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The impact of Central Bank Independence and Transparency on Inflation in Sub-Saharan Africa

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Abstract:
This study seeks to examine the impact of central bank independence and transparency on inflation in sub-Saharan Africa (SSA). The role of central banks is to maintain price stability in the economy. Many scholars have independent and transparent writings due to the image of the Central Banks. On the other hand, other scholars have made clear the negative effects of high inflation as the main macroeconomic indicator used in this paper. In practice, some current studies have concluded that central bank independence and transparency lead to macroeconomic performance (low inflation). Empirical use of regression and analysis is performed for 15 sub-Saharan African countries with data for the period 1998–14 using panel fixed effects model. This paper contributes to research by exploring more than central bank independence as used by many scholars, and adds to literature about Central Bank Independence in Sub Saharan Africa. The results of this research study show that central bank independence and transparency (participant term; CBI_Transp) are statistically significant at 95%, so central bank independence and transparency go hand in hand; reducing inflation in sub-Saharan Africa. From the regression output, we conclude that the interactive variable and the single variables have positive coefficients, which is contrary to the main neoclassical theory used in this paper.

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1. Introduction

Central Bank Independence and Transparency Monetary Policymakers Central Bankers and many economists around the world see inflation as defined as the main source of improved macroeconomic performance in most economies. It should be noted that if the monetary policy-autonomy of the banks and some effective autonomy from the present government is possible, the independence of the Central Bank will reduce the inflation rate (Robert, 1999) while maintaining price stability between the central banks' central objective. The price stability of the economy is an important public policy objective, the independence of the Central Bank is recognized by the current literature as a determinant of achieving a lower inflation rate, so the independence of the Central Bank is the direct freedom from political or governmental influence of the CBI and the direct monetary policy (Mawuko et el 2007).

In addition, there is still the view that the major banks in the democratic economy have the potential for greater financial bias than other economies. The transfer of monetary policy to these central banks seems to be a viable option for the economy and henceforth greater central bank independence has become common practice in all countries. Nothing has been a good ingredient for freedom writers who have not been able to conclude the effects of this economic downturn especially in the developed countries where democracy is gaining ground and the government is trying to use monetary policies to fund their government and administration (Oloni and Adewara 2013). Unfortunately this was not the case in many sub-Saharan African countries; sub-Saharan African countries are characterized by unstable prices and low economic activity which results into poor macroeconomic performance. The central banking institutions should regulate prices to ensure a healthy economy and therefore this provides a reason for this study to critically analyze macroeconomic performance, especially Sub-Saharan inflation, to assess the impact of central bank autonomy and macroeconomic performance in Sub-Saharan Africa and also looking at the challenges facing maintaining high economic performance. This paper uses the neoclassical model of central bank independence and inflation among other models. The Neoclassical model of central bank freedom and inflation means given the nominal and real hardships in the economy, the economic monetary policy maker is encourages Unexpected inflation thus lowered real-world wages and thus encouraging hiring more people. Robert, 1999 says institutionalization in a large private bank with a lot of freedom from political leaders provides such credibility in financial authorities. Therefore, central bank independence reduces inflation without ad-effects results on average which neoclassical argument equals central bank independence from political executives with fiscal policy and conservatism. Therefore concludes that central bank independence reduces inflation without real results on average. The findings of the study using the panel fixed effect model show that central bank autonomy and transparency do not have a positive impact on inflation in 15 sub-Saharan countries under this study. it will be a matter for many lesser or more developed countries.

2. Supported Theoretical Models

2.1 Latest Developments

In general, recent developments remind us that two different central bank systems existed in the past namely: The first model sees the country's largest bank as the operational arm of public finance policy with its functions being determined by technocratic comparative advantage. This model has been adapted from major banks to become a pillar of the payment system, as Francis Baring realized in the late 18th century. As the captain of the bank's community group, they economically provide the club's assets (Tucker, 2020). The second model looks at the central banks as the private sector that provides certain services and officially insulated against daily politics. They provide public goods (such as price stability) and maintain common assets (such as financial stability) that are not enjoyed by all because some enjoy exploitative. These patterns of existence are so different that the transition from one to another is often full. He says that while in the emerging market economy, even after formal independence, big banks are sometimes expected (and sometimes want) to continue to provide more services to their communities while the transition from a sub-agency to an independent trustee in a developed economy has become more common; sometimes it calls for well-being costs. However, the extent of boundaries is also still not well defined. Therefore, the second model as outlined above is very important in this paper in the sense that central banks must be independent of groups such as government if they are to make sound decisions and draw policies aimed at stabilizing inflation in the country.

