by customers as a result of lower prices and revenues for businesses and individuals who anticipated higher prices to enable them pay-off their loans. When an independent central bank creates lower inflation, then prices of goods and services are not as high as could have been anticipated by lenders and borrowers. This results in lower revenues, not adequate to pay back loans, leading to a fragile financial system. The possibility of this happening can result in the central bank, targeting higher inflation rates, than they would, if financial systems were strong enough to withstand such defaults. So financial systems highly capitalised, can result in central banks being able to target lower inflation rates, knowing very well that, should defaults arise, the financial system is capable of soaking in these defaults better than less capitalised financial systems could do.

In literature, the development of debt markets is preconditioned on the existence of low inflation. Low inflation, like sound public finances, is reputed to create the right incentives and environment needed for investors and for enhancing the development of markets in fixed

income securities (Mihaljek, Scatigna & Villar, 2002). In a similar vein, in economies where bond markets are well developed, bondholders will prefer lower inflation rates so as to preserve the value of their investments. Another argument by Tirole (2002) is that high inflation and large fiscal deficits produce distortions in economic behaviour, thereby encouraging short-term speculative projects and discouraging long-term investment projects conducive to sustainable economic development. A second hypothesis is that, in addition to greater reliance on domestic bond issuance, lower inflation should also lead to smaller international bond issuance. In such jurisdictions, the financial sector will pressure the central bank to maintain lower inflation rates so as to encourage bondholders to invest in government and corporate bonds (Tirole, 2002).

A well-developed financial system also provides well-resourced personnel to fill up vacancies in the central bank to enable it achieve its vision. This is in line with the argument that the ability of the independent central bank to achieve lower inflation levels, plays a role in managing the expectations of the private sector, as well as improving the credibility of the monetary policy regime. The ability of the financial sector to provide this support therefore comes from its capability, experience and size. With more developed financial sectors, more resourced persons, can be employed in the central bank, to provide the needed expertise for the independent central bank to achieve price stability.

- **Political institutions, central bank independence and inflation**

Since the 1990s, a number of studies (Campillo & Miron, 1997; Aisen & Veiga, 2008; Hielscher & Markwardt, 2012; Aysun, Brady, & Honig, 2013) have examined the relationship between institutional quality and inflation.

Aysun *et al.* (2013) examine the relationship between financial frictions and the strength of monetary policy across a large number of countries made up of 56 developed and developing

countries. The study measures financial frictions by bankruptcy recovery rates and the proportion of a firm's value creditors can recover from a defaulting firm. Firstly, using SVAR models to estimate the output response to monetary policies for each country, followed by regressing the absolute value of the measure of monetary policy impact generated in the first step on the measure of financial frictions, the bankruptcy recovery rates, the results indicate that recovery rates have a negative and statistically significant effect on the impact of monetary policies. This means that monetary policies are less effective under higher recovery rates. As control variables, the study includes in the regression, dummies for the countries' legal origin (German, English, Scandinavian and Socialist). The results show the effectiveness of monetary policies can be impacted by the legal origin. Countries with German legal origin, which has stronger creditor rights, have significantly weaker monetary policy transmission than countries with French legal origin.

According to Hielscher and Markwardt (2012), there are a number of reasons why it is important to consider the quality of institutions in assessing the link between CBI and inflation. To begin with, as a determinant of inflation, institutional quality becomes a necessary control variable in estimations. Campillo and Miron (1997) for example, find that political instability results in high inflation rates.

Aisen and Veiga (2008) attempted to provide evidence on the determinants of inflation volatility; hypothesising that political and institutional factors are the main determinants of inflation volatility. They argue that politically unstable countries are more often susceptible to political shocks leading to discontinuous monetary and fiscal policies and higher inflation volatility. Their study showed that greater political instability, lowers economic freedom and higher degrees of polarisation and political fragmentation leading to higher inflation volatility.

Further to the above reason, CBI is a possible result of the level of political institutions in a country. For instance, there is a greater level of monetary institutional autonomy in jurisdictions characterised by good checks and balances (Moser, 1999; Keefer & Stasavage, 2000; Farvaque, 2002). Therefore, Crowe and Meade (2008) noted that, measures of the quality of institutions may be used as potential instruments for legal CBI measures, so as to address issues of endogeneity in CBI-inflation studies. According to Cukierman *et al.* (2002) and Aisen and Veiga (2006), developing countries characterised by low institutional quality, have inefficient tax collecting systems which propel governments to print money in order to finance public expenditures. Inflation subsequently arises from this reliance on seigniorage.

Using a change in government and polarisation as proxies for political stability, Edwards and Tabellini (1991) find that higher inflation results from political instability in developing countries. This was subsequent to Alesina (1987), who developed a model in which the social choice function and hence budget deficits and debt, were influenced by political instability and polarization. The study argued that, governments who believed they were most likely to lose elections, spent excessively, as they would not be the final incidence of the cost incurred in repayment of debt. In doing so, they squeeze the fiscal space of the opponent party should they (opposition party) win the next election. This results in more budget deficits and debt. Thus, in line with the fiscal theory of price level, the study concluded that in countries where there are high levels of political instability, polarisation, higher budget deficits and higher inflation, will occur. Cukierman (1989) preceding the study by Edwards and Tabellini (1991) provided empirical evidence that indicates that higher inflation rates result from higher degrees of political instability.

Aisen and Veiga (2006) show that frequent government changes lead to frequent changes in macroeconomic policies. The reason is that new governments seek to pursue their own ideas

and campaign promises, which are at variance to that of their predecessors. The changes in macroeconomic policy changes have implications for price stability. Furthermore, the horizon of policy makers is shortened by frequent changes in cabinet. Thus, prominence will be placed on short-term objectives which makes it difficult to maintain inflation in a rational range.

In examining the relationship between inflation and political instability in eight Latin American countries over 1946-83, Paldam (1987) identifies a bi-directional relationship which works in two paths. The first path is linked to inflation costs and responsibility hypothesis. It states that there is a recognition by people of government's responsibility for economic outcomes. In this light, in popularity functions literature, having high levels of inflation, reduces the popularity of governments making it difficult for government to find partners in elections. Lower inflation however increases governments' popularity and keeps them in power. The other path is the path from politics to inflation. This is drawn from public expenditure literature in which weak governments hugely rely on inflation tax to finance expenditures. Subsequently, having higher levels of inflation, such governments are unable to resist political pressures and would change executives and plans.

According to Drazen (2000), there is a desire by interest groups to have other groups take up the burden on disinflation costs. In communities that are fragmented and have multiple beneficiary groups as well as weak political institutions, being confronted with difficult economic conditions, it is difficult to have the status quo changed. This results in higher and more persistent inflation rates.

Khani Hoolari, Abounoori and Mohammadi (2014) in examining the determinants of inflation in Iran, find that the effects of monetary determinants on inflation, depended on the

political environment and that there was a positive relationship between political instability and governance indicators.

Keefer and Stasavage (2003) in a study find that having multiple political veto players strengthens the effectiveness of central bank independence in achieving price stability. This is also supported by Hayo and Voigt (2008) who show that having sufficiently strong checks and balances is a precondition for a significant relation between CBI and inflation.

Hielscher and Markwardt (2012) show that having greater central bank independence will not automatically lead to lower inflation. There is a need for a sufficiently large change in central bank independence as well as a high level of political institutional quality. They argue that political institutional characteristics such as those reflected in democracy, accountability, rule of law and bureaucratic systems are needed to improve the credibility of the monetary policy regime. The study however used data on central bank independence for the period 1980–1989 and the year 2003 for 69 countries worldwide thus having fewer data points. Because the sample consists of both developing and developed countries, the findings may not be the same for developed countries or developing countries separate samples.

The study is closely related also to those by Acemoglu *et al.* (2008) and Quintyn and Gollwitzer (2010). According to Acemoglu *et al.* (2008) and Quintyn and Gollwitzer (2010), institutions appear as a factor that can change the effectiveness of other variables. The study by Acemoglu *et al.* (2008) empirically show that the effectiveness of central bank independence reforms is related to the overall institutional development of a country. More specifically, central bank independence reforms are ineffective in countries with weak and strong constraints on the executive. They further show that reforms are more effective in countries with medium constraints on the executive. The study measures the effectiveness of the reforms is measured in terms of the reduction in inflation rates. Inflation rates are

regressed on lagged inflation and multiplicative terms composed by the interaction between the central bank independence measure and dummies for weak, medium and strong constraints on the executive. Their study however uses a dummy variable to measure CBI, which does not adequately represent the effects of changes and differences in CBI levels across countries and time. Their study assumes that CBI increases by the same magnitude in every country following a reform, which we know is not true, because reforms in different countries have introduced different levels of independence.

Quintyn and Gollwitzer (2010) in a study which samples low and middle-income countries, also tests whether the effect of central bank independence on inflation rates is differential by institutions. The study shows that inflation is reduced by central bank independence irrespective of the overall institutional environment. None of the interaction terms between institutional quality and central bank independence are significant.

This study is also strongly related to the work by Mishra *et al.* (2010) which examines the monetary policy transmission in low income countries. The findings of the study show that, the transmission of central bank discount rates to bank lending rates is minimal in countries with a more concentrated banking sector and smaller scores in a transparency index. The authors explain that there is an impairment of the traditional channels of monetary policy transmission in such economies primarily as a result of the weak institutional frameworks and the imperfect competition in the banking sector. An important consideration is that Mishra *et al.* (2010) does not investigate whether the effectiveness of monetary policies on inflation, is dependent upon institutions. This research will answer this question because we focus on the effects of monetary policies on inflation rather than on bank lending rates.

From the above review, it is evident that the effect of central bank independence on inflation, is still open to further examination. Particularly in Africa and the developing world, where

financial systems and institutional quality differ significantly from the developed world, we can possibly identify differences in the levels of financial development and institutional quality as accounting for the differences in the effectiveness of central bank reforms. Though legal measures of central bank independence have not been found to have significant impact on inflation in developing countries, these could be conditions under which central bank independence can have significant impact on lowering inflation. Thus, we expect that, higher levels of financial development, both banking sector and stock market, would enhance the effectiveness of central bank independence in achieving lower inflation rates. We also expect that improvements in the quality of institutions through respect for rule of law and accountability, would enhance the credibility of the independent central bank through its discipline and accountability, in anchoring inflationary expectations at lower levels.

### **3.3 Methodology**

#### **3.3.1 Data and Sample**

To investigate the effect of CBI on inflation, we utilize panel data spanning 1970 - 2012 on 48 African countries, 90 other developing countries, 40 developed countries and 35 OECD countries (see Appendix III for the list of countries). Our legal CBI index is from Garriga (2016) who computes the CWN index for over the period 1970 - 2014. The control variables that we take into account come from the models of Campillo and Miron (1997) and Klomp and de Haan (2010). We include an indicator of trade openness, log of GDP per capita, an exchange rate dummy, fiscal deficit, world inflation, inflation targeting dummy, and indicators of financial development and institutional quality.

Following Klomp and de Haan (2010), in order to ameliorate potential heteroscedasticity of the error term, our inflation variable is rescaled using:

$$\ln(1 + \pi_{GDPDf})$$

where  $\pi_{GDPdf}$  is the annual percentage change in GDP deflator. The transformed inflation variable is also more useful for studies on emerging markets and developing countries, which are characterised by hyper-inflationary episodes (Arnone & Romelli, 2013). The GDP deflator is a measure of the price level of all domestically produced final goods and services in an economy. It is sometimes also referred to as the GDP price deflator or the implicit price deflator. The GDP deflator reflects changes in the average price level within the economy.

We adopt the use of the GDP deflator as compared to the average consumer price index (CPI), because it provides a more comprehensive measure of inflation as it covers all goods and services, unlike the consumer price index which has a specific basket of goods and services. Secondly, though the method of calculating the CPI index is standard, it should be noted that the methodology for data collection for its calculation has several limitations, including (i) the emergence of new products or services not incorporated in the calculation, (ii) the failure to take account of changes in the quality of a basket product, (iii) the degree of geographical coverage, which is sometimes limited to large cities in some countries. All these limitations may therefore skew the analysis that can be made of the interpretation of inflation statistics in Africa. Thirdly, our data provides more data points for GDP deflator than average CPI. We add the lagged value of our dependent variable ( $y_{it-1}$ ) to correct the potential endogeneity of inflation. It also controls for initial level effects.

$CBI_{it}$  represents the annual legal *central bank independence* measure of country  $i$  in period  $t$ . Our legal CBI index is from Garriga (2016), who compute CBI index for 182 countries over the period, 1970 - 2014. It follows Cukierman, Webb, and Neyapti's criteria (CWN), presented in Appendix IV. The CWN CBI index is based on a weighted aggregation of 16 legal indicators in four categories regarding the tenure of the bank's governor, policy

formation, objectives, and limitations on lending to the government. Using the criteria and weights in Cukierman, Webb and Neyapti, the index varies between 0 and 1, with larger values indicating more independence. A central bank is legally more independent when the governor's term in office is longer; the appointment and dismissal procedures are more insulated from the government; the mandate is more focused on price stability; the formulation of monetary policy lies squarely with the central bank; and the provisions on direct central bank lending are more restrictive. The index represents the most comprehensive data on CBI that spans the longest period and covers the most number of countries, useful for conducting a panel study. According to the theoretical rationale for CBI, we would expect an increase in CBI to result in a decrease in inflation.

*FinDev* is a *financial development indicator*; measured as the ratio of private credit to GDP to capture banking sector development and the ratio of stock market capitalisation to GDP as a proxy for stock market sector development. The bigger the ratio, the larger the size of the banking sector and stock market respectively. This further means more support for effective monetary policy implementation, more efficient financial sector, and greater opposition to inflation. Though studies have shown that the bond market also plays a significant role in monetary policy effectiveness, this market is relatively under-developed in Africa and developing countries. Data on the domestic bond market is unavailable for the majority of countries in Africa and the developing world for most part of the study period. With the financial markets being predominantly banks and stock exchanges and in order to facilitate comparison of our findings among Africa, developed and developing countries, the study believes using the ratio of private credit to GDP to capture banking sector development and the ratio of stock market capitalisation to GDP as a proxy for stock market sector

development indicator are appropriate. This variable is sourced from the World Development Indicators (2015).

*Inst.Qual* is the *institutional quality* variable, which is proxied by the political rights score obtained from Freedom House database. Political rights (PR) score captures the extent to which the electoral process is free and fair, the state of political pluralism and participation, and the functioning of government. The score for the variable ranges from 7 to 1, with 7 representing the least rating and 1 the highest. Following Bodea and Higashijima (2017), we rescale the original score to range between 0-6, so that lower scores now correspond to lower political rights rating and higher scores correspond to higher political rights rating. In order to do this, we use the formular  $-1 * (PRS - 7)$ , where *PRS* is the political right score as given by Freedom House. So, countries with a rating of 6 for instance, are countries that enjoy a wide range of political rights, including free and fair elections. Those elected also actually rule and political parties are competitive; the opposition plays an important role and enjoys real power, and the interests of minority groups are well represented in politics and government.

We also expect political rights to have an impact on the credibility of CBI. For example, frequent government changes may lead to revisions to central bank design and have a negative impact on the credibility of the legal design of monetary policy. However, even in an unstable government, the impact of government changes may be counteracted by the existence of a strong and high-quality bureaucratic system that can act as a shock absorber and minimize policy revision (Busse & Hefeker, 2007).

Financial development and institutional quality interact with CBI. The interaction model implies that the marginal effect of CBI on inflation depends on the value of the conditioning variable. In other words, a negative  $\beta_i$  indicates that for a given change in CBI, the marginal reduction effect on inflation, increases when  $FinDev_{it}$  increases; i.e., the effectiveness of changes in CBI is larger for more developed financial systems or countries with higher institutional quality in the case of  $InstQual_{it}$ . This variable is sourced from the World Development Indicators (2017).

Our indicator of *Trade Openness* is defined as the sum of exports and imports in relation to GDP. It is obtained from the World Development Indicators (2017). More import dependent countries are exposed to global fluctuation in prices which can impact domestic inflation. In line with Cukierman *et al.* (2002), de Haan and Kooi (2000), Klomp and de Haan (2010) and Jacome and Vazquez (2008); we include a *Fixed Exchange Regime* dummy constructed from the IMF database on de facto exchange regimes, using 1 for regimes classified as "another currency as legal tender", "currency board", or "conventional peg against a single currency", and 0 otherwise. This is to account for the effects of exchange rate anchoring on inflation.

*World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. We expect that lower inflation in developed countries, would mean lower global inflationary pressures which will mean lower inflation in a country. We include the log of per capita GDP (*LGDP*), to capture several possible effects. A higher per capita GDP is likely to be associated with a more sophisticated tax system and a financial system that is more developed. The implications of these two is the presence of lower optimal inflation tax meaning lower inflation. On the flip side, high-income countries might be better at innovating

technologies for reducing the costs of inflation, so their inflation aversion might be lower. This variable is sourced from the World Development Indicators (2017).

We include a dummy for *inflation targeting* regimes. We assign a value of 1 for inflation targeting countries and periods and 0 otherwise. While inflation targeting regimes have an overriding objective of price stability and explicitly and numerically announce an inflation target and respond to short-term shocks, they are not necessarily independent central banks as other aspects of central bank independence such as appointment and dismissal of governors and limits on central bank credit are not captured by having a central bank operating under an inflation targeting regime. Thus, we include the variable to capture other monetary policy regimes that work towards price stability. The empirical evidence indicates that most inflation targeting regimes have successfully reduced inflation (Dumiter, 2014).

We include *fiscal deficits* measured as government expenditure to GDP, minus government revenue to GDP. We expect that higher levels of fiscal deficit will lead to higher demand for inflationary finance which can result in high levels of inflation. High fiscal deficits also lead to crowding out in the financial markets which lead to higher cost of credit, which pushes prices of goods and service up (Ismihan & Ozkan, 2012).

### **3.3.2 Model and Estimation Technique**

To address our research questions, we use the following procedure. We follow the approach used by Eichengreen and Dincer (2014), Klomp and de Haan (2010), Jacome and Vasquez (2008) and Campillo and Miron (1997) to estimate the impact of CBI on inflation. Following recent literature in panel data studies (Merkl & Stolz, 2009) and to account for the possibility

of endogeneity in our model and time persistence in inflation structure, we adopt a Two Stage Least Square Instrumental Variables (2SLSIV) estimator.

The justification for using this estimator is to address issues of reverse causality and endogeneity. The decision of implementing central bank reforms may be self-dependent on inflation. An instance is that a disinflationary period can result in easier implementation of central bank reforms. Secondly, the effects of central bank reforms on inflation may not be immediately realised. This is because; implementing a new institutional environment usually requires the enactment of more specific regulations, and the build-up of central bank reputation, which is the main factor from the perspective of market participants (Jacome & Vasquez, 2012). All estimations are performed with robust standard errors to ensure that the errors are homoscedastic. Subsequently, we use instrumental variables as the appropriate treatment to account for the possible endogeneity of central bank reform. Following Jacome and Vasquez (2008), we use the Error Correction Two-Stage Least Squares (EC2SLS) described in Balgati and Chang (2000).

In applying the 2SLS, we require valid instruments, which are always difficult to get. In the literature, either internal instruments or external instruments are employed. We opt for internal instruments and consequently employ the lags of CBI as instruments<sup>2</sup>. In this regard, we use the lags of CBI as instruments. The lagged values do not themselves belong in the respective estimating equations and they are sufficiently correlated with the explanatory variables. The equations are exactly identified and therefore no need to perform over identifying restrictions tests.

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<sup>2</sup> A test of endogeneity showed that measures of financial development and institutions are not endogenous.

Specification tests relating to instrument validity and endogeneity are conducted. The Woolridge's over-identifying restrictions test is employed to assess instrument validity. The null hypothesis is that the instruments are valid. With regard to endogeneity, two tests are conducted: Woolridge's robust score test for endogeneity and the robust regression exogeneity test. The null hypothesis in both cases is that the variables are exogenous. Estimations are executed with robust standard errors to ensure that the results are not tainted by heteroscedasticity.

The first stage equation which evaluates the endogenous variable (CBI) as a function of the instrument and the vector of explanatory variables ( $\mathbf{X}$ ) is specified as follows:

$$CBI_{it} = \alpha_0 + \alpha_1 Instrument + \mathbf{X}_{it}\boldsymbol{\beta} + u_t + \eta_i + e_{it} \quad (3.1)$$

where:

$\mathbf{X}$  is a vector of explanatory variables as specified in equation (3.2);

$\mathbf{X}_{it} = (x_{1t}, x_{2t}, \dots, x_{kt})$  and  $\boldsymbol{\beta} = (\beta_1, \beta_2, \dots, \beta_k)'$ .

This study accounts for the persistence in inflation, by introducing the lag of inflation into the model. This also helps to address further issues of endogeneity, reverse causality and omitted variable bias.

Subsequently, the second stage equation is specified generally as follows:

$$Inf_{it} = \beta_1 Inf_{it-1} + \beta_2 CBI_{it} + \beta_3 FinDev_{it} + \beta_4 Inst. Qual_{it} + \beta_5 X_{it} + \varepsilon_{it} \quad (3.2)$$

where  $\varepsilon_{it} = v + w + e_{it}$ .

To capture possible unobserved heterogeneity, and to analyse the impact of institutional quality and financial development on the CBI-inflation, we specify the following interaction model:

$$Inf_{it} = \beta_1 Inf_{it-1} + \beta_2 CBI_{it} + \beta_3 FinDev_{it} + \beta_4 Inst. Qual_{it} + \beta_5 (CBI_{it} * CV_{it}) + \beta_6 X_{it} + \acute{\epsilon}_{it} \quad (3.3)$$

where  $CV$  is the conditioning variable; i.e. either institutional quality or financial development and  $\acute{\epsilon}_{it} = \acute{u}_t + \acute{\omega}_i + \acute{\epsilon}_{it}$ .

We thus estimate our model in line with our objectives as follows:

$$Inf_{it} = \beta_1 Inf_{it-1} + \beta_2 CBI_{it} + \beta_3 FinDev_{it} + \beta_4 Inst. Qual_{it} + \beta_5 (CBI_{it} * FinDev_{it}) + \beta_6 X_{it} + \epsilon_{it} \quad (3.4)$$

$$Inf_{it} = \beta_1 Inf_{it-1} + \beta_2 CBI_{it} + \beta_3 FinDev_{it} + \beta_4 Inst. Qual_{it} + \beta_5 (CBI_{it} * InstQual_{it}) + \beta_6 X_{it} + \epsilon_{it} \quad (3.5)$$

To properly interpret the interaction terms, we must include the level of conditioning variable i.e. institutional quality and financial sector development  $CV_{it}$  (Brambor, Clark & Golder, 2006). As in the case of CBI based on equation (3.3), the effect of a change in CBI on our dependent variable is given by:

$$\frac{\partial \Delta Inf_{it}}{\partial \Delta CBI_{it}} = \beta_2 + \beta_5 CV_{it} \quad (3.6)$$

### **3.4 Analysis and Discussion of Results**

#### **3.4.1 Data description**

Table 3.1 presents summary statistics of the key variables for our sample of Africa, other developing and developed countries. Africa has the highest inflation rates (4.08), compared to developed and other developing countries. This highlights the inflationary challenges that confront the continent. This is in spite of Africa having relatively higher median and mean CBI values compared to developed and other developing countries. The quality of institutions is highest in developed countries with an average score of 4.76 compared to Africa's 2.17 and other developing countries' score of 2.89. When we look at our financial development measures, Africa has the lowest average private credit to GDP ratio of 19.89. This is very low compared to that of developed countries of 68.67 on average. Examining the standard deviation of private credit to GDP ratio for other developing countries, there is a high level of variation of 80.52. While that of Africa is 19.35. This points to some wide level of disparities in the level of financial development among other developing countries, with more commonality among African countries, than among other developing countries. The same can be said of stock market capitalisation, where Africa has the lowest average.

From the correlation matrix in Table 3.2, there are no serious multicollinearity concerns. The very high and significant correlations occur among the two measures of institutional quality (civil liberties and political rights) and financial development (private credit to GDP and stock market capitalisation as percent of GDP). This means that when we use either of the variables as a proxy for financial development or institutional quality, we will be appropriately describing the variables of concern.

**Table 3.1: Descriptive Statistics**

Variable		Mean	Median	Max	Min.	SD.	Obs.
Inflation	Africa	2.832	0.992	4.083	-1.229	1.477	1735
	Developing	0.998	0.988	3.7	-2.510	0.998	3911
	Developed	0.732	0.712	2.416	-1.889	0.415	1705
Priv.Cred	Africa	19.892	14.736	160.125	0.491	19.347	1769
	Developing	29.219	20.193	115.783	0.491	80.527	4028
	Developed	68.671	58.178	312.154	0.059	44.925	1654
StockMkt.Dev't	Africa	30.043	13.785	96.939	0.095	26.587	335
	Developing	32.410	15.946	125.433	0.095	32.382	1161
	Developed	56.595	43.04	265.128	0.178	46.963	1247
CBI	Africa	0.453	0.501	0.866	0.134	0.197	1593
	Developing	0.462	0.482	0.894	0.134	0.193	3777
	Developed	0.480	0.450	0.894	0.097	0.222	1915
Inst.Qual	Africa	2.178	2	6	0	1.451	1986
	Developing	2.880	3	6	0	1.719	4534
	Developed	4.763	5	6	0	1.697	1883
Fiscal Deficit	Africa	-7.917	22.521	10.985	-84.508	15.124	1379
	Developing	-4.397	25.67	29.29	-43.532	15.819	3981
	Developed	21.749	35.84	45.21	-67.851	25.588	1766
Inflation Targeting	Africa	0.019	0.018	1	0	0.0967	1588
	Developing	0.072	0.065	1	0	0.0987	4579
	Developed	0.115	0.095	1	0	0.124	1937
Fixed Exchange Regime	Africa	0.311	0.302	1	0	0.454	1259
	Developing	0.632	0.7521	1	0	0.524	3485
	Developed	0.412		1	0	0.525	1483
Per Capita GDP	Africa	1362.7	1568.5	14749.2	113.7	2129.5	1429
	Developing	2045.7	2254.3	15912.5	111.7	2179.6	4127
	Developed	23951.3	32154	87772.7	589.14	14956	1703
Trade Openness	Africa	43.58	45.2	92.9	22.5	16.5	1569
	Developing	33.82	54.23	85.27	21.6	36.7	4480
	Developed	91.9	89.52	217.4	21.38	19.42	1912

*Inflation* variable is the modified inflation rate computed as:  $LOG(1 + \pi_{GDPDF})$  where  $\pi_{GDPDF}$  is the annual percentage change in GDP deflator. CBI is the annual legal CWN central bank independence index measure of a country's central bank independence. *Priv.Cred* is credit to the private sector as a percentage of GDP; measured as the ratio of stock market total value traded to GDP (%), which are proxies for financial development. *Inst.Qual* is rescaled civil liberties score (0-6) which is proxy for institutional quality. *Trade Openness* is defined as sum of exports and imports in relation to GDP. *Fixed Exchange* regime is a dummy constructed from the IMF database on de facto exchange regimes, using a one (1) for regimes classified as: "another currency as legal tender," "currency board," or "conventional peg against a single currency," and zero (0) otherwise. *Fis.Def* is fiscal deficit measured as government expenditure minus government revenue as a percent of GDP. *World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. *Per Capita GDP* is measured as log of the ratio of real Gross Domestic Product divided by total population. *Inflation Targeting* variable is a dummy constructed from the IMF database, using a one (1) for inflation targeting regimes and zero (0) for non-targeting regimes.

**Table 3.2 Correlation Matrix**

	Inflation	CBI	Priv.Cred	Fiscal Deficit	World Inflation	Inflation Targeting	Fixed Exchange	Per Capita GDP	StockMkt.Dev't	Civ.Lib	Pol.Rights	Trade Openess
Inflation	1.000											
CBI	-0.1754*	1.0000										
Priv.Cred	-0.3825*	0.0416*	1.000									
Fiscal.Def	0.0414	-0.0464*	-0.0917	1.0000								
World Inflation	0.2430*	-0.3087	-0.0974	-0.0521	1.0000							
Inflation Targeting	-0.1398	0.0996*	0.2187	-0.1119	0.0012	1.0000						
Fixed Exchange	-0.1094*	0.0342	-0.1457	0.0774	0.0794	-0.1898	1.0000					
Per Capita GDP	-0.2593*	0.2313*	0.6313	-0.1995	-0.0380	0.1964	-0.1512	1.0000				
StockMkt.Dev't	-0.0513	0.0777	0.2075*	-0.1645	0.0342	0.0601	0.0561	0.0726	1.0000			
Civ.Lib	-0.2642	0.1458	0.5012	-0.0961	-0.1461	0.2197	-0.239	0.5822	0.3021	1.0000		
Pol.Rights	-0.2298	0.1361	0.4733	-0.0919	-0.0969	0.2214	-0.2439	0.5486	0.3321	0.9068*	1.0000	
Trade Openness	0.0391	-0.1206	0.1498*	-0.0953	0.0014	0.0012	-0.0258	0.0015	0.0022	0.0042	0.0015	1.0000

Pairwise correlations for a sample of 152 countries. *Inflation* variable is the modified inflation rate computed as:  $LOG(1 + \pi_{GDPDF})$  where  $\pi_{GDPDF}$  is the annual percentage change in GDP deflator. CBI is the annual legal CWN central bank independence index measure of a country's central bank independence. *Priv.Cred* is credit to the private sector as a percentage of GDP; measured as the ratio of stock market total value traded to GDP (%), which are proxies for financial development. *Civil.Lib* is rescaled civil liberties score (0-6) which is proxy for institutional quality. *Trade Openness* is defined as sum of exports and imports in relation to GDP. *Fixed Exchange* regime is a dummy constructed from the IMF database on de facto exchange regimes, using a one (1) for regimes classified as: “another currency as legal tender,” “currency board,” or “conventional peg against a single currency,” and zero (0) otherwise. *Fis.Def* is fiscal deficit measured as government expenditure minus government revenue as a percent of GDP; *World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. *Per Capita GDP* is measured as log of the ratio of real Gross Domestic Product divided by total population. *Inflation Targeting* variable is a dummy constructed from the IMF database, using a one (1) for inflation targeting regimes and zero (0) for non-targeting regimes. \*Indicates correlations significant at the 10% significant level after Bonferroni adjustment.

### 3.4.2 Main Empirical Results

The results of our regressions are presented in this section. These results are not susceptible to endogeneity bias. The first stage results (not reported), indicate that the instruments for CBI, was appropriate, with the associated coefficient significant at the one-percent level in all cases.

The Woolridge's over-identifying restrictions tests of which the null hypothesis is that the instruments are valid, indicate that instruments used are valid. In addition, Woolridge's robust score test for exogeneity and/or the robust regression exogeneity test, reject the null hypothesis of exogeneity for all models. The Wald test confirms that the regressor variables jointly affect the regressands at significant levels. These tests combined, show that the models are adequate.

Our baseline results for the relationship between CBI, financial development, institutional quality and inflation are shown in Table 3.2. All standard errors are corrected to ensure homoscedastic errors. The results of our instrumental variables regressions for African countries, are shown in models 1-3 in Table 3.2.

CBI is found not to have any significant impact on inflation as seen in models 1-3 in Africa and 4-6 in other developing countries. This means that central bank reforms making central banks (more) independent, have not significantly reduced inflation as desired. This confirms the findings by previous studies concerning developing countries whereby legal measures of central bank independence were not significant determinants of inflation. This means that the legal dependence of central banks in Africa and other developing countries, do not reflect their actual or de facto independence. This is most likely due to disregard for CBI provisions in Africa and developing countries where the rule of law and respect for legal provisions are

low, thereby resulting in the central bank not being truly independent from political authorities.

In developed countries however, CBI has a significantly negative effect on inflation (as seen in models 7-9). In such countries, due to the high levels of respect for the rule of law, central bank independence provisions are respected thereby resulting in actual/ de facto independence of the central banks. In such jurisdictions, governments cannot exploit the central bank in order to achieve short term objectives which could include financing government projects from central bank credit which generates inflation. In addition, central bank governors' tenure are not threatened and therefore they are able to say no to government when governments' demands are inimical to the achievement of price stability objectives.

Our proxy for institutional quality, which is the rescaled political rights variable does not have a significant negative impact on inflation in Africa (except in model 3 after the introduction of the interactive term). In other developing and developed countries however, where institutional quality is higher compared to Africa, we see a significant negative impact of institutional quality, (i.e. political rights) on inflation (model 4-6 for developing countries, and model 7-9 for developed countries). This is not surprising as such environments have systems that enable society to hold governments accountable for poor economic performance such as high inflation. They also have better tax systems that reduce pressure for use of seigniorage to finance government expenditure, thus resulting in lower inflation. In such jurisdictions, pressure on government to seek the welfare of society through efficient economic policies are present. This means governments cannot just do anything to achieve short term objectives without being held accountable by the citizenry. Such jurisdictions are also characterised by political stability which means governments think about the long term

and not seek to plan and execute policies within the short term. This guarantees the efficient roll out of sound macroeconomic policies to achieve lower inflation and economic growth.

Private credit to GDP, our measure of financial development has a significantly negative impact on inflation in Africa, other developing countries and developed countries (models 1-3 for Africa, 4-6 for other developing countries and 7-9 for developed countries). More developed financial systems are efficient in their operations thereby having lower cost of credit compared to less developed systems. More developed financial markets have less costly sources of finance since they are able to gather a significant amount of deposits at lower cost. This ensures that cost of credit is lower and therefore lower cost of production for the real sector and subsequently lower inflation rates compared to poorly developed financial systems.

Focusing on the interactive variables, the interactive term between CBI and financial development ( $CBI*Priv.Cred$ ) shows a negative and significant impact on inflation across all three samples (i.e. Africa, other developing countries and developed countries). This supports the argument that the financial sector enhances the effectiveness of CBI on inflation and that CBI has effect on inflation only at higher levels of financial development. More developed financial markets act as more effective channels for the transmission of monetary policy, so that independent central banks can more effectively achieve price stability with monetary policy tools. This is because the magnitude of the impact of central banks' policy rate is dependent on the transmission channel, which is more effective in well-developed financial markets than poorly developed ones. So given that an independent central bank desires to minimise inflation through hiking policy rates, this desired impact can be more effective when the financial markets are well developed and can influence access to money and cost of funds. Also, well developed financial systems can provide more accurate data to the central

bank which enables the bank to come out with better policies based on accurate figures. This enables the achievement of price stability objectives. In addition, government's reliance on central bank financing is reduced in well-developed financial systems as governments can borrow from the financial system and not rely on seigniorage from the central bank. This should reduce inflationary pressures compared to less developed financial systems whereby pressure on the central bank to finance government expenditure is high.

Though political institutional quality on its own, does not impact inflation in Africa directly, it combines effectively with CBI to achieve price stability. This can be explained to mean that, higher levels of institutional quality enhance the ability of independent central banks, to lower inflation, through better respect for CBI provisions as well as the vigilance of the opposition to ensures CBI legislations are adhered to. This is explained by the credibility that the monetary policy regime gains from the expectation that central bank laws will be respected and certain control mechanisms meant to keep the central bank on its toes, are implemented. Central banks that are independent in such environments, are more transparent and accountable, thereby enhancing their performance and the trust the markets have in their independence. This anchors inflationary expectations, which feed into lower inflation rates. Secondly, where respect for creditor and property rights exist, they lower information asymmetry costs which contribute to the lowering the overall cost of financial transactions and therefore lower cost of credit. This should lead to lower cost of production and lower inflation rates.

Focusing on our control variables, past inflation, world inflation and fiscal deficit, all have the expected significant impact on inflation in Africa, other developing and developed countries. Whilst past inflation, world inflation and fiscal deficits result in higher levels of inflation, fixed exchange rate regimes and inflation targeting regimes significantly lowered

**Table 3.3: CBI, Financial Development, Institutional Quality and Inflation (1)**

	AFRICA			DEVELOPING			DEVELOPED		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation
L.Inflation	0.175*** (0.024)	0.174*** (0.024)	0.174*** (0.024)	0.085*** (0.02)	0.440*** (0.02)	0.093*** (0.02)	0.375*** (0.026)	0.367*** (0.026)	0.373*** (0.026)
World Inflation	0.235*** (0.037)	0.245*** (0.038)	0.235*** (0.037)	0.165*** (0.028)	0.018*** (0.002)	0.169*** (0.028)	0.006*** (0.002)	0.006*** (0.002)	0.006*** (0.002)
CBI	-0.012 (0.056)	-0.132 (0.189)	-0.042 (0.065)	-0.071 (0.066)	-0.044 (0.059)	-0.031 (0.084)	-0.083** (0.028)	-0.004** (0.01)	-0.016** (0.03)
Priv.Cred.	-0.002** (0.001)	-0.001 (0.002)	-0.002** (0.001)	-0.008* (0.004)	-0.003** (0.001)	-0.004* (0.001)	-0.011*** (0.001)	-0.011*** (0.001)	-0.013*** (0.001)
Pol.Rights.	-0.003 (0.006)	-0.002 (0.006)	-0.017* (0.010)	-0.01** (0.006)	-0.017** (0.008)	-0.01** (0.006)	-0.006** (0.001)	-0.005** (0.001)	-0.038** (0.017)
CBI*Priv.Cred		-0.007** (0.003)			-0.007*** (0.001)			-0.001*** (0.000)	
CBI* Pol.Rights.			-0.073* (0.043)			-0.025** (0.012)			-0.066** (0.013)
Fiscal Deficit	0.014*** (0.001)	0.014*** (0.001)	0.014*** (0.001)	0.009*** (0.000)	0.001*** (0.000)	0.009*** (0.000)	0.014*** (0.001)	0.014*** (0.001)	0.014*** (0.001)
Fixed Exchange	-0.139*** (0.022)	-0.140*** (0.022)	-0.135*** (0.022)	-0.095*** (0.015)	-0.115*** (0.015)	-0.097*** (0.015)	-0.002 (0.016)	-0.006 (0.016)	-0.004 (0.016)
Inflation Targeting	0.155* (0.087)	0.122 (0.088)	0.148* (0.087)	-0.073** (0.032)	-0.060* (0.034)	-0.073** (0.031)	-0.017** (0.003)	-0.018** (0.003)	-0.08** (0.002)
Per Capita GDP	0.038 (0.029)	0.045 (0.030)	0.038 (0.030)	0.016 (0.026)	-0.163** (0.067)	0.03 (0.025)	-0.062** (0.031)	-0.042 (0.032)	-0.062** (0.031)
Trade Openness	0.043 (0.076)	0.022 (0.076)	0.042 (0.076)	0.316*** (0.056)	0.228*** (0.049)	0.260*** (0.052)	0.010 (0.059)	0.000 (0.059)	0.01 (0.059)
Constant	0.464*** (0.108)	0.361*** (0.118)	0.531*** (0.115)	0.788*** (0.150)	0.769*** (0.137)	0.711*** (0.135)	0.656*** (0.143)	0.569*** (0.147)	0.611*** (0.145)
Observations	937	937	937	1,269	1,269	1,330	1,105	1,103	1105
Number of Countries	48	48	48	90	90	90	40	40	40
Wald Chi <sup>2</sup>	55.24***	53.11***	49.3***	46.52***	47.54***	49.31***	47.65***	48.87***	51.63***
Wooldridge's OIR	0.5432 (0.4521)	0.5321 (0.4652)	0.6325 (0.4526)	0.7456 (0.8214)	0.7351 (0.8115)	0.7652 (0.7985)	0.6287 (0.6654)	0.6325 (0.6451)	0.6587 (0.6652)
p-value	8.5462**	8.7452**	8.4564**	9.2153**	9.2151**	9.3211**	8.4562**	8.5421**	8.5231**
Robust Regression	4.9312**	4.2312**	4.2563**	5.2334**	5.4565**	5.2332**	5.4521**	5.8965**	5.745**

*Inflation* variable is the modified inflation rate computed as:  $\text{LOG}(1 + \pi_{\text{GDPDF}})$  where  $\pi_{\text{GDPDF}}$  is the annual percentage change in GDP deflator. CBI is the annual legal CWN central bank independence index measure of a country's central bank independence. *Priv.Cred* is credit to the private sector as a percentage of GDP; measured as the ratio stock market capitalisation to GDP (%), which is proxy for financial development. *Pol.Rights* is rescaled political rights score (0-6) which is proxy for institutional quality. *Trade Openness* is defined as sum of exports and imports in relation to GDP. *Fixed Exchange* regime is a dummy constructed from the IMF database on de facto exchange regimes, using a one (1) for regimes classified as: "another currency as legal tender", "currency board", or "conventional peg against a single currency", and zero (0) otherwise. *Fiscal Deficit* is fiscal deficit measured as government expenditure minus government revenue as a percent of GDP. *World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. *Per Capita GDP* is measured as log of the ratio of real Gross Domestic Product divided by total population. *Inflation Targeting* variable is a dummy constructed from the IMF database, using a one (1) for inflation targeting regimes and zero (0) for non-targeting regimes. Robust Standard errors are in parentheses (\*\* $p < 0.01$ , \* $p < 0.1$ ). Robust standard errors in parenthesis.

inflation compared to other exchange rate regimes in Africa and other developing countries only.

