



**TITLE:**

**The Impact of Institutional Quality on the Effectiveness of Fiscal Policy in  
Stimulating Economic Growth: Evidence from sub-Saharan Africa**

By

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## ABSTRACT

Over the last few decades since the independence of most African countries, which coincided with that of Asia, the economic growth between the two continents has not been the same. As an example, in the year 1965, exports and incomes per capita were much higher in Ghana compared to Korea and it was anticipated that this trend would continue into the future. But these projections were shown to be way off the mark as Korea's exports per capita overtook Ghana's in 1972, and its income level surpassed Ghana's four years later. Between 1965 and 1995 Korea's exports increased by 400 times in current dollars. Meanwhile, Ghana's increased only by 4 times, and real earnings per capita fell to a fraction of their earlier value (World Bank, 2000). This raises questions regarding the tools available for use in the pursuit of economic growth. This study then attempts to examine the role of institutional quality in moderating the impacts of fiscal policy on economic growth in sub-Saharan African economies.

Objectives of the study firstly included the investigation of the effect of fiscal policy on economic growth, it then explored the effect of institutional quality on economic growth which was then followed by the analysis of whether the impact of fiscal policy on economic growth is dependent on institutional quality.

This dissertation employs the Generalised Method of Moments to analyse the effect of fiscal policy on economic growth given institutional quality for sub-Saharan African countries for the period from 1996 to 2018. The findings show that the conduct of fiscal policy under improved institutional quality positively and significantly improve sub-Saharan African countries output. SSA countries should strengthen independent institutional bodies that prosecute economic crimes through employing participatory and transparent decision-making processes. Citizens should have freedom of association, expression and a free media. Also, African countries should support African agendas that are aligning with global development agenda. Sub-Saharan African countries should strengthen institutions that widen democratic space, civil liberty and the participation of citizen in the development agenda of a country.

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# CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY

## 1 INTRODUCTION

Economic growth is conventionally defined as the yearly rate of increment in the total income or production in an economy, and it is viewed as a significant objective of economic policy. This is taken as an indication to signify that when there is an increase in the Gross Domestic Product (GPD) in a country over time, economic growth is occurring (Jhingan, 2004). Mohr, Van Zyl and Pretorius (2018) define GDP as the total value of all final goods and services produced within the boundaries of a country in a particular period (usually one year). According to Poliduts and Kapkaev (2015), economic growth is characterized by direction, social necessity, and also by government regulation.

Economic literature argues that the rate of economic growth of a country is essentially explained by resource endowment and technology. It states that the determinants of economic growth and development can be traced back to the neoclassical model in the 1950s (Solow, 1956; Swan, 1956). Most of these models explaining economic growth focus primarily on the basic factors of production like capital stock, labour force and level of technology needed to produce aggregate level of output to determine the level of growth. In spite of different models explaining how different inputs can be combined to produce output, further analysis show that growth models hitherto fail to answer truly causal questions. Even if capital accumulation or technological innovation accounts for significant differences in long-run levels of per capita output across countries, the question remains why certain societies succeeded while others failed to take the actions necessary to accomplish the same result? Another question stems from this one, why do these residual differences still persist over time if these identified factors can fully explain them?

Recent research in fiscal policy and institutional economics has arisen as an attempt to provide a framework investigating those residual differences. Fiscal policy has been proved to be critical in enhancing economic growth, but however, should it be unsustainable, it has been blamed on economic crises in recent times, high inflation and poor investment that adversely affect economic growth (Odetayo & Adeyemi, 2017, Al-Maseed & Tsaregorodtsev, 2018). Focus on institutional quality which is the extent to which a country's institutions facilitate international transactions, and provide for their security and predictability (Iheonu, Ihedimma & Onwuanaku, 2017) has in the recent decades come into focus. High institutional quality has

been argued as an economic growth momentum by incentivising economic activities such as consumption and investment, improving efficiency, allocating resources more efficiently, supporting freedom of choice and protecting property rights (Nguyen, Su, Nguyen, 2018).

However, the literature (Babalola & Aminu, 2011; Benos, 2009; Zhang, 2016; and Medee & Nenbee, 2011) largely ignores the simultaneous impact of fiscal policy and institutional quality on economic growth. This study attempts to examine the role of institutional quality in moderating the impacts of fiscal policy on economic growth in sub-Saharan economies. This is imperative as sub-Saharan African economies are increasingly using fiscal policy but ignoring the institutional quality which may mutually affect economic growth.

In this chapter a background to the study is provided. The problem statement is stated and from there the research objectives and questions are formulated. A section then follows which provides the research design and methodology proposed. After which the scope and the proposed structure of the study is stated.