2.2 Neo-classical Model of Central Bank Independence and Inflation

It says that given the nominal and real rigidities in the economy, the monetary-policy authority has an incentive to create an amazing "surprise" inflation, thus lowering real wages (prices), thereby promoting employment (output). Economic hardship means that the economy is not doing well. Under such circumstances where the economy does not perform, the monetary policy officer in the case is expected to intervene and “inflate” the inflation rate and lower employment rates thus creating more economic activity due to the hiring of more workers. On the other hand, inflation can be mitigated according to the current economic situation in the country. This clearly shows that only a central bank will play such roles without an injection from any interest group.

Private companies, however, are aware of this incentive and incorporate their effects on inflation into their salaries and pricing. Similarly, in the expected estimates, financial managers are not able to surprise private companies, so real wages (prices) and therefore (employment) activity are not affected by the average while inflation is high. If, on the contrary, the monetary policy officer can be more committed to preventing such inflation, the actors of private companies can set a minimum wage (prices) without fear. Loyalty commitments therefore reduce inflation without affecting actual pay (amounts), and thus do not affect employment (disbursements), on average (Robert, 1999). The establishment of conservative central bank with substantial freedom from political leaders is held to provide such credibility for the monetary authority. Therefore, central bank independence reduces inflation without ad verse actual results on average. Thus, the neoclassical debate equates the central bank's independence with political authority and monetary policy reliability and conservatism and therefore concludes that central bank autonomy reduces inflation without real results on average. On the other hand, if the central banks generally fight inflation rather than the government, and the central bank's independence is defined as the level of the bank's autonomy policy-making in the current government, and if some independence is actually possible, then banking independence reduces inflation.

Therefore, the model states that monetary policy authorities and central banks take responsibility for determining the inflation affected by the independence of the central banks, transparency among other things.

2.3 Theory of Central Bank Independence

Hayo and Hefeker (2001) claim that this view is derived from the work of Barro and Gordon (1983), Oloni and Adewara, (2013). It was built on the previous work of Kydland and Prescott (1977) that introduced the concept of time-inconsistent behavior.
They argue that the theory started with the idea that being a social welfare maximizer who is fully responsible for inflation and whose objectives are defined by employment (or output) and inflation. They explain that the deviation of inflation and employment from their target prices (here considered zero) entails quadratic losses. Nominal wage contracts are retained for a period of time, which means that inflation reduces real wages, creates more wage and employment, and thus creates a reason to surprise wage earners by allowing inflation to rise above expectations, determining wage demands. Wage goal targets anticipate this incentive and incorporate the expected rate of inflation into their wage demands.

3. Literature Central Bank Independence and Transparency and Inflation

3.1 Central Bank Independence (CBI)

The independence of the central bank is related to the relationship between the government and the central banks (CBs) as the government deals with the judiciary. According to Mboweni (2011) the traditional argument in favor of a central bank is strong that the ability to spend money in some way is separated from the ability to make money. Many episodes in the world's economic history prove that government can misuse its power to make money. He gave the analogy of what happened in the third century AD in the Roman Empire, when the government collected silver coins as the people melted and included lower coins, donating far more coins to Caesar's priorities than the first tax. With so much money running for so few goods, the result was hyperinflation (Oloni and Adewara, 2013). Therefore, the three main areas where government influence should be eliminated or completely reduced are; Personnel independence: This refers to the level of government impact on the appointment of employees to the bank. It should be noted that it may not be entirely possible for the government to assist in this but it is not limited to areas such as, representing the government on the board of the central bank, the government that influences the process of appointment and voice the terms of office and dismissal of the governing body;

Financial independence: This refers to the level of power and accessibility granted to government to manage central bank loans. For example, if the government is given direct access, it means that the central bank is not financially independent and indirect access such as the ability to have a central bank as a government manager or to have the power to manage public debt management means independence of the central bank; Policy independence: This is defined as a regulatory body approved by the central bank to formulate and implement a monetary policy that covers the extent to which the Central Bank should use its understanding and the existence or absence of monetary policy as its primary objective.

Therefore, the central banks are said to be independent if they have the power to use effective policy instruments and are empowered by state law to choose how they will achieve their objectives. On the other hand, they are said to be independent if they have to seek government approval before using any tool to achieve their goals.