Whilst higher levels of per capita GDP significantly lower inflation in other developing and developed countries, it was not so in Africa. This could be due to lower per capita GDP levels in Africa, which means lower incomes and lower tax revenues. This would mean more reliance by government on seigniorage. Trade openness significantly increased inflation in developing countries only.

### **3.4.3 Relative importance of banking sector and stock market development to CBI effectiveness on inflation**

In Table 3.4, when we measure financial development using stock market capitalisation to GDP, and civil liberties as proxy for financial development, similar to the results in Table 3.3, CBI has no significant impact on inflation in Africa and other developing countries, except in developed countries. Civil liberties, also does not have any significant impact on inflation in Africa. However, it significantly lowers inflation in other developing and developed countries. This confirms the earlier results in Table 3.3. The interactive term between civil liberties and CBI is also significant and negative in Africa, other developing and developed countries.

However, whilst private credit to GDP has a significant impact on inflation in Africa, other developing countries and developed countries, stock market capitalisation to GDP only has significant impact in developed countries. This means that in Africa and other developing countries, where the stock markets are poorly developed, they do not act as effective channels for monetary policy and therefore are unable to impact inflation. Secondly, poorly developed capital markets mean lower investments in firms and lower revenues, resulting in lower taxes. This puts pressure on inflationary financing sources. In developed countries,

where capital markets are highly developed, there are likely to be more efficient systems in administering tax regimes. This leads to lower costs in tax collection and lower opportunities to evade tax, thereby leading to higher tax revenues and less reliance on central bank finance which is inflationary.

It is noteworthy that the magnitude of the coefficient of stock market capitalisation in Table 3.4 for developed countries, is higher compared to that for private credit to GDP in Table 3.3. This means that compared to the banking sector, the capital market is an important channel for monetary policy effectiveness in developed countries which are mostly capital market-based systems. For Africa and other developing countries, which are predominantly bank based financial systems, the banking sector significantly impacts inflation more than the capital markets.

In terms of the interactive term between CBI and stock market capitalisation, we see a significant and negative impact on inflation in other developing and developed countries. This means that capital market development enhances the effectiveness of CBI in reducing inflation. In well-developed capital markets, the credibility of the overall financial system is high as such systems require high levels of transparency and accountability. This means CBI gains credibility as fear of government interference is low. This anchors inflationary expectations also and leads to price stability. In highly developed capital markets, cost of capital is also low, meaning access to cheaper source of finance. This should lead to higher productivity and more revenues for government, thereby reducing pressure on CBI to finance government spending. Finally, with low cost of capital, cost of goods and services will be relatively low thereby enabling independent central banks to easily attain price stability.

Comparing the effect of banking sector development and stock market development on the CBI inflation nexus, we can note on the basis of the significance of the interactive variable coefficients, that banking sector development, is more effective in reducing inflation than capital market development in Africa. Comparably, the banking sector is much more developed in Africa, than the stock market.

In other developing countries, we find that the banking sector, enhances the effectiveness of CBI more than the stock market. On average, the coefficient of the interactive variable  $CBI*Priv.Cred$ , is higher than that of  $CBI*StockMkt.Dev't$ . This can be attributed to the dominance of the banking system in most developing countries, thereby acting as a more effective tool to enhance the effectiveness of CBI.

In developed countries, though both banking and capital market development enhance the effectiveness of CBI, capital market development enhances CBI's effectiveness in reducing inflation more than the banking sector. This is because, the coefficient for the interactive term between capital market development and CBI, is higher (0.004) than that for banking sector development and CBI (0.001). This can be attributed to the dominance of the stock market in most developed countries.

**Table 3.4: CBI, Financial Development, Institutional Quality, and Inflation (2)**

	AFRICA			DEVELOPING			DEVELOPED		
	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation	Inflation
L.Inflation	0.172*** (0.043)	0.172*** (0.043)	0.172*** (0.043)	0.612*** (0.025)	0.281*** (0.088)	0.395*** (0.082)	0.065* (0.036)	0.069* (0.036)	0.069* (0.036)
CBI	-0.288 (0.198)	-0.300 (0.272)	-0.300 (0.282)	-0.021 (0.050)	-0.116 (0.218)	-0.14 (0.179)	-0.428* (0.110)	-0.314* (0.093)	-0.314* (0.083)
StockMkt.Dev't	-0.002 (0.001)	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.001 (0.002)	-0.000 (0.002)	-0.004** (0.001)	-0.004** (0.001)	-0.004** (0.001)
Civil.Lib	-0.034** (0.010)	-0.036** (0.010)	-0.036* (0.010)	-0.006 (0.005)	-0.101** (0.021)	-0.12* (0.003)	-0.040** (0.016)	-0.036** (0.015)	-0.036** (0.015)
CBI* StockMkt.Dev't		-0.003 (0.005)			-0.005* (0.002)			-0.014** (0.002)	
CBI* Civil.Lib			-0.004* (0.002)			-0.003* (0.002)			-0.004** (0.002)
World Inflation	0.437*** (0.106)	0.445*** (0.108)	0.445*** (0.108)	0.139*** (0.048)	-0.195 (0.281)	-0.047 (0.268)	0.029 (0.110)	0.034 (0.109)	0.034 (0.109)
Fiscal Deficit	0.020*** (0.001)	0.020*** (0.001)	0.020*** (0.001)	0.009*** (0.000)	0.009*** (0.000)	0.009*** (0.000)	0.107*** (0.005)	0.107*** (0.005)	0.107*** (0.005)
Fixed Exchange	-0.150*** (0.033)	-0.148*** (0.033)	-0.148*** (0.033)	-0.083*** (0.022)	-0.173* (0.093)	-0.144* (0.083)	-0.029 (0.019)	-0.028 (0.019)	-0.028 (0.019)
Inflation Targeting	-0.054 (0.071)	-0.055 (0.071)	-0.055 (0.071)	-0.090*** (0.031)	-0.195** (0.087)	-0.155** (0.075)	-0.061** (0.027)	-0.059** (0.027)	-0.059** (0.027)
Per Capita GDP	-0.036 (0.045)	-0.038 (0.045)	-0.038 (0.045)	0.039 (0.025)	0.159 (0.137)	0.146 (0.106)	-0.113** (0.053)	-0.107** (0.052)	-0.107** (0.052)
Trade Openness	0.176 (0.169)	0.173 (0.168)	0.173 (0.168)	0.330*** (0.077)	0.681* (0.376)	0.548* (0.309)	(0.026) (0.146)	(0.055) (0.135)	(0.055) (0.135)
Constant	0.437** (0.180)	0.436** (0.179)	1.252*** (0.243)	0.240** (0.096)	0.337*** (0.102)	0.240** (0.096)	0.539* (0.286)	0.516* (0.291)	0.539* (0.286)
Observations	238	238	238	861	862	967	489	488	488
Number of Countries	18	18	26	84	84	84	38	38	38
Wald Chi <sup>2</sup>	52.16***	52.31***	48.32***	44.31***	45.42***	48.35***	46.15***	47.27***	48.52***
Woolridge's OIR	0.6212 (0.4251)	0.6521 (0.3256)	0.6354 (0.4253)	0.6689 (0.2541)	0.6785 (0.3254)	0.6874 (0.2564)	0.5874 (0.3569)	0.5684 (0.3256)	0.5589 (0.4586)
p-value	9.2111**	8.8852**	9.1124**	8.1121**	8.7252**	8.5215**	8.5522**	8.6411**	8.7222**
Woolridge Rob.	5.3115**	4.7342**	4.8442**	5.2254**	5.5421**	5.2541**	5.5465**	5.5225**	5.6532**
Robust Regression									

*Inflation* variable is the modified inflation rate computed as:  $LOG(1 + \pi_{GDPDF})$  where  $\pi_{GDPDF}$  is the annual percentage change in GDP deflator. CBI is the annual legal CWN central bank independence index measure of a country's central bank independence. *StockMkt.Dev't* is a stock market development indicator; measured as the ratio stock market total value traded to GDP (%), which is proxy for financial development. *Civil.Lib* is rescaled civil liberties score (0-6) which is proxy for institutional quality *Trade Openness* is defined as sum of exports and imports in relation to GDP. *Trade Openness* is defined as sum of exports and imports in relation to GDP. *Fixed Exchange* regime is a dummy constructed from the IMF database on de facto exchange regimes, using a one (1) for regimes classified as: "another currency as legal tender", "currency board", or "conventional peg against a single currency", and zero (0) otherwise. *Fiscal Deficit* is fiscal deficit measured as government expenditure minus government revenue as a percent of GDP. *World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. *Per Capita GDP* is measured as log of the ratio of real Gross Domestic Product divided by total population. *Inflation Targeting* variable is a dummy constructed from the IMF database, using a one (1) for inflation targeting regimes and zero (0) for non-targeting regimes. Robust Standard errors are in parentheses (\*\*\*)  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Robust standard errors in parenthesis.

### **3.5 Robustness Checks**

Considering that CBI is not significant though negative for African countries, we do the estimation for the global sample and introduce a dummy for Africa and then interact the African dummy with CBI and test whether the coefficient of the new variable (African dummy) interacted with CBI is the same in and out of Africa. If it is, then we can conclude CBI is significant for inflation even in Africa.

We also measure institutional quality as rule of law sourced from the World Governance Indicators and include Growth of Money supply (from the World Bank) and Oil prices (from the World Bank Commodity Price database) as additional explanatory variables (Basnet & Upadhyaya, 2015; Nguyen, 2015).

The results as shown in Table 3.5 indicate that the interactive variable CBI\*Africa is not significant. Thus confirming that CBI is not effective in Africa. However, when we interact CBI, Africa and Institutional quality, we have a significant coefficient which is negative, giving further credence to the fact that higher levels of institutional quality, improve CBI's effectiveness in Africa.

### **3.6. Conclusion**

The independence of the central bank and its effect on inflation has been examined by many studies with varying results. In Africa, the outcome of CBI reforms has not been encouraging. This has led to discussions in literature on the conditions under which CBI is effective against inflation. This study empirically identifies financial development and institutional quality as two of such conditions.

Taking into account the effect of endogeneity of the CBI variable as well as the effect of lagged inflation on the dependent variable, the direct negative relationship between CBI and inflation, fails to hold in African and other developing countries. The relationship is

however further confirmed in developed countries. The study finds evidence to the effect that, well developed financial systems and institutions improve the effectiveness of central bank independence in achieving lower inflation rates.

In Africa, where earlier studies did not identify any direct relationship between CBI and inflation, the findings of this study establish that, improving Africa's financial sector and institutions, would benefit central bank reforms objectives on the continent. This supports the point by Posen (1993) that the financial and political system are needed to support CBI reforms to succeed in reducing inflation. This is achieved through the overall and general good reputation of the central bank that is created in the economy which means that the independent central bank would be given the free hand to be independent of government. This works to hold down inflationary expectations, resulting in low levels of inflation. A well-developed financial sector also plays the role of ensuring good corporate governance practices of the central bank, to ensure that its independence from political authorities is maintained. Doing this can help African governments achieve the objective of having a monetary union and a single currency. The results are robust to the level of development of countries in that, in both developed and other developing countries, financial development and institutional quality are useful and effective conditioning variables, for CBI to reduce inflation. The study also finds that, stock market development enhances the effectiveness of CBI in reducing inflation in developed and other developing countries. However, this is not the case for African countries, where the stock markets are relatively under-developed relatively. Between banking sector development and stock market development, the banking sector, enhances CBIs' effectiveness in reducing inflation more than the stock market does in Africa and other developing countries. In developed countries however, CBI's effectiveness in reducing inflation, is higher with stock market development than banking sector development.

**Table 3.5: CBI, Financial Development, Institutional Quality and Inflation in Africa**

	Inflation (37)	Inflation (38)	Inflation (39)
L.Inflation	0.462*** (0.021)	0.445*** (0.024)	0.475*** (0.032)
World Inflation	0.211** (0.047)	0.216** (0.052)	0.248** (0.062)
CBI	-0.214** (0.061)	-0.221** (0.044)	-0.215** (0.051)
Priv.Cred.	-0.182** (0.078)	-0.145** (-0.062)	-0.153** (0.074)
Rule of Law	-0.073** (0.018)	-0.076** (0.002)	-0.079** (0.027)
Africa	0.152** (0.035)	0.149** (0.041)	0.113* (0.069)
CBI*Africa		-0.121 (0.174)	
CBI*Africa*Rule of Law			-0.155** (0.049)
Fiscal Deficit	0.122*** (0.003)	0.134 (0.172)	0.105** (0.002)
Fixed Exchange	-0.099*** (0.005)	-0.102** (0.062)	-0.032** (0.056)
Inflation Targeting	-0.104** (0.018)	-0.157** (0.002)	0.111** (0.027)
Per Capita GDP	-0.052 (0.068)	-0.046** (0.021)	-0.058* (0.025)
Trade Openness	0.124*** (0.005)	0.116*** (0.008)	0.148** (0.009)
Oil Prices	0.211** (0.028)	0.224*** (0.001)	0.256** (0.038)
Growth of M2	0.314*** (0.002)	0.335*** (0.003)	0.331*** (0.001)
Constant	1.115*** (1.111)	1.423*** (0.798)	1.234*** (0.124)
Observations	1521	1521	1521
Number of Countries	140	140	140
Wald Chi <sup>2</sup>	48.22***	51.45***	52.56***
Woolridge's OIR	0.5123 (0.4324)	0.5567 (0.4467)	0.5321 (0.4689)
<i>p</i> -value			
Woolridge Rob.	6.3221**	7.5442**	7.3522**
Robust Regression	5.2254**	4.5647**	4.7541**

*Inflation* variable is the modified inflation rate computed as:  $LOG(1 + \pi_{GDPDF})$  where  $\pi_{GDPDF}$  is the annual percentage change in GDP deflator. CBI is the annual legal CWN central bank independence index measure of a country's central bank independence. *Priv.Cred.* is percentage of private credit to GDP (%), which is proxy for financial development. Rule of law is the rule of law measure for institutional quality; Trade *Openness* is defined as sum of exports and imports in relation to GDP. *Fixed Exchange* regime is a dummy constructed from the IMF database on de facto exchange regimes, using a one (1) for regimes classified as: "another currency as legal tender," "currency board," or "conventional peg against a single currency," and zero (0) otherwise. *World Inflation* is proxied by the average inflation rate of industrial countries, computed from the World Bank. *Per Capita GDP* is measured as log of the ratio of real Gross Domestic Product divided by total population. *Inflation Targeting* variable is a dummy constructed from the IMF database, using a one (1) for inflation targeting regimes and zero (0) for non-targeting regimes. *Africa* is a dummy variable 1 for African countries and 0 otherwise; Growth of M2 is growth in money plus quasi money as an indicator for growth in money supply; Oil price is the international crude oil price; Standard errors in parentheses (\*\*\*)  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ). Robust standard errors in parenthesis.

# **CHAPTER FOUR**

## **CENTRAL BANK INDEPENDENCE, ELECTIONS AND FISCAL POLICY IN AFRICA: EXAMINING THE MODERATING ROLE OF INSTITUTIONAL QUALITY**

**CHAPTER FOUR**  
**CENTRAL BANK INDEPENDENCE, ELECTIONS AND FISCAL POLICY IN**  
**AFRICA: EXAMINING THE MODERATING ROLE OF INSTITUTIONAL**  
**QUALITY**

**Abstract**

The study primarily investigates the ability of independent central banks (CBI) to improve fiscal performances in Africa, accounting for election years. It also examines whether the effectiveness of CBI in improving fiscal performance is enhanced by higher institutional quality; and if the behaviour and effectiveness of CBI, varies between non-election and election years.

Using Two Stage System GMM estimation, we show that CBI does not significantly improve fiscal performance in Africa. However, the effectiveness of CBI in improving fiscal performance in Africa is enhanced by higher levels of institutional quality. While elections directly worsen fiscal performance in Africa, institutional quality enhances CBI's effect on improving fiscal performance in election years across Africa, other developing countries and developed countries. Due to the strong incentives of political authorities to influence economic outcomes in election years, we show that CBI has stronger effects on fiscal performance in election years compared to non-election years, given higher levels of institutional quality in Africa, other developing and developed countries. This implies that there is a need for strong institutions to complement independent central banks in order to control fiscal indiscipline in election years.<sup>3</sup>

*Keywords: Central Bank Independence; Fiscal Policy; Political Institutions; Africa*

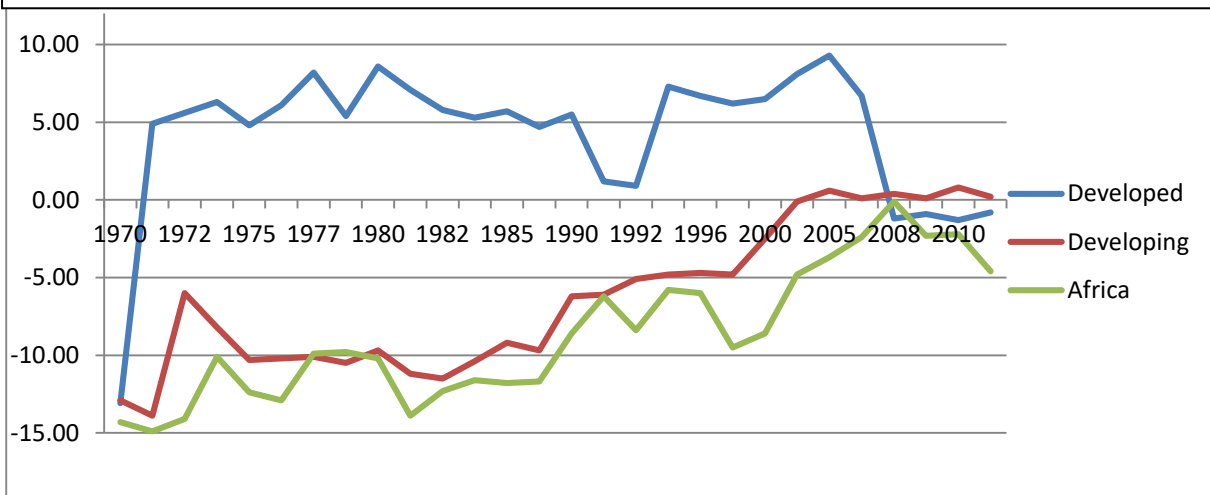
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<sup>3</sup> An extract from this chapter has been published: Agoba, A. M., Abor, J. Y., Osei, K., Sa-Aadu, J., Amoah, B., & Dzeha, G. C. O. (2019). Central bank independence, elections and fiscal policy in Africa: Examining the moderating role of political institutions. *International Journal of Emerging Markets*.

#### 4.1 Introduction

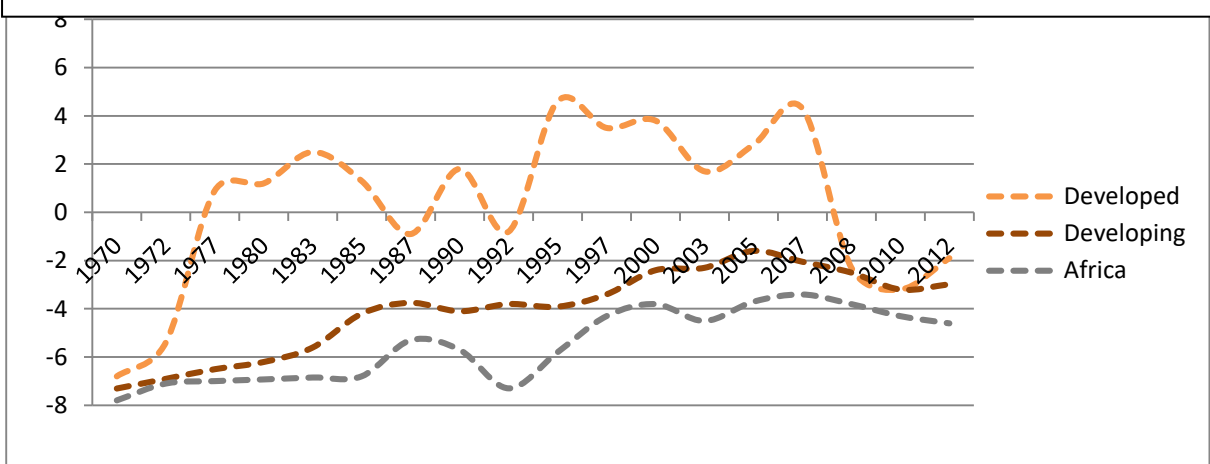
There has been an apparent failure by developing countries including Africa, in achieving successful fiscal performances (Bodea & Higashima, 2017) particularly as a result of pre-electoral behaviour of governments. As seen in Figure 4.1 and Figure 4.2, Africa's fiscal balance<sup>4</sup>, though improving, compares unfavourably to that of other developing and developed countries.

Figure 4.1 Fiscal balance 1970-2012



Source: World Development Indicators (2017)

Figure 4.2 Cyclically-Adjusted Fiscal Balances 1970-2012



Source: World Development Indicators (2017)

<sup>4</sup> Fiscal balance is measured as government revenue less government expenditure as a percentage of GDP. Government revenue is central government's total revenue plus grants to GDP. Expenditure is total central government expenditure relative to GDP.

Electorally motivated fiscal spending, vote buying, or simply money printing it has been argued, are the sources of inflationary pressures on central banks' price stability objectives (Pourcelot, 2015). According to Ramogi (2017), Kenya's central bank had to “mop excess cash in the economy” as a result of formal and informal spending – voter bribing – related to the elections. Richard and Desmond (2012) found that under excessive central bank credit to government, deficits produce high inflation rates. The study recommended that explicit constraints be placed on central bank credit to government.

Governments in power are believed to want to use all available mechanisms to win elections, particularly when closely contested; though the probability of recording poor fiscal performances is high. However, there is little empirical evidence in literature, regarding any effect of opportunistic electoral behaviour on fiscal imbalances.

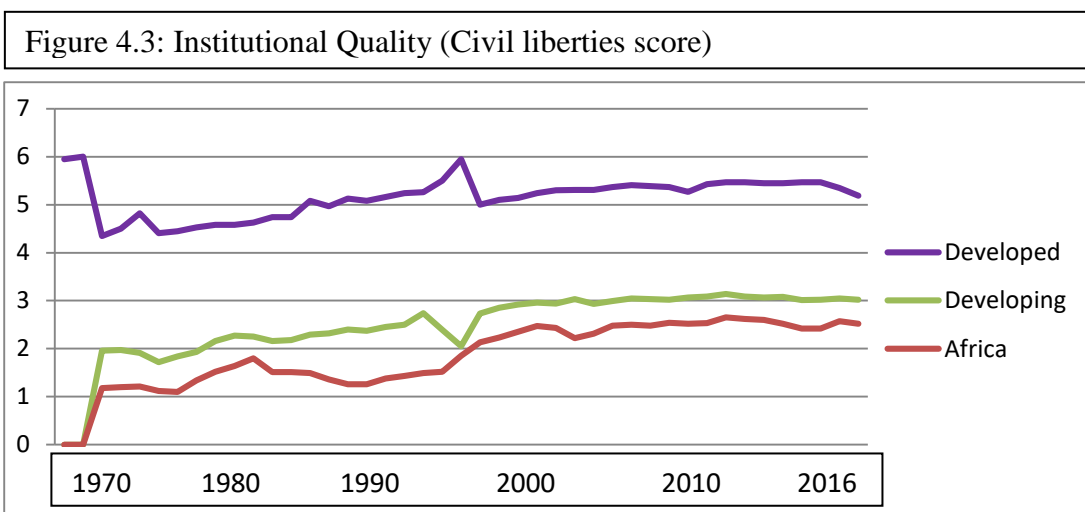
In this study, we analyze to what extent independent central banks are successful in countering fiscal pressures originating particularly in election years. Does central bank independence offset spending pressures originated by the electoral cycle?

Empirical work on the impact of CBI on fiscal performance, have been few, with many focusing on developed countries and having mixed results (Burdekin & Wohar, 1990; Barnhart & Darrat, 1988). These results implied that having central bank independence laws without the existence of an accountability mechanism can lead to flouting of restrictions placed on political authorities meant to deterring them from putting pressure on central banks to finance budget deficits beyond legislatively permissible limits. Just as Cukierman (1992) noted, though measures of CBI for developed and developing countries are basically the same with median values of 0.34 and 0.33 respectively, there are sharp disparities between the legal independence of the central bank and their actual independence. He attributed it to disrespect for CBI provisions. A typical example is Zimbabwe, where the statutory credit the

central bank can give to government is pegged at a maximum of 20% of the revenue of the preceding year. Since the late 1990s however, government has borrowed in excess of this limitation. Despite this credit limit, government borrowing has exceeded the statutory limit since the late 1990s. Monetary accommodation by the central bank came up as a result of limited access by government to credit from foreign markets, fluctuating public revenue, a wide scale crowding out of the domestic banking system and a massive increase in politically induced government expenditures (Al-Marhubi, 2012).

Another critical theoretical link which many studies do not identify in the CBI-fiscal policy nexus is that in the context of public finances, poor institutional environments breed corruption which may impact independently on both the expenditure and revenue sides of the government's budget; thereby distorting the composition of expenditures by shifting resources towards items where the possibility of inflating spending and obtaining more "commissions" is higher and also where there is greater scope for indulging in covert corruption, as alluded to by Shleifer and Vishny (1993). Secondly, as corruption reduces government's revenue, when part of tax proceeds do not accrue to government and are usurped (Imam & Jacobs, 2007; Tanzi & Davoodi, (1998, 2000)), it alters the manner in which revenues are generated by shifting pressure on the central bank to finance government deficits. Subsequently, confronted with this pressure, it becomes more difficult for the central bank, to resist financing government, in excess of revenue generated. This may lead to much more difficulty in achieving successful fiscal discipline than in less corrupt environments; thereby implying low effectiveness of independent central banks in influencing fiscal policy, in low institutional environments. Among developing regions such as Latin America, studies have such as that by Laegreid and Povitkina (2018) found the existence of heterogeneity in the quality of institutions and governance which could potentially mean varying outcomes for central bank independence in terms of its effectiveness in ensuring fiscal discipline.

As shown in Figure 4.3, respect for civil liberties, our proxy for institutional quality, (measured by the rescaled civil liberties score (from 0 for least rating and 6 for highest rating) from Freedom House for the period 1970 - 2016), which basically reflects the rule of law, has increased over the period in Africa, though not at similar levels with developed countries. We also observe that while developed countries and other developing countries have higher levels of institutional quality, Africa has comparatively had the lowest levels of institutional quality. One problem this study seeks to address, is that with Africa having improved fiscal positions though not as good as that of other developing and developed countries, the quality of political institutions can affect the extent to which central bank reforms affect fiscal policy.



Source: Freedom House (2018)

The study makes important contributions to extant research by advancing the theoretical framework that links central bank independence to fiscal performance across different income levels and varying political institutional structures. It also extends the empirical tests of this relationship beyond research in developing countries as a whole to focus on Africa where fiscal performances are relatively poor compared to other developing countries (Grilli *et al.*, 1991). This study further addresses three (3) important discussions in the literature: the

effects of central bank independence, the political economy of central bank reforms and the existence and extent of opportunistic political cycles.

According to Akhmedov and Zhuravskaya (2004), the political business cycles literature, provides evidence that electoral cycles are smaller in the presence of a well-developed local press, where the presence of a free press allows free access to information by voters (Shi & Svensson, 2006) and when there is high level of fiscal policy transparency (Alt & Lassen, 2006).

In this study, we analyze to what extent and how differently independent central banks are successful in countering fiscal pressures originating particularly in non-election and election years. Does central bank independence differently offset spending pressures originated by the electoral cycle? We argue that since fiscal pressures are higher in election years than in non-election years, the impact of independent central banks on fiscal policy should be higher in the years when pressure to spend is high, which in this case, are expected to be election years. This is so because in most African countries, these years are associated with political authorities desiring to fulfil promises and influence the outcome of elections in their favour through huge projects and in some cases sharing money and other gifts to party delegates and some of the electorate.

We provide evidence that unlike other developing countries and developed countries, CBI is not associated with improved fiscal performance in Africa. However, the effectiveness of CBI in improving fiscal performance in terms of reducing net central bank claims on government and government deficits as well as improving fiscal balances, is enhanced by institutional quality in all three (3) regions. Also, institutional quality's ability to directly influence fiscal balance is embedded in being in upper-middle income and high-income countries. In addition, CBI has significant effects on fiscal performances in election years in

developed countries. However, higher institutional quality enhances the impact of CBI on fiscal policy in election years in Africa, other developing and developed countries. We also provide evidence that unlike developed countries, CBI's effect on fiscal performance in election years, does not significantly vary from that in non-election years in Africa and other developing countries. However, institutional quality significantly enhances the effectiveness of CBI the more in election years, than in non-election years in Africa, other developing and developed countries.

The rest of the chapter is structured as follows. We review extant literature on the political economy of reforms, central bank independence, fiscal deficits, and institutional quality. We then outline the methodology, analyse and present the results and conclude based on our findings.

## **4.2 Literature Review**

### **4.2.1 Institutional Quality and Fiscal Policy**

Governments play a significant role in achieving sustainable growth for their economies. However, the classical thoughts about government's role have ceased to be valid in the face of unemployment and destabilisation. According to Keynesian school of thought, the major economic goal of government is to increase the rate of sustainable growth through the creation of employment and maintenance of political stability for business through the use of government's expenditures and taxes. However, in developing countries, these tools (expenditure and taxes) are not effectively used by governments in that they adopt pro-fiscal policy. This phenomenon however, is contrary to the Keynesian thoughts. According to Keynesian thoughts, during boom seasons, there is counter cyclical fiscal policy and pro-cyclical through recession in order to capture the cyclical variations. A pioneering study by Gavin and Perotti (1997) for example showed that there is pro-cyclical fiscal policy in Latin

American economies. In good and superior times, fiscal policy is expansionary but contractionary in bad times. Two main reasons explain why developing countries adopt pro-cyclical fiscal policy. The first, which is supported by Gavin and Perotti (1997) is with regards to deficiency in international credit markets that prevent developing countries from getting loans in bad times; and second are weak institutions (supported by Talvi & Vegh, 2005; Alesina & Tabellini, 2007).

Though institutions are seen as the main drivers of economic growth, weak institutions are the main drawback of developing countries (Alhassan & Kilishi, 2019). North and Thomas (1973) maintain that what explains the differences in economic growth is the different levels of institutional development. The institutional characteristics of developing countries is strongly influenced by the role colonial power played/plays. Colonial masters developed institutions in their respective colonies in order to serve their own interests. Thus, in colonies where there were high mortality rates, the colonial masters did not settle there permanently whilst they developed institutions that were extractive such as they did in Congo. The extractive institutions created, do not favour the protection of property rights whilst there are also no checks and balances on expropriation by government. Contrary to this, in jurisdictions such as New Zealand and US, with favourable weather conditions, good institutions similar to European institutions were developed. Till today, these institutions are working in these countries even after their independence (Acemoglu, 2008). Apparently, it is these good institutions in countries like New Zealand and the USA, which make the countries the developed economies of the world while institutions in developing countries such as South Asian countries are the main cause of their slow progress (Alhassan & Kilishi, 2019). The primary components of economic institutions are property rights and rule of law. Similarly, there is a significant role played by political institutions in achieving higher economic growth (Acemoglu, Johnson & Robinson, 2005). According to Acemoglu *et al.*

(2005), political institutions set the stage for economic institutions. While the role of political institutions is indirect, political leaders provide the framework to economic institutions.

Institutions give clear and apparent apparatus to govern businesses, thereby minimising corruption and bureaucratic hurdles (Grigorian & Martinez, 2000). Without governance, institutions do not perform effectively. The effectiveness of the investment channel is predicted to be diminished by poor governance which however increases the effectiveness of the factor-productivity channel in the link between fiscal policy and growth (Abed & Gupta, 2002). Ultimately, fiscal policy has the objective of increasing output and stabilising business cycles. In pursuit of this, developed countries adopt counter cyclical policies while developing countries adopt procyclical policies mainly as a result of lack of access to international financial institutions and an underlying reason for lack of this access is poor institutions reflected in poor governance.

One critical institutional characteristic that affects the nature of fiscal policy in developing countries including Africa is corruption. Recent studies have, unveiled that corruption in the public-sector impacts on both the level and the composition of public revenue and expenditure, thus influencing the conduct of fiscal policy-making. Corruption, which is the abuse of public office for private gain, is a major problem afflicting developed and developing countries alike.

Although, in general, income taxation and seigniorage – the two most common government financing methods – are both considered distortionary in terms of growth, there is no consensus on the relative merits of tax versus seigniorage financing of public spending. While Palivos and Yip (1995) consider income-tax financing to be worse than seigniorage financing, De Gregorio and Sturzenegger (1994) generally disagrees. Bose, Haque and Osborn (2007) link the optimal mode of financing to the levels of development, i.e., they find

that for low-income (high income) countries, financing expenditures with revenue generated by income taxation (seigniorage) is less distortionary for growth. According to Miller and Russek (1997) a tax-financed increase in public spending in developing countries actually leads to higher growth, while that in developed countries lowers growth. None of these papers, however, attribute corruption as a factor that affects the relative efficiency of seigniorage as against income taxation except Ghosh and Neanidis (2011).

According to Ghosh and Neanidis (2011), in the context of public finances, corruption may impact independently on both the expenditure and revenue sides of the government's budget: corruption can distort the composition of expenditures by shifting resources towards items where the possibility of inflating spending and obtaining more "commissions" is higher and also where there is greater scope for indulging in covert corruption, as alluded to by Shleifer and Vishny (1993). Corruption can also alter the manner by which revenues are generated, e.g., by shifting from tax to seigniorage revenues when part of the tax proceeds does not accrue to the government and is usurped, as suggested by other empirical evidence. Also, Ghura (1998), Imam and Jacobs (2007), and Tanzi and Davoodi (1998, 2000) conclude that corruption reduces total tax revenues by reducing the revenues from almost all taxable sources (including incomes, profits, property, and capital gains). The implication is that, *ceteris paribus*, other means of raising income must be sought, and one of the most tempting of these is seigniorage. Significantly, it has been found that seigniorage is closely linked with inflation (see Cukierman *et al.* 1992), and that inflation is positively related to the incidence of corruption (e.g., Al-Marhubi, 2000), while seigniorage, itself, has a negative effect on growth (e.g., Adam & Bevan 2005; Bose *et al.*, 2007).

It is these observations that provide the motivation for this paper, which seeks to explore the influence of institutional quality on public spending and finance, and the implications of this for central bank independence effectiveness.

Following Ghosh and Neanidis (2011), in exploring this study's objective, corruption features in three distinct ways: On the expenditure side, there are two types of effects: first, corrupt officials inflate the size of the public spending, not for increasing the size of the national cake, but for their own pecuniary gain; secondly, although the amount of public spending is higher than warranted, the productivity arising out of such spending is considerably lower than it would otherwise have been. Although some of these aspects have been captured in previous empirical papers (see Mauro, 1995, 1998; Tanzi & Davoodi, 1997; Haque & Kneller, 2008; among others), explicit analytical conditions have not been derived in the literature on the effects of corruption in public finances. On the revenue side, corruption in tax administration implies that not all tax revenues end up in government coffers, as some of it is embezzled by corrupt bureaucrats involved in tax collection.

On the basis of these linkages, this study argues that the impact of poor institutional environments on the effectiveness of CBI is evident when explained also, with the impact of corruption on fiscal policy. Given the pressure on seigniorage financing as a result of poor collection and usage of tax revenues, independent central banks are confronted with more fiscal policy challenges in low institutional environments, making them less effective in improving fiscal policy than in higher institutional environments. We seek to examine how the level of corruption exhibited in the much wider institutional quality, affects the effectiveness of independent central banks in influencing fiscal policy.