3.2 Central Bank Transparency

Monetary policy transparency can be defined as the level at which central banks disclose information related to the policy-making process (Eijffinger, and Geraats, (2004), Oloni and

Adewara, 2013. The central banks must be accountable to the public for their actions. Central banks must always show that they are following their authorized policies, which require transparency in the central bank's economic vision and policy strategy. They say that transparency was needed for the experience of banking problems in Mexico in 1994 and South East Asia In 1997, legal entities, including the IMF and the Basel Committee on Banking Administration, were therefore exposed to the banking industry and thus advocated for increased transparency of the banking industry. Their suspicion is that the crises emanated from general lack of transparency in the affairs of both lender and borrowers and policies responsible for the depth of the crises which would not have been undertaken, had there been transparency and policies that address the depth of problems that would not have been created i.e. if they had been transparent. Also, monetary policy has become more knowledgeable about the increase in inflation targeting (IT) in addition to simple policy anchors such as a fixed exchange rate or combined monetary policy. Thus both the supply and demand for transparency in the central bank seems to have increased (Oloni and Adewara, 2013). Kingsley (2011) also defines transparency as the existence of complementary data, including clarity on central banking processes, their intentions, their ideas, policy strategies, and their shortcomings. While Helder and José (2008) described the central bank's transparency as the existence of coherent information between monetary policy makers and other economic actors. Therefore, experts see that the disclosure of policy by the central bank creates the visibility of institutions. Disclosures include, long-term monetary policy objective, inflation report describing the economic banking model, estimates of the potential impact of monetary policy changes and revisions. Thus, the central bank's forecast for policy flexibility, is an analysis of what monetary policy objectives have been developed in the past and its effect.

Nhavira and Ocran (2013) studied the impact of monetary policy on inflation and output, claiming that disclosure was initiated by New Zealand as a result of the Reserve Bank of New Zealand's continued failure to deliver or achieve the agreed target for lower inflation. This failure is due to a time constraint or policy reversal. Most of the major central banks in sub-Saharan Africa have suffered from the crisis over time. Encouraged by New Zealand's success in the 1990's, major banks in Sub-Saharan Africa (SSA) and others around the world began to change their banking charts. This widespread change in monetary policy, which took place in the early 90s, raises some questions about the benefits of transparent monetary policy. They also claim that Morris and Shin (2002) were the first to show that transparency has an effect on economic outcomes as a result of creating inflation expectations in so-called consolidation games i.e. the central bank coordinates economic agent expectations through provision of information on how they (economic agents are performing) as well as providing information on its (central bank) policy commitments. In addition, provide feedback on its effectiveness. Cruijsen (2008) reviewed theoretical texts and made a strong analysis of the same paper and concluded that it appears to arrive at an ambiguous conclusion. However, recent publications have argued for more openness (transparency). Thus, the thread that applies to many theoretical books is that the integration of the expectations of both policy makers and economic agencies is the key to successful implementation, i.e., effective monetary policy. The regulations imposed by policymakers are designed to increase the reputation and credibility of the central bank if it complies with those rules. Transparency is the way a central bank responds to economic workers by following a "contract". Obviously no one will accept a new monetary policy law unless the results are beneficial to policy makers and economic agents. The policy maker needs sustainable economic growth as it makes sense with a view to national security and fiscal policy. Economists, on the other hand, are not happy to see their hard-earned money hurt by rising prices. These requirements depend on price stability. Geraats (2002) states that one can distinguish five confidential matters related to disclosure of information about the categories of financial policy making such as: Political transparency: Political transparency is enhanced by institutional arrangements, such as central bank autonomy and central bank contracts, which ensures that there is no undue influence or political pressure to deviate from the stated objectives; Economic transparency: this focuses on the economic data used by monetary policy and includes economic data used by the central bank. The types of policies it used to create economic forecasts or to evaluate the impact of its decisions and internal forecasts on which the central bank relied; Process transparency: this refers to the way in which monetary policy decisions are made. It includes a clear fiscal policy or strategy that defines the framework for fiscal policy, as well as the account of the negotiations of the policy itself and how the policy decisions were reached, obtained through the issuance of minutes and voting records; Policy transparency: this focuses on how a quick announcement of policy decisions is made. Includes a description of the decision and approval of the policy or signal of future policy action which means that the central bank may be willing to change the policy instrument, but decides to wait until another guarantee authorizes the full action; Operational transparency: this includes the implementation of central bank policy actions. It involves the issue of regulatory errors in achieving the operational or targeted instrument set in the policy decision, and the (unexpected) economic disruption affecting the transfer of monetary policy from item to object.

The need for transparency has increased because of central banks becoming more independent, both accountable and legitimate, and the expectations of financial market participants; its thirst for knowledge has expanded as financial markets have expanded and deepened. Therefore, in the case of financial markets, central banks have also tried to increase the effectiveness of monetary policy through communication and transparency to meet expectations in future policy decisions and thus its thirst for knowledge has grown as the financial markets have expanded and deepened thus influencing rates across the term structure (not just short term end, over which they have some direct control). Monetary policy has more information-intensive with the increasing popularity of inflation targeting over simpler policy anchors such as a fixed exchange rate or money aggregate rule. Hence both the supply of and demand for central bank transparency seem to have increased (Crowe and Meade, 2008). In addition, the openness of central bank can have several implications for macroeconomic variables but these are often model-specific and general studies are difficult to scratch. They argue that transparency is often helpful when asymmetries of data itself are the cause of economic inefficiency, but can be more costly in a second place where the central bank can eliminate some of its inefficiencies through its information benefits. Finally, however, the question of whether central bank disclosure brings tangible benefits is speculative, and their findings have found that greater transparency in the issuance of forecasts is associated with the private sector using more public than confidential information (Crowe and Meade, 2008).

3.3 Relationship between Central Bank Independence and Transparency and Inflation

Central bank autonomy and transparency have become the mainstay of monetary policy. Independence is appropriate as a way of allowing the appointment of central banks that are more dependent on the central voter to eliminate inflation bias which leads to a failure of previous commitments. Independently, there are demands for adequate response and thus more transparency. However, the behavior of large central banks is very different from disclosure of information (Oloni and Adewara, 2013). Independence in the Central Bank has become increasingly important as the bank has been given the legal authority to make money. Most analysts agree that greater transparency in monetary policy is desirable because it allows central banks sector to make predictions and decisions that improve Pareto. But not everyone agrees. Some argue that disclosure of information reduces the likelihood that large banks will use their confidential information. For example, the asymmetries of information between central banks and the public about the weight of each objective in the work of the central bank's losses could affect union behavior, promote wage balance and reduce both he level and variance of inflation. It can be shown that transparency is incomplete due to the transaction between the impact on the reputation of the central bank and its ability to control inflation on the other hand, and the desire of the private sector to see exit, employment and prices on the other hand. For others, certain limitations in visibility are important for operational reasons to strengthen the credibility of the central bank (Garriga, 2016).

In examining the relationship between the autonomy of the central bank and that the rate or variance of economic growth as shown in Figures 1 and 2 below, Alesine and Summers (1993) argue that nothing arises. Statistically, we see that Switzerland, which has avery greater central bank independence, is showing slower and more volatile growth than the average country in the sample while Germany and the Netherlands also have major independent banks operating economically. On the other hand, countries with major central banks such as Spain and New Zealand have volatile economic growth and France with a central bank that is heavily dependent on it has achieved stable growth.

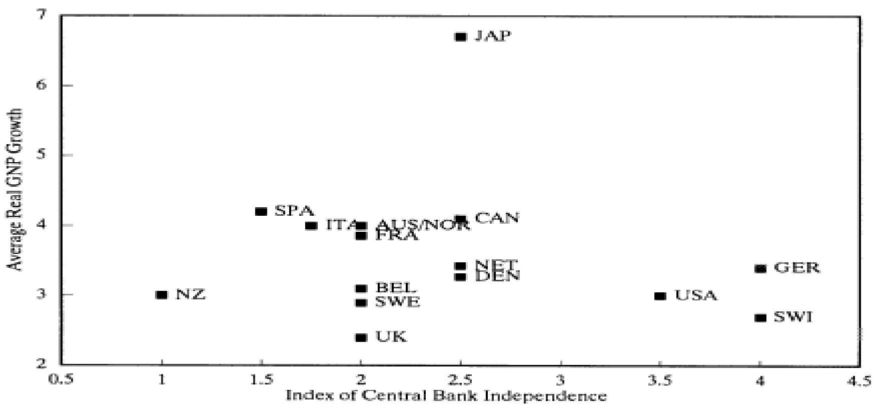

Figure 1: Average Real GNP Growth

Source: *(Alesina Alberto and Summer Lawrence (1993), Central Bank Independence and Macroeconomic Performance: Some comparative Evidence, Journal of Money, Credit and Banking, Vol.25, No.2, pp.151-162)*