#### **4.2.2 Political Economy of Reforms**

Though there have been a number of literature examining the political economy of reforms (Drazen, 2000; Rodrik, 1996), a large part of these studies has paid attention to explaining why socially beneficial reforms do not happen and why if they do happen, they are often delayed (Fernández & Rodrik, 1991; Alesina & Drazen, 1991). Mukand and Rodrik (2005),

developed a model to indicate the fact that policymakers at times develop policies which they know are inefficient so as not to be thought of as being corrupt. Dewatripont and Roland (1997) also examine the consequences for sequencing reforms given the political impediments that reforms face.

They also discuss whether the sequencing can be a gradual or radical reform and whether or not the reform can be sustained. This study is closely related to those by Acemoglu *et al.* (2008), Shleifer and Vishny (1993) and Boycko, Shleifer and Vishny (1996). They examine the conditions under which efficiency is increased under privatisation. Shleifer and Vishny (1994) and Boycko *et al.* (1996) develop a model that shows politicians as deriving political benefits from high employment and as a result they can bribe managers of privatised firms to employ more people even when it means reducing their profits in doing that. They also examine the conditions under which employment falls after privatisation. Coate and Morris (2006), as a way of formalizing an intuition of Stigler (1971), Rodrik (1996) and Drazen (2000), develop a model in which optimal distribution of income achieved by policy instruments, are later altered by policy reforms introduced by politicians, culminating in a reduction in the efficiency of these instruments.

Acemoglu *et al.* (2008) differ from the study by Coate and Morris (2006), by focusing on the role political institutions play in the success of economic reforms. They investigate the significance of political economy factors in the process of understanding and assessing the policy reform successes and further examine the theoretical and empirical interaction between policy reform and institutional constraints on politicians.

This chapter builds on these studies to focus on institutional quality and how it enhances the ability of political reforms such as CBI, to reduce fiscal deficits in their quest to achieve price

stability using an estimation technique that takes into account the endogeneity of CBI and fiscal deficits.

A very useful background to this study is provided by the general literature on the impact of policy and policy reforms on economic outcomes such as economic growth. Empirical studies indicate that policy reforms account for variations in economic growth, though there are contrary findings to that effect (Easterly, 2005). These contrary findings have been attributed to multicollinearity exhibited by policy variables, which make it difficult to identify relationships between policy measures and growth that are robust (Acemoglu *et al.*, 2008). According to Bates and Krueger (1993), the focus of most studies on reforms have been on specific successful or failed reforms. Dollar and Svensson (2000) for instance, show that having a democratic government and political stability are important determinants of the success of World Bank programs. Bumside and Dollar (2000), provides evidence that the ability of aid to increase growth, is enhanced in the presence of high institutional quality and policies, although Easterly, Levine and Roodman (2004) dispute the robustness of the study.

Many empirical papers have shown that the success or otherwise of policies or shocks are dependent on the institutional environment (Bekaert, Harvey, & Lundblad, 2005; Mehlum, Moene, & Torvik, 2006). This study is closely related to the case study on politics in Latin America and Africa, which has made the argument that the appearance and the reality of policy reforms may be different in the region. Extant literature has argued that the adoption of Bretton Woods institutions' reforms in Africa such as the Structural Adjustment Program among others, were done in the presence of populist policies as politics as usual (Roberts 1995; Gibson, 1997; Levitsky, 2003).

In many jurisdictions, policy reforms were adjusted to the demands of clientelism in which for example, privatised firms were sold cheaply to those with political linkages. Although the

instruments used changed, populism and clientelism continued. This depicts the argument the study makes that in the absence of strong institutions, CBI which is a good instrument to achieve budget deficits, may be adjusted and subjected to political clientelism, in which case on the surface, the politician who may be seen to be abiding by the provisions of the central bank charter, may find ways of circumventing it or appointing people to the central bank, who will succumb to the demands of the political authorities and subvert the objectives of having an independent central bank (Acemoglu *et al.*, 2008).

### **4.2.3 Fiscal Policy**

An important aspect of fiscal policy, is the management of the fiscal deficit in the public sector. Such a deficit is measured in terms of the excess of the public sector's expenditure over revenue (Lupu & Riedl, 2013). Fiscal deficit could also be seen as a practice in which a government spends more money than it receives as revenue (Paiko, 2012). It signifies a gap between public revenues and expenditures (Anyanwu, 1997). Sources of revenue include taxes, grants, royalties, and fines for offences. Expenditures are mostly made on development projects which are capital expenditures, and wages and salaries which are current expenses for running government. When there is a budget deficit, this gap is closed by increasing revenues, reducing expenditures, borrowing internally from the general public, commercial banks, and the central bank and external borrowing.

In recent times, there has been a rise in the interest researchers have in central bank lending to the government. In the course of the “great recession”, many governments turned to central banks for finance as a result of increased government liabilities, declining tax revenues as well as the rising cost of domestic and international capital markets to finance fiscal imbalances. The reference to governments in this context means the state, which includes entities such as local governments and public enterprises. Similarly, the term “fiscal

deficit/imbalance” refers to the public-sector deficit (Jacome, Townsend, Matamoros-Indorf, & Sharma, 2012).

In the economic literature, as suggested by Keynes (1923), there are acceptable levels of monetisation of deficits. Many countries have a limit on the credit central bank can give to the government. This is referred to as “*statutory credit*” and is usually a fixed percentage of previous year’s total public revenue. However there exist no explicit constraints on credit central bank can give to government (Cottarelli, 1993).

Gardner Patterson defines deficit financing as “*the net increase in the amount of money in circulation where such an increase results from a conscious governmental policy designed to encourage economic activities which would otherwise not have taken place*” (Oluwabukola & Falowo, 2013). Fiscal deficits used prudently, constitute an effective tool of capital formation (Jhingan, 2007). Fischer and Easterly (1990) identify four (4) ways of financing the government fiscal deficit: 1) printing money (ways and means); 2) external borrowing; 3) use of foreign reserves and 4) domestic borrowing.

There are four (4) categories of domestic borrowing (Oluwabukola & Falowo, 2013): (i) borrowing from the banking system; (ii) borrowing from the non-banking public; (iii) borrowing from the central bank through the issuance of new currency and (iv) drawing from the reserves of the central bank. Funds are borrowed from the banking system through the issuance of government bonds and securities directly to banking institutions. These bonds are purchased by banks using the excess reserves they have. By doing this, the credit creation capacity of banks is constricted as they deplete their excess reserves. Government bonds can also be sold to the non-banking public who by buying the bonds, transfer part of their resources to government. This has the effect of negatively affecting private credit to finance investments.

With regards to the issuance of new currency, the central bank prints new currencies to finance government deficits. This increases the growth of money supply in the economy which has an inflationary consequence according to the quantity theory of money (Friedman, 1975). Under this theory, there is a proportionality between changes in money supply and changes in prices, which result in no impact on output and employment. With fewer goods being chased by more money, demand increases and prices increase accordingly. With this inflation being as a result of fiscal deficit financing by the central bank, Friedman's assertion that "inflation is everywhere a monetary phenomenon" is modified. Inflation might be a monetary phenomenon, but money is a reflection of fiscal policy and not monetary policy.

The central bank can also finance government deficits by drawing down on its reserves; which are monies generated through the central bank's banking functions. These funds could be those meant for the purchase of foreign exchange, which are lent to central government, to finance its deficits (Nwaogwugwu, 2005).

Musgrave, Case and Leonard (1974) and Rustow (1971) argue that there are different stages of development, countries pass through. Each stage has its varying proportion of government expenditure to total investment in the economy. Particularly for developing countries, government expenditure to investment ratio will be large since most of her activities will be geared towards capital expenditure such as roads, healthcare, housing, information and communication technology among others, in order to prepare the grounds for take-off into middle income status (Musgrave *et al.*, 1974). This can result in huge deficits for developing countries. Each financing method, has its implications for the economy.

Borrowing from external sources to finance budget deficits ties the country to payment terms which form part of the conditions and regulations that come from the foreign lender. By committing itself to these payment terms, deficits can be perpetuated as government finds

ways of servicing these re-payments. The widening deficit can result in high debt stock, more inflation, and reduction in investment (Ndikumana & Boyce, 2011). This reduction is due to credit rationing. This is a situation whereby a highly indebted country faces constraints in accessing credit from the international market. There is also the possibility of debt overhang. Debt overhang is the condition of an organisation or government that has existing debt so great that it cannot easily borrow more money, even when that new borrowing is actually a good investment that would more than pay for itself. This can lead to slow economic growth and macro-economic instability (Osuji & Ozurumba, 2013). Other implications of this source of deficit financing is an appreciation in real exchange rate, deepening current account deficit, high foreign debt and a depletion of foreign reserves. This can result in currency crisis in extreme cases (Gertler, Gilchrist, & Natalucci, 2007; Hakkio, 1996).

Taxes can be increased to finance deficits. However, this option is only viable in situations whereby citizens can afford the tax increment. In jurisdictions where most people survive on subsistence farming and other low-income level jobs, there is a thin margin between income and consumption, leaving little to absorb tax increment. Many developing countries, have however attempted to increase taxes for financing projects (Mascagni, 2014). Due to extreme poverty conditions, it has been difficult to raise taxes above certain limits. These attempts usually make governments unpopular and subject to being voted out if governments persist in increasing taxes. These consequences, have forced governments in most circumstances, to look at other sources of financing deficits.

One option to consider will be borrowing from the domestic financial market. This option has the implication of being more enduring as it can be used to finance foreign debts and accumulated interests. Another option will be to fall on the central bank for financing. This option appears less resistant and less costly to governments who want to undertake projects to create employment and win elections. This however will also lead to unsustainable inflation,

due to increased money supply with no resulting increase in output. Thus, an argument is made for legislation to grant the central bank independence with a focus on price stability. Having this legal backing, it is expected that the independent central bank, will not undertake any activity, such as lending to government, when doing so will derail its efforts to ensure price stability and economic welfare for its citizens.

Fiscal policy that includes temporary deficits resulting from counter cyclical government policy during recessions, contribute significantly to human and physical capital investments or sharing of risk (Alt & Lowry, 1994; Grilli *et al.*, 1991,). Despite these benefits, sound public finance is strongly encouraged by the empirical literature (Ardagna, Caselli, & Lane, 2007; Fatás & Mihov, 2003; Easterly *et al.*, 1994). They argue that deficit spending is defiant to economic cycle and can be linked to conditions in the political environment, that compel huge accumulation of excessive debt in economies of the world.

According to this logic, in jurisdictions where institutional quality is low, the independence of the central bank can be threatened through attempts to change existing regulations that restrict central bank deficit financing, or dismissal of central bank governors who do not subscribe to government pressure, among others. Deficits could also be perpetuated to please party foot-soldiers at the expense of national economic welfare and stability (Posen, 1995, Hielscher & Markwardt, 2012).

Many countries have gambled to finance fiscal deficits given that government expenditure and taxes are exogenous and cannot be synchronised. With debt finance being unsustainable, central banks have to consequently monetise the deficits. This is a widely prevalent phenomenon in developing countries. Once they are stuck with large fiscal disequilibria and have exhausted domestic borrowing, there is a continual search for monetary accommodation of fiscal deficits. The reason for this is that the inflation that results from central bank

financing of deficits, reduces the debt burden of government as a result of what is termed inflation tax. However, high inflation will erode the real tax revenue that comes to government, thereby resulting in a continual cycle of fiscal deficits and consequent monetary accommodation (Richmond & Desmond, 2012). This results in fiscal dominance, a situation whereby the growth of money supply are conditioned by budget deficits. Due to limited access to external borrowing, governments resort to excessive borrowing from the central bank so as to make up for their revenues short falls in many developing countries including Africa.

#### **4.2.4 Central Bank Independence and Fiscal Policy**

Independent central banks can also ensure price stability through restrictions placed on providing finance to government (Bodea & Higashijima, 2017). This is expected to deter governments from overly spending beyond their revenues. However, this cannot be the case when respect for the rule of law is minimal. A typical example is Zimbabwe, where the statutory credit the central bank can give to government is pegged at a maximum of 20% of the revenue of the preceding year. Since the late 1990s however, government has borrowed in excess of this limitation. Monetary accommodation by the central bank came up as a result of limited access by government to credit from foreign markets, fluctuating public revenue, a wide scale crowding out of the domestic banking & system and a massive increase in politically induced government expenditures (Richmond & Desmond, 2012). Jacome *et al.* (2012) identifies five (5) different levels of restriction of central bank financing to government; based on the legal provisions.

One is what the authors call *full prohibition*. In this circumstance, there is a complete ban on the central bank from providing finance for government expenditure in the primary market or providing securitised loans. Other prohibitions even extend to the secondary market where

the central bank is not allowed to purchase government securities because they constitute a form of providing finance indirectly to government. An example of such a restriction is a ceiling on the value of government debt that can be found on the balance sheet of the central bank. There are also some countries in this category, who under extraordinary circumstances, permit the central bank to finance government expenditure.

The other category of central bank lending to government is termed as *short-term access to central bank financing or advances*. Comparatively, a less restrictive provision, this allows governments, a temporary access to central bank funds. Under usual circumstances, this mode of lending includes advances and/overdrafts found on government's account at the central bank. Its aim is to compensate for seasonal shortfalls in the revenues government gets. A cap is placed on the loan amount and government is required to repay the loan by the end of the same fiscal year. The cap may either be an absolute cash value, a specified percentage of government revenues/expenditures in preceding years, or a proportion of central bank liability. The law may or may not explicitly define interest rates charged.

The third lending modality is *long-term financing or credit in the primary market*. With this legislation, the credit central banks advance to government have maturity in excess of one year. In addition, the central bank is permitted to purchase securities in the primary market, whether or not the central bank can also extend advances to government. Some legislations include provisions regarding the financial conditions of the loans in addition to limits on the value of the advances. This category also includes situations in which the central bank has the authority to pay or provide financing for government's foreign debt on government's behalf. It also includes legislations whereby it is required of the central bank to transfer funds such as international reserves to the government.

The fourth category is classified as *no legislation on central bank lending to the government*. In the case of this category, no legal provisions prohibiting central bank lending to government exist. This category, however, exists in a few countries.

The final category is *other forms of central bank financing*. In this category of legislations, central banks are allowed to provide other forms of financing to the government. Examples are financing for specific economic activities which require the involvement of government. It also includes financing for the government or state-owned deposit insurance institutions to tackle financial crises. This category also includes legislative provisions that authorise the central bank to make transfers to government of unrealised profits that are associated with changes in exchange rate adjustments among the currencies in the international reserves.

The survey by Jacome *et al.* (2012), indicates that: (i) close to two-thirds of the countries in their sample either placed prohibitions on the provision of central bank loans to the government or if they did not, they restricted it to short-term loans; (ii) in most developed countries and in the majority of countries with flexible exchange rate regimes, restrictions placed on government financing by the central bank were strong; and (iii) in cases where the central bank is permitted to advance short-term loans, the interest rate charged government were market interest rates, while the value of the loan is usually capped at a small proportion of government revenues, and this financing goes to the national government only. The study recommended significant improvements be made in many countries.

In the situation whereby, many governments were heavily reliant on central bank financing of public expenditure, the political and operational autonomy of the central bank is seriously undermined and thus threatens the achievement of the bank's policy objective of preserving price stability.

Generally speaking, the legal mandate of a central bank that is independent excludes fiscal policy though the accumulation of debt as a result of deficit financing has repercussions for the level and variability of inflation as well as inflationary expectations. These are of great interest to central banks.

In the developed world and in many other jurisdictions however, attention is paid to statements by central bankers which are usually their responses to government's budget plans as well as their plea or caution to government to limit its spending to available taxes and avoid unsustainable deficits.

In 2009, in the course of the global economic and financial crises for instance, the central bank of Turkey cautioned that for monetary policy decisions to be effective, there was a need for government to strengthen its commitment to fiscal discipline and structural reforms.

In 2011, the governments of Italy, Ireland and Spain were demanded by the European Central Bank (ECB) to cut down significantly on their deficits. This and other measures were conditions under which the ECB would buy Italian and Spanish bonds from the market in order to cut down the market's demand for high interest rates in these countries.

There have also been instances where the president of the of German Bundesbank, Axel Weber, in 2010, issued a warning that "*excessive deficits can cause tensions with monetary policy and may require higher interest rates if not corrected*"(Bodea & Higashijima, 2017).

The question still remains as to why central banks attempt to influence fiscal policy which is in the remit of political authorities. Another begging question is whether central banks that are independent can be expected to behave differently under different pressures to finance deficits and whether these varying behaviours will affect fiscal deficits.

Consequent to the negative implications of debt that accumulates from financing budget deficits through borrowing, policy makers have directed attention to the ability of institutional designs and reforms to limit fiscal deficits.

Among the institutional designs that foster budget discipline; there are balanced budget laws (Alt & Lowry, 1994); delegation of power to monitor budgets to the executive (Hallerberg & Marier, 2004; Von Hagen, 2002); contracts among key veto players for multi-annual fiscal programs and spending targets (Hallerberg & Marier, 2004); and limits on parliamentary budget amendments (Wehner, 2010). The study first and foremost, argues in line with Bodea and Higashijima (2017) that the government and the central bank acting as fiscal and monetary authorities respectively, can interact to constitute an important constraint on fiscal deficits.

A potential effect of CBI is the link between fiscal deficits and price stability that comes from having an independent central bank. Earlier studies were of the view that an independent central bank is a remedy for low inflation, which leads to lower cost of capital and improved fiscal performance, without hurting economic growth (Alesina & Summers, 1993; Grilli *et al.*, 1991). The other link is the limits on central bank credit to government.

The tests of the direct link between CBI and fiscal deficits have provided mixed results both in developed (Franzeze, 2002a; Jonsson, 1995; Grilli *et al.*, 1991; Leone, 1991, Burdekin & Laney, 1988; Barnhart & Darrat, 1988) and developing countries (Bodea & Higashijima, 2017; Bodea, 2013; Sikken & de Haan, 1998).

According to Bodea and Higashijima (2017), many reasons have been found to be accountable for these mixed findings: 1) difficulty in covering consistently central bank reforms over the past four (4) decades. Most extant literature used decade averages of aggregated data, did single regional studies, and used two data points in time or a particular

decade of the most recent reforms. Consequently, literature has been unable to examine the interaction of fiscal and monetary policy (Bodea & Hicks, 2012).

Secondly, CBI's ability to deter deficits is possible on condition that the central bank's commitment towards low inflation is credible. Political economy research provides an understanding of when legal CBI is credible and as such can fight inflation (Keefer & Stasavage, 2003; Broz, 2002). However, the application of these theories to the link between central banks and fiscal policy, until recent times has been largely missing particularly in developing countries. Other literature instead have watered down the importance of central banks in fiscal policy (Clark, 2003). These studies looked at the effectiveness of fiscal policy in open economies.

The framework developed by Mundell Fleming brought significant insights on role of political electoral cycles and the convergence of partisan policies (Clark and Hallerberg, 2000). The work by Clark (2003) argued that under fixed exchange rates and in regimes where capital is mobile, CBI is ineffective.

Bodea and Higashijima (2017) however counter these arguments. They argue that, it is not central banks, but governments, who make commitments to exchange rates. The focus of central banks that are independent is primarily price stability rather than exchange rate stability. This makes them not to necessarily be accommodative of expansionary fiscal policy. The result of this is that with CBIs, governments that are fiscally irresponsible will have to adjust their exchange rate regimes, as evidenced by increased exchange rate volatility (Bearce, 2008) or less cooperation in the gold standard (Simmons, 1996).

It has been pointed out by O'Mahony (2011) that, inflexibilities in international asset markets and lack of anticipation by consumers of higher future taxes, may throw more light on the reason why an expansion in government expenditure surprisingly generates growth in output

and consumption even under flexible exchange rates. This means that there are incentives on the part of governments to make use of fiscal deficits even when under floating exchange rate regimes. Theoretically, this allows for the influence of CBI. The theoretical and empirical question therefore still remains as to whether and when central banks influence fiscal deficits.

The second objective of this paper will therefore seek to examine the effect of political institutional conditions on central banks' ability to credibly reduce fiscal deficits. Independent central bankers have a conservative preference over fiscal policy in support for their conservative monetary policy (Rogoff, 1985; Lohman, 1992; Blinder, 1998). In developed countries where there are large debt or fiscal deficits, they pay a premium on long term interest rates. This reflects the higher inflationary expectations of the bond markets (Baldacci *et al.*, 2010)

Fiscal deficits can be deterred by independent central banks when they increase short term interest rates to raise government borrowing cost and when they limit and /or refuse to lend directly to the government. When short term interest rates are higher, it leads to higher long-term bond rates. This results in higher costs to government in financing its debt as well as reduction in economic growth. Thus, in a situation where there are fiscal deficits and the independent central bank retaliates with tight monetary policy, there will be a rise in the interest rates markets require and are willing to finance fiscal deficits. This should deter government from having high fiscal deficits (Benigno, 2017; Bodea & Higashijima, 2017).

Central bank and government interactions are mostly not public, and any retaliation by the central bank does not materialise when the bank succeeds in deterring fiscal deficits. As a result, there are only rare instances of central bank statements and increases of short term interest rates that are retaliatory in nature. However, one apparent example where this was evident, was in January 1955, when the German Bundesbank issued a warning to government

to desist from pursuing fiscal deficits during a period of growth in the economy. The initial admonitions to government were later followed by “highly visible warning signal of a higher discount rate in August 1955” (Berger & Kisser, 2013).

In 1956, there were two additional increases in interest rate which were, both very publicly linked by the central bank’s council to the fiscal policy of government. In addition, when the US Federal Reserve increased interest rates as a response to increasing fiscal deficits in the 1970s, Beck (1984) attributed this to the bank's newly found independence.

Aside using interest rates retaliation as a tool to deter fiscal deficits, independent central banks' laws also limit the extent to which the bank can provide credit to government. The laws also give the central bank more control over the financing conditions which include the maturity and cost of lending to government. Central banks' credit to government are most times the cheapest source of financing government deficits. Thus, when the law limits governments' access to these cheap funds, the cost to government of having fiscal deficits financed by the financial markets is high.

According to Franzese (2002a), CBI may discourage the accumulation of debt as governments foresee an inability to inflate debt.

Tabellini (1987) points out to an example of this in Italy, in 1981, after the Bank of Italy was no longer obliged to purchase any public debt unsold directly to investors. The Italian Treasury was dissuaded from accumulating more debt. Though developing countries are most likely to experience central bank financing of budget deficits as a result of weak financial markets (Laurens *et al.*, 2016), developed countries also greatly benefit from the credit their central banks extend to them. The British government for example, maintains its ability to borrow directly from the Bank of England and used it in the most recent financial crisis (Bodea & Higashijima, 2017).

#### **4.2.5 Central Bank Independence and Electoral Cycles**

According to Garriga and Rodriguez (2017), it is assumed that central banks and governments have contrasting preferences. Whilst the central bank is conservative and desires to achieve price stability, political authorities also desire price stability, however, they are motivated by the quest to retain power (Bueno de Mesquita, Morrow, Siverson, & Smith, 2003). This is because, for the politician, remaining in power is necessary for them to achieve all other policy goals including price stability. Therefore, the central bank's decisions meant to achieve price stability, should be protected against political manipulative tools meant to ensure their stay in power.

Fiscal pressures are not constant through time. In election years in particular, there are stronger incentives to enact inflationary policies; resulting in demands for the central bank to loosen monetary policy, or through the government embarking on an expansionary fiscal policy (Bodea & Higashijima, 2017; Clark & Hallerberg, 2000; Treisman & Gimpelson, 2001).

However, the effects of political pressures on fiscal policy will be determined by the ability of the central bank to resist and or counter these pressures. In election years, the independence of the central bank should be of more importance to achieving fiscal discipline compared to in non-election years. During election years, there are stronger pressures on central banks and greater challenges to attain price stability and fiscal discipline compared to non-election years or period. Thus, the test of true central bank independence emerges in election years. Garriga and Rodriguez (2017) argue that, the inability of previous studies to identify inflationary opportunistic cycles precisely is as a result of these studies failing to account for the fact that central bank independence will have a stronger inflation-curbing effects during elections. One of such effects is through fiscal discipline achieved through

restrictions on central bank credit to government. Muscatelli (2019), states that “the most obvious advantage a fully independent central bank has is that of not being influenced by electoral deadlines”.

The impact of elections on central bank's behaviour however is uncertain. While some literature identify similar central banks' policies in both election and non-election years, (Alesina & Stella, 2010; Allen & McCrickard, 1991; Beck, 1987; Leertouwer & Maier, 2002), others such as Abrams and Iossifov (2006) and Clark and Arel-Bundock (2013) find an accommodative behaviour by central banks of pressures from political authorities during elections.

Studies that have suggested that central bank independence is more significant in election years have either examined this only in democracies and have neglected developing countries including Africa (Franzese, 1999:681; Clark, 2003). Incipient studies by Bodea, Garriga & Higashijima (2016), Garriga and Meseguer (2017) and Johnson (2016) suggest however that, central bank independence may be credible in autocracies under certain circumstances. Particularly in Africa and other developing countries, where institutional quality is low, there is a higher incentive for political authorities to manipulate monetary and fiscal policy (Schuknecht, 1996; Shi & Svensson, 2006). In relatively weak institutional environments, there is an observed vastly greater levels of uncertainty concerning election outcomes thereby resulting in higher incentives to influence electoral results through vote buying, last minute infrastructural projects and other electorally related spending (Lupu & Riedl, 2013:1344, 1348).

In Africa and other developing countries, relatively weaker institutions make it easier for politicians to manipulate monetary and fiscal policy (Schuknecht, 1996, Shi & Svensson, 2006). Garriga and Rodriguez (2017) argue that although it seems counterintuitive,

developing countries have reasons to respect central bank independence especially when it is very costly – that is, during elections. This is because, there are significant reputational and signaling considerations that come with compromising the independence of the central bank. Primarily, according to Weeks (2008), violations of institutional commitments give rise to audience costs. In addition, and more importantly, having an independent central bank constitutes a “good signal” to international markets, and is associated with more investment and better credit conditions (Bodea & Hicks 2017; Maxfield, 1994; Polillo & Guillén, 2005). Governments of African and other developing countries being more vulnerable to international markets distrust, have the motivation to respect the independence of the central bank, even when electoral cycles may attempt to cause them to flout central bank independence provisions. Based on these considerations, it is possible to have a stronger anti-fiscal indiscipline effect of central bank independence in election years in Africa and other developing countries.

#### **4.2.6 Institutional Quality and Macroeconomic Policy**

Persson and Tabellini (2005) establish an association between institutions with macroeconomics. Persson and Tabellini (2005) examine the extent to which government spending and fiscal deficits are influenced by electoral rules and forms of government. The study finds that compared to parliamentary systems, presidential systems are associated with smaller government spending as a fraction of GDP and smaller fiscal deficits. Presidential regimes are characterised by a stronger separation of powers between the executive and the legislative branches than parliamentary regimes are. It therefore appears that this separation of powers intensifies the checks and balances between the two branches, increasing accountability, constraining politicians from abusing their powers and justifying the estimated results.

Finally, Bernhard and Leblang (2002) empirically find that fixed exchange rates and central bank independence are not only determined by the level of economic openness, but also by the configuration of domestic political institutions. While, in general, single-party majority governments do not benefit from the choice of these policies, coalition governments, on the other hand, can benefit from it. Thus, fixed exchange rates and central bank independence will emerge as the choices that maximize cabinet durability under specific institutional configurations.

Imam and Jacobs (2007) estimates the impact of corruption on the revenue-generating capacity of different tax categories in the Middle East. The study finds that low revenue collection as a share of GDP there, compared to other middle-income regions is due in part to corruption, and certain taxes are more affected than others. Taxes that require frequent interaction between the tax authority and individuals, such as taxes on international trade, seem to be more affected by corruption than most other types of taxation.

#### **4.2.7 Central Bank Independence, Institutional Quality, and Fiscal performance**

As argued earlier in the chapter, the independence of monetary policy is capable of influencing fiscal policy. However, there are incentives for political authorities to disregard and/ subvert the institutional independence of the central bank. Central bank laws are inherently incomplete but can be altered or threatened to be altered by politicians so as to make the central banks more subservient. While central bank governor's appointment can be determined by the success or failure of their monetary policies, they can also be dismissed before their tenure (Bodea & Higashijima, 2017).

Earlier studies have showed that the degree to which central bank laws are enforceable, is determined by political institutions and therefore, determines when the de facto behaviour of central banks indicate their aversion to inflation and subsequently, deficits (Keefer &

Stasavage, 2003). There is an advantage that democracies have over autocracies when it comes to the application of the rule of law. This is as a result of the constraints there are to abusing the law, as well as the promotion of transparency in democracies. Monetary policy delegation to the central bank in democratic environments, therefore enhances the credibility of delegating monetary policy to a central bank that is independent and increases the possibility of having monetary policy that is retaliatory in response to fiscal policy.

The effect of CBI on fiscal deficits in countries with rule of law and impartial contract enforcement is derived from various central bank behaviours. In the first place, central banks can prompt governments to have fiscal policies that counter macro-economic cycles, thereby leading to surpluses or balanced budgets in favourable times. Secondly, this can emanate from electoral calendars or government partisanship, during which the central bank accommodates governments as a way of guarding its formal legal independence.

In general, high institutional quality environments are associated with strong democracies, which secure property rights, contract enforcements, which are all characterised by an independent judiciary, respect for rule of law and individual rights (Bodea & Higashijima, 2017). Therefore, in poor institutional quality environments such as dictatorships, there is high uncertainty that legislation aimed at tying the hands of government, would be enforced. In democracies, the rule of law prevails because there are strong constraints on the power of government. In fact, the opposition parties are interested in the independence of the central banks as having such will conceal from the party in power, the opportunistic abuse of monetary policy as well as consequently placing limits on government's use of fiscal policy. Also, in countries with coalition parties in government, protecting the independence of the central bank is paramount, as such an institution provides useful information on government policies (Crowe, 2006). It is most unlikely for central banks' decisions on financing government expenditure to be overridden or for the central bank laws to be easily amended,

in governments where there are two or more veto players (Bodea & Higashijima, 2017). Consequently, the credibility of independent central banks to pursue price stability and abide by legal limitations on providing finance to government is enhanced in such environments (Keefer & Stasavage, 2003).

Another characteristic of high institutional quality environments is the transparency of political decisions. In political systems that are very transparent, costs are imposed against opportunistic behaviours by government (Broz, 2002). It is very difficult to monitor the independence of most central banks, who by their very nature are opaque in their decision making (Bodea, 2010; Broz, 2002). In high institutional quality environments, violations of central bank independence can be fiercely criticised by opposition parties and voters with such knowledge can vote governments out. These actions are more likely where there is freedom of the press and free and fair elections. These features, assist CBI in ensuring fiscal discipline by government.

According to Akhmedov and Zhuravskaya (2004), the political business cycles literature, provides evidence that electoral cycles are smaller in the presence of a well-developed local press, where the presence of a free press allows free access to information by voters (Shi & Svensson, 2006) and when there is high level of fiscal policy transparency (Alt & Lassen, 2006).

Studies have also shown that incumbents manipulate the economy in election years and as such, such periods are not ideal for the central bank to press for budget balances (Drazen, 2005). Bodea & Higashijima (2017) using Polity IV scores to measure democracy, political rights and civil rights find that CBI restrains deficits only in democracies, during non-election years and under left government tenures.

The study argues that in countries where the quality of institutions are generally high, there is respect for rule of law and there are mechanisms through which political authorities are held accountable for the outcome of their decisions which include flouting central bank independence laws and spending in a way that generates excessive deficits. With this advantage for jurisdictions where institutional quality is high, there is an enhancement in the credibility of monetary policy delegated to a central bank that is independent and therefore the possibility of the central bank initiating a monetary policy that is retaliatory in response to fiscal policy to deter fiscal deficits is high.

Secondly, in countries with high institutional development, low levels of corruption mean that government expenditure are not overpriced, tax administration is efficient, thereby leading to more reliance on tax revenue and less demand for seigniorage; thereby making it easier for the independent central bank to influence fiscal policy and be more effective.

### **4.3 Methodology**

#### **4.3.1 Data and Sample**

To investigate the effect of CBI and elections on fiscal spending, and the effect of institutional quality on this relationship, we utilize panel data spanning the post Bretton-Woods period of 1970 - 2012 on 45 African countries, 90 other developing countries, 40 developed countries and 35 Organisation for Economic Co-operations and Development (OECD) member countries. During this period, there was discretion in managing monetary policies thereby making the period suitable to examine the relationship between CBI and deficits. In addition to the CBI index from Garriga (2016) who computes the CWN index for over the period 1970 - 2014, an elections year dummy and institutional quality measures from Freedom House, we include control variables based on the models of Bodea and Higashijima (2017) and Acemoglu *et al.* (2008). We include an indicator of trade openness,

log of GDP per capita, the real GDP annual growth rate, indicators of financial development, the degree of urbanisation and the share of agriculture in GDP.

- ***Dependent Variable***

The dependent variable, fiscal policy, is measured as the net central bank claims on government ( $NetCBClaims_{it}$ ) which is determined as central bank loans to government agencies net of central government deposits as a percentage of GDP. The study is of the view that in general, independent central banks will be able to restrict credit to government and therefore should lead to lower net claims central banks on government. It is sourced from the World Development indicators (World Bank, 2017)

We also measure the dependent variable as the ratio of the difference between revenues and expenditures as a share of the GDP ( $Fiscal\ Balance_{it}$ ). These are taken from the World Economic Outlook (International Monetary Fund, 2018). Though central banks may find of more interest other operationalisations of fiscal policy such as the primary deficit which excludes interest payments by the treasury, due to unavailability of this data for most countries, we are unable to use it in this study.

Econometrically, the use of revenue minus expenditure exposes us to potential simultaneity bias between the dependent variable and the CBI index. This is because, the more influential government is in getting deficits monetised by monetary authorities, the smaller the degree of CBI. We therefore adopt an estimation technique that will address the issue of potential endogeneity.

- *Explanatory Variables*

$CBI_{it}$  which is our principal explanatory variable, is measured as the annual legal central bank independence measure of country  $i$  in period  $t$ . It represents the degree of CBI measured by the *de jure* indicator. We settle on *de jure* measure of CBI, since the focus of the study is on policy reforms.

This study uses a CBI index as given by Garriga (2016), who computes an updated CWN index for a large set of countries using the International Monetary Fund's Central Bank Law Database. The CWN CBI index is based on a weighted aggregation of 16 legal indicators in four categories regarding the tenure of the bank's governor, policy formation, objectives, and limitations on lending to the government, using the criteria and weights in Cukierman, Webb and Neyapti. The index varies between 0 and 1, with larger values indicating independence. We prefer this *de jure* measure to turnover rates of central bank governors, because we seek to investigate the impact of CBI policy reforms on fiscal balances. Also, the alternative form of measuring *de facto* independence – the turnover rate of central bankers (Cukierman & Webb, 1995; Cukierman *et al.*, 1992; de Haan & Siermann, 1996) has been shown to be endogenous to inflation (Dreher *et al.*, 2008). According to the theoretical rationale for CBI, we would expect an increase in CBI to result in better fiscal balance and a reduction in central bank claims on government.

We identify election years ( $Election_{it}$ ) from the Database of Political Institutions (DPI) (da Cruz *et al.*, 2016). We code elections as a dichotomous variable equal to 1 to indicate the occurrence of an election for the executive or legislative branches, respectively, in a given year and 0 for non-election years. Election years are expected to increase demands on central bank for finance and a worsening fiscal balance.

In this study, as a measure of institutional quality ( $Inst. Qual_{it}$ ), we use civil liberties score variable obtained from Freedom House database. The score for the variable ranges from 7 to 1, with 7 representing the least rating and 1 the highest. Following Bodea and Higashijima (2017), we rescale the original score to range from 0 to 6, so that lower scores now correspond to lower civil liberties rating and higher scores correspond to higher civil liberties rating. In order to do this, we use the formular  $-1 * (CLS - 7)$ , where CLS is the civil liberty score as given by Freedom House. Civil liberties (CLS) variable captures the degree in freedom of expression, association, assembly, religion and education. In countries with high civil liberty score, there is a generally established fair rule of law system (including an independent judiciary), freedom of economic activity, and strive for equality of opportunity for everyone, including women and minority groups. There are four subcategories of the civil liberties question namely: freedom of expression and belief (4 questions), associational and organizational rights (3), rule of law (4), and personal autonomy and individual rights. We expect higher institutional quality to improve fiscal policy; that is, as countries become more democratic and the rule of law prevails, corruption reduces thereby leading to prudent use of government resources. Such environments also have well developed tax systems which generate efficient tax accumulation increasing government revenue and improved fiscal performance.

We also introduce the log of real GDP per capita ( $LGDP_{it}$ ) in the model as a way of capturing the differences in the level of economic development among countries. This variable indicates that a higher per capita income reflects a higher level of development and capability in levying and collecting taxes (Chelliah, 1971). The study expects a negative relationship between  $LGDP_{it}$  and  $NetCBClaims_{it}$  and a positive relationship with fiscal balance ( $Fiscal Balance_{it}$ ).

We include real annual GDP growth rate ( $GDPR_{it}$ ) in the regression to proxy for economic activity as a result of the fact that government budget balance is sensitive to fluctuations in the economy. During periods of low or moderate economic activity, there is a decrease in amount of taxes collected by government. At the same time, there is an increase in social expenditures, resulting in a worsening budget balance. On the other hand, during periods of high economic activity, budget balances improve due to higher tax revenues.

According to Edwards and Tabellini (1991), the urban population ratio ( $URB_{it}$ ) variable is introduced in the model because authorities find it easier and more cost effective in collecting taxes in urban areas where there are higher concentrations of the formal sector than in the rural areas, where there is high degree of tax evasion and avoidance (Ansari, 1982). Subsequently, the expected coefficient of the variable  $URB_{it}$ , is positive with  $Fiscal\ balance_{it}$  and negative with  $NetCBClaims_{it}$ .

Tanzi (1992) notes that the economic structure of a country is an important determinant of the level of taxation. This study therefore uses the ratio of Agriculture to GDP ( $AGRIC_{it}$ ), to capture the structure of the economy of a country. In developing countries, where the agricultural sector is mainly subsistence in nature due to the presence of many small farmers, most governments are reluctant in taxing staple food items (Stotsky & WoldeMariam, 1997). In developed countries, characterised by more industrial sectors, they are more formal and therefore tax evasion is reduced. Whilst the study expects a positive coefficient with  $NetCBClaims_{it}$ , we expect a negative relationship between  $AGRIC_{it}$  and  $Fiscal\ Balance_{it}$  in Africa and other developing countries.