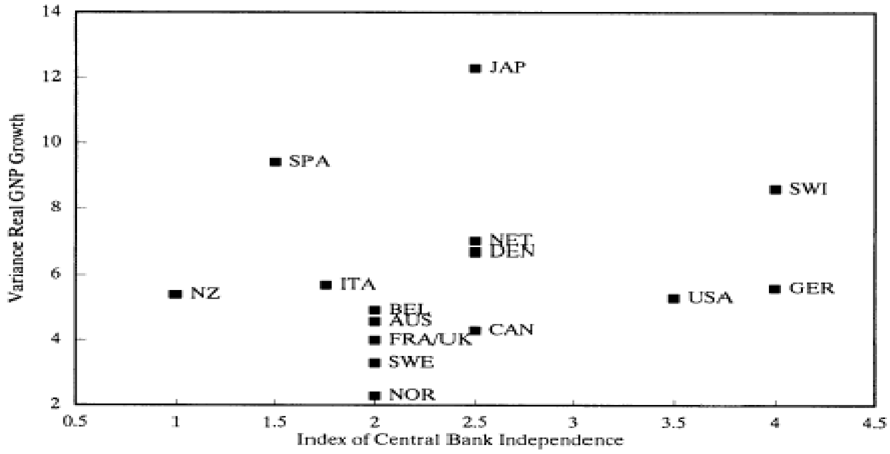

Figure 2: Variance Real GNP Growth
Source: *(Alesina Alberto and Summer Lawrence (1993), Central Bank Independence and Macroeconomic Performance: Some comparative Evidence, Journal of Money, Credit and Banking, Vol.25, No.2, pp.151-162).*

They also say that high inflation has a detrimental effect on the economy by creating disruption, promoting employment, or increasing risk premium but one could expect central bank independence to improve economic performance. They also say that inflation in the U.S. given the Federal Reserve's elimination of inflation after it has been allowed to rise sharply; one can expect that the anti-inflation policy will be associated with less stable economic performance. Therefore, the monetary policy associated with central bank liberalization reduces inflation and it's variability but does not have significant gains or costs in relation to real macroeconomic performance. On the contrary, they argue that the level of independence of the central bank can be a endogenous variable in the sense that the experience of the history of hyperinflation in Germany may raise the German public's opposition to inflation and its ability to have an independent central bank committed to price stability. This is shown in figure 3 below.

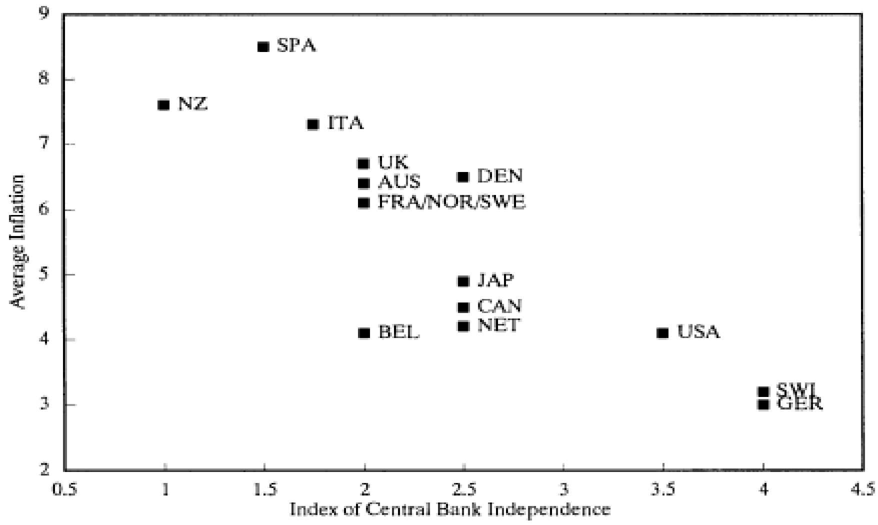

Figure 3: Average Inflation
Source: *Alberto and Lawrence (1993), Central Bank Independence and Macroeconomic Performance: Some comparative Evidence, Journal of Money, Credit and Banking, Vol.25, No.2, pp.151-162.*

The National Bank of Romania (NBR) had a high degree of independence in 2012. The results of a study by Vasile and Tiberiu (2012) showed that NBR has goal and instrument freedom. The independence of the NBR played a key role in the significant dis-inflation process that led to a decline in headline inflation. Abel et el (2007) describes the independence and transparency of the central bank in terms of financial development and institutional quality. They say there is a wide gap between developed and developing (African) countries in terms of financial development and institutional quality. There have been significant efforts to develop banking, stock and bond markets, to improve democracy, good governance, institutional quality and the rule of law in Africa over the past two decades. However, financial development in Africa and the developing world, measured at the rate of private credit in GDP from 1970 to 2016, is low compared to developed countries. They also point out that the developed countries have higher levels of institutional quality, measured by rescaled political rights score (ranging from 0 to get the lowest ratings and 6 to get the highest rating) from Freedom House from 1970 to 2016. . This means that developed countries have a higher level of autonomy and transparency compared to developing countries including Sub-Saharan Africa.