We measure the level of financial development ( $FinDev_{it}$ ), using the ratio of private credit to GDP due to the availability of this data for most countries in our sample. According to Woo (2006), “countries with highly developed financial markets can more easily finance the fiscal

*deficit by issuing bonds without having to resort to inflationary finance*". Therefore, the expected coefficient sign is negative with regards to  $NetCBClaims_{it}$ . However, we expect also that higher levels of financial development will increase fiscal balance as more credit is given to the private sector to boost investments, growth and revenues. This should include government tax revenues and hence improve fiscal balances.

We measure trade openness ( $Openness_{it}$ ), as the ratio of the sum of exports and imports of goods and services to GDP. The importance of this variable is to assess the extent of integration of a country in global trade. It also measures the degree of sensitivity of country to fluctuations in international prices (Blancheton 2004). With increased revenues, fiscal balances should increase and net central bank claims on government should fall.

#### **4.3.2 Model and Estimation Technique**

We use a Two-step system GMM (2SSGMM), with Windmeijer (2005) small sample robust correction estimator for various reasons. First, due to the relatively small-time duration for some countries in our data, and the use of lagged dependent variable in the model, the 2SSGMM is more appropriate as it avoids the bias that would result from using fixed effects in an OLS regression. For example, in the African and developing world sample, there are a number of countries in Africa and post-communist countries respectively, who are in the sample for relatively few years ranging between 7-17 years, which does not allow the diminishing over time of shocks to fixed effects (Wooldridge, 2002; Beck & Katz, 2004). Second, because both the CBI index and institutional quality, measured as the political rights score vary little within countries, the SGMM leads to a more efficient estimation than fixed effects models (Plümper & Troeger, 2007). Several shortcomings of the data, which include missing data in the sample, fixed individual effects, and potential heteroscedasticity and auto-

correlation within countries, are adequately addressed by the 2SSGMM estimation (Newey & Windmeijer, 2009).

The 2SSGMM approach allows us to treat fiscal balance as a dynamic process thus accounting explicitly for the possibility that previous budget surplus/deficits may influence future budget surplus/deficits. Also, the use of the 2SSGMM approach allows us to control for the endogeneity of all the explanatory variables. In particular, we assume that the explanatory variables are ‘weakly exogenous’ meaning that they can be affected by current and past realizations of the budget surplus/deficits. However, they must have no relation or correlation with future realizations of the error term. Thus, this means that for example future budget surplus/deficits do not affect CBI and institutional quality.

The inclusion of lagged dependent variables may not eliminate potential endogeneity and reverse causation problems. If CBI is correlated with regressors from equation (1), the main result may not hold. More importantly, fiscal balances may affect the level of independence granted to the central bank. The 2SSGMM allows us to account for these potential effects where CBI is treated as an endogenous variable.

The study reports two standard specification tests: The Hansen test of over-identifying restrictions tests the overall validity of the instruments and failure to reject the null hypothesis gives support for the model, including our choice of endogenous variables. The Arellano–Bond test for AR (2) in first differences tests whether the residuals from the regression in differences is second order serially correlated and failure to reject the null hypothesis supports the model specification. We also report the number of instruments as suggested by Bazzi and Clemens (2013) who argues that ideally, the instruments should be less than the number of countries in the sample.

Our preferred model based on Bodea and Higashijima (2015), Lucotte (2012), Acemoglu *et al.* (2008) and Romer (1993) can be summarized as follows:

The specification is generally given by:

$$Fiscal\ Policy_{it} = \beta_1 Fiscal\ Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst.\ Qual_{it} + \beta_4 Election_{it} + \beta_5 X_{it} + \varepsilon_{it} \quad (4.1)$$

where:

$$\varepsilon_{it} = v_t + w_i + e_{it}.$$

To capture possible unobserved heterogeneity, and to analyse the impact of institutional quality on the CBI-fiscal policy nexus, we specify the following interaction models:

$$Fiscal\ Policy_{it} = \beta_1 Fiscal\ Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst.\ Qual_{it} + \beta_4 Election_{it} + \beta_5 X_{it} + \beta_6 (CBI * Inst.\ Qual_{it}) + \acute{\varepsilon}_{it} \quad (4.2)$$

where  $\acute{\varepsilon}_{it} = \acute{v}_t + \acute{\omega}_i + \acute{e}_{it}$ .

$$Fiscal\ Policy_{it} = \beta_1 Fiscal\ Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst.\ Qual_{it} + \beta_4 Election_{it} + \beta_5 X_{it} + \beta_6 (CBI * Election_{it}) + \grave{\varepsilon}_{it} \quad (4.3)$$

where  $\grave{\varepsilon}_{it} = \grave{v}_t + \grave{\omega}_i + \grave{e}_{it}$ .

To examine the impact of institutional quality on the CBI-fiscal policy relationship during elections, we specify the following model:

$$Fiscal Policy_{it} = \beta_1 Fiscal Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst. Qual_{it} + \beta_4 Election_{it} + \beta_5 X_{it} + \beta_6 (CBI * Election_{it} * Inst. Qual) + \xi_{it} \quad (4.4)$$

where:

$$\xi_{it} = \eta_t + \omega_i + \epsilon_{it}.$$

We also examine if the behaviour of CBI varies in election and non-election years by separating our sample based on whether there was an election or not. Here, the focus will be on the magnitude of the CBI coefficient in both samples.

The specification is given as follows:

$$Fiscal Policy_{it} = \beta_1 Fiscal Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst. Qual_{it} + \beta_4 X_{it} + \beta_5 (CBI * Inst. Qual_{it}) + \xi_{it} \quad (4.5)$$

(if  $Election_{it} = 1$ ; for election year sample)

and

$$Fiscal Policy_{it} = \beta_1 Fiscal Policy_{it-1} + \beta_2 CBI_{it} + \beta_3 Inst. Qual_{it} + \beta_4 X_{it} + \beta_5 (CBI * Inst. Qual_{it}) + \epsilon_{it} \quad (4.6)$$

(if  $Election_{it} = 0$ ; for non-election year sample)

where:

$i$  denotes the country and  $t$  denotes the time;

$$\xi_{it} = \eta_t + \omega_i + \epsilon_{it}$$

and the variables are defined as:

$Fiscal\ Policy_{it}$  is a covariate variable measured firstly as net central bank claims on government as a percentage of GDP ( $NetCBClaims_{it}$ ), secondly as fiscal balance calculated as government revenue minus government expenditure as a percentage of GDP ( $Fiscal\ Balance_{it}$ ).

$CBI_{it}$  is the central bank independence measured by the CWN index

$Election_{it}$  is a dummy variable measured as 1 for election years and 0 otherwise

$Inst.\ Qual_{it}$  is the rescaled civil liberties score (0 for least respect for civil liberties and 6 or highest respect for civil liberties)

$GDPR_{it}$  is the real GDP annual growth rate

$URB_{it}$  is the degree of urbanisation

$AGRI_{it}$  is the share of agriculture in the GDP

$FinDev_{it}$  is the ratio of private credit to GDP

$LGDP_{it}$  is log of real GDP per capita, and

$Openness_{it}$  is the trade openness measured as sum of exports and imports as a percentage of GDP.

## **4.4 Analysis and Discussion of Results**

### **4.4.1. Data description**

In Table 4.1, we present summary descriptive statistics of the key variables for the regions of our study. Average net central bank claims on government as a percentage of GDP is 8.9% in Africa which is the least compared to developed and other developing countries figures of

**Table 4.1: Descriptive Statistics**

Variable		Mean	Median	Max	Min.	SD.	Obs.
NetCBClaims	Africa	8.895	5.9	39.629	-88.541	22.526	1850
	Developing	9.562	5.601	38.711	-88.541	22.423	2369
	Developed	9.313	7.732	37.617	-62.961	17.863	1770
Expen.GDP	Africa	16.206	14.921	84.508	2.047	7.665	1746
	Developing	15.128	13.771	86.531	14.101	8.603	2920
	Developed	18.311	18.265	76.222	6.733	5.383	1743
FiscalBalance	Africa	7.266	5.1610	101.985	-18.523	10.602	1556
	Developing	7.337	6.0577	129.282	-37.951	10.077	1857
	Developed	12.95	12.422	78.169	-67.850	12.209	1595
CBI	Africa	0.509	0.501	0.866	0.137	0.183	1597
	Developing	0.491	0.482	0.979	0.016	0.198	2773
	Developed	0.483	0.450	0.894	0.0971	0.222	1872
Inst.Qual	Africa	2.190	2	6	0	1.434	1991
	Developing	2.759	3	6	0	1.604	2408
	Developed	4.854	6	6	0	1.598	1842
Elections	Africa	0.228	0.21	1	0	0.419	2058
	Developing	0.249	0.27	1	0	0.451	3589
	Developed	0.273	0.31	1	0	0.445	1937
URB	Africa	32.41	36.52	86.367	2.845	16.621	1587
	Developing	42.759	45.23	56.23	5.523	1.604	2408
	Developed	70.52	65.21	100	8.534	20.117	1894
AGRIC	Africa	27.37	32.54	79.04	0.718	16.345	1200
	Developing	32.28	0.21	56.23	0.721	0.419	2058
	Developed	3.65	6.215	29.48	0.035	3.22	1292
Priv.Cred	Africa	19.892	14.736	160.125	0.491	19.347	1769
	Developing	29.219	20.193	115.783	0.491	80.527	2328
	Developed	68.671	58.178	312.154	0.059	44.925	1654
GDPC	Africa	1362.7	1568.5	14749.2	113.7	2129.5	1429
	Developing	2045.7	2254.3	15912.5	111.7	2179.6	3127
	Developed	23951.3	32154	87772.7	589.14	14956	1703
Openness	Africa	43.58	45.2	92.9	22.5	16.5	1569
	Developing	33.82	54.23	85.27	21.6	36.7	4480
	Developed	91.9	89.52	217.4	21.38	19.42	1912

$NETCBCLAIMS_{it}$  denotes Net Central Bank Claims on Government and is measured as the ratio of central bank loans to central government institutions net of deposits to GDP.  $FiscalBalance_{it}$  is government revenue less government expenditure as a percentage of GDP.  $Expen.GDP_{it}$  is government expenditure as a percentage of GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $URB_{it}$  is the degree of urbanization,  $AGRIC_{it}$  is the share of agriculture in the GDP,  $FinDev_{it}$  is the ratio of private credit to GDP,  $GDPC_{it}$  is the real GDP per capita,  $InstQual_{it}$  is the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and  $Openness_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP. Developing refers to other developing countries.

9.3% and 9.56%. The country with the highest net central bank claims to government as a percentage of GDP of 39.629 however, is in Africa. On average, Africa has a higher expenditure to GDP ratio (16.2%) compared to other developing countries (15.1%). Developed countries have higher expenditure to GDP ratio (18.3%) compared to other

developing countries (15.1%). The highest expenditure to GDP ratio is found in other developing countries (86.5%). The average fiscal balance in Africa is 7.2% while that of other developing and developed countries is 7.3% and 12.9% respectively. The highest fiscal deficit is found in developed countries (-67.8%). Africa has lower median and mean fiscal balances (5.2% and 7.2%) compared to other developing countries (5.1% and 7.4%) respectively.

Developed countries have better mean and median fiscal balances (12.9% and 12.4%) compared to other developing (7.3% and 6.05%) and African (7.3% and 5.2%) countries. This highlights the fiscal challenges that confront Africa and other developing countries in particular. Africa although has relatively higher median and mean CBI values (0.50 and 0.51) compared to developed (0.45 and 0.48) and other developing countries (0.48 and 0.49). The quality of institutions is highest in developed countries with an average score of 4.85 compared to Africa's 2.19 and other developing countries' score of 2.76.

#### **4.4.2 Main Results**

- **CBI, Elections, Institutional Quality and Net Central Bank Claims on Government**

In Table 4.2 we show the results of the influence of central bank independence (*CBI*), elections and institutional quality on fiscal policy, measured by net central bank claims on government as a percentage of GDP in Africa.

As indicated by the economic literature on CBI, the estimated coefficient of CBI is insignificant in Africa as seen in model 1 to 6. Meaning that CBI has no direct significant impact on reducing net central bank claims on government in Africa. This could be due to the broad disregard for central bank provisions, which limit the credit central banks can give to government.

In other developing countries and developed countries, we see a significant and negative effect of CBI on net central bank claims on government (models 7-12 for other developing countries, and models 13-18 for developed countries). This means that more independent central banks are able to significantly reduce credit to government. This is attributable to respect for CBI provisions which limit credit to government.

Elections have significant and positive impact on net central bank claims on government throughout Africa, other developing and developed countries. This is evident in model 3 for Africa, 9 for other developing countries and 15 for developed countries. In election years, most political authorities seek financing for their projects meant to convince voters to vote for them or to buy votes as experienced in some African countries. This leads to increased demand on the central bank to provide relatively cheaper finance.

The interactive term between CBI and Elections is significant and negative only in developed countries (model 17). Meaning that in developed countries, independent central banks are able to constrain central bank financing for government projects.

Institutional quality (*Inst.Qual*), proxied by the civil liberties does not have a significant effect on reducing net central bank claims on government in Africa as shown in models 1 to 6. This can be explained to mean that with low levels of institutional quality in Africa this does not improve central bank's ability to restrict credit to government. However, in other developing and developed countries, where there are relatively stronger institutions, the coefficient of the variable is significant and negative; as shown in models 7 to 18. Where there is respect for the rule of law and institutions are allowed to work, government finds itself accountable to the electorate in free and fair elections as well as having the media being free to report government's disregard for laws such as the charter of the central bank. The presence of quality institutions also means a high level of political stability which ensures

that businesses work in a stable environment which guarantees their revenues and profits to pay taxes to government. This goes to reduce budget deficits and the need to resort to the central bank for loans. High levels of institutional quality also are associated with more efficient tax collection and administrative systems that enable the payment of taxes and closes loopholes through which tax revenues are leaked, which could lead to government resorting to central banks for financing. High institutional quality means lower levels of corruption, leading to prudent use of government resources and efficient tax administration thereby increasing government revenue. With low levels of corruption, it is easier for independent central banks to influence fiscal policy as pressure to finance government spending is lower than in poor institutional development countries.

When we consider the interactive effect of CBI and institutional quality, the study finds that, it has a significant and negative effect on net central bank claims on government across, Africa, other developing and developed countries. Institutional quality also combines effectively with CBI, to reduce the impact of elections on central bank financing to government. It can be explained that, independent central banks operating in jurisdictions where there is political stability, democracy and the rule of law, are allowed to operate more independently and in accordance with their charter provisions. Political authorities attempt to disregard these provisions are punished by voters at the polls, the opposition party can freely criticise government and expose its attempt to unduly pressurise the central bank to finance its spending beyond the legal limit. The independent central banks themselves are also careful in preserving their independence as any attempt to please political authorities will greatly hurt their reputation in a democratic dispensation as they will be subject to public criticism in an era of freedom of speech. This may affect the confidence the public has in them which can hurt the achievement of their price stability objective. With low levels of corruption, it is easier for independent central banks to influence fiscal policy as pressure to

finance government spending is lower. Similar results are achieved when we proxy fiscal policy with fiscal balance and government expenditure to GDP. These are presented in Tables 2.3 and 2.4 respectively.

Focusing on the other control variables, growth rate of GDP (*GDPR*), has a significantly negative impact on net central bank claims in Africa, other developing and developed countries. Thus, when economic activities are booming, we expect government tax revenues to increase. This should therefore reduce government's reliance on central bank loans to meet its fiscal obligations. This therefore results in the negative and significant coefficient of the *GDPR* variable across the various models in Table 4.2.

With regards to the urban population ratio (*URB*), the expected sign is seen across Africa, other developing and developed countries where increased urbanisation results in lower net central bank claims. This is due to the fact that, in urban areas where there is an expected higher concentration of the formal sector than in rural areas, tax revenue collection is relatively easier and less costly and as such more revenue accrues to government. This availability of revenue results in less reliance on central bank credit to finance government expenditure. This confirms the position of Edwards and Tabellini (1992) and Newey and Windmeijer (2009).

We only see a significant impact of *AGRIC*, our proxy for economic structure on net central bank claims in models 2 and 4 for Africa, and for other developing countries respectively (models 7-12). This is captured by the ratio of agriculture to GDP (*AGRIC*). When countries are highly reliant on agriculture, prices of their commodities are subject to variations and as such revenues can be low. This can result in a reliance on central bank for loans. This explains the positive coefficient of the *AGRIC* variable. Also, most agricultural based

economies are not formalised and as such revenue collection is difficult resulting in lower revenues and higher need for central bank loans (Newey & Windmeijer, 2009).

Focusing on the financial development variable, *FinDev*, we see a significant negative coefficient across all 18 models. This means that higher levels of financial development reduce central bank credit to government. This happens because more revenues are generated as more investments are made by the private sector with credit received from the financial markets.

Also, the government can borrow from well-developed domestic financial markets thereby reducing demand for inflationary finance from the central bank as posited by Woo (2003).

The trade openness variable (*Openness*) has a significant negative coefficient in models 1, 2, 3, 4, 5 for African countries and 8, 10, 11, and 12 for other developing countries. It is significant and negative in model 16 for developed countries. This means that higher levels of trade openness, result in lower central bank claims on government.

This can be attributed to higher exports resulting in higher revenues for government. When such happens, then government's reliance on central bank financing to make up for revenue shortfalls is reduced. We see a negative and significant effect of real per capita GDP (*LGDP*) in model 2 for Africa, model 11 for developing countries and model 16 for developed countries. The *LGDP* was to measure the differences in the level of economic development between countries. As expected, highly developed economies will result in higher revenues and lower reliance on central bank finance.

Table 4.2: CBI, Elections, Institutional Quality and Net Central Bank Claims on Government

	AFRICA NETCBClaims						DEVELOPING NETCBClaims						DEVELOPED NETCBClaims					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
NetCBClaims <sub>it</sub>	0.859*** (0.028)	0.901*** (0.021)	0.943*** (0.035)	1.021*** (0.029)	0.920*** (0.036)	0.945*** (0.029)	0.921*** (0.021)	0.940*** (0.002)	0.962*** (0.020)	0.992*** (0.003)	0.970*** (0.011)	0.894*** (0.011)	0.952*** (0.023)	0.982*** (0.027)	0.960*** (0.01)	0.981*** (0.02)	0.935*** (0.021)	0.934*** (0.023)
CBI	-0.074 (0.124)	-0.071 (0.277)	-0.088 (0.072)	-0.145 (0.225)	-0.104 (0.198)	-0.127 (0.185)	-0.124* (0.085)	-0.125** (0.015)	-0.130* (0.040)	-0.189* (0.065)	-0.161* (0.156)	-0.141* (0.114)	-0.143*** (0.029)	-0.102* (0.061)	-0.286** (0.058)	-0.284*** (0.039)	-0.237** (0.179)	-0.273** (0.056)
Inst.Qual	-0.196 (0.104)	-0.132 (0.086)	-0.496 (0.104)	-0.115 (0.053)	-0.102 (0.096)	-0.038 (0.079)	-0.213* (0.125)	-0.057* (0.019)	-0.262* (0.142)	-0.036* (0.026)	155 (0.171)	1* (0.241)	-0.070** (0.024)	-0.052** (0.013)	-0.082** (0.038)	-0.071** (0.036)	-0.021* (0.017)	-0.022* (0.016)
Election			0.276*** (0.038)	0.229 (0.179)	0.128** (0.059)	0.119 (0.185)			0.105** (0.035)	0.284 (0.353)	0.108 (0.171)	0.201 (0.241)			0.014** (0.004)	0.012 (0.013)	0.203 (0.080)	0.04 (0.068)
CBI*Inst.Qual		-0.155*** (0.034)		-0.102*** (0.032)					-0.066*** (0.019)									
CBI*Election																		
CBI*Election*Inst.Qual																		
GDPR <sub>t-1</sub>																		
URB	-0.032** (0.014)	0.003 (0.011)	-0.037** (0.014)	0.003 (0.011)	0.006 (0.004)	0.004 (0.003)	-0.022* (0.012)	-0.015*** (0.001)	-0.022* (0.011)	-0.014*** (0.003)	-0.018** (0.090)	-0.016* (0.011)	-0.67 (0.003)	-0.417 (0.026)	-0.009** (0.004)	-0.001 (0.002)	-0.010*** (0.003)	-0.010*** (0.003)
AGRIC	0.03 (0.019)	0.063** (0.026)	0.03 (0.028)	0.036** (0.025)	0.003 (0.014)	0.007 (0.015)	0.033*** (0.01)	0.020*** (0.001)	0.035*** (0.010)	0.022*** (0.003)	0.011*** (0.001)	0.010*** (0.001)	-0.025 (0.018)	-0.122 (0.14)	-0.083 (0.042)	-0.061 (0.023)	-0.033** (0.016)	-0.034** (0.016)
FinDev <sub>t-1</sub>																		
Openness <sub>t-1</sub>	-1.47*** (0.432)	-1.872*** (0.585)	-1.37*** (0.432)	-1.663*** (1.74)	-0.726** (0.316)	-0.414 (0.267)	-2.914 (2.425)	-1.466*** (0.172)	-1.951 (2.285)	-1.543*** (0.281)	-1.015*** (0.050)	-0.991*** (0.049)	-0.52 (0.45)	-0.216 (0.539)	-0.076 (0.538)	-0.422*** (0.297)	-0.456 (0.431)	-0.541 (0.422)
LGDPCC <sub>t-1</sub>	-0.139 (0.211)	-0.489* (0.289)	-0.427 (0.514)	-0.354 (0.604)	-0.172 (0.193)	-0.073 (0.156)	-0.027 (0.049)	-0.008 (0.005)	-0.038 (0.043)	-0.012 (0.012)	-0.004** (0.002)	-0.001 (0.002)	-0.015 (0.01)	-0.033 (0.02)	-0.026 (0.078)	-0.811*** (0.184)	-0.007* (0.004)	-0.007 (0.004)
Observations	1,092	1,092	1,092	1,092	1,013	1,013	1,645	1,645	1,619	1,619	1,583	1,583	1,184	1,184	1,166	1,166	1,165	1,165
No. of Countries	45	45	45	45	43	43	90	90	90	85	85	85	40	40	40	40	40	40
No. of Instru'ts	39	39	39	39	36	36	54	54	54	48	48	48	37	37	37	37	37	37
AR (1)	0.007	0.007	0.008	0.007	0.006	0.006	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.005	0.005	0.005
AR (2)	0.117	0.115	0.107	0.115	0.108	0.113	0.313	0.201	0.115	0.114	0.115	0.112	0.311	0.21	0.211	0.195	0.201	0.186
Hansen (p>Chi2)	0.504	0.525	0.504	0.525	0.514	0.525	0.552	0.553	0.421	0.423	0.521	0.442	0.602	0.712	0.222	0.234	0.232	0.254

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

$NETCBCLAIMS_{it}$  denotes Net Central Bank Claims on Government and is measured as the ratio of central bank loans to central government institutions net of deposits to GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $URB_{it}$  is the degree of urbanization,  $AGRIC_{it}$  is the share of agriculture in the GDP,  $FinDev_{it}$  is the ratio of private credit to GDP,  $LGDPCC_{it}$  is log of real GDP per capita,  $InstQual_{it}$  is the rescaled the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and  $Openness_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP. No. of Instru'ts is number of instruments.

- **CBI, Elections, Institutional Quality and Fiscal Balance**

In Table 4.3, we show the results of the influence of central bank independence (*CBI*) on fiscal balance. The estimated coefficient of *CBI* is insignificant in Africa but significant and positive in other developing countries and developed countries in the baseline models 25 and 36. In model 19 to 24, for Africa, *CBI* does not have a significant effect on fiscal balance meaning *CBI* on its own does not influence government fiscal position or improve government deficits in Africa.

In the case of other developing countries (models 25-30) and developed countries (models 31 to 36) however, it is very evident that *CBI* increases fiscal balance and by reverse, reduces budget deficits. In such jurisdictions, independent central banks are able to caution government against having fiscal deficits as well as restrict its credit to government. In such jurisdictions, central banks can take actions that will counter governments fiscal spending decisions as evident in Germany and Turkey in times past (Acemoglu, 2008). This could include the central banks' refusal to buy government bonds, raise interest rates on credit to government as well as raise interest rates that will cause the financial markets to demand more returns on government securities (Bodea & Higashijima, 2015).

However, in Africa, institutions in the region do not have significant impact on improving fiscal balances. In other developing countries and developed countries where stronger institutions exist, the impact is significant and positive (in the baseline models 31 and 33). Where there is respect for rule of law and institutions work, governments are accountable to the electorate in free and fair elections. The presence of quality institutions also means a high level of political stability guaranteeing a stable environment for business operations and investments, to raise the needed revenues through taxing of profits. This goes to improve fiscal balance.

The impact of elections on fiscal balance is significant and negative in Africa only in model 22 and in developed countries in model 33 only. This impact is negative meaning that election years reduce fiscal deficits more than non-election years. When the elections variable is introduced, CBI is still significant in developed countries in the baseline regressions (model 33). However, when we introduce the interactive terms between CBI and elections, though the elections variable is significant, its magnitude is lower compared to when without the interactive terms (as seen in models 21 and 22 in Africa, 27 and 28 in other developing countries and 33 and 34 in developed countries).

We also see that institutions enhance the effectiveness of *CBI* in improving fiscal balance in Africa, other developing and developed countries. Focusing on the interactive term *CBI\*Inst.Qual* and the sign of its coefficient in model 20, 26, 28, 32 and 34, it is evident that the sign of the interactive term is positive and significant. Meaning that, quality institutions enhance the ability of independent central banks to reduce fiscal deficits and improve fiscal performance. According to the literature on political economy of policy reforms, central bank reforms in high institutional quality environments, are more able to achieve central bank objectives such as price stability. In jurisdictions where there is respect for rule of law, the central bank laws are respected by government and as with the central bank is given actual independence from political authorities to operate and function per the requirements of the law. In such environments, it is easier for the central bank to say no to government's pressure to finance its deficits. It is also easier for central bank governors to issue warnings to government when monetary policy stability is threatened by fiscal policy of government.

The central bank also is able to take actions that will ensure that monetary policy objectives are achieved even if it means restricting governments' ability to spend. This will lead to a limitation of central bank credit to government, reduce government spending and improve

fiscal balance. With low levels of corruption, it is easier for independent central banks to influence fiscal policy as pressure to finance government spending is lower.

So particularly in Africa, where *CBI* is not sufficient in checking fiscal performance of government, it is important to have quality institutional environments to guarantee the independence of the central bank in practice. According to Goodhart (2010), supporting government' spending in during periods of repression constitutes and objective of the central bank. Secondly, one objective of the central bank is to constrain fiscal spending when it threatens monetary policy.

In this light, reforms of central bank independence though geared towards price stability will aim to ensure that fiscal indiscipline does not dominate monetary policy. In that regard, the central bank will not support government's fiscal plans should it feel that doing so will not help it achieve its primary goal of price stability.

We further proxy our fiscal policy measure with the ratio of government expenditure to GDP and measure institutional quality as rule of law. The rule of law characterises low corruption levels. The results (Table 4.4) are not different from what we find earlier. In that higher levels of the rule of law, improves the impact of *CBI* on reducing government expenditure across Africa, other developing countries and developed countries. *CBI* doesn't have a significant direct effect on government expenditure in Africa and other developing countries. It becomes a significant determinant upon the introduction of interactive terms with rule of law. However, in developed countries, *CBI* directly impacts government expenditure (model 49 - 54).

**Table 4.3: CBI, Elections, Institutional Quality and Fiscal Balance**

	AFRICA						DEVELOPING						DEVELOPED					
	Fisc. Balance						Fisc. Balance						Fisc. Balance					
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Fisc.Balnce <sub>t-1</sub>	0.640*** (0.08)	0.568*** (0.062)	0.285*** (0.079)	0.427*** (0.05)	0.633*** (0.105)	0.711*** (0.077)	0.778*** (0.107)	0.784*** (0.108)	0.598*** (0.078)	0.579*** (0.065)	0.153*** (0.01)	0.147*** (0.01)	0.711*** (0.025)	0.768*** (0.048)	0.895*** (0.008)	0.907*** (0.009)	0.564*** (0.037)	0.535*** (0.037)
CBI	0.201 (0.93)	0.216 (0.754)	0.392 (0.165)	0.380 (0.494)	0.243 (0.230)	0.221 (0.191)	0.11* (0.07)	0.228 (0.109)	0.277* (0.032)	0.231 (0.341)	0.153** (0.046)	0.132 (0.169)	0.142*** (0.659)	0.102* (0.053)	0.161* (0.076)	0.158* (0.052)	0.337** (0.183)	0.329** (0.107)
Inst.Qual	0.329 (0.318)	0.172 (0.232)	0.607 (0.089)	0.202 (0.426)	0.014 (0.351)	0.012 (0.127)	0.277* (0.125)	0.231* (0.115)	-0.105*** (0.007)	0.219* (0.086)	0.189** (0.015)	0.315* (0.114)	0.301*** (0.05)	0.045* (0.027)	0.042* (0.037)	0.065* (0.037)	0.152** (0.082)	0.291** (0.052)
Election			-0.335*** (0.141)	-0.145 (0.154)	-0.139 (0.208)	-0.207 (0.306)			-0.668 (0.835)	-0.511 (0.859)	-0.153 (0.81)	-0.147 (0.87)			-0.506** (0.121)	-0.108 (0.133)	-0.364 (0.377)	-0.335 (0.337)
CBI*Inst.Qual		0.066* (0.022)		0.097* (0.032)				0.158* (0.078)		0.134** (0.047)				0.061* (0.021)		0.180* (0.102)		
CBI*Election					0.023 (0.043)						0.081 (0.091)						0.032** (0.012)	
CBI*Election*Inst.Qual						0.088** (0.019)						0.186** (0.019)						0.078** (0.012)
GDPR <sub>t-1</sub>	0.057*** (0.01)	0.062*** (0.009)	0.295*** (0.039)	0.373*** (0.037)	0.048** (0.019)	0.053*** (0.018)	0.089*** (0.025)	0.078*** (0.026)	0.111*** (0.024)	0.083*** (0.024)	0.106*** (0.01)	0.114*** (0.01)	0.139*** (0.013)	0.159*** (0.023)	0.094*** (0.013)	0.100*** (0.014)	0.115*** (0.024)	0.116*** (0.027)
URB	0.075*** (0.03)	0.118*** (0.028)	0.114*** (0.02)	0.113*** (0.038)	0.071* (0.038)	0.084*** (0.026)	0.008 (0.012)	0.029* (0.016)	0.042*** (0.011)	0.011 (0.015)	0.054** (0.21)	0.056** (0.22)	0.023*** (0.005)	0.046*** (0.012)	-0.008*** (0.002)	-0.008*** (0.003)	0.031*** (0.008)	0.030*** (0.008)
AGRIC	0.003 (0.08)	0.007 (0.096)	-0.023 (0.043)	0.112 (0.077)	0.041 (0.061)	-0.017 (0.030)	-0.044* (0.022)	-0.067** (0.027)	-0.019 (0.015)	-0.102*** (0.028)	-0.012 (0.013)	-0.014 (0.014)	-0.120*** (0.031)	0.039 (0.063)	0.033 (0.021)	0.016 (0.021)	-0.148 (0.036)	-0.170 (0.239)
FinDev <sub>t-1</sub>	0.029* (0.02)	0.043*** (0.011)	0.037** (0.017)	0.052** (0.024)	0.014 (0.013)	0.014 (0.011)	-0.007 (0.008)	0.017* (0.009)	0.004 (0.008)	0.014* (0.008)	0.154** (0.77)	0.165** (0.97)	0.009** (0.004)	0.006 (0.005)	0.065*** (0.012)	0.055*** (0.015)	0.023*** (0.005)	0.023*** (0.004)
Openess <sub>t-1</sub>	1.704*** (0.54)	2.378* (1.183)	1.018*** (1.111)	1.684*** (0.798)	0.136 (0.227)	-0.484 (0.572)	0.599 (1.67)	0.676 (1.637)	0.142 (0.152)	0.385 (0.598)	0.018 (0.018)	0.028 (0.031)	-2.914 (2.425)	0.466*** (0.172)	-0.32 (0.861)	-1.248 (1.525)	-0.246 (0.421)	-0.610 (0.724)
LGDPCC <sub>t-1</sub>	0.139 (0.21)	0.489* (0.289)	1.095*** (0.228)	1.974*** (0.689)	0.786* (0.404)	0.181 (0.304)	0.227** (0.114)	0.177 (0.131)	0.229*** (0.079)	0.196** (0.086)	-0.162** (0.07)	0.084*** (0.02)	0.021** (0.009)	0.050*** (0.015)	0.278** (0.127)	0.206 (0.129)	0.037** (0.017)	0.042** (0.019)
Observations	373	373	188	188	382	382	1,354	1,354	1,392	1,392	1,304	1,306	981	981	846	846	779	779
Countries	31	31	29	29	31	31	65	65	56	56	56	56	44	44	42	42	44	44
No. of Instru	28	28	27	27	29	29	45	45	45	39	39	39	37	37	35	35	36	36
AR (1)	0.058	0.056	0.042	0.041	0.006	0.006	0.053	0.026	0.012	0.015	0.016	0.030	0.073	0.072	0.05	0.066	0.033	0.043
AR (2)	0.108	0.118	0.112	0.114	0.108	0.113	0.239	0.334	0.145	0.136	0.720	0.526	0.362	0.359	0.341	0.431	0.286	0.309
Hansen test	0.583	0.577	0.565	0.462	0.414	0.425	0.683	0.677	0.52	0.534	0.221	0.332	0.458	0.456	0.585	0.531	0.532	0.654

Robust Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

$FiscalBalnce_{it}$  is government revenue less government expenditure as a percentage of GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $URB_{it}$  is the degree of urbanization,  $AGRIC_{it}$  is the share of agriculture in the GDP,  $FinDev_{it}$  is the ratio of private credit to GDP,  $LGDPCC_{it}$  is log of real GDP per capita,  $InstQual_{it}$  is the rescaled the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and  $Openness_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP. No. of Instru'ts is number of instruments.

	AFRICA						DEVELOPING						DEVELOPED					
	Expen.GDP						Expen.GDP						Expen.GDP					
	(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)	(51)	(52)	(53)	(54)
Expen.GDP <sub>t-1</sub>	0.721***	0.721***	0.711***	0.709***	0.723***	0.756***	0.792***	0.798***	0.803***	0.807***	0.856***	0.858***	0.888***	0.892***	0.878***	0.899***	0.911***	0.923***
	(0.032)	(0.033)	(0.036)	(0.034)	(0.043)	(0.034)	(0.025)	(0.049)	(0.014)	(0.093)	(0.04)	(0.071)	(0.064)	(0.064)	(0.044)	(0.055)	(0.042)	(0.048)
CBI	-0.106	-0.133	-0.135	-0.132	-0.137	-0.131	-0.109	-0.111**	-0.165	-0.172*	-0.16	-0.16	-0.211***	-0.204**	-0.236**	-0.255**	-0.248**	-0.296**
	(0.291)	(0.118)	(0.142)	(0.099)	(0.175)	(0.166)	(0.145)	(0.022)	(0.114)	(0.052)	(0.078)	(0.071)	(0.008)	(0.051)	(0.057)	(0.055)	(0.077)	(0.063)
Rule of Law	-0.311	-0.178	-0.173	-0.122	-0.168	-0.112	-0.115*	-0.089	-0.198*	-0.079	-0.065**	0.043*	-0.124***	-0.119**	-0.098**	-0.157**	-0.175*	-0.099*
	(0.118)	(0.261)	(0.154)	(0.135)	(0.176)	(0.182)	(0.056)	(0.078)	(0.098)	(0.065)	(0.015)	(0.018)	(0.009)	(0.086)	(0.044)	(0.036)	(0.089)	(0.039)
Election			0.115***	0.101	0.065	0.042			0.119**	0.112	0.105	0.132			0.054*	0.041	0.044	0.048
			(0.021)	(0.116)	(0.128)	(0.079)			(0.033)	(0.142)	(0.116)	(0.166)			(0.014)	(0.052)	(0.063)	(0.072)
CBI*Rule of Law		-0.112**		-0.134***				-0.231***		-0.248**				-0.197***		-0.194***		
		(0.056)		(0.018)				(0.005)		(0.042)				(0.013)		(0.018)		
CBI*Election					0.115						-0.128							-0.151**
					(0.77)						(0.084)							(0.039)
CBI*Election*Rule of Law						-0.167**						-0.244**						-0.278**
						(0.022)						(0.046)						(0.053)
GDPGR <sub>t-1</sub>	-0.109***	-0.108***	-0.086***	-0.082***	-0.021***	-0.011***	-0.133***	-0.122***	-0.121***	-0.084***	-0.064***	-0.088***	-0.132**	-0.141***	-0.152*	-0.171*	-0.108**	-0.021**
	(0.002)	(0.003)	(0.005)	(0.004)	(0.005)	(0.001)	(0.011)	(0.014)	(0.035)	(0.012)	(0.013)	(0.016)	(0.088)	(0.014)	(0.084)	(-0.096)	(0.044)	(0.011)
URB	0.021*	0.005	0.028**	0.003	0.014	0.006	0.031*	0.024***	0.022*	0.018***	0.019**	0.017*	0.125	0.156	0.118**	0.121	0.122***	0.058***
	(0.012)	(0.01)	(0.011)	(0.012)	(0.008)	(0.005)	(0.019)	(0.002)	(0.003)	(0.005)	(0.008)	(0.009)	(0.141)	(0.188)	(0.041)	(0.119)	(0.004)	(0.004)
AGRIC	-0.031*	-0.044**	-0.074*	-0.054**	-0.024	-0.041*	-0.034**	-0.036**	-0.038**	-0.031***	0.039***	0.042***	-0.051	0.055	-0.046	-0.052	-0.069**	-0.071**
	(0.011)	(0.022)	(0.019)	(0.018)	(0.043)	(0.021)	(0.011)	(0.012)	(0.013)	(0.003)	(0.006)	(0.002)	(0.035)	(0.54)	(0.042)	(0.032)	(0.015)	(0.014)
FinDev <sub>t-1</sub>	0.124**	0.126**	0.138**	0.142**	0.114*	0.124**	0.213***	0.223**	0.245*	0.208**	0.215*	0.221*	0.318**	0.329***	0.415	0.421**	0.379**	0.332**
	(0.021)	(0.037)	(0.032)	(0.056)	(0.054)	(0.063)	(0.005)	(0.098)	(0.102)	(0.095)	(0.112)	(0.123)	(0.071)	(0.083)	(0.232)	(0.114)	(0.121)	(0.063)
Openess <sub>t-1</sub>	-0.252***	-0.292***	-0.317***	-0.242***	-0.122**	-0.114	-0.219	-0.231***	-0.241	-0.264***	-0.212***	-0.521***	0.254	0.186	-0.176**	-0.192***	-0.154	-0.131
	(0.006)	(0.005)	(0.001)	(0.004)	(0.051)	(0.327)	(0.425)	(0.012)	(0.611)	(0.011)	(0.021)	(0.038)	(0.116)	(0.198)	(0.028)	(0.004)	(0.191)	(0.127)
LGDPCC <sub>t-1</sub>	0.118	0.154*	0.128	0.145*	0.169	0.112	0.231**	0.198**	0.172	0.098	0.085**	0.082	0.298	0.265	0.247	0.213***	0.345**	0.412*
	(0.115)	(0.068)	(0.119)	(0.114)	(0.085)	(0.123)	(0.049)	(0.022)	(0.096)	(0.118)	(0.031)	(0.074)	(0.311)	(0.341)	(0.352)	(0.014)	(0.041)	(0.043)
Observations	485	485	248	248	335	335	1445	1445	1285	1285	1282	1282	995	995	875	875	792	792
Countries	33	33	31	31	28	28	90	90	90	90	90	90	40	40	40	40	40	40
No. of Instru'ts	31	31	29	29	27	27	65	65	65	65	65	65	38	38	38	38	38	38
AR (1)	0.003	0.002	0.004	0.002	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.002	0.002	0.002	0.003	0.003	0.002
AR (2)	0.121	0.115	0.103	0.102	0.104	0.114	0.213	0.211	0.115	0.124	0.125	0.122	0.131	0.133	0.142	0.165	0.121	0.141
Hansen test	0.521	0.522	0.543	0.561	0.514	0.521	0.566	0.571	0.511	0.483	0.421	0.522	0.405	0.421	0.432	0.412	0.514	0.502

Robust Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

*Expen. GDP<sub>it</sub>* is government expenditure as a percentage of GDP. *CBI<sub>it</sub>* is the central bank independence measured by the CWN index, *GDPGR<sub>it</sub>* is the real GDP annual growth rate, *URB<sub>it</sub>* is the degree of urbanization, *AGRIC<sub>it</sub>* is the share of agriculture in the GDP, *FinDev<sub>it</sub>* is the ratio of private credit to GDP, *LGDPCC<sub>it</sub>* is log of real GDP per capita, *Rule of law* is the measure of rule of law and proxy for institutional quality from the Word Governance Indicators and *Openness<sub>it</sub>* is the trade openness measured as the ratio of sum of exports and imports to GDP. No. of Instru'ts is number of instruments.

- **Does the level of economic development matter for the impact of institutions on Fiscal Policy?**

From the regressions above, we note that while the institutional quality variable has a significant impact on fiscal balance in other developing countries and developed countries, this is not the case with regards to Africa. Noting also that there are a high number of high income countries in other developing countries and developed compared to Africa, it therefore appears that the impact of institutions on fiscal performance is driven by the level of development of the countries, particularly by high income countries. We therefore seek to empirically examine this and posit that institutions matter because of the economies they are embedded in. That is to say that, institutional quality matters for fiscal balance if the economy is already well developed. It can be argued that having strong institutions in poorly developed economies does not improve fiscal balances since strong economies are needed to generate economic activities that will promote increased revenues for government unlike in poorly developed economies. Also, in the midst of poor institutions, strong economies are able to improve fiscal balances due to the systems that have been embedded in the economy to generate high incomes and increase government revenues.

To examine this thought, following Issahaku, Abor and Amidu (2018), we split our sample into two, based on The World Bank's 2016 classification of countries based on gross national income (GNI) per capita computed from the Atlas method. The income divisions are: low-income countries (GNI per capita of less than or equal to \$1,045 in 2013), lower-middle income countries (GNI per capita greater than \$1,045 but less than \$4,125), upper middle-income countries (GNI per capita greater than \$4,125 but less than \$12,746) and high-income countries (GNI per capita of \$12,746 or greater). For the sake of our analysis, and to gain an adequate sample size, we truncate the sample at \$4,125; those countries below this amount

form one sample (low-income and lower-middle-income countries) whereas those above (upper middle - income and high-income countries) form another sample. This classification is based on the presumption that the institutional characteristics of low-income countries will be similar to those in lower-middle-income countries, and the institutional features of upper-middle-income countries will be similar to those in high-income countries. This categorisation will also afford us more observations to avoid over fitting the models.

In the first regression in Table 4.5, we estimate the impact of institutional quality on fiscal balance in the presence of economic development level for the global sample. We introduce a level of development dummy *DevDum*, which is 1 for upper middle income and high-income countries, and 0 for low income and lower middle-income countries. We then run separate regressions for low income and lower middle-income countries on one hand, and upper middle income and high-income countries on the other hand.

From the results in Table 4.4, models and 55 and 64, institutional quality is significant and positive. However, when we introduce a level of economic development dummy, our measure of institutional quality, loses its significance in models 57 and 58. The dummy variable for economic development *DevDum* is however significant and positive in model 57 and 58. This means that, strong institutions impact fiscal balances more in upper middle income and high-income countries than in low income and lower middle-income countries.

The interactive term between level of economic development and institutional quality in model 58 is significant and positive. This is explained to mean that, the impact of strong institutions on fiscal balance is enhanced in upper middle income and high-income countries than in low income and lower middle-income countries.

**Table 4.5: CBI, Institutional Quality and Fiscal Balance: Role of Level of Development**

	GLOBAL				LIC & LMIC		UMIC & HIC		OECD	
	Fiscal Balance				Fiscal Balance		Fiscal Balance		Fiscal Balance	
	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)
FISCAL BALANCE <sub>t-1</sub>	0.578*** (0.059)	0.604*** (0.001)	0.574*** (0.051)	0.580*** (0.00162)	0.575*** (0.065)	0.599*** (0.065)	0.661*** (0.007)	0.655*** (0.011)	0.561*** (0.057)	0.545*** (0.01)
CBI	0.111 (0.17)	0.511** (0.132)	0.572 (0.940)	0.019** (0.314)	0.204 (0.213)	0.202 (0.289)	0.054*** (0.014)	0.051* (0.024)	0.122* (0.052)	0.123* (0.078)
Inst.Qual	0.296** (0.211)	0.278** (0.026)	0.222 (0.345)	0.409 (0.021)	0.301 (0.18)	0.196 (0.234)	0.116** (0.062)	0.113*** (0.023)	0.116*** (0.012)	0.121** (0.052)
Election	-0.182* (0.078)	-0.12 (-0.62)	-0.202 (0.371)	-0.261 (0.027)	-0.124* (0.072)	-0.162 (0.126)	-0.145* (0.051)	-0.032 (0.092)	-0.112** (0.011)	-0.036 (0.082)
DevDum			1.022*** (0.345)	0.409*** (0.021)						
DevDum*Inst.Qual				1.013** (0.469)						
CBI*Inst.Qual		0.197 (0.172)				0.140** (0.732)		0.042*** (0.264)		0.021*** (0.251)
GDPR <sub>t-1</sub>	0.092*** (0.031)	0.091*** (0.003)	0.070** (0.033)	0.082*** (0.003)	0.076** (0.034)	0.092*** (0.032)	0.081*** (0.006)	0.076*** (0.005)	0.051** (0.005)	0.066** (0.004)
URB	0.053** (0.018)	0.046** (0.002)	0.017 (0.027)	0.035*** (0.003)	0.078*** (0.027)	0.098*** (0.029)	-0.027* (0.015)	-0.036** (0.016)	-0.015* (0.012)	-0.016** (0.01)
AGRIC	-0.009 (0.028)	-0.011*** (0.001)	-0.098** (0.038)	-0.047*** (0.002)	-0.045* (0.025)	-0.017 (-0.022)	-0.080*** (0.015)	-0.119*** (0.025)	-0.051** (0.013)	-0.112** (0.022)
FinDev <sub>t-1</sub>	0.004 (0.006)	0.003*** (0.001)	-0.007 (0.008)	-0.002* (0.001)	0.005 (0.019)	0.025 (0.02)	-0.008*** (0.003)	-0.012*** (0.003)	-0.012*** (0.002)	-0.011*** (0.002)
Openess <sub>t-1</sub>	1.018*** (1.111)	1.684*** (-0.798)	-0.000 (0.000)	-0.000 (0.000)	-1.346 (2.317)	0.126 (2.15)	-2.914 (2.425)	0.466*** (0.172)	-2.914 (1.415)	0.521** (0.072)
Observations	3029	3029	3029	3029	722	722	802	802	391	391
No. of Countries	178	178	178	178	51	51	40	40	22	22
No. of Instru'ts	87	87	87	87	42	42	38	38	19	19
AR (1)	0.042	0.041	0.05	0.056	0.053	0.026	0.052	0.05	0.03	0.02
AR (2)	0.112	0.114	0.341	0.331	0.239	0.334	0.235	0.3	0.255	0.213
Hansen test	0.665	0.562	0.485	0.431	0.683	0.677	0.558	0.556	0.555	0.551

**Robust Standard errors in parentheses**

**\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$**

*FiscalBalance<sub>it</sub>* is government revenue less government expenditure as a percentage of GDP. *CBI<sub>it</sub>* is the central bank independence measured by the CWN index, *GDPR<sub>it</sub>* is the real GDP annual growth rate, *URB<sub>it</sub>* is the degree of urbanization, *AGRIC<sub>it</sub>* is the share of agriculture in the GDP, *FinDev<sub>it</sub>* is the ratio of private credit to GDP, *LGDP<sub>it</sub>* is log of real GDP per capita, *InstQual<sub>it</sub>* is the rescaled the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and *Openness<sub>it</sub>* is the trade openness measured as the ratio of sum of exports and imports to GDP. *DevDum* is a dummy; 1 for upper middle income and high-income countries, and 0 for low and lower middle income. No. of Instru'ts is number of instruments.

These findings are further established in models 59-62, where separate regressions for low income and lower middle-income countries (LIC & LMIC) and upper middle income and high-income countries (UMIC & HIC) are presented. In low income and lower middle-income countries, institutional quality has no significant impact on fiscal balance directly. However, in upper middle income and high-income countries, institutional quality has a direct and significant impact on fiscal balances. With respect to CBI, we find that it has a direct impact on fiscal balances in upper middle income and high-income countries.

We further proxied developed countries with OECD countries and run a separate regression for them in models 62 and 64. We find that similar to developed countries, upper middle income and high-income countries, CBI and institutions have a direct and significantly positive impact on fiscal balance in OECD countries, unlike in low income and lower middle-income countries.

This implies that while countries seek to have strong economic and political institutions, they need to seek opportunities to grow their economies so as to harvest the full benefits of CBI and strong institutions in terms of improving fiscal balances.

- **Does Central Bank Independence Impact fiscal policy differently in Election and Non-Election years?**

Following Garriga and Rodriguez (2017), another question this chapter seeks to answer is whether the effects of central bank independence varies based on the political authority's incentives to manipulate macroeconomic outcomes, particularly during election years. The argument made is that if delegating monetary policy to central banks is a means to curb politically induced inflation as a result of central bank financing of government projects in election years, then we should clearly see this during election years where the motivation to

manipulate economic outcomes is high. The assumption is that these incentives are high in election years compared to non-election years. If this assumption is through, then the magnitude of the effect of CBI on fiscal performance should be higher in election years, than in non-election years.

Consistent with Brambor *et al.* (2006) and contemporary literature (Asongu & Nwachukwu, 2018; Tchamyou & Asongu, 2017; Amavilah, Asongu, & Andrés, 2017), we compute the total effect of CBI which is the sum of the unconditional effect of CBI ( $\beta_1$ ) and the conditional effect ( $\beta_3$ ) (modulated by the mean value of the interacting variable). This is in order to avoid a misleading interpretation of the conditional and unconditional effects of CBI (i.e. independently) brought about by interactive regressions. Thus the overall effect of a change in CBI on fiscal policy conditioned on the level of institutional quality is given as:

$$\frac{\partial Fiscal Policy_{it}}{\partial CBI_{it}} = \beta_1 + \beta_3 Inst. Qual$$

As evident in Tables 4.2, Table 4.3 and Table 4.5, we observe that the magnitude of impact of CBI on fiscal policy is higher on the introduction of the elections variable across Africa, other developing and developed countries. However, on the basis of the magnitude of the CBI coefficient, we cannot confidently conclude that independent central banks impact fiscal policy the more in election years than in non-election years. Running separate regressions for election years and non-election years will allow us to better see that impact.

The theory this study tests is that central bank independence matters differently in election and non-election years. As such, including controls for election years would not capture the effect of independent central banks facing stronger pressures to finance government spending.

Subsequently, following Garriga and Rodriguez (2017), depending on the occurrence of national<sup>5</sup> executive or legislative elections in a given year, we split the African, other developing and developed countries samples into election and non-election years. Doing this, allows for the possibility that the effects of the determinants of fiscal balance vary during election and non-election years. Having done this, we are able to examine the impact of CBI and institutional quality in both election and non-election years. It also enables us to better assess the impact of elections and institutional quality on the behaviour of the central bank in election and non-election years.

The results in Table 4.6 indicate that in Africa and other developing countries, there is no direct significant impact of CBI on fiscal performance in either election or non-election years. And the magnitudes of the CBI coefficients are smaller in election years than in non-election years except in model 67. This is shown in models 65 to 67 and 69-72 respectively. When we introduce the *CBI\*Inst.Qual* interactive term in models 70 and 72, CBI still has no significant direct impact. The interactive term is however significant in both non-election years and in the election years samples (models 66 and 68 for Africa and 70 and 72 for other developing countries) and has a higher magnitude in election years than in non-election years. In developed countries however, CBI has a direct impact in both election and non-election years as seen in models 73 and 75 with a stronger impact in election years (0.156) than in non-election years (0.142). Institutional quality also enhances this effect as indicated by the higher magnitude of the interactive term coefficients in election years (0.198) than in non-election years (0.190) as seen in models 74 and 76.

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<sup>4</sup> A second extract from this chapter has been published: Agoba, A. M., Abor, J. Y., Osei, K. A., & Sa-Aadu, J. (2019). Do Independent Central Banks Exhibit Varied Behaviour in Election and Non-Election Years? : The Case of Fiscal Policy in Africa. *Journal of African Business*, 1-21.

**Table 4.6: CBI, Elections, Institutional Quality and Fiscal Balance (Non-Election vs Election Years)**

	AFRICA				DEVELOPING				DEVELOPED			
	Fiscal balance		Fiscal balance		Fiscal balance		Fiscal balance		Fiscal balance		Fiscal balance	
	NON-ELECTION	ELECTION	NON-ELECTION	ELECTION	NON-ELECTION	ELECTION	NON-ELECTION	ELECTION	NON-ELECTION	ELECTION	NON-ELECTION	ELECTION
	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)	(73)	(74)	(75)	(76)
Fiscal balance $t-1$	0.671*** (0.07)	0.615*** (0.08)	0.915*** (0.07)	0.964*** (0.07)	0.997*** (0.002)	0.875*** (0.072)	0.450*** (0.009)	0.798*** (0.05)	0.981*** (0.02)	0.970*** (0.01)	0.985*** (0.16)	0.964*** (0.013)
CBI	0.201 (0.281)	0.195 (0.230)	0.204 (0.262)	0.177 (0.121)	0.089 (0.070)	0.119 (0.420)	0.123 (0.146)	0.132 (0.177)	0.142*** (-0.059)	0.182** (0.08)	0.156** (0.06)	0.227*** (0.02)
Inst.Qual	0.124 (0.12)	0.721 (0.57)	0.072 (0.94)	0.385 (1.23)	0.157*** (0.020)	0.172 (-0.232)	0.059 (0.02)	0.063* (0.01)	0.310*** (0.04)	0.04 (0.04)	0.664 (0.46)	0.082** (0.04)
CBI*Inst.Qual		0.155* (0.053)		0.234* (0.052)		0.213* (0.064)		0.221*** (0.06)		0.190*** (0.012)		0.198*** (0.03)
GDPR $t-1$	0.219*** (0.01)	0.207*** (0.03)	-0.281* (0.15)	-0.198 (0.16)	0.095*** (0.001)	0.143** (0.056)	0.085*** (0.006)	0.115*** (0.027)	0.032* (0.02)	0.028* (0.02)	0.062 (0.05)	0.03 (0.02)
URB	0.056** (0.02)	0.068** (0.03)	1.534 (1.38)	-1.002 (0.877)	0.010*** (0.002)	0.018 (0.026)	0.055*** (0.006)	-1.002 (0.877)	0.001 (0.00)	0.009** (0.00)	0.054** (0.02)	-0.006 (0.00)
AGRIC	-0.014 (0.03)	-0.047 (0.05)	0.117** (0.05)	-0.65 (0.50)	0.001 (0.002)	0.037 (0.029)	0.017* (0.01)	0.005 (0.016)	0.061** (0.02)	0.083* (0.04)	0.069 (0.04)	0.103** (0.05)
FinDev $t-1$	0.023*** (0.01)	0.032** (0.01)	0.060** (0.03)	0.076 (0.22)	0.019*** (0.001)	0.025** (0.012)	0.013 (0.003)	0.012 (0.005)	0.009** (-0.004)	0.006 (-0.005)	-0.02 (0.02)	0.055*** (-0.015)
OPENNESS $t-1$	0.189** (0.03)	0.114** (0.07)	0.199 (0.01)	0.158 (0.08)	0.107** (0.049)	3.076 (2.245)	0.063*** (0.03)	0.018 (-0.02)	-0.822*** (0.30)	-0.076 (0.54)	1.416 (1.18)	-0.032 (0.69)
LGDP $t-1$	0.587*** (0.10)	0.224 (0.46)	0.056 (0.04)	0.087 (0.02)	0.094*** (0.008)	0.108** (0.049)	0.348*** (0.033)	0.206*** (-0.075)	0.012*** (0.00)	0.014*** (0.00)	0.124 (0.20)	0.011** (0.01)
Total CBI Effect ( $\beta_1 + \beta_3$ )		0.35* (0.11)		0.411* (0.29)		0.332* (0.15)		0.353** (0.086)		0.372*** (0.011)		0.425*** (0.013)
Observations	188	188	92	92	1,057	1,058	470	470	176	176	129	129
Number of Countries	29	29	22	22	90	90	61	61	36	36	32	32
No. of Instru'ts	24	24	19	19	65	65	54	54	25	25	20	20
AR (1)	0.047	0.043	0.031	0.03	0.063	0.046	0.012	0.025	0.067	0.052	0.03	0.05
AR (2)	0.183	0.182	0.101	0.103	0.239	0.234	0.115	0.116	0.462	0.459	0.231	0.231
Hansen test	0.403	0.406	0.455	0.452	0.58	0.67	0.42	0.434	0.258	0.256	0.135	0.231

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

$FiscalBalance_{it}$  is government revenue less government expenditure as a percentage of GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $URB_{it}$  is the degree of urbanization,  $AGRIC_{it}$  is the share of agriculture in the GDP,  $FinDev_{it}$  is the ratio of private credit to GDP,  $LGDP_{it}$  is log of real GDP per capita,  $InstQual_{it}$  is the rescaled the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and  $OPENNESS_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP.  $DevDum$  is a dummy; 1 for upper middle income and high-income countries, and 0 for low and lower middle income. No. of Instru'ts is number of instruments.

Thus, we show that central bank independence has stronger fiscal policy effects in election years compared to non-election years only in developed countries. However, in higher levels of institutional quality, central bank independence effectively curbs politically induced fiscal indiscipline across Africa, developing and developed countries. Thus, the importance of respect for the rule of law, good governance, free press and expression for the effectiveness of CBI is paramount.

#### **4.5. Conclusion**

The study has investigated the impact of central bank independence reforms on fiscal performance of governments in Africa. Borrowing from the political economy of reforms literature, the study also sought to determine if the institutional environment within which central bank reforms take place, can affect the effectiveness of independent central banks in restricting fiscal spending behaviour of political authorities in Africa. It also sought to investigate the behaviour of the central bank in election and non-election years with regards to fiscal performance. The study then compares the results in Africa, with that of developing and developed countries on the basis of differences in the level of institutional quality and fiscal performances in these regions.

Our evidence suggests that CBI is associated with significant declines in net central bank claims on government only in other developing and developed countries. However, in Africa this is not the case. CBI has no significant impact on net central bank claims on government. This the study argues could be a reflection of the wide disparity between legal CBI and de facto CBI as argued by Cukierman (2002). This is as a result of high disregard for the rule of law in which case, central bank provisions with regards to limiting credit to government, are over-ridden by government.

However, when we proceed to examine the impact of the interactive term between CBI and institutional quality on net central bank claims on government, the evidence is that there is a significant and negative impact in Africa, other developing and developed countries. This supports the theoretical argument that the political context of central bank reforms is important in order to achieve the objectives of reforms. Therefore, for CBI to be able to ensure fiscal discipline, political institutions in Africa should be strengthened in order to ensure respect for the rule of law, press freedoms and place strong constraints on governments so as not to be able to change central or flout bank laws and guarantee the tenure of central bank governors.

The chapter then examined the impact of CBI on fiscal balance measured as government revenues less expenditure as a percentage of GDP. The empirical evidence indicates that, just as CBI was not significant in reducing net central bank claims on government in Africa and other developing countries, CBI does not reduce fiscal deficits in both jurisdictions. However, across all three regions, CBI in high institutional quality environments, captured by the interactive term between CBI and institutional quality, significantly improves fiscal performance.

The argument of this study therefore is that central bank independence is an important deterrent of fiscal deficits and that the effect is conditioned by a country's institutional quality. The estimation results using data from 45 African countries, 90 other developing countries and 40 developed countries covering 1970 - 2012 are robust and strongly support the theory that CBI reduces fiscal deficits in countries with high political institutional quality characterised by rule of law, high constraints on the executive and a free press.

When it comes to election years in Africa and developing countries. CBI is not able to improve fiscal performance directly. However, its ability to impact fiscal performance is enhanced in high

institutional quality environments where the CBI charter provisions are adhered to and demand for seigniorage is lower due to respect for rule of law, freedom of the press and low levels of corruption. In developed countries, CBI improves fiscal performance irrespective of whether it is an election year or not. The results are robust to the measure of fiscal policy.

The study also shows that the effect of central bank independence on fiscal policy is enhanced in election years than in non-election years given higher levels of institutional quality. This is in response to the stronger incentives of political authorities to manipulate economic outcomes through their spending in order to win elections. While CBI does not directly achieve it in Africa and other developing countries, in higher institutional quality environments, CBI is able to effectively respond to these incentives by governments.

The findings of the study are significant as they provide insight into the benefits of having strong institutions to complement independent central banks in order to control fiscal indiscipline in election years. CBI should be encouraged, promoted and consolidated in Africa and developing economies so as to exert a disciplining influence on political decision makers to improve fiscal policies particularly in election years. Therefore, more disciplined fiscal policies should help avoid debt crisis, which have characterised some African and developing countries in times past.

# **CHAPTER FIVE**

## **EXAMINING THE IMPACT OF CENTRAL BANK INDEPENDENCE ON FINANCIAL DEVELOPMENT IN AFRICA: THE ROLE OF POLITICAL INSTITUTIONS**

## CHAPTER FIVE

### EXAMINING THE IMPACT OF CENTRAL BANK INDEPENDENCE ON FINANCIAL DEVELOPMENT IN AFRICA: THE ROLE OF POLITICAL INSTITUTIONS

#### Abstract

Institutions are important for economic growth through their impact on financial development. They include political/legal institutions and economic institutions. Economic institutions include monetary policy institutions that affect the development of the financial sector by being able to influence the level of inflation and expected inflation. In this sense, the classic case for central bank independence (CBI). Though there is not much difference in CBI provisions, it seems to be more effective in developed countries than in developing countries; particularly in Africa. There are suggestions, this could be due to differences in political/legal institutional quality, as independent central banks function in a political/legal environment. We explore the importance of CBI for financial development in Africa, other developing countries and developed countries and the impact of political/legal institutions on the effectiveness of CBI in promoting financial development using panel data from 1970 to 2012.

The study finds that, CBI does not directly promote financial development in Africa. This direct impact of CBI is dependent on the level of development of a country. However, CBI promotes financial development more in countries with strong political institutions.<sup>6</sup>

*Keywords: Central Bank Independence; Financial Development; Political Institutions; Africa*

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<sup>5</sup> An extract from this chapter has been published: Agoba, A. M., Abor, J. Y., Osei, K. A., & Sa-Aadu, J. (2019). The Independence of Central Banks, Political Institutional Quality and Financial Sector Development in Africa. *Journal of Emerging Market Finance...*(Accepted for publication)

## 5.1 Introduction

There exists a wide body of literature on understanding the factors that determine the development of financial systems (Ang & McKiban, 2007; Chinn & Ito, 2011; Baltagi *et al.*, 2009). Key among these are institutional factors (Tayssir & Feryel, 2017). Poorly developed financial markets, such as those in Africa and some other developing countries, are characterised by high information and transaction costs, and institutions matter to the extent that they are the fundamental roots of these costs (Fernandez & Tamayo, 2017; North, 1990).

While the role of political/legal institutions in promoting financial development has been broadly examined and established, that of economic institutions is nascent. At the end of the 1970s, economic theory began to recognise the importance of a key attribute of an economic institution; i.e. central bank governance in determining macroeconomic performance, i.e. during the New Classical Revolution, with the role of central bank design being confirmed in the New Keynesian analysis of monetary policy (Masciandaro & Romelli, 2015). Subsequently, there is evidence that monetary institutions affect financial development by being able to influence the level of inflation and expected inflation, government expenditure, government debt and interest rates (Agoba *et al.*, 2017; Mbulawa, 2015; Raza *et al.*, 2014; Khan *et al.*, 2006; Boyd *et al.*, 2005). In this sense, the classic case for central bank independence as argued by Rogoff (1985).

The regulation and supervision of the financial system has also been identified as an important determinant of its development. Though a plethora of studies have examined the impact of regulations like capital requirements, restrictions on activities, deposit insurance and private monitoring on bank risk-taking and soundness (e.g. Laeven & Levine, 2009; Agoraki, Deli, & Pasiouras, 2011), there exists a gap on the relationship between the architecture of the

supervision system and financial development (Masciandaro & Romelli, 2015). Moreover, though central bank independence is believed to be beneficial not only for price stability but also financial stability, Berger and Kisser (2013) theoretical model is contrary to this belief (Doumpos, Gaganis, & Pasiouras, 2016).

The main purpose of this paper is therefore to add to this strand of the literature by investigating whether and how financial institutions risk-taking in terms of growth of finance to the private sector, through the banking, stock and bond markets is determined by central bank independence and how political institutions affect this relationship.

Though many African governments like many other nations in the world, have promulgated laws granting increasing independence to their central banks, Africa's financial system is characterised by a dominant banking sector and low activity level on the capital markets. Domestic bond markets are woefully small or non-existent thereby limiting access to long term capital. Financial instruments are basically short term and financial inclusion is still low. Cost of credit is very high thereby excluding many from participating in the financial system (Bascom, 2016).

As indicated in Table 5.1, we see Africa performing poorly in terms of depositors per thousand, commercial bank branches per 100,000 adults, ATMs per 100000 adults relative to other developing countries and world average. The lending deposit spread is also comparatively high compared to other developing countries and world average. This poses a significant challenge to access to finance and financial development in Africa.

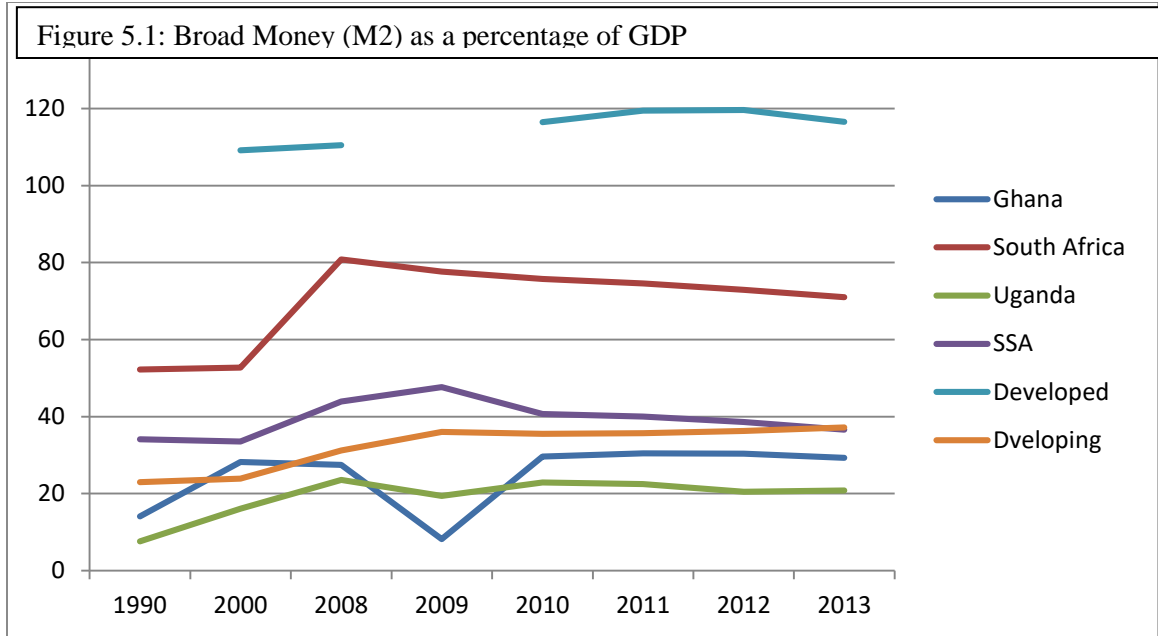
Table 5.1 Financial Development In Africa, Other Developing and Developed Countries

	Financial access and outreach				Interest rate spread
	Depositors with commercial banks	Borrowers from commercial banks	Commercial bank branches	Automated teller machines	Lending rate minus deposit rate
	per 1,000 adults	per 1,000 adults	per 100,000 adults	per 100,000 adults	percentage points
	<b>2016</b>	<b>2016</b>	<b>2016</b>	<b>2016</b>	<b>2016</b>
Africa	292	35	5.3	5.82	7.3
Other Developing	657	22	9.6	9.64	4.2
Developed	1,967	..	17.3	62.17	..
World	1,141	..	12.5	47.55	5.7

*Source:* World Development Indicators (2017)

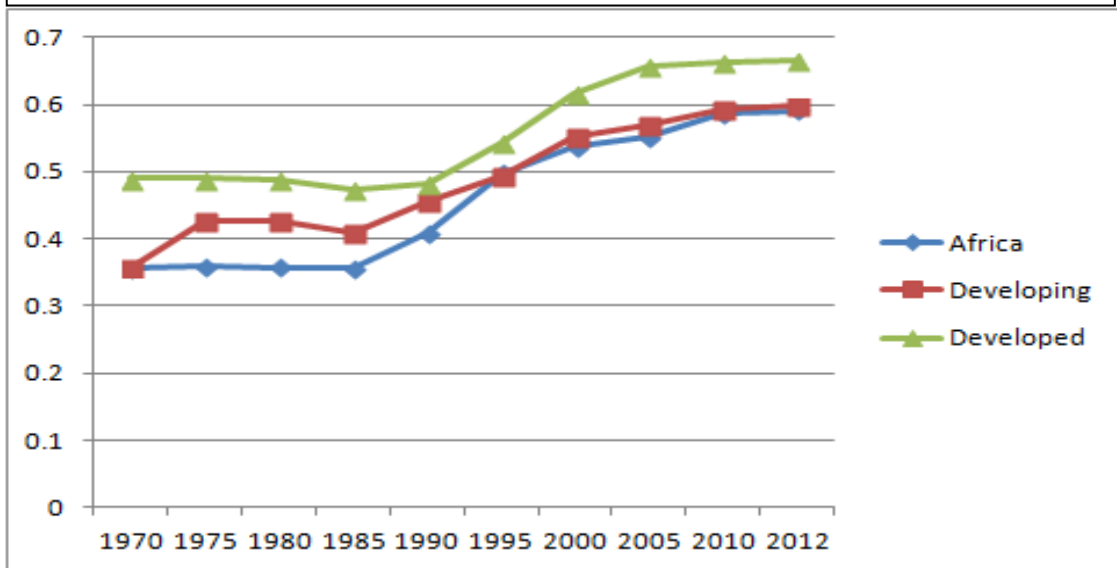
In Figure 5.1, we see significant differences in financial sector development measured as broad money as a percentage of GDP, among three (3) African countries; South Africa (the biggest economy in Africa), Ghana (a small but fast-growing economy) and Uganda (a very small economy). We also see that aside South Africa, Ghana and Uganda have relatively less developed financial markets compared to other developing countries.

Given little difference in CBI provisions among Africa, other developing countries and developed countries (Figure 5.2), but a significant lag in the development of Africa's financial systems relative to other developing countries and developed economies, this study seeks to empirically examine the extent to which CBI has been an effective tool for financial development in Africa.



Source: Authors' own computation, World Development Indicators (2017)

**Figure 5.2: Average CBI in Africa, Other developing and Developed countries 1970-2012**



Source: Garriga (2016)

Secondly, according to Masciandaro and Romelli (2015), private agents trust the central banker only if effective rules on accountability and transparency hold. Lupusor (2012) also shows empirically how legal independence cannot be considered a sufficient condition for avoiding the political pressures on the monetary policy stance. The literature surveyed in this area indeed indicate that poor institutions that manifest, for example, in poor creditor protection in Africa and other developing countries (e.g., Latin America), have had effects on both the level and the variability of credit (Fernandez & Tamayo, 2017). Subsequently, the study also examines the extent to which the level of development of political institutions, affects the extent to which CBI is effective in promoting financial development in Africa.

Compared to other developing countries, political/legal institutional quality on average, is low in Africa, though there are differences among countries in the region in terms of rule of law, good governance and respect for civil liberties (see Figure 3). This situation can have serious implications for the impact CBI reforms will have on financial development on the continent.

Using panel data from 1970 to 2012, the study finds that in other developing countries and developed countries, CBI directly promotes financial development. However, in Africa, CBI does not significantly promote financial development. Further investigation reveals that this direct impact is dependent on the level of development of a country. CBI promotes financial development more in countries with strong political institutions.

The rest of the paper is organised as follows. We review literature in section 2 and outline the methodology for the study in section 3. Section 4 presents an analysis and discussion of results obtained. In section 5, we conclude the study.

## 5.2. Literature review

### 5.2.1 Review of Theoretical literature

- **Institutions and financial development**

Institutions are defined by North (1990) as *"the human constraints that structure political, economic and social interaction. They are made up of both formal rules (property rights, constitutions and laws) and informal constraints (unwritten taboos, customs, traditions and codes of conduct)"*.

According to legal theories, there are two channels through which financial development is influenced by legal institutional systems. First is the law and finance theory's political channel which emphasizes that (a) there are differences in legal traditions in terms of the priority they attach to private property rights and investors' rights in firms relative to the rights of government and (b) international differences in financial development today are explained by historically determined differences in legal tradition and as such the protections of private property rights and outside investors constitute the basis of financial development (La Porta, Lopez-de-Silanes, Lopez-de-Silanes, & Vishny, 1997; 1999).

The second channel is the legal adaptability channel. This channel stresses that (a) there are differences in legal traditions in terms of their abilities to adapt to changing commercial and financial conditions and (b) financial development and contracting are enhanced the more by legal systems that adapt quickly to minimize gaps between the needs of the economy and the legal system's capabilities. (Beck *et al.*, 2001; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000).

The importance of legal tradition theory is however rejected by the politics and finance theory. According to Rajan and Zingales (2003) while there have been significant improvements in financial development in the course of the past century, the legal tradition of each country has remained unchanged. This means that fixed factors such as legal tradition are of little importance to financial development. Rather, emphasis should be placed on political factors that vary with time. The politics and finance view generally emphasises that policies and institutions are influenced by those in power, to their own advantage (Olson, 1993; North, 1990). Ruling political groups will promulgate laws that promote financial development only if financial markets are seen to be promoting the group's interest. On the flip side, should the ruling elite desire to use its control over government to channel the savings of society to advance its own goals, then financial development will be derailed. In addition, according to the politics and finance view, a decentralised, open, and competitive political system is less likely to promote the will of the elite than what a centralised/powerful government will.

There is a difference between the political channel of the law and finance theory and the politics and finance theory. The difference lies in here that, the law and finance theory's political channel posit that exporting civil law leads to limitation on private property rights as a result of a centralised, powerful state. In addition, this centralised powerful state reduces the protection of minority shareholders and creditors and derails the development of competitive financial markets irrespective of the initial political structure. In contrast, the politics and finance theory holds that the driving force is not legal tradition but the political structure.

The importance of the legal system as a determinant of financial development is also rejected by the endowment view, which instead argues that the development of all institutions not excluding legal and financial institutions is shaped by the geography, topology, and disease environment of a country. The endowment view explains that jurisdictions characterised by high rates of disease and poor agricultural yields – such as the tropics – are unsupportive of large scale farming, which is a prerequisite for specialisation and hence innovation, institutional development, and economic growth (Gallup, Sachs, & Mellinger, 1998; Kamarck, 1976). Therefore, truly exogenous endowments largely determine the current state of institutional and financial development.

- **Creditor protection**

Institutional arrangements can facilitate trade in debt instruments in at least two ways. First, Pagano and Jappelli (1993) developed a theory on the role information-sharing plays in credit markets. In this theory, through credit bureaus for example, information-sharing among lenders may be endogenously generated for many reasons. An example is a situation whereby, lenders with an influence within a geographical locality enhance the screening of borrowers who immigrate into their region of influence. This they achieve through the information they obtain from the borrower's lender in their previous location. Thus, the problem of adverse selection can be mitigated by these information sharing schemes (Pagano & Jappelli, 1993). Borrowers can also exercise discipline as they become aware of the fact that information about their creditworthiness is shared among lenders (Padilla & Pagano, 2000).