From Figure 4 below, Nergiz and Eichengreen (2014), demonstrate transparency on the level of economic development and it is not surprising that major banks in developed countries are more transparent than major emerging market banks (defined as middle income with significant connections to global financial markets), which are also much more obvious than major central banks in developing countries. We are seeing an upward trend over time in all three sectors of the economy until 2006. In the case of emerging markets, this compares Crowe with Meade 2008, which did not find an increase between 1998 and 2006. It is during this time with a small economic group that our data shows a significant increase in the level of transparency. Surprisingly, while transparency continues to rise in both developed and developing countries, the same emerging markets that made great strides in 2006 seem to offer ground up after that. This reflects very low prices in many emerging markets. Brazil and China were in 2007 and Brazil, Colombia and Poland were in 2008.

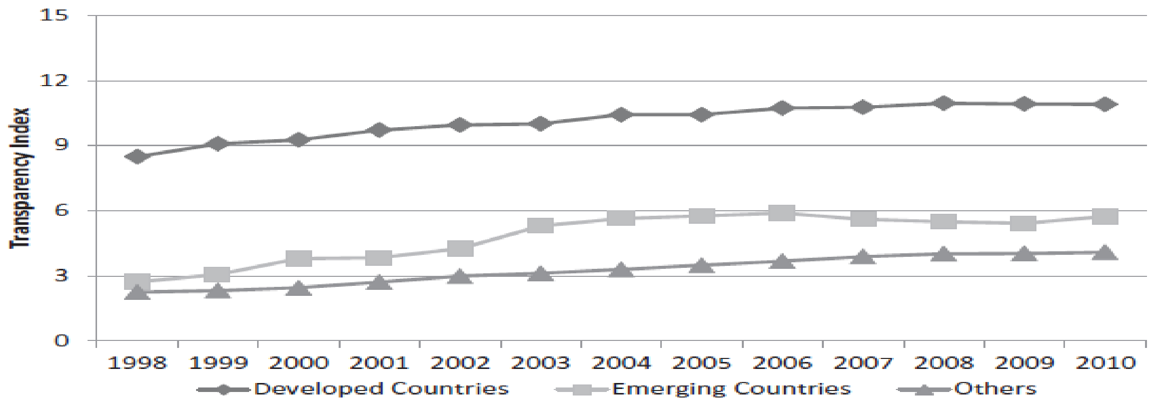

Figure 4: Trends in Transparency by Level of Economic Development, Weighted

Source: Nergiz *and Eichengreen (2014), Central Bank Transparency and Independence: Updates and New Measures, International Journal of Central Banking, Vol 1(4)).*

3.5 Central Banking Before and During COVID 19 (2018/2019)

Taking a step back in 2018/19, Tucker P (2020) states that politicians were attacking banking monetary policy and banking regulation around the world: from the US, through Italy and

Turkey, to India. He points out that the powerful actors of private companies wanted the big banks to buy money from them whenever the next economy recession came along. And the technicians themselves were receiving calls from the think tank to prevent access to credit to deal with climate change, inequality, productivity growth and other oppressive social problems, even if some were drawn into political intervention and thus abandoned their purpose. He explains that globally, the left-wing politician was calling for "People's Quantitative Easing" and free activists seeking salvation on cryptocurrencies released privately. The conspiracy thus dominated the view of the financial authorities as dealing with the enemies of the people. Thus, it was clear, even before COVID-19, that something was happening in a once-in-a-lifetime settled central banking world, with the game becoming a political and constitutional nightmare. The division of COVID-19 restored the central banking bank to the type of role it played when, from the 1930s to the 1980s, it was just a financial service provider to ministries. For example, in some jurisdictions (especially in the US and euros), the central bank would take on the role of governments that could not take immediate and decisive action, hence acting as the fiscal authority. While in others (perhaps the UK), the central bank will support the ruling government, perhaps without a framework that guarantees a way out, and risk releasing the ruling government from the problems of the elected assembly (Tucker, 2020).

4. Data and Research Methods

This research uses Stata application to run a panel fixed effect model. A Hausman test is conducted to choose which type of panel model to be used. Fixed effect model is used because of the large country data used over a long period that is 18 years, this implies that we cannot rule out differences between countries and we cannot also rule out that regressors' correlation with the error term hence used fixed effect model to fix all such circumstances. The paper uses purposeful sampling to choose the number of countries in Sub-Saharan Africa that are employed. This is since there are limited researches conducted about this topic in Sub-Saharan Africa hence limited data. Most of the countries do not have recent data and most of them have missing data for variables especially Central Bank Independence and transparency. Hence this paper uses 15 countries of the 44 Sub-Saharan countries depending on the data availability that was obtained. Primary data was collected from World Bank development indicators database, Central Bank websites, Trading economics websites. Depending on the type of variables like debt to GDP, financial depth and Trade openness, the researcher mathematically computes them after collection of related variables to aid in computation using macroeconomic models and theories of such variables. In addition, Oloni and Adewara (2013) use a panel data approach to evaluate the effects of the central bank transparency and independence respectively on the macroeconomic variables in their study.
The model used is specified as:

$$Y_t = \alpha_t + \beta_t X_t + \varepsilon_t$$

With; Y_t as the selected macroeconomic variables (Inflation as in this case)
Xt is Central bank Independent and transparency.

- ❖ The independent variables are measured as the indices of Transparency and independence. However other variables as controls are also examined which include;
  - Financial depth, Trade openness, GDP per Capita, Unemployment and Debt to GDP.

5. Empirical Analysis

A panel data regression using fixed effects is conducted consisting countries from Sub-Saharan Africa for a period of 18 years from 1998 to 2015 for all the 7 variables as from the literature review pertaining Sub-Saharan Africa. For the list and category of countries used see appendix A.This research thus employs the model below,

Inflation ($\prod_{I,t}$) = β_0 + β_1 $CBI_{i,t}$ + β_2 Transparency+ β_3 $Tradeopenness_{i,t}$ + β_4 $Financialdepth_{i,t}$ + β_5 $GDPPercapita_{i,t}$ + β_6 $Unemployement_{i,t}$ + β_7 $gdp_{i,t}$ + DebttoGDP $_{i,t}$ + μ

In addition, Nhavira and Ocran, (2012) among other scholars empirically set out to discover those factors that lead Sub-Saharan African economies to adopt transparency using a sample of 14 countries. They also found that current account, real output, financial depth and trade openness are the determinants of transparency in Sub-Saharan African economies.
To cater for the Interaction term (CBI*Transparency)= CBI_Trans, the model is adjusted and statistically insignificant variables dropped where accordingly. When including the Interaction term, the single factors Central Bank Independence and Transparency in the above model were dropped to avoid multi-collinearity (see stata outreg output below).

Table 1. Regression Results

VARIABLES	(1) Inflation	(2) Inflation	(3) Inflation	(4) Inflation
CBI	77.51*		65.04	
	(46.00)		(43.38)	
Transparency	7.367***		7.365***	
	(1.422)		(1.421)	
TradeOpeness	24.85***	30.07***	25.15***	31.01***
	(6.817)	(6.503)	(6.771)	(6.482)
lgdppercapita	-31.41***	-31.36***	-30.48***	-31.12***
	(4.121)	(3.881)	(4.015)	(3.885)
lnfinancialdepth	-10.64***	-10.28***	-10.23***	-9.902***
	(2.462)	(2.420)	(2.446)	(2.410)
Unemployement	25.30	29.69		
	(21.37)	(20.99)		
gdp	7.03e-11***	7.61e-11***	6.67e-11**	7.42e-11***
	(0)	(0)	(0)	(0)
DEBTtoGDP	-1.427			
	(1.610)			
CBI_Transp		15.47***		15.47***
		(2.515)		(2.520)
Constant	54.92	72.61	133.0***	164.3***
	(72.26)	(70.28)	(29.43)	(27.26)
Observations	270	270	270	270
R-squared	0.432	0.446	0.427	0.441
Number of ID	15	15	15	15

5.1 Robustness Check

Hausman test has been conducted to choose the right model to employ between random effect and fixed effect model. The results show that fixed effect model is the efficient model to use and has thus been used in this research. Many control variables have been included in this research to avoid bias. They have been tested and significant ones picked out. Most scholars have only hinged on two variables that is Central Bank Independency and Transparency however this research includes other five variables i.e trade openness, financial Depth, GDP per Capita, unemployment and Debt to GDP. To cater for autocorrelation, serial correlation, since various entities have been used in this paper, VCE will be employed on all the models. Due to multiple entities and variables, the study employs robust (r) check to control for heteroscedasticity. A fixed effect model is used to cater for endogeneity.

5.2 Discussion of Findings

Results from the inflation model show that central bank independence and transparency (CBI_Trans) is statistically significant at 90%, 95% and 99% confidence level. Separately we observe that transparency is more important than CBI since it is significant at 90%, 95% and 99% and CBI only at 90%. This means that central bank independency and transparency as a joint variable contributes significantly to inflation. Transparency being more significant than central bank independence implies that Central Banks in Sub Saharan Africa are more likely to be accountable (more transparent) than implement their rules and objectives (less independent). We thus fail to reject the null hypothesis that Central bank independence and transparency have a positive effect on inflation. From the observation that the interaction term of CBI and Transparency is positive under column 2 and 3 of table 1, we thus reject the alternative hypothesis. This implies that improvement of Central Bank Independence and Transparency in the Sub-Saharan countries under this study does not necessarily result into a reduction in inflation. This is due to the positive signs of the coefficients. This variation of results from the main theory is also explained by other scholars as below; Garriga and Rodrigruez, 2020 say that while agreeing on a policy that promotes central bank independence as an effective tool to control inflation, evidence is still limited, especially in developing countries. The CBI is most common in countries with a history of high inflation and in many democratic countries. Large central banks are often clearly visible, consistent with the quality of the institution. The greater independence of central banks is also associated with lower inflation rates (Behrooz, 2019).