- **Costly Enforcement of Contracts**

Aside specifying property rights and protecting contractual parties that are disadvantaged, institutional arrangements also deter individuals from renegeing on pre-specified contractual terms, through commitment mechanisms and third-party (usually state-run) arbitrators (Acemoglu *et al.*, 2005; Schwartz & Watson, 2004). The enforcement of contractual terms can however be costly, either because financial contracts are complex and sophisticated and/or because courts and regulators are inefficient in their operations. The expectations of these costs that come with enforcement of contracts may significantly have incentive effects on the parties to financial contracts (Diamond, 2004). There is an illustration of this point by Jappelli, Pagano and Bianco (2005) who study a model in which opportunistic debtors may strategically behave given courts that are inefficient. In their model, when there is inefficiency in the judicial system, there is an associated lower rate of recovery; and this can (i) exclude borrowers with profitable projects but relatively lower collateral from credit markets and also (ii) promote varying opportunistic behaviour such as strategic default by borrowers.

- **Macroeconomic Policy and Financial Development**

From literature, the most apparent link from macroeconomic policy to financial development is with regards to having a low and stable rate of inflation. Financial development can be hindered by inflation that is high and unpredictable as it lowers real returns on assets (Feldstein, 1980) and also worsens the problem of asymmetric information. In particular, where there is adverse selection, having lower returns further creates incentives for "patient" agents to pretend to be "impatient" and borrow rather than lend (Choi, Boyd, & Smith, 1996; Huybens & Smith, 1999).

Finally, the uncertainty about future real returns as a result of inflation discourages long-term lending, thereby lowering the maturity structure of debt (as in e.g., Aarstol, 2000).

There can also be profound effects of fiscal policy on financial stability and financial development. On one hand, Gerschenkron (1962) pioneers an old view that the participation of government in the financial sector can subsequently encourage the growth of lending to the private sector. And truly the conventional wisdom as noted by Herring and Chatusripitak (2006) is that, having liquid market for public bonds is a precursor to the development of the market for corporate bonds. However, Caballero and Krishnamurthy argue that a large fraction of private savings can be captured by large and persistent fiscal deficits and subsequently inhibit the development of private credit markets. This can lead to severe cases of financial repression. This crowding out of private credit and investment is indeed prevalent in developing countries, where there is low quality public spending coupled with limited funding sources (Caballero & Krishnamurthy, 2004).

Aside crowding out considerations, consistently accumulating sovereign debt are likely to lead to periods of default. This mostly causes serious damages to the financial system's balance sheet and financial distress in the economy. Based upon this, Alesina and Perotti (1999) developed the concept of "budgetary institutions", namely, the rules and regulations that guide the preparation, approval and implementation of budgets. Issues addressed by such institutions include concerns about competition for resources among decision-makers, culminating in "deficit bias" (Velasco, 1999). Other issues addressed by the institutions include the various agency problems which can possibly affect the size, allocation, and use of budgeted resources. Evidence available indicates that fiscal rules (ex-ante constraints), top-bottom arrangements and more transparent procedures

promote fiscal discipline (Alesina *et al.*, 1999) and should therefore promote greater financial stability and financial development.

- **Regulation and Competition Policy**

When it comes to financial policy, the institutional mechanism has responsibility for (i) the competitive structure of financial markets and (ii) the relative independence with which supervisors can enforce specific rules and regulations (Fernandez & Tamayo, 2017). Firstly, the responsibility of regulating and supervising the financial markets is an archetypal example of a technical task requiring greater ability than effort and, consequently, is best executed by independent bureaus (Alesina & Tabellini, 2007). However according to Hupkes, Quintyn and Taylor (2005) for independence to be effective, there is a need for an elaborate set of accountability arrangements due to the complex nature of the task at hand. This subsequently can prohibitively increase the cost of having an independent enterprise. These issues most likely lead to excessive emphasis on the accountability of independent regulators/supervisors or, more worryingly, indirect political control mechanisms (Quintyn, Ramirez, & Taylor, 2007).

- **Financial liberalisation and Central Bank Independence**

Financial liberalisation consists of a set of measures such as the central bank's independence from political control and free flow of capital into and out of an economy, which ensures that currencies are freely convertible (Edwards, 2015; Fischer, 1995). It also includes the abandonment of all "priority sector" lending targets, and abolishing government-imposed differential interest rate schemes. Within financial liberalisation frameworks, central banks are granted independence in the determination of interest rates. Interest rates are freed, there is liberty among banks to pursue profits unhindered by government directives; the removal of

restrictions on the ownership of banks, which means de-nationalisation, full freedom for foreign ownership, and an end to “voting caps” (Patnaik, 2011). Financial liberalisation is a widely acknowledged integral part of financial sector development. This is because; policies on dismantling interest rate controls and other restrictions on banking operations have important implications for financial development and hence economic growth.

By allowing monetary policy institutions to be independent, effective monetary policy can be conducted in achieving price stability, ensuring effective competition in the financial system, promoting efficient allocation of resources and ensuring effective management of foreign exchange risks which promotes access to foreign capital and reduces foreign currency loan repayment defaults. Fischer (1995) argues that controlled financial systems typically allocate resources inefficiently. In addition, markets find their way around controls, subsequently, the effectiveness of these controls are lost over time. Often, informal or black market and fringe financial institutions develop, but because they are operating around control, they are less efficient at allocating financial resources and often also less sound than a well-developed formal financial sector would be. Hence the major gain from liberalisation is likely to be an increase in the efficiency with which savings are allocated. If financial repression is particularly severe and widespread, liberalisation may also increase the overall level of financial savings.

Evidence of a clear impact of financial liberalisation’s impact on stabilisation policies abound. Cecchetti and Krause (2001) find evidence suggesting that an improvement in the depth of the financial sector and the intermediation process, measured by less centrally controlled banking system, has contributed to the reduction in inflation and output variability.

In financially repressed systems, interest rates are often very low and very inflexible (Cole, 1974). As a result, this key channel of monetary policy transmission mechanism becomes ineffective. Coupled with lack of fiscal discipline, this can result in endemic inflation and frequent balance of payments or exchange rate weaknesses. Financial liberalisation measures are therefore often needed to improve the effectiveness of monetary policy.

Central bank independence can be seen as forming part of financial liberalisation, in that, with reforms of central bank legislations, the central bank is expected to be independent in terms of setting monetary policy goals as well as being independent in deciding on the instruments to be used to achieve those goals. According to Fischer (1995), financial liberalisation includes moves to market-based methods of monetary control and financing of government deficits, including government debt auctions, and open market management of the monetary base and interest rates by the central bank. As financial markets are liberalised, and the implementation of monetary policy shifts to reliance on indirect, market-based methods, questions about the operation of monetary policy and the role of the central bank come to the fore.

According to the McKinnon–Shaw school of thought, restrictions by government such as interest rate ceiling, direct credit programs and high reserve requirements (dubbed financial repression) may hinder financial deepening (McKinnon, 1973; Shaw, 1973). This can subsequently ameliorate the quality and quantity of investments and slow down the development of financial systems. Therefore, the McKinnon–Shaw financial repression paradigm indicates that a poorly functioning financial system may negatively lead to poor economic growth. In the simple AK model which involves financial factors as shown in Pagano (1993), financial sector policies such as interest rate controls and reserve requirements can determine the amount of resources available for financial intermediating activities. In the same light, the financial endogenous

growth developed by King and Levine (1993b) also shows that financial repression can negatively influence financial development. In such circumstances, a repressed financial system suppresses the impact of financial development on economic growth. According to the McKinnon-Shaw model by increasing investment and productivity, financial liberalisation can lead to economic growth. On the basis of this model, other studies show that the positive correlation between financial liberalisation and financial development may lead to financial instability (World Bank, 1989). Claessens, Djankov and Lang (2000) and Magas (2011) show that the liberalisation of the banking sector may possibly lead to an improvement in national banking operations and the quality of services provided by the financial system, thereby leading to the development of the financial sector.

- **Central Bank Independence and Financial Development**

According to Blancheton (2016), towards the end of the 1970s, there was a change in economic paradigm following the works of Friedman, focused on currency, and of Kydland & Prescott on the rules of economic policies. The advocacy by liberal economists towards advanced international financial integration and competitive deflationary policies, was to give impetus to greater long-term growth. In order to expand economic activity growth, there was a need for price stability to generate the best environment for economic activity to expand in the long term. Having an independent central bank was an additional institutional guarantee for keeping inflation under control.

The theoretical case for CBI rests on countering inflationary biases that may occur for various reasons in the absence of an independent central bank (Fischer, 1995). These are: (i) political pressure to boost output in the short run for electoral reasons irrespective of longer term costs

(Drazen, 2000); (ii) the incentive for politicians to use the central bank's power to issue money as a means to finance government spending and (iii) the time-inconsistency problem of monetary policy making. In a nutshell, this is the problem that policymakers are not credible, i.e. they have an incentive to renege in the future on their promise made today to keep inflation low. The CBI institutional setting gained momentum and the relationship between the policymaker - who designs the overall economic policy - and the central bank - who is responsible for the monetary policy - became crucial in avoiding the inflation bias (Masciandaro & Romelli, 2015).

In modern literature, the role of the central bank in fostering price stability cannot be over emphasised. Price stability can have two positive impacts for financial market participants, notably bond investors. The first effect is that lower inflation means lower short-term interest rates to boost credit demand. With lower short-term policy rates, intermediate and longer-term rates also tend to decline. Since bond prices and yields move in opposite directions, lower yields mean rising prices—and a higher principal value for fixed-income investors; thereby boosting bond market development (Kang & Pflueger, 2015). The second impact is on real returns on bonds. With price stability, the real returns on bonds are high compared to periods of high inflation where the real or inflation adjusted returns are much lower compared to the nominal returns. This can go a long way to affect the development of the bond market. A clear example is in Africa, where with high inflation rates among others, domestic bond markets are underdeveloped. Price stability which ensures proper evaluation of viable business projects presented to financial institutions (Sherraden *et al.*, 2015).

The central bank can also finance government deficits by drawing down on its reserves; which are monies generated through the central bank's banking functions. These funds could be useful

for the purchase of foreign exchange to guarantee exchange rate stability. This consequently affects the foreign exchange risks that the financial markets are exposed to (Nwaogwugwu, 2005) as well as the stability of prices through exchange rate-pass through effect. Having an independent central bank should lead to lower wage increase negotiations as well as lower changes in prices of goods and services. This should encourage certainty in financial transactions and evaluation of projects by the financial system.

According to the fiscal theory of price level, total outstanding nominal government liabilities—that is, the sum of treasury securities and the monetary base, determine price levels. This enables open market operations that alter the mix of treasuries and bank reserves (while keeping their sum constant) to have real effects on bank investment and financing behaviour, even in a world where all prices are perfectly flexible (Woodford, 2003; Sims, 1999; Cochrane, 2005; Leeper, 1991). It also ensures that interest rates on credit to government are competitive so as not to generate incentives for the financial system to direct funds towards government securities to the disadvantage of the private sector. Considering the effects of central bank independence on financial markets, Alesina and Summers (1993) show that interest rate variability is decreasing with higher central bank independence and credibility.

In cases where the central bank is involved in prudential supervision, CBI could have a direct impact on the functioning of banks. Doumpos *et al.* (2016), examined the impact of central bank independence on bank soundness and find that higher central bank independence improves the soundness of banks particularly in the case of smaller banks, which is enhanced during crisis. According to Barth *et al.* (2003), independent regulators exercise professionalism and consistency in supervising the financial condition of banks. Furthermore, bank regulatory and

supervisory independence is important in ensuring financial stability for reasons akin to why CBI matters for monetary stability (Quintyn & Taylor, 2002).

Quintyn and Taylor (2003) argue that, among other things, CBI is a mechanism that mitigates the economic costs that are associated with a time-inconsistency problem. Similarly, a greater level of central bank independence from outside pressures encourages central banks that are less politically constrained to act in preventing financial distress (Cihák, 2010). This is because, a more dependent central bank may be influenced by political interests associated with weak and less compliant financial institutions, leading to a lax in the exercise of central bank discretion in the exercise of its powers to discipline such financial institutions. This can have implications for financial stability and confidence in the financial system. This is further highlighted by Hutchison and McDill (1999) who posit that a dependent central bank that has close association with government, may have more tendencies towards providing monetary finance to problem financial institutions, thereby creating an additional channel for the moral hazard problem” (p. 160).

## 5.2.2 Review of Empirical Literature

- **CBI, Inflation and Financial Development**

There exists a number of empirical work that examine the effect of central bank independence on macroeconomic performance (inflation and output levels and volatility). According to Alesina (1988) and Grilli *et al.* (1991) central bank independence is associated with lower levels of inflation. Cukierman *et al.* (1992) show that legal independence is a significant determinant of price stability in industrial countries. During part of the Great Moderation between 1984 and 2003, Taylor (2013) considered changes in monetary policy to be a major reason for improved

economic performance (measured by variability of output and inflation) in the United States. Agoba *et al.* (2017) however finds no impact of central bank independence on inflation in Africa and other developing countries. The transparency in CBI monetary policy decision making. It is argued, has important economic benefits as it reduces inflationary expectations and makes the central bank accountable for its decisions (Papadamou *et al.*, 2017; da Cruz *et al.*, 2016; Stiglitz, 1998; Eijffinger & van der Crujisen, 2007). Papadamou *et al.* (2014) find that a higher level of monetary policy credibility produces lower interest rates, higher effective exchange rates, and a positive effect on economic activity.

Bittencourt (2012) examined the impact of inflation on financial development in Brazil between 1985 and 2002. The results of the study were that inflation negatively impacted financial development. This meant that poor macroeconomic performances were detrimental to the growth of the financial sector. The study concluded that a low and stable inflation rate was a necessary first step to achieving a deeper and more active financial sector with all its attached benefits.

Al-Nasser and Jackson (2012) empirically examined the long run link between inflation and the performance of the financial sector. With a focus on the banking sector and capital markets, the study, after introducing control variables to capture other economic factors that may be associated with financial development, showed that there was a statistically significant negative relationship between banking sector development measures and inflation. Again, the study further found that there was a negative correlation between inflation and market capitalisation and domestic value traded. This showed that stock market development is depressed by high inflation rates in Latin American countries. The study concluded that macroeconomic stability should be prioritised by monetary authorities as it was shown to be economically costly,

reflective in lowered economic growth and the non-competitiveness of a country on the international markets.

Boyd *et al.* (2001) in an extension of the examination of the inflation- financial development nexus, assessed the mechanisms by which anticipated increases in inflation rate interfered with the financial sector's ability to effectively distribute resources. The study employed a panel methodology on time series data for inflation, banking sector activity, equity market size, equity market liquidity and the rates of return over the period 1960-1995 in 100 countries. The results of the study were that there was a significant and non-linear negative relationship between inflation and both banking sector development and stock market development.

Following the work by Boyd *et al.* (2001), in an examination of the impact of inflation on financial sector performance, Bennaceur and Ghazouani, (2005) examined 11 MENA (Middle East and North African Countries) regions using a dynamic panel model for data spanning 1979-1999 and employed the Generalized Methods of Moment proposed by Arellano and Bond. The study confirmed a negative relationship between inflation and financial sector development. It further showed that though inflation had a significantly negative effect on the development of the financial sector, there were thresholds effects, even after controlling for simultaneity and omitted variable biases. Other studies that confirmed the negative impact of inflation on financial development include Rousseau and Wachtel (2002) and Huybens and Smith (1999).

In a report by Demirguc-Kunt and Klapper (2012), the high cost of having accounts or financing credit, has been identified as the second most important barrier to access to credit. These costs (transaction costs and contract enforcement costs) to a large extent, are determined by prevailing economic conditions including inflation rate and its variability. High cost of maintaining

accounts has fared primarily in the barriers to financial inclusion in many surveys (Demirguc-Kunt & Klapper, 2012). Financial institutions also incur cost in providing financial services such as deposits, credits and payment systems. Price stability makes cost of financial services affordable, thereby increasing the patronage of financial services and products. From an economic classification perspective, bank accounts are normal, if not luxury goods. Because banking activity is costly in terms of fees and transaction costs, opening a bank account only becomes attractive if the cost of the transactions is affordable considering the income level of the individual (Beck & Demirguc-Kunt, 2008).

Banks' operational costs may inhibit the expansion of financial services to remote or sparsely populated areas (Claessens & Perotti, 2007; Kpodar & Andrianaivo, 2011). There are high sunk and fixed costs associated with setting up a financial institution. These costs can inhibit easy entrance for other financial institutions, creating a monopolistic market power for first movers; thereby restricting financial inclusion to particular categories of people in the society.

English (1999) focused on the increased production of “financial services” to construct a model in which households make purchases either with money or with costly transactions services, produced by firms in the financial services sector. In his model, a higher inflation rate makes households substitute purchased transactions services for money balances thereby leading to a contraction in the size of the financial services sector. Using cross sectional data, a test of his model established that the size of a nation's financial sector was strongly affected by its inflation rate.

Financial institutions also assess the economic viability of projects in order to extend credit to individuals and firms. Inflation and price instability make the discernment of the quality of

borrowers and projects difficult. In the midst of price instability, the uncertainty of returns on projects could make banks reject viable projects, and or increase their risk premiums on loans, which have implications for access to finance and therefore financial inclusion (Lima, Tremin, Oliveira, Batistus, & Setti, 2015).

Barro (2013) observe that although the adverse influence of inflation on growth is small, it has substantial effects on standards of living in the long run. High levels of inflation and its variability increase the cost of living, limit credit and subsequently stifle productivity, capital accumulation and economic growth. High inflation levels also reduce the return on savings, thereby discouraging account openings. This further reduction in savings reduces investment capital, having negative implications for capital accumulation and economic growth. De Gregorio and Sturzenegger (1994b) present models in which the ability of financial intermediaries to distinguish among heterogeneous firms is reduced as inflation rises leading to a larger share of credit allocated to less efficient firms. In contrast, Choi *et al.* (1996) posit that inflation reduces real returns to savings and makes more severe the adverse selection problems in capital markets inducing a higher degree of credit rationing.

Mascaro and Meltzer (1983) who measure monetary and inflationary uncertainty by the variability of unexpected money growth and inflation, posit that high inflation variability produces uncertainties. These uncertainties will lead to risk-averse investors demanding a risk premium to compensate for uncertainty, thereby leading to higher (ex ante) real interest rates, decrease in investments, and subsequent decrease in growth. By maintaining price stability, through the Mascaro-Meltzer (1983) effect, once CBI reduces inflation uncertainty, (ex post) real interest rates could be lower. This should drive up accessibility to credit.

Therefore, we argue in this study, that CBI which leads to stable prices and low inflation reduces default risks and the threat of institutional failure from loan losses, thereby encouraging improved lending and better assessment of project viability. The Friedman-Ball hypothesis that higher inflation rates increase inflation uncertainty, which inhibits long-term contracting, supports the argument that inflation can negatively affect financial contracts between financial institutions and the financially excluded (Hartmann, Hubrich, Kremer, & Tetlow, 2015; Friedman, 1977; Ball, 1992).

Independent central banks it is expected would resist political pressure to finance government budget deficits by means of monetization. Moreover, when governments can only finance budget deficits on the capital markets, then they are more careful about their spending so as to reduce future interest payments.

In Parkin (1987)'s study, Germany and Switzerland, the two countries with the most independent central banks, appeared to have almost close to zero government deficits during the period of the study. This supported the claim that having an independent central bank can lead to fiscal discipline. According to Masciandaro and Tabellini (1988) however, New Zealand with the least independent central bank within the period 1970-1985, recorded the highest budget deficit measured as the ratio of budget deficit to gross national product (GNP). This evidence made the impact of CBI still debatable.

When government does not compete with the private sector for funds, credits are accessible in larger quantities and at lower interest rates. With a reduction in the need to sell government bonds, to the non-banking public to finance fiscal deficits, and a consequent reduction in inflation to preserve the time value of money, independent central banks encourage savings

which are channeled into more productive and efficient private sector activities (Broner, Erce, Martin, & Ventura, 2014).

Central banks can take actions that will counter governments' fiscal spending decisions as evident in Germany and Turkey in times past (Acemoglu, 2008). This could include the central banks' refusal to buy government bonds, raise interest rates on credit to government as well as raise interest rates that will cause the financial markets to demand more returns on government securities (Bodea & Higashijima, 2017). Therefore, having an independent central bank, ensures that the financial sector is stable and access to credit improves. This increases businesses' profitability, savings and investments.

In the developed world and in many other jurisdictions however, attention is paid to statements by central bankers which are usually their responses to government's budget plans as well as their plea or caution to government to limit its spending to available taxes and avoid unsustainable deficits. In 2009, in the course of the global economic and financial crises for instance, the central bank of Turkey cautioned that for monetary policy decisions to be effective, there was a need for government to strengthen its commitment to fiscal discipline and structural reforms. In 2011, the governments of Italy, Ireland and Spain were demanded by the European Central Bank to cut down significantly on their deficits. This and other measures were conditions under which the ECB would buy Italian and Spanish bonds from the market in order to reduce the high interest rates that the market demanded of these countries. There have also been instances where the president of the of German Bundesbank, Axel Weber, in 2010, warned that "*excessive deficits can cause tensions with monetary policy and may require higher interest rates if not corrected*"(Bodea & Higashijima, 2017).

According to Imboden (2005), governments and central banks should actively play their roles in the financial sector and ensure that commercial banks revise their credit systems to tackle the issue of loan defaults which can arise from high inflation rates (Boyd *et al.*, 2001).

- **Political/Legal Institutions and financial development**

A large number of studies have established the impact of financial development on growth. These studies further establish the impact of political/legal institutional quality on financial development (Marano, Arregle, Hitt, Spadafaro, & Essen, 2016).

According to La Porta *et al.* (1997) there is a significant difference among countries with regards to the legal rules that protect investors and the quality of their enforcement. Subsequently, this has resulted in differences in the quantity of external finance. According to the study, having a good legal environment aids in protecting potential financiers against expropriation by entrepreneurs. It also increases the willingness of investors to surrender funds in exchange for securities. This subsequently leads to an expansion in the scope of capital markets.

Levine (1998) examined the link between the legal environment and financial development and linked it to long run economic growth. The findings of the study were that, the legal and regulatory environment is an important determinant of financial development. In countries where legal and regulatory systems highly prioritised creditors receiving the full present value of their claims on corporations, such countries tend to have better functioning financial intermediaries than countries where the legal system weakly supports creditors. The second finding of the study is that enforcement of contracts significantly improves the development of the financial sector. There are much better developed financial intermediaries in jurisdictions where there is high compliance with contract enforcement laws as compared to countries in which there is lax

enforcement of contracts. The findings of the study also established that the disclosure of information is an important player in the development of the financial sector.

Lombardo and Pagano (2002) in an investigation of the cross-country relationship between the quality of institutions and the rate of return on equity, find that the legal environment generally positively impacts the risk-adjusted rate of return, though proxies that measure the extent to which shareholders rights are protected, have either no impact or negatively impact the return on equity. Lombardo and Pagano (2002) measure the rate of return on equity, as the percentage return on each market stock index, the dividend yield ratio and the earnings/price ratio. While general measures of the quality of the legal environment significantly impact the percentage return on each market stock index; variables that capture the protection of shareholder rights are not significant explanatory variables. There also is a positive and statistically significant correlation between respect for the law or judicial efficiency and the risk-adjusted rate of return on equity. Meaning that increase in the rule of law has a comparable impact on the returns of the secondary market.

Beck *et al.* (2003) find that in line with the law and finance view, cross-country differences in financial development are accounted for by cross-country differences in legal tradition, political structure and initial endowments. Also, according to Claessens and Laeven (2003), having better property rights leads to an improvement in the allocation of assets, subsequently resulting in growth in sectorial value added. This further implies improvements in access to financing as a result of increased financial sector development.

Demetriades and Andrianova (2004) also show that financial regulation and the rule of law, which capture the strength of political/legal institutions, may determine how successful financial

reforms become. Qian and Strahan (2007) find a direct and positive link, between weak creditor rights and loan spreads. Focusing on a country's political environment, Qi, Roth and Wald (2010) show that better political rights are associated with narrower corporate bond spreads. It was found by La Porta *et al.* (1997, 1998) and Levine (1998) that financial development is high in countries where there is better protection for and enforcement of property rights.

While political institutional quality seems to be a significant factor for banking sector development, it does not appear to be an important determinant of stock market development. Gazdar (2011) and Ahokpossi (2013) also find that having a system whereby there is a high level of rule of law coupled with other institutional infrastructure, as well as the collection and dissemination of credit information helps in fostering lending by banks to the private sector. In the bond market, Miller and Reisel (2011) find that bond covenants become more restrictive when creditor rights are weak.

Anderlini, Felli, Immordino and Riboni (2013) and Acemoglu, *et al.* (2006) argue that having a rigid legal environment can negatively affect financial development thereby impeding economic development. According to Ayadi *et al.* (2013), having legal institutions that are strong, as well as a good governance system coupled with proper execution of reforms in the financial sector can lead to a significant improvement in the development of the financial sector only when they are all taken together.

- **The impact of political institutions on the effectiveness of Central bank Independence**

Chinn and Ito (2006) find that financial systems with a higher degree of legal/institutional development on average benefit more from financial liberalisation than those with a lower one. This provides further impetus for our investigation into the role of institutions in enhancing the

impact of central bank independence on financial development. This remains a nascent area in research. To the best of the author's knowledge, no study has yet investigated the impact of political/legal institutions on the effectiveness of CBI in promoting financial development. However, from the preceding literature reviewed, since price stability, fiscal policy and financial sector regulation are important channels through which CBI impacts financial development, literature that capture the impact of political institutions on CBI's ability to achieve price stability and fiscal policy, support the argument that the political/legal environment plays an important role in the link between CBI and financial development.

High-quality political institutions might generally be associated with greater trust in governmental decisions and legal arrangements. As a result, the quality of political institutions might be a positive determinant of the reputation effects of CBI (Hielscher & Markwardt, 2012). Posen (1995) argues that preferences for price stability embodied by CBI, require political support to insure against the risk to monetary institutions and to examine the monetary institutions themselves.

Since the 1990s, a number of studies (Campillo & Miron, 1997; Aisen & Veiga, 2008; Hielscher & Markwardt, 2012) have examined the relationship between institutional quality and price stability. Given that political institutions do impact the level of inflation, and independent central banks operate in a political economy, it sounds reasonable that the quality of the political/legal environment would impact the inflation outcome pursued by an independent central bank.

Aisen and Veiga (2008) for example attempted to provide evidence on the determinants of inflation volatility; hypothesising that political and institutional factors are the main determinants

of inflation volatility. They argue that politically unstable countries are more often susceptible to political shocks leading to discontinuous monetary and fiscal policies and higher inflation volatility. Their study showed that greater political instability, lower economic freedom and higher degrees of polarisation and political fragmentation lead to higher inflation volatility.

Aisen and Veiga (2006a) show that in a country with frequent government changes, macroeconomic policies will also change consistently because the new economic executives want to pursue their own ideas which are different from their predecessors. Macroeconomic policy changes will therefore threaten price stability. In addition, cabinet changes and government crisis will shorten the horizon of policy makers. Therefore, the importance of short term objectives will increase and keeping inflation in a rational range would be difficult.

In addition, when political institutions such as the judiciary do not ensure the proper enforcements of contracts, this can impact the extent to which investors and creditors take advantage of the stable macroeconomic environment pursued by the independent central bank. The cost of contract enforcement if high, can negate the benefits of low inflation and reduce the number and value of financial contracts in the economy. On the other hand, better enforcement of financial contracts can enhance the willingness of creditors and investors to engage in financial transactions and improve access to finance (Besley, 2015). Chinn and Ito (2006) argue that capital liberalisation significantly improves financial development with a given level of institutional and legal development.

With these studies having empirically examined the impact of political/legal institutions on financial development, this chapter investigates its impact on an economic institution such as an

independent central bank in promoting financial development in Africa where institutional quality and financial development are low though improving.

We argue that strong political institutions ensure that central bank provisions are respected since such systems will hold government accountable for breaching such provisions. This should enable central banks effectively work towards achieving their objectives of price stability which financial markets need. In high political institutional environments, the credibility of central banks is high as little/no interference from government is expected. This enables the market to adequately rely on central bank pronouncements and execute financial contracts with some degree of certainty. This enables projects to be properly evaluated and considered given the stable macroeconomic environment. Subsequently, more projects are financed as banks can give more loans to projects deemed as profitable.

In addition, investors are better able to take advantage of stable macroeconomic environment when there is political stability and a protection for them and their investment by the legal system. Information asymmetry is reduced thereby reducing the cost that high information asymmetry generates aside inflation which feeds into determining the cost of credit.

### **5. 3. Methodology**

#### **5. 3.1 Data and Sample**

To investigate the effect of CBI on financial development, and the effect of political/legal institutional quality on this relationship, we utilize panel data from 1970 - 2012 on 48 African countries, 90 other developing countries, 40 developed countries and 35 OECD countries. In addition to the CBI index from Garriga (2016) who computes the CWN index for over the period

1970 - 2014, and civil liberties variable as a proxy for the political/legal institutional quality measure from Freedom House, the control variables come from the models of Tayssir and Feryel (2017) and Chinn and Ito (2006). We include an indicator of trade openness, log of GDP per capita, the real GDP annual growth rate, public debt, and, inflation targeting dummy, population size and the exchange rate regime dummies.

### **5.3.2 Model and Estimation technique**

- **Estimation Technique**

The study assumes that past values of financial development affect its current values. We therefore require the use of the lag of financial development as an explanatory variable. If not done, then the precision of point estimates would be low as a result of the variance being higher when the lag is omitted – due to a specification error (Mizon, 1995). Though earlier studies relied on the use of panel-corrected standard errors (PCSE) to address the use of a lagged dependent variable (Arnone & Romelli, 2013; Bodea & Hicks, 2015), it is nevertheless not appropriate for this study as the number of cross-sectional units is greater than the number of time-series observations that could bias t-statistics. We pursue an alternative methodology. We adopt the use of GMM dynamic panel data estimation as the standard solution to avoid Nickell bias (Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998). This approach addresses the issues of joint endogeneity of all explanatory variables in a dynamic formulation, and mitigates potential biases induced by fixed effects. There is a danger however that the instrument count can easily grow large relative to the sample size (Roodman, 2006). This can result in an over fitting of endogenous variables, thus failing to expunge their endogenous components and biasing coefficient estimates. This study uses the two-step System Generalised

Method of Moments (SGMM) estimator with Windmeijer (2005) corrected standard errors since this is asymptotically more efficient than the one step-estimator.

In order to deal with the issue of instrument proliferation, we collapse the instrument matrix as suggested by Rodman (2009) and Bontempi and Mammi (2015). Doing this we observe, gives us higher point estimates and lower number of instruments. We also have a higher reliability of the Hansen test, consistently characterized by a lower p-value. Though the sign and significance of some of the control variables change (compared to earlier estimations where collapse of instruments matrix was not applied), the sign and significance of the main variables of interest (CBI, PolInst; and their interactions) do not. According to Bontempi and Mammi (2015), this shift in the sign of some of the control variables, is not directly driven by the reduction in the number of instruments rather, it is due to the restrictions imposed on the instrument matrix.

The autocorrelation test and the robust estimates of the coefficient standard errors assumes no correlation across individuals in the idiosyncratic disturbances.

The study reports two standard specification tests: The Hansen test of over-identifying restrictions tests the overall validity of the instruments and failure to reject the null hypothesis gives support for the model, including our choice of endogenous variables. The Arellano–Bond test for AR (2) in first differences tests whether the residuals from the regression in differences is second order serially correlated and failure to reject the null hypothesis supports the model specification. The study also reports the number of instruments as suggested by Bazzi and Clemens (2013).

- **Model**

One main objective of this study is to examine the impact of central bank independence on financial development. In addition to the CBI variable, other variables identified in literature are included in our model.

Our preferred model based on Bodea and Higashijima (2015), Lucotte (2012), Acemoglu *et al.* (2008) and Romer (1993) and can be summarized as follows:

$$FINDEV_{it} = \beta_1 FINDEV_{it-1} + \beta_2 CBI_{it} + \beta_3 PolInst_{it} + \beta_4 X_{it} + \varepsilon_{it} \quad (5.1)$$

To capture possible unobserved heterogeneity, and to analyse the impact of political/legal institutional quality on the CBI-financial development nexus, we specify the following interaction model:

$$FINDEV_{it} = \beta_1 FINDEV_{it-1} + \beta_2 CBI_{it} + \beta_3 PolInst_{it} + \beta_4 (CBI * PolInst)_{it} + \beta_5 X_{it} + \xi_{it} \quad (5.2)$$

where:

$i$  denotes the country and  $t$  denotes the time

$\varepsilon_{it}$  and  $\xi_{it}$  are error terms;  $\varepsilon_{it} = v_t + w + e_{it}$  and  $\xi_{it} = \eta_t + \omega_i + \epsilon_{it}$

$FINDEV_{it}$  is the financial development indicator

$CBI_{it}$  is central bank independence measured by the CWN index

$PolInst_{it}$  is the measure of political/legal institutional quality proxied by the civil liberty scores, and

$X_{it}$  is a set of control variables namely:

$GDPR_{it}$  is the real GDP annual growth rate

$POPUL_{it}$  is population size

$LGDP_{it}$  is log of real GDP per capita

$DEBTG_{it}$  is debt-to-GDP ratio

$LDS_{it}$  is the lending-deposit spread measured as the difference between lending rate and deposit rate,

$CBASSETS_{it}$  is the ratio of central bank assets to GDP

$TRD.OPEN_{it}$  is trade openness measured as the sum of exports and imports as a percentage of GDP and

$FINOPEN_{it}$  is financial openness measured as the Chinn-Ito Index.

### 5.3.3 Definition of variables

- ***Dependent Variable***

The dependent variable in this study is financial development ( $FINDEV_{it}$ ) which is measured by three (3) indicators. The first indicator is private credit to GDP ratio ( $PRIV.CRE_{it}$ ) which measures the extent of financial intermediation in a country and a gauge of the extent to which the banking sector is developed.

The study uses private credit, which captures the value of all credit issued by financial intermediaries to the private sector as a share of GDP. It excludes credit given to public corporations and other agencies of government which may not be allocated based on expected return.

According to Levine *et al.* (2000), higher levels of private credit indicate “higher levels of financial services and therefore greater financial intermediary development.”

The second measure is a widely used measure in literature; stock market capitalisation ( $STOCK.MKCAP_{it}$ ) which is the ratio of the value of all stock on the domestic markets to GDP and is an indicator of the size of the economy's stock market. The stock market provides alternative sources of finance and thus acts as a substitute of or complement to bank credit (Yao *et al.*, 2014; Buttner & Hayo, 2011).

The third measure of financial development is public bond as a percentage of GDP ( $PUBLICBOND_{it}$ ) to capture the impact of CBI and political institutions on bond market development. We use the public bond to GDP variable first due to the absence of adequate data on private bond to GDP.

Secondly it is argued that well developed public sector bond markets are precursors or pointers to well-developed corporate bond markets (Claessens, Klingebiel, & Schmukler, 2007; McCauley & Remolona, 2000).

- ***Explanatory variables***

On the basis of literature reviewed, the explanatory variables include a set of financial, demographical, institutional and macroeconomic variables.

$CBI_{it}$ , which is our principal explanatory variable, is measured as the annual legal central bank independence measure of country  $i$  in period  $t$ . It represents the degree of CBI measured by the *de jure* indicator. We settle on *de jure* measures of CBI, since the focus of the study is on policy reforms. Many researchers have attempted to capture and measure CBI. This study uses a CBI index as given by Garriga (2016), who compute an updated Cukierman, Webb and Neyapti (CWN) index for a large set of countries using the International Monetary Fund's Central Bank Law Database. The CWN CBI index is based on a weighted aggregation of 16 legal indicators in four categories regarding the tenure of the bank's governor, policy formation, objectives, and limitations on lending to the government, using the criteria and weights in Cukierman, Webb and Neyapti. The index varies between 0 and 1, with larger values indicating independence. A central bank is legally more independent when the governor's term in office is longer; the appointment and dismissal procedures are more insulated from the government; the mandate is more focused on price stability; the formulation of monetary policy lies squarely with the central bank; and the provisions on direct central bank lending are restrictive.

Because the CBI measure is an index, the possibility of it being an endogenous variable is addressed by the choice of estimation technique. Because financial development may affect the level of independence granted to the central banks, there are potential endogeneity

effects which we account for by using System Generalised Methods of Moments (SGMM) estimation technique.

In this chapter, as a measure of political/legal institutional quality ( $PolInst_{it}$ ), we use the civil liberties score variable obtained from Freedom House database. The score for the variable ranges from 7 to 1, with 7 representing the least rating and 1 the highest. Following Bodea and Higashijima (2017), we rescale the original score to range from 0 to 6, so that lower scores now correspond to lower civil liberties rating and higher scores correspond to higher civil liberties rating. In order to do this, we use the formular  $-1 * (CLS - 7)$ , where CLS is the civil liberties score as given by Freedom House. Civil liberties variable captures the extent to which there is freedom of expression, assembly, association, education, and religion. Countries with high civil liberty scores have an established and generally fair system of the rule of law (including an independent judiciary), allow free economic activity, and tend to strive for equality of opportunity for everyone, including women and minority groups. The civil liberties questions are grouped into four subcategories: freedom of expression and belief (4 questions), associational and organizational rights (3), rule of law (4), and personal autonomy and individual rights.

We expect the coefficient of political/legal institutional quality to be positive. In economies where property rights are not well defined or enforcement of contracts are not guaranteed by the legal system and where there is general disrespect for the rule of law, there can be limitations on the incentives for loan contracts. Legal protections for creditors and the level of credibility and transparency of accounting rules are also likely to affect financial decisions of economic agents. We also expect that political/legal institutional development will enhance the effectiveness of CBI in promoting financial development through price

stability and effective regulation of the financial sector as it brings credibility to the central bank arrangement. Secondly, the political/legal environment will reduce the cost of information asymmetry and encourage investors and creditors to take advantage of the price stability achieved by the central bank by investing in the financial sector and encouraging savings and loan contracting. We therefore expect the coefficient of the interactive term between CBI and institutional quality to be positive.

We include the log of GDP ( $LGDP_{it}$ ) per capita to capture the level of economic development. It is expected that more developed economies will have better developed financial systems. This is due to the availability of higher incomes for investments, technological advancements and better developed systems that address issues of information asymmetry. The expected sign is therefore positive.