In addition, while some countries with extremely independent central banks show high levels of inflation and employment, at present some countries with large politically dependent banks collect low levels of inflation and employment. This means that in developing countries the independence of the big banks is not an important factor in determining inflation and the rate of unemployment rates (Dumiter and Coroiu, 2011). Crowe and Meade (2008) also argue that while the CBI theoretical case appears to have been accepted, artistic research has found surprisingly limited evidence of independence that brings its promised anti-inflation benefits. This is because the first CBI studies focused on a small set of industrialized countries that brought this result. However, recent studies involving a broad set of developing countries and industries have yielded more results. They also claim that another explanation for the weak relationship between the CBI and inflation is that the de jure rate of independence provided by the widely used CBI indices fails to gain independence, especially in developing countries where institutions and the rule of law may be weak and this is a matter for countries in Sub-Saharan Africa.

Also, some experts say the concept and degree of independence of the central bank is a problem with regard to the authority of the central bank by looking at how state politicians are building their capacity to prevent inflation. The effective use of the central bank's authority to prevent inflation requires special relationships with potential sponsors of an expansion policy that is not well known as independence. The respect that other government officials and political leaders have for the central banking policy positions can be found in close social and / or political relations outside of central banks. Thus, on the other hand, the central bank may be independent but still unable to implement effective anti-inflation policies because it has no control over the formulation and implementation of policy by other government agencies (Maxfield, 2019). A lot of variables have been tested other than central bank freedom and transparency, and we see from the retrospective outcome that the volatility of unemployment and debt in GDP is not statistically significant at 90%, 95% and 99%. This means that they do not recognize the SSA model as used in this model. Thus they are removed from the model and are not subject to any deductions. In addition, the negative coefficient on GDP debt is unreasonable because an increase in national debt may not reduce inflation.

On the other hand, GDP and Trade Openness are highly significant in this model at the three levels of significance however GDP's positive coefficient does not make an economic sense. An increase in GDP is expected to reduce inflation rather than the results that indicate that inflation increases. The coefficient on Trade openness is positive and this reflects an increase in inflation as a result of increased level of trade openness; it may be as a result of imported inflation among other factors. However, this does not intend to restrain free movement of goods and services across countries. Lastly financial depth and GDP per capita are highly significant i.e. at 90%, 95% and 99% and hence they highly contribute to our model. In this study, they are the key variables explaining how inflation can be stabilized since they have negative coefficients that when they improve, then inflation reduces. Hence holding CBI and Transparency constant, policy makers should greatly take these two aspects into consideration in order to reduce inflation rates that is seek policies addressing how to increase GDP per capital. Policies regarding promoting a sound financial system should be considered to increase the number of people banked for easy control, regulation and supervision of finances coupled with deepening the financial system across different areas like stock markets, financial markets, insurance etc. to strengthen the financial sector.

6. Conclusion

In conclusion central bank independence and transparency (joint variable) often have a significant impact on inflation but the coefficient is not as expected because of other factors described in this paper. Sub-Saharan Central banks have been found to be more transparent than independent hence more of observers than actors. It should be noted that even among other developed economies, central bank independence and transparency have a negative impact if they have had high rate of inflation before or even some with high levels of independence still have high inflation rates. From the other variables examined in this paper, financial depth and GDP per capita are more important and greatly reduce inflation and therefore should be considered by the 15 SSA countries in this study with the aim of maintaining inflation. Sub-Saharan central banks especially those under auspicies of the study, should not only focus on transparency but also devise means to apply the independent central banking code, especially developed by International Financial organizations in order to operate and achieve central bank autonomy. This is because many of the results clearly show transparency to be more significant that central bank independence in most models employed yet we evidence of a positive impact on macroeconomic variables from the interaction term (CBI_Transp). Sub Saharan central banks should also review and update their policies regarding how to maintain sound central bank independence and transparency.

This should be geared towards separating political and social interests from central bank role of price stability. Checks for implementation of central bank independence measures should be conducted often to ensure that no loop holes are created from time to time, this will in a long run keep all staff focused towards maintaining central bank independence which will thus result into stability of prices like inflation, BoP, GDP and others as seen earlier in this paper.

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