We also introduce the real annual GDP growth rate ( $GDPR_{it}$ ). The inclusion of this variable is inspired by Greenwood and Smith (1997) who examine the impact economic growth has on financial development. There are varying views on the theoretical link between financial development and economic growth. Schumpeter (1911) argues that growth and innovation are driven by the services provided by financial intermediaries as they channel financial resources to the most productive sectors of the economy, which spurs growth. However, Robinson (1952) contends that finance does not cause economic growth but it follows economic growth as a result of more demand for financial services. Meaning that in response to higher demand for financial services, when there is growth in an economy, there is the emergence of more financial institutions, financial products and services in the markets. In line with Robinson (1952)'s perspective and in accordance with other empirical work which have established a causal effect from economic growth to financial

development (Menyah *et al.*, 2014), the study also includes real annual GDP growth rate ( $GDPR_{it}$ ) in the regression to proxy for economic activity as a result of the fact that demand for and supply of credit is sensitive to fluctuations in the economy. During periods of low or moderate economic activity, there is a decrease in credit available or supplied. At the same time, there is a decrease in profits and savings thereby resulting in lower investments. On the other hand, during periods of high economic activity, access to and supply of credit improve due to higher profits and investments. Consequently, the expected sign of the  $GDPR_{it}$  variable is positive.

We include the size of the population ( $POPUL_{it}$ ) to capture the availability of huge number of potential investors and borrowers which means higher savings, investments and demand for credit (Allen *et al.*, 2013).

We measure trade openness ( $TRD.OPEN_{it}$ ), as the ratio of the sum of exports and imports of goods and services to GDP. The importance of this variable is to assess the extent of integration of a country in global trade and its resultant impact on demand for financial services. Firstly, trade increases the availability of various intermediate goods and capital equipment. This can over time, grow the productivity of an economy's resources. Secondly, trade opens doors for developing countries to access improved technology in developed countries, in the form of embodied capital goods. Trade also increases the use of a country's capacity to produce goods and services for consumption. It provides a wider market for domestic producers to operate at minimum required scale and on the other hand, benefit from increasing returns to scale. With this growth in economic activity, demand for financial services is high (Gries, Kraft, & Meierrieks, 2009).

The study measures public debt ( $DEBTG_{it}$ ) as the ratio of public debt to GDP. This measure is arrived at as the sum of two ratios, namely the accumulated debt as a percentage of GDP for the previous year, which is discounted by the interest rate and then the ratio of budget deficit to GDP for the current year. Empirically, the negative effect of public debt/fiscal deficit on financial development through the crowding out effect remains ambiguous. According to Kumhof and Tamar (2005), public debt is considered by depositors as collateral and serves as a benchmark for the private sector to provide support to the financial sector. Ismihan and Ozkan (2012) however argue that higher public debt accumulated by the banking sector might be critical for financial development because the private sector may be unable to access bank credit due to high interest rates. Kutivadze (2011) also shows that the development of the domestic debt market is positively correlated with financial development.

The study includes a measure of financial openness, ( $FINOPEN_{it}$ ) which is the Chinn-Ito index; an index measuring a country's degree of capital account openness. It is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). In the binary variable,  $1$  equals the presence of financial controls, and  $0$  otherwise. However, unlike Quinn (1997, 531- 51) and Quinn (2003, 189-204) which measure the intensity of capital controls, the Chinn-Ito index, does not. Chinn-Ito's correlation with Quinn, though, is 0.84, suggesting that it captures capital control intensity to a reasonable extent.

Central Bank assets ( $CBASSETS_{it}$ ), is measured as the ratio of central bank total assets held to GDP of a country. Central bank assets are claims on domestic real non-financial sector by

the Central Bank. The more assets held by a central bank, the more finance it can provide to support the financial system when it needs funds. This should lead to the development of the financial sector (Tayssir & Feryel, 2017).

The lending to deposit spread ( $LDS_{it}$ ), spread is a measure of the efficiency of the financial system. It is the difference between lending rate and deposit rate. Lending rate is the rate charged by banks on loans to the private sector and deposit interest rate is the rate offered by commercial banks on three-month deposits. More efficient financial systems can offer credit at lower rates which promotes increased access to credit and expansion of the financial system (Odhiambo, 2008).

We include a dummy for inflation targeting regimes ( $IT_{it}$ ). We assign a value of 1 for inflation targeting countries and periods and 0 otherwise. While inflation targeting regimes have an overriding objective of price stability and explicitly and numerically announce an inflation target and respond to short-term shocks, they are not necessarily independent central banks as other aspects of central bank independence such as appointment and dismissal of governors and limits on central bank credit are not captured by having a central bank operating under an inflation targeting regime. Thus, we include the variable to capture other monetary policy regimes that work towards price stability. The empirical evidence indicates that most inflation targeting regimes have successfully reduced inflation. Based on this, then as high rates of inflation negatively affect developments in the financial system, exacerbate credit market frictions and ultimately, make financial institutions inefficient in allocating resources for growth (Agbeja, 2008; Stone, 2003; Boyd & Smith, 1998; Huybens & Smith, 1998; 1999), we expect that inflation targeting regimes will improve the development of the financial sector. The expected sign is therefore positive.

The exchange rate dummy variable ( $FEXRT_{it}$ ), is captured as  $1$  for fixed exchange rate regimes and  $0$  otherwise. We capture the existence of a fixed exchange rate regime based on the *de facto* exchange rate regime classification by Reinhart and Rogoff (2004, 2009). This dummy variable is  $1$  when there is no separate legal tender, when there is a pre-announced peg or currency board arrangement, when there is a pre-announced horizontal band that is narrower than or equal to  $\pm 2\%$ , or when there is a *de facto* peg, and  $0$  otherwise.

We expect that fixed exchange rate regimes will reduce foreign exchange rate risks which results in more stable macro-economic environments for the growth of the banking sector and capital markets. With floating exchange rate regimes, financial markets stand the risk of foreign exchange risks which can increase their cost of capital and operations and thereby pass it on to borrowers in the form of high interest rates. It also means borrowers face lower foreign exchange risks in fixed exchange rate regimes and thereby can access credit and pay back without default (Calvo & Reinhart, 2002; Tayssir & Feryel, 2017).

## **5. 4. Analysis and Discussion of Findings**

### **5.4.1 Descriptive Statistics**

From the descriptive statistics table, labeled Table 5.2, we observe that private credit to GDP for Africa, is on average at 19.9%, the lowest compared to other developing countries (29.3%) and developed (68.7%) countries. This reflects the relatively more developed banking sector in developed countries. The mean of stock market capitalisation (STOCK.MKCAP) is highest in developed countries (57.1%), with other developing countries having the lowest mean of 32.4%. On average, the bond market has a higher mean in developed countries relative to other

Table 5.2: Descriptive Statistics							
Variable		Mean	Median	Max	Min.	SD.	Obs.
PRIV.CRT	Africa	19.892	14.736	160.125	0.491	19.347	1769
	Other Developing	29.219	20.193	115.783	0.491	80.527	2028
	Developed	68.671	58.178	312.154	0.059	44.925	1654
Stock.MkCap	Africa	36.043	13.785	96.939	0.009	76.587	335
	Other Developing	32.410	15.922	75.380	0.009	60.713	1150
	Developed	57.091	43.308	265.128	1.389	47.434	1114
BondMktDev	Africa	-	-	-	-	-	-
	Other Developing	1.47e+08	25.447	38.915	0.428	5.64e+08	360
	Developed	35.741	30.157	190.772	0.005	26.612	691
CBI	Africa	0.501	0.501	0.866	0.137	0.197	1593
	Other Developing	0.491	0.482	0.899	0.134	0.198	2769
	Developed	0.483	0.450	0.894	0.097	0.222	1872
PolInst	Africa	2.178	2	6	0	1.451	1986
	Other Developing	2.757	3	6	0	1.604	2396
	Developed	4.854	6	6	0	1.598	1842
FEXRT	Africa	0.311	0.302	1	0	0.454	1259
	Other Developing	0.632	0.752	1	0	0.524	3485
	Developed	0.412	0.486	1	0	0.525	1483
GDPR	Africa	4.084	14.736	149.73	-62.08	7.682	1908
	Other Developing	29.219	20.193	115.783	0.491	80.527	2028
	Developed	68.671	58.178	312.154	0.059	44.925	1654
Per Capita GDP	Africa	1362.7	1568.5	14749.2	113.7	2129.5	1429
	Other Developing	2045.7	2254.3	15912.5	111.7	2179.6	4127
	Developed	23951	32154	87772.7	589.1	14956	1703
POPUL (log)	Africa	5.241	7.736	26.73	2.118	3.37	2013
	Other Developing	12.31	13.254	35.83	3.215	3.427	2018
	Developed	13.27	13.178	33.154	4.591	3.525	1554
TRD.OPEN	Africa	43.58	45.2	92.9	22.5	16.5	1569
	Other Developing	33.82	54.23	85.27	21.6	36.7	2480
	Developed	91.9	89.52	217.4	21.38	19.42	1912
IT	Africa	0.019	0.018	1	0	0.0967	1588
	Other Developing	0.072	0.065	1	0	0.0987	2579
	Developed	0.115	0.095	1	0	0.124	1937
FINOPEN	Africa	-0.25	-0.15	2.37	-1.90	1.45	1986
	Other Developing	-0.23	-1.19	2.37	-1.90	1.44	2376
	Developed	1.30	2.37	2.37	-1.90	1.36	1842
LDS	Africa	9.28	10.25	15.23	6.87	5.63	1543
	Other Developing	7.75	9.78	12.54	3.48	5.26	2769
	Developed	8.26	8.32	5.53	1.61	1.23	1872
CBASSETS	Africa	2.21	2.35	3.56	1.25	1.451	1986
	Other Developing	5.21	5.36	4.52	1.75	1.604	2396
	Developed	6.54	6.87	8.53	4.56	2.58	1842

$PRIV.CRE_{it}$  denotes the ratio of domestic private credit to GDP.  $STOCK.MKCAP_{it}$  denotes the ratio of stock market capitalisation to GDP.  $PUBLICBONDS_{it}$  denotes the ratio of public bonds to GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $LGDP_{it}$  is log of real GDP per capita,  $PolInst_{it}$  is the rescaled civil liberties score, from 0-6 where 0 denotes least respect for civil liberties and 6 highest respect for civil liberties, and  $TRD.OPEN_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP.  $FEXRT_{it}$  is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise.  $IT_{it}$  denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise.  $POPUL_{it}$  is the size of the population and  $DEBTG_{it}$  is the debt to GDP ratio.  $LDS_{it}$  is the difference between lending rate and deposit rate;  $CBASSETS_{it}$  is the ratio of central bank assets to GDP and  $FINOPEN_{it}$  is Chinn-Ito binary index for capital openness.

developing countries. The median value for bond market development in developed countries is 30.2% while that of other developing countries is lower at 25.4%.

Due to unavailability of adequate data on bond market development in Africa, we are unable to provide statistics on that for Africa, although it has relatively higher median and mean CBI values (0.50) compared to developed (0.48) and other developing countries (0.45). Thus, we see higher CBI values in Africa and other developing countries, compared to developed countries. The quality of institutions is highest in developed countries with an average score of 4.85. This compares to 2.18 in Africa and 2.76 in other developing countries. With higher institutions and higher financial development, it shows a clear positive association, between institutional quality and level of development. A correlation matrix is presented in Appendix I.

#### **5.4.2. Main results**

We separately consider equations (5.1) and (5.2) for each group of countries (Africa, other developing countries and developed countries). In estimating the regressions separately for African other developing and developed countries, there is no selection bias as a check of the variables indicate that, there exist significant variations in the variables except for institutional quality measure in which the variations are not wide. . This is a result of the fact it is a score from 0-6 and most African countries have scores around the average

We use the lagged values of the exogenous variables to explain the exogenous variables in the models (1) and (2). As a result, we estimated these models using the Two Stage System GMM estimator to avoid the problem of endogeneity arising from financial development and CBI. The validity of the model specification determines the effectiveness of the GMM estimator. We

employed two main tests. The first one is the test of Hansen. Tables 5.3, 5.4, and 5.5 show that the Hansen test does not reject the null hypothesis of over-identification of the models, thus validating the quality of the internal instruments used. The results of the test of autocorrelation of errors (significant AR (1) and insignificant AR (2)) mean we accept the null hypothesis indicating that there is no correlation between the errors in the second order.

- **CBI, Political/Legal Institutional Quality and Financial Development**

In Table 5.3, we see the results of regressions for the African sample and other developing countries sample; seeking to examine the impact of CBI and political/legal institutional quality on financial development. Table 5.3 also presents the results for developed and OECD countries. The tables also present results on the impact of political/legal institutional quality on the ability of CBI to impact financial development in Africa.

In models (1) and (2), central bank independence ( $CBI_{it}$ ) in Africa, does not have any significant impact on financial development measured as the ratio of private credit to GDP ( $PRIV.CRT_{it}$ ), neither does it have any impact of financial development measured as the ratio of stock market capitalisation to GDP ( $STOCK.MKCAP_{it}$ ) in models (3) and (4). For other developing countries and developed countries however, all across the 4 models, central bank independence ( $CBI_{it}$ ) has a significant positive impact on both financial development variables; namely, the ratio of private credit to GDP ( $PRIV.CRE_{it}$ ) and the ratio of stock market capitalisation to GDP ( $STOCK.MKCAP_{it}$ ). This most emanates from the insignificant relationship between CBI and inflation in Africa as detailed in Agoba *et al.* (2017). When CBI has no impact on price stability, it is more likely not to have any impact on financial development as price stability is a major channel through which CBI impacts financial development in literature.

In developed countries (Table 5.4), central bank independence ( $CBI_{it}$ ) has a significantly positive impact on all three measures of financial development; namely, the ratio of private credit to GDP ( $PRIV.CRE_{it}$ ), the ratio of stock market capitalisation to GDP ( $STOCK.MKCA_{it}$ ) and ratio of public bonds to GDP ( $PUBLICBOND_{it}$ ). This shows that in other developing countries and developed countries, central bank independence has a direct positive impact on financial development. This is explained by the impact of CBI on price stability as well as effective regulation and supervision by a central bank independent of political control which focuses on achieving price stability and effectively dealing with weak financial institutions thereby engendering confidence in the financial system as argued by Laeven and Levine, (2009) and Agoraki *et al.* (2011).

For African countries, central bank legislations are disrespected and not complied with, thereby resulting in its ineffectiveness in achieving price stability, fiscal discipline and confidence in the management of the economy. In developed countries and other developing countries, independent central bankers are allowed to operate per the charter and this has the impact of improving access to credit and capital as price stability enables market participants to enter into financial contracts within a stable macro-economic environment. The bond markets also grow as price stability guarantees better real returns to investors and no principal losses (Kang & Pflueger, 2015).

In Africa (models 1, 2, and 4), other developing countries (models 5, 6, 7 and 8), political/legal institutional quality ( $PolInst.$ ), has a significant and positive impact on financial development measured as the ratio of private credit to GDP ( $PRIV.CRE_{it}$ ) only. This is in line with the studies of Law and Azman-Saini (2008) and Gazdar (2011) which indicate that while strong institutions matter for the development of the banking sector, it has no effect on stock market development.

**Table 5.3 Effect of CBI and Political/Legal Institutional Quality on Financial Development**

	AFRICA				DEVELOPING			
	PRIV.CRT		STOCK.MKCAP		PRIV.CRT		STOCK.MKCAP	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Priv.Crt <sub>t-1</sub>	0.187*** (0.005)	0.107*** (0.005)			0.168*** (0.003)	0.181*** (0.003)		
Stock.MkCap <sub>t-1</sub>			0.201*** (0.005)	0.118*** (0.005)			0.155*** (0.004)	0.162*** (0.002)
CBI	0.231 (0.24)	0.185 (0.35)	0.238 (0.27)	0.232 (0.34)	0.185*** (0.008)	0.127*** (0.011)	0.165*** (0.018)	0.046*** (0.002)
PolInst	0.183** (0.045)	0.145** (0.064)	0.079 (0.174)	0.061** (0.011)	0.135* (0.083)	0.128** (0.095)	0.113* (0.067)	0.210** (0.069)
CBI*PolInst		0.065* (0.021)		0.071* (0.028)		0.024*** (0.012)		0.035** (0.017)
DEBTG	-0.005 (0.006)	-0.004 (0.005)	-0.004 (0.012)	0.019 (0.012)	-0.033 (0.035)	-0.041 (0.016)	-0.025 (0.031)	-0.024 (0.021)
POPUL	0.005 (0.014)	0.009 (0.018)	0.181*** (0.012)	0.098** (0.053)	0.262** (0.089)	0.254* (0.132)	0.187** (0.083)	0.176** (0.063)
GDPR	0.012** (0.00)	0.018* (0.00)	0.172* (0.074)	0.088* (0.051)	0.321** (0.121)	0.345** (0.065)	0.215* (0.122)	0.219** (0.078)
TRD.OPEN	0.081* (0.051)	0.029 (0.11)	0.144* (0.068)	0.025* (0.01)	0.15* (0.08)	0.122* (0.087)	0.158* (0.075)	0.255* (0.112)
LGDPC	-0.05 (0.22)	0.041 (0.21)	1.704 (0.75)	-1.124 (0.84)	0.639* (0.332)	0.244* (0.154)	1.620** (0.35)	0.568** (0.213)
FEXRT	0.412 (0.35)	0.619** (0.29)	0.242 (0.185)	1.435** (0.57)	1.042* (0.51)	1.414* (0.62)	1.481* (0.54)	1.876** (0.25)
IT	0.115** (0.042)	0.355 (0.71)	0.323* (0.18)	0.236 (0.61)	0.401** (0.022)	0.535** (0.19)	0.451* (0.221)	0.227** (0.45)
LDS	-0.043* (0.03)	-0.016 (0.181)	-0.033* (0.021)	-0.023** (0.00)	-0.13** (0.031)	-0.119** (0.072)	-0.022* (0.011)	-0.055* (0.041)
CBASSETS	0.056 (0.25)	0.027 (0.22)	0.293 (0.71)	0.231 (0.851)	0.305** (0.116)	0.225** (0.125)	0.118* (0.092)	0.133** (0.011)
FINOPEN	0.42 (0.33)	0.119** (0.025)	0.245 (0.73)	0.258* (0.154)	0.145 (0.46)	0.114** (0.055)	0.175 (0.56)	0.187* (0.118)
Total CBI Effect ( $\beta_2 + \beta_4$ )		0.25* (0.015)		0.303* (0.111)		0.151*** (0.021)		0.076** (0.025)
Observations	951	951	468	471	1,660	1,669	1207	1207
No. of Countries	48	48	18	18	90	90	63	63
No. of Instruments	28	27	11	11	35	35	31	31
AR (1)	0.003	0.003	0.004	0.004	0.001	0.003	0.001	0.002
AR (2)	0.201	0.201	0.202	0.202	0.209	0.199	0.202	0.209
Hansen test	0.110	0.110	0.111	0.119	0.221	0.221	0.205	0.204

**Robust standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$**

*PRIV.CRE<sub>it</sub>* denotes the ratio of domestic private credit to GDP. *STOCK.MKCAP<sub>it</sub>* denotes the ratio of stock market capitalisation to GDP. *PUBLICBONDS<sub>it</sub>* denotes the ratio of public bonds to GDP. *CBI<sub>it</sub>* is the central bank independence measured by the CWN index, *GDPR<sub>it</sub>* is the real GDP annual growth rate, *LGDPC<sub>it</sub>* is log of real GDP per capita, *InstQual<sub>it</sub>* is the rescaled political rights score, from 0-6 where 0 denotes least respect for political rights and 6 highest respect for political rights, and *TRD.OPEN<sub>it</sub>* is the trade openness measured as the ratio of sum of exports and imports to GDP. *FEXRT<sub>it</sub>* is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise. *IT<sub>it</sub>* denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise. *POPUL<sub>it</sub>* is the size of the population and *DEBTG<sub>it</sub>* is the debt to GDP ratio. *LDS<sub>it</sub>* is the difference between lending rate and deposit rate; *CBASSETS<sub>it</sub>* is the ratio of central bank assets to GDP and *FINOPEN<sub>it</sub>* is Chinn-Ito binary index for capital openness. All regressions include both country-specific effects and time-period effects.

Table 5.4 CBI, Political Institutional Quality and Financial Development in Developed and OECD Countries

	DEVELOPED						OECD					
	PRIV.CRT		STOCK.MKCAP		PUBLICBOND		PRIV.CRT		STOCK.MKCAP		PUBLICBOND	
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Priv.Crt <sub>t-1</sub>	0.710*** (0.002)	0.785*** (0.002)					0.381*** (0.005)	0.354** (0.005)				
Stock.MkCap <sub>t-1</sub>			0.955*** (0.001)	0.921*** (0.001)					0.141*** (0.003)	0.823*** (0.002)		
PublicBond <sub>t-1</sub>					0.121*** (0.032)	0.129*** (0.041)					0.113*** (0.008)	0.162** (0.091)
CBI	0.58* (0.071)	0.53* (0.152)	0.188** (0.021)	0.108** (0.006)	0.115*** (0.011)	0.098* (0.052)	0.163** (0.071)	0.081* (0.032)	0.122*** (0.005)	0.151*** (0.005)	0.196 (0.212)	0.118** (0.076)
PolInst	0.212*** (0.006)	0.148*** (0.002)	0.133** (0.082)	0.154** (0.083)	0.451** (0.162)	0.102* (0.042)	0.415* (0.136)	0.048 (0.076)	0.152 (0.112)	-0.141 (0.086)	0.156* (0.043)	0.612* (0.328)
CBI*PolInst		0.075* (0.021)		0.015** (0.007)		0.035* (0.022)		0.092* (0.051)		0.089* (0.051)		0.077** (0.045)
DEBTG	0.021 (0.035)	0.015 (0.021)	0.071 (0.052)	0.012 (0.075)	0.085 (0.073)	0.072 (0.063)	-0.044 (0.22)	-0.131 (0.36)	0.022 (0.15)	0.069 (0.073)	0.181 (0.193)	-0.645 (0.66)
POPUL	0.092** (0.043)	0.075 (0.092)	0.183*** (0.056)	0.312** (0.124)	0.045** (0.025)	0.056*** (0.016)	2.893* (1.525)	0.866 (1.564)	0.153 (0.213)	0.219* (0.124)	0.035 (0.037)	0.336* (0.178)
GDPR	0.115* (0.071)	0.245*** (0.011)	0.376*** (0.011)	0.341*** (0.019)	0.462*** (0.011)	0.481*** (0.012)	0.658** (0.124)	0.379 (0.211)	0.269 (0.215)	0.421*** (0.014)	0.336*** (0.013)	0.431*** (0.051)
TRD.OPEN	-0.081 (0.08)	-0.063 (0.057)	-0.121 (0.088)	-0.084 (0.081)	-0.035 (0.041)	-0.047* (0.014)	-0.016 (0.042)	-0.075 (0.11)	-0.091 (0.13)	-0.025 (0.12)	-0.031 (0.045)	-0.022 (0.03)
LGDPC	0.031** (0.001)	0.005 (0.012)	0.003 (0.011)	0.011* (0.005)	0.187 (0.33)	0.133** (0.077)	0.382* (0.181)	0.387 (0.44)	0.383 (0.211)	0.079* (0.033)	0.031* (0.011)	0.072 (0.14)
FEXRT	0.197** (0.051)	0.735** (0.182)	0.377 (0.35)	0.612 (0.78)	0.021** (0.013)	0.642 (0.311)	0.511 (0.413)	0.754 (0.811)	-0.493 (0.323)	0.451 (0.371)	-0.022 (0.015)	0.731* (0.118)
IT	-0.087 (0.19)	-0.188 (0.15)	0.049*** (0.005)	0.068 (0.19)	0.325*** (0.013)	0.329*** (0.005)	-0.291 (0.21)	-0.292 (0.26)	-0.413 (0.42)	0.433** (0.071)	-0.351 (0.310)	0.509 (0.431)
LDS	-0.016** (0.008)	-0.109 (0.091)	-0.143 (0.095)	-0.131 (0.088)	-0.165* (0.092)	-0.119* (0.071)	-0.162* (0.071)	-0.107 (0.11)	-0.159 (0.22)	-0.157 (0.22)	-0.029* (0.011)	-0.029 (0.112)
CBASSETS	0.091***	0.065***	0.277	0.032	0.032**	0.641	0.471	0.741	0.491	0.452	0.015	0.133*

	(0.005)	(0.003)	(0.224)	(0.061)	(0.013)	(0.51)	(0.211)	(0.315)	(0.224)	(0.151)	(0.017)	(0.087)
FINOPEN	0.088***	0.144**	0.142	0.128	0.241	0.196	0.058*	0.045	0.058	0.018	0.142*	0.197*
	(0.002)	(0.022)	(0.174)	(0.194)	(0.261)	(0.185)	(0.024)	(0.066)	(0.042)	(0.091)	(0.065)	(0.082)
Total CBI Effect		0.605*		0.123*		0.133*		0.173*		0.24**		0.198**
$(\beta_2 + \beta_4)$		(0.121)		(0.082)		(0.084)		(0.088)		(0.011)		(0.084)
Observations	961	961	961	961	778	778	859	852	704	704	693	693
No. of Countries	40	40	40	40	34	34	35	35	32	32	26	26
No. of Instruments	25	25	25	25	19	19	23	23	23	23	15	15
AR (1)	0.028	0.028	0.028	0.028	0.028	0.029	0.021	0.024	0.011	0.012	0.052	0.051
AR (2)	0.115	0.127	0.201	0.208	0.209	0.202	0.187	0.291	0.215	0.211	0.232	0.214
Hansen test	0.101	0.117	0.101	0.117	0.103	0.101	0.291	0.312	0.118	0.158	0.101	0.101

Robust standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

NOTES:  $PRIV.CRT_{it}$  denotes the ratio of domestic private credit to GDP.  $STOCK.MKCAP_{it}$  denotes the ratio of stock market capitalisation to GDP.  $PUBLICBONDS_{it}$  denotes the ratio of public bonds to GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $LGDP_{it}$  is log of real GDP per capita,  $Pollnstl_{it}$  is the rescaled political rights score, from 0-6 where 0 denotes least respect for political rights and 6 highest respect for political rights, and  $TRD.OPEN$  is the trade openness measured as the ratio of sum of exports and imports to GDP.  $FEXRT_{it}$  is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise.  $IT_{it}$  denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise.  $POPUL_{it}$  is the size of the population and  $DEBTG_{it}$  is the debt to GDP ratio.  $LDS_{it}$  is the difference between lending rate and deposit rate;  $CBASSETS_{it}$  is the ratio of central bank assets to GDP and  $FINOPEN_{it}$  is Chinn-Ito index for capital openness. All regressions include both country-specific effects and time-period effects.

In developed countries, it has a significant and positive effect on both banking sector and stock market development including the bond market (models 9-14). This implies that strong political/legal institutions advance the development of the financial sector (specifically the banking sector) in Africa and confirms the findings by Huang (2010). With strong political/legal institutions, there is good governance, protection of property rights, political stability and freedom of expressions which ensures that the rights of investors and market participants are protected. This promotes price stability, reduces risks of political hunting which can cause capital flight, enables financial institutions and businesses to operate in sound environments guaranteeing the security of credits given and investment made. This finding confirms that of other authors who found that institutions encourage financial development (Miletkov & Wintoki, 2008; Tayssir & Feryel, 2017).

The difference in impact of political institutional quality on stock market development in Africa and other developing countries on one hand and developed countries on the other hand, could be due to the low levels of institutional quality which do not promote the commitment of capital for long term projects or investments. Political instability in most African countries do not encourage the long-term commitment of funds (Ayadi *et al.*, 2015).

With regards to the control variables, debt to GDP ratio ( $DEBTG_{it}$ ) has a negative and significant impact on banking sector development but not on stock market development in Africa (models 1 and 2). In other developing countries however, higher debt to GDP ratio ( $DEBTG_{it}$ ) negatively and significantly impacts both banking sector development and stock market development (models 5-8). In developed countries, higher debt to GDP ratio impacts stock market development (model 11) and bonds market development (models 13 and 14) negatively.

High public debt results in higher interest rates due to crowding out and subsequently, lower demand for credit and investments due to higher long-term interest rates which affect the cost of capital demanded by shareholders. An increase in government debt signals the existence of fiscal deficits and the presence of the government in the market, thereby resulting in crowding out and increase in interest rates for loans to the private sector. This means limited access to credit by the private sector. As noted by Ismihan and Ozkan (2012), higher levels of public debt accumulated by the banking sector might be important for the development of financial sectors, as less credit is made available to the private sector and access of the private sector to credit is at higher interest rates due to governments crowding out effects. This contradicts Kutivadze (2011) who finds that the domestic debt market has a positive correlation with financial development.

We also found that the size of the population ( $POPUL_{it}$ ) significantly improves stock market development in Africa (model 3 and 4). In other developing countries, it significantly improves both banking sector and stock market development (model 6 and 8) and in developed countries, population size significantly impacts positively on all three measures of financial development (models 9-16). This shows that larger population sizes result in higher demand for credit and more capitalised capital markets with the availability of a wider market providing more shareholders with more savings for investment.

The study also finds that higher economic growth rate ( $GDPR_{it}$ ) improves financial development in Africa and other developing countries. This is shown by the positive significant coefficients of the GDP growth rate variable in models (1), (2), (3) and (4) for Africa and models (6), (7), (8) and (9) for other developing countries. In developed countries, in addition to banking sector and stock markets, the bond market is also developed (models 10-14) by higher levels of economic

growth. With higher economic growth, demand for financial services and credit is high, thereby resulting in higher levels of financial development.

The exchange rate dummy variable ( $FEXRT_{it}$ ), is significantly positive in models (2) and (4) for Africa and in models (6) to (8) for other developing countries and for developed countries, (models 9 and 10) and public bonds (model 15) positively. This implies that fixed exchange regimes improve financial development more than other exchange rate regimes. Thus, indicating that fixed exchange rate regimes in Africa, other developing countries and developed countries, have more developed financial markets than floating exchange rate regimes. This is as a result of lower foreign exchange rate risks which results in more stable macro-economic environments for the growth of the banking sector and capital markets. With floating exchange rate regimes, financial markets stand the risk of foreign exchange fluctuations which can increase their cost of capital and operations and are passed unto borrowers in the form of high interest rates. It also means borrowers face lower foreign exchange risks in fixed exchange rate regimes and thereby can access credit and pay back without default. The results confirm that of Calvo and Reinhart (2002) and Tayssir and Feryel (2017) who find that fixed exchange rate regimes positively impact financial development.

Inflation targeting regimes ( $IT_{it}$ ), improve financial development (both banking and stock market development) as evident in models (1), (2), (3) and (4) in Africa and models 11 to 14; for developed countries (that is stock and bond markets development). As argued by Bernanke and Mishkin (1997), inflation targeting improves price stability which is necessary for financial development. Reducing inflation helps smoothen credit market frictions and ultimately, make financial institutions efficient in allocating resources for growth (Boyd & Smith, 1998; Stone, 2003; Agbeja, 2008).

Per capita income ( $LGDP C_{it}$ ), improves significantly banking sector development and stock market development in other developing countries and developed countries (model 9 and 12). This is because, higher income groups can have more disposable income for savings and investments purposes. They also have higher capacity to borrow and repay thereby resulting in higher demand for credit. With higher incomes, investments in stocks are high as people channel their savings into long term investments. This confirms findings by Aghion, Howitt and Mayer-Foulkes (2005), who find that higher levels of financial development are associated with higher per capita income.

The lending deposit spread ( $LDS$ ) significantly influences financial development in Africa and other developing countries. As seen in all the models except in model 2, higher lending deposit spread reduces financial development. Its impact on the banking sector and stock markets is negative. In developed countries, the lending deposit ( $LDS$ ) significantly impacts banking sector development (model 9 banking) and bond market development (models 13 and 14) negatively.

As lending deposits spread widens, cost of credit to the private sector is high, leading to lower demand and access to credit. For the stock markets, this will increase the returns demanded by shareholders which will mean a reduction in stock market capitalisation. The same can be said for bondholders who will demand higher returns on bonds purchased in order to compensate for the high interest rates they can earn in the banking sector.

Central bank assets to GDP ( $CBASSETS$ ) significantly impacts private credit to GDP and stock market development in other developing countries (models 5-8). This is seen also in developed countries but only in the banking sector (model 9). With more assets, the central bank can support the financial system in times of crises and this can result in its development.

Financial openness (FINOPEN) impacts both the banking sector and the capital market in Africa (models 2 and 4); other developing countries (models 6 and 8) and developed countries (models 9 and 10) positively and significantly. As there is increased free flow of capital, access to foreign investments increases and this goes into improving access to credit as well as equity investments. Bonds can also be purchased by foreign investors as they have increased access to a country's bond market.

- **Robustness Checks**

CBI is not significant, though positive for African countries. Therefore we do the estimation for the global sample and introduce a dummy for Africa ( $1$  for Africa and  $0$  for other countries) and then interact the African dummy with CBI and test whether the coefficient of the new variable (African dummy interacted with CBI) is the same in and out of Africa. If it is, then we can conclude CBI is significant for financial development even in Africa.

We also measure institutional quality as rule of law sourced from the World Governance Indicators. Respect for the rule of law guarantees creditor and property rights, lowers corruption and ensure respect for CBI provisions. The results as shown in Table 5.5 indicate that the interactive variable CBI\*Africa is not significant. Thus confirming that CBI is not important in Africa for financial development. However, when we interact CBI, Africa and rule of law, our measure of institutional quality, we have a significant coefficient which is positive, giving further credence to the fact that higher levels of institutional quality, improve CBI's impact on financial development in Africa. In Appendix II, we show results for the global sample, using political rights as a measure of institutional quality.

**Table 5.5: CBI, Institutional Quality and Financial Development in Africa**

	Priv.Cred.	Priv.Cred.	Priv.Cred.
	(21)	(22)	(23)
L. Priv.Cred.	0.161*** (0.005)	0.165*** (0.006)	0.152*** (0.005)
CBI	0.104*** (0.015)	0.106** (0.021)	0.145** (0.033)
Rule of Law	0.132** (0.054)	0.189** (0.096)	0.174** (0.063)
Africa	-0.056** (0.018)	-0.086** (-0.022)	-0.075** (0.032)
CBI*Africa*		0.112 (0.096)	
CBI*Africa*Rule of Law			0.169** (0.042)
GDPR	0.047** (0.018)	0.069* (0.023)	0.085** (0.033)
DEBTG	-0.123** (0.046)	-0.058** (0.016)	-0.063** (0.023)
POPUL	0.064*** (0.005)	0.095** (0.042)	0.121*** (0.001)
TRD.OPEN	-0.078*** (0.001)	-0.085** (0.021)	-0.111** (0.036)
FEXRT	0.121* (0.064)	0.136* (0.041)	0.144* (0.046)
IT	0.099* (0.051)	0.086** (0.052)	0.091* (0.049)
LDS	-0.114** (0.033)	-0.122** (0.027)	-0.136** (0.052)
CBASSETS	0.117** (0.039)	0.104** (0.033)	0.321** (0.073)
FINOPEN	0.225*** (0.001)	0.214* (0.076)	0.216*** (0.002)
GDPR	0.213*** (0.005)	0.326** (0.099)	0.265* (0.087)
Observations	2846	2846	2846
Number of Countries	178	178	178
No. of Instruments	31	31	31
AR(1)	0.007	0.009	0.011
AR(2)	0.221	0.265	0.315
Hansen Test	0.531	0.522	0.496
<b>Standard errors in parentheses</b>	<b>*** p&lt;0.01, ** p&lt;0.05, * p&lt;0.1</b>		

NOTES: PRIV.CRT<sub>it</sub> denotes the ratio of domestic private credit to GDP. CBI<sub>it</sub> is the central bank independence measured by the CWN index, GDPR<sub>it</sub> is the real GDP annual growth rate, LGDPC<sub>it</sub> is log of real GDP per capita, Rule of Law<sub>it</sub> is the rule of law scores from the World Governance Indicators; and TRD.OPEN is the trade openness measured as the ratio of sum of exports and imports to GDP. FEXRT<sub>it</sub> is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise. IT<sub>it</sub> denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise. POPUL<sub>it</sub> is the size of the population and DEBTG<sub>it</sub> is the debt to GDP ratio. LDS<sub>it</sub> is the difference between lending rate and deposit rate; CBASSETS<sub>it</sub> is the ratio of central bank assets to GDP and FINOPEN<sub>it</sub> is Chinn–Ito index for capital openness. All regressions include both country-specific effects and time-period effects.

- **Is the impact of CBI on Financial Development Dependent on the Level of Development of a Country?**

From Table 5.3 and Table 5.4 in African countries, CBI has no direct impact on financial development, while in other developing and developed countries, CBI has a direct impact on financial development. With the knowledge also from the results that, per capita GDP is a significant determinant of financial development in other developing and developed countries while it is not a significant determinant of financial development in African countries, we seek to investigate if the direct impact of CBI on financial development is driven by the level of development of a country. It could be that the significant impact of CBI on financial development in developing countries is driven by the upper middle income and high-income countries in the sample who share similar characteristics with developed countries in terms of income levels and institutional quality.

In order to examine this, following Issahaku *et al.* (2018), we split our developing countries sample into two, based on the World Bank's 2014 classification of countries based on gross national income (GNI) per capita computed from the Atlas method. The income divisions are: low-income countries (GNI per capita of less than or equal to \$1,045 in 2013), lower-middle income countries (GNI per capita greater than \$1,045 but less than \$4,125), upper middle-income countries (GNI per capita greater than \$4,125 but less than \$12,746) and high-income countries (GNI per capita of \$12,746 or greater). For the sake of our analysis, and to gain an adequate sample size, we truncate the sample at \$4,125; those countries below this amount form one sample (low-income and lower-middle-income countries) whereas those above (upper middle - income and high-income countries) form another sample.

This classification is based on the presumption that the CBI characteristics of low-income countries will be similar to those in lower-middle-income countries, and the CBI features of upper-middle-income countries will be similar to those in high-income countries. This categorization will also afford us more observations to avoid over fitting the models. We then run separate regressions for low income and lower middle-income countries (LLMIC) on one hand, and upper middle income and high-income countries (UMHIC) on the other hand.

From the results in Table 5.6, we clearly see that while CBI has no direct impact on financial development in low income and lower middle-income countries (models 24-27), it has a positive and significant impact on financial development in upper middle and high-income countries (models 28-31). The interactive term between CBI and institutional quality ( $CBI * PolInst_{it}$ ) in Table 5.6 is however significant and positive in both low income and lower middle-income countries and upper middle and high-income countries (models 29 and 31). This means that the impact of CBI on financial development is conditional on the level of development of the economy. The study also ran regressions for OECD countries, which is made up of some developed countries. This is shown in Table 5.4 models (15), (16), (17), (18), (19) and (20). In these regressions, central bank independence has a significantly positive impact on all the three (3) measures of financial development across all models. Institutional quality had a significant and positive impact on financial development in models (15), (19) and (20). This is shown by the significantly positive coefficient of the interactive variable  $CBI * InsQual_{it}$  in models 16, 18 and 20. This means that overall, in economies that are well developed, CBI promotes financial

**Table 5.6 CBI, Institutional Quality, and Financial Development in LLIC & UMHC**

	LOW & LOWER MIDDLE INCOME				UPPER MIDDLE & HIGH INCOME			
	PRIV.CRT		STOCK.MKCAP		PRIV.CRT		STOCK.MKCAP	
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
PRIV.CRT <sub>t-1</sub>	0.015*** (0.00)	0.013*** (0.00)			0.014*** (0.00)	0.074*** (0.02)		
STOCK.MKCAP <sub>t-1</sub>			0.099*** (0.06)	0.076*** (0.02)			0.033*** (0.05)	0.089*** (0.01)
CBI	0.05 (0.03)	0.06 (0.03)	0.03 (0.01)	0.017 (0.01)	0.005*** (0.01)	0.011*** (0.00)	0.033*** (0.01)	0.086*** (0.01)
PolInst	0.354* (0.03)	0.377* (0.04)	0.209** (0.01)	0.258 (0.03)	0.182** (0.01)	0.140** (0.01)	0.289* (0.05)	0.218* (0.10)
CBI*PolInst		0.079** (0.02)		0.078* (0.02)		0.155*** (0.07)		0.066** (0.06)
GDPR	0.015** (0.00)	0.020*** (0.00)	-0.293 (0.21)	0.06 (0.04)	0.306* (0.11)	0.358** (0.09)	0.210** (0.11)	0.222*** (0.05)
DEBTG	0.011 (0.035)	0.022 (0.021)	0.041 (0.052)	0.009 (0.075)	0.012* (0.004)	0.015 (0.023)	-0.022* (0.012)	0.112* (0.051)
POPUL	0.045** (0.013)	0.042 (0.071)	0.065** (0.016)	0.034** (0.011)	0.025* (0.015)	0.037** (0.017)	0.058* (0.025)	0.013 (0.011)
TRD.OPEN	0.054 (0.06)	0.037 (0.06)	0.122*** (0.03)	0.451 (0.08)	0.373 (0.08)	0.354*** (0.05)	0.227 (0.03)	0.162** (0.07)
FEXRT	0.245* (0.13)	-0.023 (0.07)	-0.273 (6.89)	-0.242 (1.99)	0.014 (3.28)	0.083 (4.90)	0.074* (3.69)	-0.776 (1.24)
IT	0.175*** (0.06)	-0.017 (0.03)	0.236 (0.06)	0.238* (0.04)	0.289** (0.04)	0.214 (0.01)	0.088 (0.07)	0.061 (0.05)
LDS	-0.031 (0.03)	-0.042** (0.01)	-0.025*** (0.01)	-0.022** (0.00)	0.025*** (0.01)	-0.018 (0.03)	-0.27 (0.35)	0.093 (0.15)
CBASSETS	0.024** (0.01)	0.018*** (0.00)	-0.042 (0.11)	0.06 (0.14)	0.202* (0.11)	0.205** (0.09)	0.111** (0.05)	0.121*** (0.03)
FINOPEN	0.054 (0.06)	0.037 (0.06)	0.122*** (0.03)	0.051 (0.08)	0.073 (0.08)	0.084* (0.05)	0.027 (0.03)	0.032** (0.01)
Observations	1717	1717	1263	1271	1568	1571	1349	1339
No of Countries	76	76	66	66	63	63	60	60
No. of Instruments	66	66	54	54	50	50	49	49
AR (1)	0.014	0.013	0.064	0.054	0.027	0.016	0.017	0.041
AR (2)	0.243	0.221	0.334	0.321	0.335	0.318	0.579	0.15
Hansen test	0.112	0.112	0.111	0.117	0.221	0.223	0.211	0.203

Standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

$PRIV.CRT_{it}$  denotes the ratio of domestic private credit to GDP.  $STOCK.MKCAP_{it}$  denotes the ratio of stock market capitalisation to GDP.  $PUBLICBONDS_{it}$  denotes the ratio of public bonds to GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $LGDP_{it}$  is log of real GDP per capita,  $PolInst_{it}$  is the rescaled political rights score, from 0-6 where 0 denotes least respect for political rights and 6 highest respect for political rights, and  $TRD.OPEN$  is the trade openness measured as the ratio of sum of exports and imports to GDP.  $FEXRT_{it}$  is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise.  $IT_{it}$  denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise.  $POPUL_{it}$  is the size of the population and  $DEBTG_{it}$  is the debt to GDP ratio.  $LDS_{it}$  is the difference between lending rate and deposit rate;  $CBASSETS_{it}$  is the ratio of central bank assets to GDP and  $FINOPEN_{it}$  is Chinn-Ito index for capital openness. All regressions include both country-specific effects and time-period effects.

development and its impact on financial development is enhanced in strong institutional environments.

## **5.5 Conclusion**

The chapter sought to examine the impact of central bank independence on financial development. The impact of institutions and macro-economic indicators on financial development has been well established in literature. Among the macroeconomic indicators is inflation, which can reduce the real return of investors and therefore serve as a disincentive to investment. It also increases cost of credit and therefore reduces demand and availability of credit. With regards to bond market development, inflation reduces real returns as well as increases the chances of principal losses. This means that mechanisms to control inflation is key to promoting financial development.

One widely accepted mechanism for inflation control is central bank independence which is mostly granted via central bank legislations which grant independence to the central bank in terms of operations, security of tenure of governors and board members, independence in setting monetary policy goals and the choice of instrument to achieve such goals, as well as limits on central bank lending to government.

With the promulgation of central bank charters that grant them independence in Africa, the study sought to investigate if these developments have had an impact on the development of the banking sector and capital markets. Borrowing from the political economy of reforms, the study further examined the impact of institutional quality on the CBI financial development nexus in Africa and compares these results to that in other developing countries and developed countries.

The study found that, CBI has no direct impact on financial development in Africa. However, in other developing and developed countries, it does. Meaning that higher CBI in other developing and developed countries, promotes financial development. The study also found that CBI promotes financial development the more in countries with strong political/legal institutions. Robustness checks reveal that CBI directly impacts financial development in upper middle and high-income countries and not in low and lower middle-income countries.

This shows that the level of development of a country, does determine the extent to which CBI impacts financial development. The policy implications are that central bank independence laws should be implemented together with other institutional reforms that strengthen the central bank's ability to be independent of political authorities. At the same time, strong economic reforms should be implemented to increase economic growth so that the impact of CBI on financial development is not eroded away by poor economic policies.

**Appendix I Correlation Matrix**

Variable	PRIV.CRT	Stock.MkCap	BondMktDev	CBI	Pollnst.	FEXRT	GDPR	Per Capita GDP	POPUL (log)	TRD.OPEN	IT	FINOPEN	LDS	CBASSETS
PRIV.CRT	1.00													
Stock.MkCap	0.421	1.00												
BondMktDev	0.322	0.212	1.00											
CBI	0.458	0.421	0.421	1.00										
Pollnst.	0.564	0.554	0.311	0.421	1.00									
FEXRT	0.468	0.321	0.119	0.112	0.012	1.00								
GDPR	0.521	0.553	0.325	0.213	0.214	0.218	1.00							
Per Capita GDP	0.755	0.628	0.412	0.211	0.315	0.365	0.321	1.00						
POPUL (log)	0.655	0.521	0.215	0.111	0.115	0.116	0.258	-0.112	1.00					
TRD.OPEN	0.521	0.422	0.223	0.145	0.235	0.174	0.421	0.358	0.365	1.00				
IT	0.524	0.325	0.214	0.198	0.114	0.163	0.416	0.269	0.125	0.362	1.00			
FINOPEN	0.636	0.352	0.325	0.124	0.254	-0.124	0.325	0.456	0.365	0.432	0.101	1.00		
LDS	-0.535	-0.425	0.113	-0.114	-0.128	0.139	-0.216	-0.256	0.113	-0.124	0.115	-0.215	1.00	
CBASSETS	0.433	0.321	0.215	0.118	0.128	0.248	0.421	0.214	0.025	0.421	0.356	0.487	-0.268	1.00

$PRIV.CRE_{it}$  denotes the ratio of domestic private credit to GDP.  $STOCK.MKCAP_{it}$  denotes the ratio of stock market capitalisation to GDP.  $PUBLICBONDS_{it}$  denotes the ratio of public bonds to GDP.  $CBI_{it}$  is the central bank independence measured by the CWN index,  $GDPR_{it}$  is the real GDP annual growth rate,  $LGDP_{it}$  is log of real GDP per capita,  $InstQual_{it}$  is the rescaled political rights score, from 0-6 where 0 denotes least respect for political rights and 6 highest respect for political rights, and  $TRD.OPEN_{it}$  is the trade openness measured as the ratio of sum of exports and imports to GDP.  $FEXRT_{it}$  is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise.  $IT_{it}$  denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise.  $POPUL_{it}$  is the size of the population and  $DEBTG_{it}$  is the debt to GDP ratio.  $LDS_{it}$  is the difference between lending rate and deposit rate;  $CBASSETS_{it}$  is the ratio of central bank assets to GDP and  $FINOPEN_{it}$  is Chinn-Ito binary index for capital openness.

<b>Appendix II CBI, Institutional Quality, and Financial Development [Global Sample]</b>				
	<b>PRIV.CRT</b>		<b>STOCK.MKCAP</b>	
	(30)	(31)	(32)	(33)
PRIV.CRT <sub>t-1</sub>	0.054*** (0.001)	0.079*** (0.001)		
STOCK.MKCAP <sub>t-1</sub>			0.113*** (0.005)	0.094*** (0.003)
CBI	0.021** (0.011)	0.032** (0.012)	0.019* (0.008)	0.018* (0.07)
PolInst	0.114** (0.037)	0.115** (0.034)	0.201** (0.051)	0.205** (0.043)
CBI*PolInst		0.075** (0.23)		0.065* (0.21)
GDPR	0.012*** (0.001)	0.015*** (0.001)	-0.023* (0.014)	0.052* (0.011)
DEBTG	0.015* (0.008)	0.017 (0.021)	0.008* (0.002)	0.011 (0.075)
POPUL	0.006** (0.002)	0.007* (0.002)	0.014** (0.016)	0.017** (0.008)
TRD.OPEN	0.032** (0.014)	0.022 (0.064)	0.043** (0.015)	0.051 (0.081)
FEXRT	0.024** (0.14)	-0.033* (0.012)	-0.048* (0.028)	-0.052* (0.027)
IT	0.104*** (0.018)	-0.025 (0.031)	0.108* (0.071)	0.119 (0.143)
LGDPC	0.054** (0.019)	0.036** (0.017)	0.041** (0.018)	0.052** (0.015)
LDS	-0.023* (0.014)	-0.037** (0.018)	-0.034*** (0.002)	-0.031** (0.009)
CBASSETS	0.031*** (0.005)	0.021*** (0.003)	-0.065 (0.16)	0.054 (0.18)
FINOPEN	0.071 (0.126)	0.052** (0.16)	0.063*** (0.003)	0.072* (0.028)
Observations	3255	3255	2831	2831
No of Countries	142	142	142	142
No. of Instruments	68	68	57	57
AR (1)	0.014	0.014	0.015	0.015
AR (2)	0.103	0.115	0.121	0.122
Hansen test	0.107	0.109	0.117	0.118

**Standard Errors are in parenthesis: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$**

*PRIV.CRE<sub>it</sub>* denotes the ratio of domestic private credit to GDP. *STOCK.MKCAP<sub>it</sub>* denotes the ratio of stock market capitalisation to GDP. *PUBLICBONDS<sub>it</sub>* denotes the ratio of public bonds to GDP. *CBI<sub>it</sub>* is the central bank independence measured by the CWN index, *GDPR<sub>it</sub>* is the real GDP annual growth rate, *LGDP<sub>it</sub>* is log of real GDP per capita, *InstQual<sub>it</sub>* is the rescaled political rights score, from 0-6 where 0 denotes least respect for political rights and 6 highest respect for political rights, and *TRD.OPEN<sub>it</sub>* is the trade openness measured as the ratio of sum of exports and imports to GDP. *FEXRT<sub>it</sub>* is a dummy variable for the exchange rate regime measured as 1 for fixed exchange rate regimes and 0 otherwise. *IT<sub>it</sub>* denotes inflation targeting regime and is a dummy measured as 1 for inflation targeting regimes and 0 otherwise. *POPUL<sub>it</sub>* is the size of the population and *DEBTG<sub>it</sub>* is the debt to GDP ratio. *LDS<sub>it</sub>* is the difference between lending rate and deposit rate; *CBASSETS<sub>it</sub>* is the ratio of central bank assets to GDP and *FINOPEN<sub>it</sub>* is Chinn-Ito binary index for capital openness.

# **CHAPTER SIX**

## **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

## CHAPTER SIX

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 6.1 Introduction

This chapter presents a summary of the findings of the thesis from which conclusions are drawn. It also identifies the contributions of the thesis to knowledge. Based on the findings and conclusions, we make recommendations for policy and future academic research. Subsequently in Section 6.2 we present a summary of the findings of the study; Section 6.3 presents conclusions drawn from the findings, whilst Section 6.4 explains the contribution of the thesis to empirics, theory, methodology and practice (policy recommendations). Section 6.5 gives directions for future studies.

#### 6.2 Summary of findings

The thesis sought to examine the effect of central bank independence on inflation, fiscal policy and financial development. It further examined how institutional quality, elections and financial development affected how effective CBI is in Africa. In chapter one, we provided a background to the study, identified the research questions the study sought to answer, and the significance of the study to literature. In chapter two, we provided stylised facts on key variables in this study namely central bank independence, inflation, fiscal policy, financial development and institutional quality. The subsequent three (3) chapters, chapter three, chapter four and chapter five separately addressed the objectives respectively as follows:

- i. Examine the effectiveness of CBI on inflation performance in Africa, and the role of financial development and institutional quality in the CBI-inflation nexus; - Chapter Three
- ii. Assess the impact of CBI and elections on fiscal policy and the role institutional quality plays in these relationships in Africa - Chapter Four; and
- iii. Examine the effect of CBI on financial development in Africa and the moderating role of institution quality - Chapter Five.

In Chapter Three, the study examined the impact of central bank independence on inflation in Africa. It further examined the extent to which financial systems and the quality of political institutions impact the effectiveness of central bank independence in achieving price stability in Africa. Taking into account the effect of endogeneity of the CBI variable as well as the effect of lagged inflation on the dependent variable, we estimated a panel regression model, using Two Stage Least Squares instrumental variables procedure, on a sample of 48 African countries over the period 1970-2012.

After accounting for various control variables and introducing inflation targeting as an additional explanatory variable, the study showed that, unlike in developed countries, CBI is not sufficient in achieving lower inflation in Africa and the other developing countries. However, common to developed, other developing and African countries, is that central bank independence is more effective in lowering inflation in the presence of high levels of banking sector development and political institutional quality. The findings of the study also show that while stock market development enhances the effectiveness of CBI in developed and other developing countries, it has no significant effect on CBI effectiveness in Africa.

Between banking sector development and stock market development, the banking sector, enhances CBIs' effectiveness in reducing inflation more than the stock market does in Africa and other developing countries. In developed countries however, CBI's effectiveness in reducing inflation, is higher with stock market development than banking sector development.

The study is different from other studies on Africa because it examines the CBI inflation nexus with a wider set of data both in terms of number of countries (48 African countries) covered and time period studied (1970-2012). This addresses the issue of lack of data for studies on Africa in particular where previous panel studies have focused on a maximum of 21 countries. It also is the first study on Africa, to consider the importance of financial systems and institutional quality in enhancing the effectiveness of central bank independence in achieving price stability.

With most studies primarily examining the impact of central bank independence on price stability, few have empirically focused on one channel through which it theoretically achieves this; limiting credit to government so as to influence government's fiscal policy. In Chapter Four, the study investigated the impact of central bank independence reforms on fiscal performance of governments in Africa. Borrowing from the political economy of reforms literature, the study also sought to determine if the institutional environment within which central bank reforms take place, can affect the effectiveness of independent central banks in restricting fiscal spending behaviour of political authorities in Africa. The study then compared the results in Africa, with that of other developing and developed countries on the basis of differences in the level of institutional quality and fiscal performances in these regions. The political economy of reforms literature argues that in order to understand

the conditions under which policy reforms will be effective in, it is important for one to understand the political context within which these reforms take place.

The study finds that in Africa and other developing countries, CBI does not have a direct impact on fiscal policy measured either as net central bank claims on government or fiscal balance as a percentage of GDP or government expenditure as a percentage of GDP. Though institutional quality also has no direct impact on fiscal policy in Africa and other developing countries; it significantly improves fiscal policy in developed countries. Institutional quality however enhances the effectiveness of CBI in improving fiscal balances in Africa as well as other developing countries and developed countries.

While elections directly worsen fiscal performance in Africa, other developing and developed countries, CBI has significant effects on improving fiscal performances in election years in other developing and developed countries but not in Africa. However, institutional quality enhances CBI's effect on improving fiscal performance in election years across Africa, other developing and developed countries.

Having identified the significant impact of institutional quality in other developing countries and developed countries only, we sought to investigate if this is driven by the level of development. We find out that while institutional quality is significant in our global sample, its significance diminished on the introduction of a level of development dummy (*1* for upper middle income and high-income countries; *0* for low income and lower middle-income countries), which has a significant impact on improving fiscal policy. However, when we interact institutional quality with the level of development dummy, we find that the variable is significant and positive. This means that the impact of institutional

quality on fiscal balance is dependent on being in highly developed economies compared to less developed economies. When we split our samples based on income divisions; to further confirm this, we find that institutional quality is insignificant in low income and lower middle-income countries, but significant in high income and upper middle-income countries. It also has a direct impact in OECD countries. This means that high levels of economic development are conducive for the impact of institutional quality on fiscal policy.

Due to the strong incentives of political authorities to influence economic outcomes in election years, the results show that CBI has stronger effects on fiscal performance in election years compared to non-election years, given higher levels of institutional quality in Africa, other developing and developed countries.

Chapter five, addresses the third objective of the study, which was to examine the impact of central bank independence and political/legal institutional quality on financial development. Given that price stability is important for financial development, with the promulgation of central bank charters that grant them independence in Africa, the study sought to investigate if these developments have had an impact on the development of the banking sector and capital markets. Borrowing from the institutional theory of development and political economy of reforms, the study further examined the impact of political/legal institutional quality on the CBI-financial development nexus in Africa and compared these results to that in other developing countries and developed countries.

The study finds that, CBI has no direct impact on financial development (i.e. both banking sector and stock markets) in Africa. However, in other developing countries and developed

countries, it does. Also, in developed countries, higher levels of CBI lead to more bond market development. The study also finds that CBI promotes financial development more in countries with strong institutions. This is true for Africa, other developing countries and developed countries. Robustness checks reveal that CBI directly impacts financial development in upper middle and high-income countries and not in low and lower middle-income countries. This shows that the level of development of a country, does determine the extent to which CBI impacts financial development. The policy implications are that central bank independence laws should be implemented together with other institutional reforms that strengthen the central bank's ability to be independent of political authorities.

### **6.3 Conclusion**

The thesis consists of three (3) empirical chapters that primarily examine the impact of central bank independence on inflation, fiscal policy and financial development in Africa. It also considers the role political institutions play in enhancing the effectiveness of independent central banks in achieving price stability, improving fiscal performance and promoting the development of Africa's financial sector.

The thesis establishes that for Africa and other developing countries, central bank independence reforms do not result in the achievement of price stability and improved fiscal performance. It is clear however that in order to fully benefit from central bank independence reforms, Africa and other developing countries must focus on promoting the development of their financial markets (banking sector to be precise) as well as the quality of their political institutions. This would improve the credibility of the central bank and make its operations more efficient as an independent economic institution so as to be able

to address to a large extent the time inconsistency associated with having dependent central banks. With increasing credibility of the central bank, arising from respect for the central bank charter, the bank's announcements and projections are more trusted by the financial and real sectors of the economy. This should feed into lower inflationary expectations which will affect wage levels and business contracts. Lower levels of corruption also imply more prudent government spending and improved tax administration resulting in increased tax revenue and less pressure on central bank seigniorage, which is inflationary in nature. Having a well-developed financial system also is important to enhancing the effectiveness of monetary policy decisions of the central bank since more developed financial markets mean wider effect of monetary policy tools as well as the provision of more accurate data to the central bank to inform their monetary policy decisions. Furthermore, it is shown that, the development of financial markets, particularly, the banking sector, in Africa, will greatly enhance the effectiveness of CBI in maintaining price stability as well as reducing central government reliance on central bank credit more than the stock market will do.

It is worthy to note from the thesis also that, high level of political institutional quality can enhance the impact of CBI on fiscal performance in election years. This means that given the fiscal challenges African countries face in election years, having independent central banks whose independence is respected in terms of being allowed to keep to the legal limits on its credit to central government, can be a useful antidote to having fiscal discipline. However, having strong institutions should go with improving economic development so as to achieve the needed benefits of political institutional development on fiscal policy.

We can conclude from the findings of the study that, having independent central banks, promotes financial development more in countries with strong institutions. Strong

political/legal institutions enable market participants to take advantage of the stable economic environment created by the independent central bank. They reduce information asymmetries and therefore further contribute to the low cost of financial transactions and credit. Thus, African countries can grow and develop their banking sector and stock markets further, with independent central banks in an environment where there is the rule of law, respect for creditor and property rights and where there is general political stability. Thus, strong political institutions are very important to ensuring the success of and enhancing the effectiveness of CBI in Africa.

The results can be interpreted as evidence that the effectiveness of central bank reforms policies in Africa, will be partially reduced by a poor institutional environment. Subsequently, independent central bankers will have to increase interest rates even more to compensate the negative effects that come from the financial sector and institutional environment; otherwise, they will not achieve the desired price level.

## **6.4 Contributions to Knowledge**

The study makes a number of empirical, theoretical and methodological contributions to the disciplines of economics and finance.

### **6.4.1 Contributions to Empirics**

The study presents empirical evidence on the impact of central bank independence on inflation in Africa. While evidence on the impact of CBI on developing countries exist, that on Africa is few and not recent. Following the wide range of central bank reforms on the continent from the 1990s, the study presents evidence on the success or otherwise of these

reforms. It is the first among studies on the CBI-inflation nexus to provide evidence on the ability of financial development and institutional quality to enhance the effectiveness of central bank independence in achieving price stability in Africa, other developing and developed countries.

The study is also the first to provide insight on the relative importance of the banking sector and stock markets in enhancing the impact of CBI on inflation in Africa, other developing countries and developed countries. It provides evidence to the effect that compared to the stock market, the banking sector enhances the effectiveness of independent central banks in achieving price stability more in Africa and other developing countries. However, the stock markets enhance central bank independence effectiveness more in developed countries than the banking sector does. It also provides evidence that though institutional quality is low in Africa, it still enhances the effectiveness of CBI in achieving price stability.

On the role of political institutions in improving fiscal performance, the study is the first to identify that institutional quality's impact is conditional on the level of development of an economy. Political institutions improve fiscal performance in highly developed countries.

The study also empirically examines if central bank independence impacts fiscal policy differently in non-election and election years on the argument that political pressures peak during election years and therefore effective independent central banks will impact fiscal policy more in election years than in non-election years. The evidence indicates that in Africa and other developing countries, there is no direct significant impact of CBI on fiscal performance in either election or non-election years. Focusing on the magnitudes of the

CBI coefficients, though there appears to be a stronger effect of CBI on fiscal policy in election years than in non-election years, in Africa (model 67) and other developing countries (models 71 and 72), these are not significant. However, in developed countries, CBI has a direct impact in both election and non-election years with a stronger impact in election years than in non-election years.

The study also is first to identify differences in the impact of CBI on fiscal performance in election and non-election years conditioned on institutional quality. The findings show that the impact of CBI on fiscal performance is enhanced by higher levels of institutional quality in both non-election years and in election years in Africa, other developing countries and developed countries and also has a higher impact in election years than in non-election years.

On the direct impact of central bank independence on financial development, the study provides empirical evidence showing that the direct impact of CBI is dependent on the level of development of the country. That is, CBI is effective in highly developed countries in promoting financial development.

This study also provides fresh evidence to establish that CBI impacts financial development in Africa, other developing countries and developed countries, given strong political institutions. This contributes to the debate on the importance of central bank independence as it highlights its ability to improve the development of the banking sector, stock market and bond market through its impact on inflation, fiscal policy and proper regulation of the financial market. It also provides evidence to highlight the contribution of economic institutions, in this case central banks to the development of the financial sector.

The study further empirically shows that the quality of political institutions matters for deriving maximum benefits from economic institutional reforms such as central bank independence. Such institutions provide the necessary legal framework to enhance the respect for central bank independence laws. They also provide the stable political environment to enable central banks function effectively in achieving price stability and influencing fiscal performance. Political institutions also lower the cost of financial transactions which further boosts the impact of low inflation on increasing financial contracting and investments.

#### **6.4.2 Contributions to Theory**

The study contributes to understanding the link between financial liberalisation and financial development by focusing on central bank independence and its impact on financial development. The thesis advances the application of the political cycle theory by examining if independent central banks behave differently in election versus non-election with regards to influencing fiscal policy. Theoretically, the thesis advances knowledge in the application of the institutional theory of development by using it to stimulate the effect of political/legal institutions on the effectiveness of monetary institutions in promoting financial development.

The study provides a theoretical link between the interaction of central bank independence and institutional quality and its impact on inflation and fiscal policy. The study posits that in the context of public finances, poor institutional environments may for example breed corruption which may impact independently on both the expenditure and revenue sides of the government's budget: corruption thereby distorting the composition of expenditures by

shifting resources towards items where the possibility of inflating spending and obtaining more “commissions” is higher and also where there is greater scope for indulging in covert corruption. Secondly, as corruption reduces government's revenue, when part of tax proceeds does not accrue to government and is usurped, it alters the manner in which revenues are generated by shifting pressure on the central bank to finance government deficits through seigniorage. In such environments, independent central banks may be confronted with a bigger challenge in fighting inflation and ensuring fiscal discipline than in less corrupt (poor institutional) environments; thereby minimising the effectiveness of independent central banks in low institutional environments.

#### **6.4.3 Contributions to Methodology**

The study addresses the issue of CBI-fiscal deficit endogeneity by using an instrumental variable estimation technique with robust standard errors. Secondly, the bane of studies on CBI in Africa, has been lack of data. The study makes use of the most recent and widespread CBI data spanning 1970-2012, covering a period of 43 years and 48 African countries, to examine the impact of CBI on macroeconomic performance. Earlier studies had focused on a maximum of 20 countries and a shorter study period. This study however provides more data points to better capture the time and country effects of changes in CBI on economic performance. Thirdly, it is also the first single study in the discussions on CBI-fiscal performance nexus focused on Africa, with a focus on net central bank claims to government as percentage of GDP. This provides evidence on a critical channel through which CBI affects fiscal policy.

#### **6.4.4 Contributions to Practice (Policy Recommendations)**

There are very clear policy implications from the findings and conclusion of the thesis:

The main policy implication for independent central bankers and governments, is the necessity of understanding the distortions caused by the specific set of incentives and constraints that is present in each country. Central bankers and governments should understand the impact that these distortions have on the outcome of monetary policies, fiscal policies and subsequently, the financial system; accepting and incorporating them in policy decisions and actions. Apparently, institutional weaknesses can only be addressed by improvements in the set of incentives and constraints that shapes the behaviour of the economic agents and characterises the country's institutional environment.

For African countries to benefit from CBI, domestic political institutions in Africa should be strengthened in order to ensure respect for the rule of law, allow for accountability and freedom of expressions, press freedoms, minimise corruption and place strong constraints on governments so as not to be able to change central bank independence laws or flout central bank independence laws including guaranteeing the tenure of central bank governors and limiting central bank credit to governments.

There is a need for the respective countries to develop capital and money markets, which are still shallow in most of the African countries. For African countries and other developing countries, developing the banking sector would effectively aid the central bank in properly transmitting monetary policy changes to achieve target inflation rates.

African countries should make efforts to improve public debt management in the Treasury Departments of most governments. This would help reduce the demand for central bank credit by governments. It would also help reduce the central banks' discretion on the lender-of-last resort facility.

Central banks should enforce credit limit conditions. Some central banks will need to further tighten loose credit limits and move away from negotiated interest rates on government debt, to market or close to market interest rates.

Policies to grow the economy and equip central banks with requisite high level technology, tools and expertise should be implemented alongside central bank independence reforms and political institutional reforms to enable them work effectively towards achieving price stability.

#### **6.5. Suggested Areas for Further Research**

Notably, the Cukierman *et al.* (1992) weights are assigned apriori and arbitrarily. As a robustness check on the legal indices we used, a method of principal components could be explored to calculate legal CBI indices. The suggested method could improve on some of the inadequacies of the legal indices that we used.

Other studies can consider the use of factual CBI to explore the relationships examined in this study. In terms of factual CBI, a longer study period would generate more legal terms of office of the central bank governor. More terms of office would broaden our analysis and give more conclusive results for the factual CBI index.

Future studies can also explore the existence of fiscal dominance in individual countries and consider the impact of the financing method on the effect of CBI on economic performance. As explained by Neyapti (2003), how fiscal deficits are financed may explain lack of a systematic relationship among fiscal deficits, CBI and macroeconomic variables. Financing methods could be interacted variables with the level of the fiscal deficit variable as was done in Aisen and Hauner (2007, 2008).

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Appendix III: List of Countries

Africa (48)	Other Developing (90)		Developed (40)	OECD (35)
Algeria	Afghanistan	Malaysia	Australia	Australia
Angola	Albania	Maldives	Austria	Austria
Benin	American Samoa	Marshall Islands	Belgium	Belgium
Botswana	Argentina	Mexico	Bermuda	Canada
		Micronesia, Federated States of		
Burkina Faso	Armenia	Moldova	Canada	Chile
Burundi	Azerbaijan	Mongolia	Cyprus	Czech Republic
Cabo Verde	Bangladesh	Montenegro	Czech Republic	Denmark
Cameroon	Belarus	Myanmar	Denmark	Estonia
Central African Republic	Belize		Estonia	Finland
Chad	Bhutan		Finland	France
Congo, Democratic Republic of	Bolivia	Nauru	France	Germany
Congo, Republic of	Bosnia and Herzegovina	Nepal	Germany	Greece
Côte d'Ivoire	Brazil	Nicaragua	Greece	Hungary
Djibouti	Bulgaria	Pakistan	Hong Kong	Iceland
Egypt	Cambodia	Panama	Iceland	Ireland
	China (does <b>not</b> include Hong Kong or Taiwan)	Papua New Guinea	Ireland	Israel
Equatorial Guinea	Colombia	Paraguay	Israel	Italy
Eritrea	Comoros	Peru	Italy	Japan
Ethiopia	Costa Rica	Philippines	Japan	Korea
Gabon	Croatia	Romania	Latvia	Latvia
Gambia, The	Cuba	Russian Federation	Lithuania	Luxembourg
Ghana	Dominica	Samoa	Luxembourg	Mexico
Guinea	Dominican Republic	São Tomé and Príncipe	Macau	Netherlands
Guinea-Bissau	Ecuador	Serbia	Malta	New Zealand
Kenya				

**Appendix III: List of Countries (Continued)**

<b>Africa</b>	<b>Other Developing</b>		<b>Developed</b>	<b>OECD</b>
Lesotho	El Salvador	Solomon Islands	Netherlands	Norway
Liberia	Fiji	Sri Lanka	New Zealand	Poland
Libya	Georgia	St. Lucia	Norway	Portugal
		St. Vincent and the		
Malawi	Grenada	Grenadines	Portugal	Slovak Republic
Mali	Guatemala	Suriname	Puerto Rico	Slovenia
Mauritania	Guyana	Syrian Arab Republic	San Marino	Spain
Mauritius	Haiti	Tajikistan	Singapore	Sweden
Morocco	Honduras	Thailand	Slovakia	Switzerland
Mozambique	India	Timor-Leste	Slovenia	Turkey
Namibia	Indonesia	Tonga	South Korea	United Kingdom
Niger	Iran, Islamic Republic of	Turkey	Spain	United States
Nigeria	Iraq	Turkmenistan	Sweden	
Rwanda	Jamaica	Ukraine	Switzerland	
Senegal	Jordan	Uzbekistan	Taiwan	
Sierra Leone	Kazakhstan	Vanuatu	United Kingdom	
Somalia		Venezuela, RB	United States	
South Africa	Kiribati	Vietnam		
	Korea, Democratic			
	People's Republic of North			
Tanzania	Korea)	Yemen, Republic of		
Togo	Kosovo			
Tunisia	Kyrgyz Republic			
Uganda	Lao PDR			
Zambia	Lebanon			
Zimbabwe	Macedonia, FYR			
Madagascar				

**APPENDIX IV: Criteria List for Legal Central Bank Independence Indices of Cukierman, Webb, and Neyapti 2002**

	Weight	Codes
<b>1 Chief Executive Officer (CEO)</b>	0.2	
<b>a. Term of Office</b>		
Over eight years		1.00
Six to eight years		0.75
Five years		0.50
Four years		0.25
Under four years or at the discretion of appointer		0.00
<b>b. Who appoints CEO?</b>		
Board of central bank		1.00
A council of the central bank board, executive branch, and legislative branch		0.75
Legislature (congress, king)		0.50
Executive collectively (e.g., council of ministers)		0.25
One or two members of the executive branch (prime minister, president, or any other member)		0.00
<b>c. Dismissal</b>		
No provision for dismissal		1.00
Only for reasons not related to policy (incapacity or violation of law)		0.83
At the discretion of central bank board		0.67
At legislature's discretion		0.50
Unconditional dismissal possible by legislature		0.33
At executive's discretion		0.17
Unconditional dismissal possible by executive or not mentioned		0.00
<b>d. May CEO hold other offices in government?</b>		
No		1.00
Only with permission of the executive branch		0.50
No rule against CEO holding another office		0.00
<b>2 Policy Formulation</b>	<b>0.15</b>	
<b>a. Who formulates monetary policy?</b>		
Bank alone		1.00
Bank participates, but has little influence		0.67
Bank only advises government		0.33
Bank has no say		0.00
<b>b. Who has final word in resolution of conflict?</b>		
The bank, on issues clearly defined in the law as its objectives		1.00
Government, on policy issues not clearly defined as the bank's goals or in case of conflict within bank		0.80
A council of the central bank, executive branch, and legislative branch gives final decision		0.60
The legislature has final authority on policy issues		0.40
The executive branch on policy issues, subject to due process and possible protest by CB		0.20

	The executive branch has unconditional priority	0.00
	<b>c. Role in the government's budgetary process</b>	
	Central bank active	1.00
	Central bank has no influence	0.00
<b>3</b>	<b>Objectives</b>	<b>0.15</b>
	Price stability mentioned as the major or only objective in the charter, and in case of conflict with government CB has final authority to pursue policies aimed at achieving this goal	1.00
	Price stability is the only objective	0.80
	Price stability is only one goal, with other compatible objectives, such as a stable banking system	0.60
	Price stability is only one goal, with potentially conflicting objectives, such as a full employment	0.40
	No objectives stated in the bank charter	0.20
	Stated objectives do not include price stability	0.00
<b>4</b>	<b>Limitations on lending to the government</b>	<b>0.15</b>
	<b>a. Advances (limitation on non-securitized lending)</b>	
	No advances permitted	1.00
	Advances permitted, but with strict limits (e.g., absolute cash amounts or up to 15 percent of government revenue)	0.67
	Advances permitted, and the limits are loose (e.g., over 15 percent of government revenue)	0.33
	No legal limits on lending	0.00
	<b>b. Securitized lending</b>	<b>0.10</b>
	Not permitted	1.00
	Permitted, but with strict limits (e.g., up to 15 percent of government revenue)	0.67
	Permitted, and the limits are loose (e.g., over 15 percent of government revenue)	0.33
	No legal limits on lending	0.00
	<b>c. Terms of lending (maturity, interest, amount)</b>	<b>0.10</b>
	Controlled by the bank	1.00
	Specified by the bank charter	0.67
	Agreed between the central bank and the executive	0.33
	Decided by the executive branch alone	0.00
	<b>d. Potential borrowers from the bank</b>	<b>0.05</b>
	Only the central government	1.00
	All levels of government (state as well as central)	0.67
	Those mentioned above and public enterprises	0.33
	Public and private sector	0.00
	<b>e. Limits on central bank lending defined in:</b>	<b>0.025</b>
	Currency amounts	1.00
	Shares of central bank demand liabilities or capital	0.67
	Shares of government revenue	0.33
	Shares of government expenditures	0.00
	<b>f. Maturity of loans</b>	<b>0.025</b>

Within six months		1.00
Within one year		0.67
More than one year		0.33
No mention of maturity in the law		0.00
<b>g. Interest rates on loans must be</b>	<b>0.025</b>	
Above minimum rates		1.00
At market rates		0.75
Below maximum rates		0.50
Interest rate is not mentioned		0.25
No interest on government borrowing from the central bank		0.00
<b>h. Central bank prohibited from buying or selling government securities in the primary market</b>	<b>0.025</b>	
Yes		1.00
No		0.00

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**Notes:** The eight aggregate criteria are aggregated from the sixteen initial measures as follows:

1. Four variables concerned with the independence of the CEO are aggregated with equal weights, i.e.,  $(1a+1b+1c+1d)/4$ ;
2. The three policy formulation variables 2a, 2b, and 2c are aggregated (with weights 0.5, 0.25, and 0.25, respectively) into one variable;
3. Objectives criterion, 3.
4. Advances criterion under limits on lending;
5. Securitized lending criterion under limits on lending;
6. Terms of lending criterion under limits on lending;
7. Potential borrowers from the bank criterion under limits on lending;
8. Four criteria - 4e, 4f, 4g, and 4h-on limits on lending; are aggregated to one using equal weights, namely  $(4e+4f+4g+4h)/4$ .

From these eight aggregated variables two indices are computed. LVAU is the unweighted average of the eight aggregated variables, whereas LVAW is the weighted average where the weights are given in the column labeled "Weight."

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