## **1.2 BACKGROUND TO THE STUDY**

When both the African and Asian colonies attained their independence in the eras between 1945 and 1965, the political leaders of those nations were seemingly faced with a dual challenge. Most of them thought the first was a short to medium term challenge, which involved consolidating their political power and achieving domestic peace and stability (Louis, Arpit & Stephen, 2015). The other challenge, was believed to be a medium to long term challenge, and this was on the question how to transform their countries' economies from their colonial format as suppliers of raw materials produced through the exploitation by the colonialists of the cheap, unskilled (and de-skilled) labour of the indigenous populations (Mbeki 2009).

The aftermath of this mega project of consolidating political power in pursuit of domestic peace and stability as well as the transformation of the country's economies is today a matter of general knowledge. Asian countries experienced many bloody conflicts in the early years but, by 1965, most of these conflicts, with the exception of those in Indochina, where they continued into the 1970s, had been resolved. The countries of the East, South East and South Asia started on the second challenge, which focused on developing and diversifying their economies. These Asian tigers experienced impressive growth rates of around 6.0 per cent per year in per capita terms which they sustained between 1965 and 1995. On the other hand, many countries in sub-Saharan Africa (SSA) and Latin America recorded less than 1.0 per

cent average growth rates in per capita income during the same period (De Gregorio and Lee, 2002).

In its influential review of social and economic conditions of sub-Saharan Africa at the beginning of the new century, the World Bank acknowledged that the expectation had been for Africa to steam ahead while Asia would remain stuck in poverty. However, the opposite, has been the case. Comparing South Korea and Ghana, two countries that were at a similar level of development in the 1960's, then World Bank noted that as an example, in the year 1965, exports and incomes per capita were much higher in Ghana compared to Korea and it was anticipated that this trend would continue into the future. But these projections were shown to be way off the mark as Korea's exports per capita overtook Ghana's in 1972, and its income level surpassed Ghana's four years later. Between 1965 and 1995 Korea's exports increased by 400 times in current dollars. Meanwhile, Ghana's increased only by 4 times, and real earnings per capita fell to a fraction of their earlier value (World Bank, 2000). Some writers (Santacreu & Zhu, 2018; Kim, Lee, Ahn, Lee & Lee, 2021) however caution that such comparisons are misleading as Korea's growth trajectory is much different from the sub-Saharan economies and the world at large. Santacreu and Zhu (2018) show that although it started as an agriculture-based economy in the 1960's, Korea experienced an industrial miracle through policies aimed at opening the country to foreign markets coupled with an improvement in its business environment and policies incentivizing investment in innovation. Kim *et al* (2021) also notes that global sustainable development should be only achieved through an exhaustive consideration of the context and the needs of the countries in question.

The question then becomes, why have some regions in the world seen much economic growth while others are barely maintaining the same levels of economic growth, that is, if they are not regressing?

In an attempt to explain the grounds of differing rates in the growth amongst various countries, this study turns to fiscal policy and further examines the role of institutions. Taking the two countries South Korea and Ghana which started at the same level in the 1960's, Acemoglu, Johnson and Robinson (2005) notes that the major differences have in the subsequent choices in terms of institutional organization. South Korea maintained a system of private property and an economic model based on private incentives and market forces. South Korea thus followed the path of inclusive institutions and prospered, turning into one of the 'Asian economic miracles' in the 1960s. Ghana in contrast tried a number

of institutional arrangements ranging from the UK-style parliamentary government in the 60's, to adopting the one party state model, then the German style parliamentary government towards 1969 and the US-style presidential government towards the 80's with intermittent military intervention in the government and coups in between the years, Dartey-Baah (2015). The Ghanaian regime chose extractive institutions and has seen its economy lag that of its counterpart South Korea since, even falling back in terms of absolute economic welfare since the 1990s as noted earlier. This case clearly supports the view that institutional quality is an essential element in the enabling environment that drives long term economic progress (African Capacity Building Foundation, 2016).

Consequentially, the past few decades have revived the interest in researching the long-term determinants of economic growth and development. Initially, this research was led by Barro (1991), and since then, economists have been trying to pinpoint the key factors responsible for fluctuations in economic performance among countries and regions in the world. From Barro's research, an extensive range of influences ranging from trade openness, government size, income distribution, to mention but a few, along with the more traditional influence including factors of production and technology, have been identified to be the major determinants of economic performance (Mugableh, 2019). Much more recently, new growth theories have suggested that additional factors, such as institutional quality, may constitute possible causes of the variation of economic performances between countries and regions (African Development Bank, 2018).

For a lot of countries still in the development stage, a large range of public debate on macroeconomic fiscal policy has not only been focused on the output growth outcomes of effective fiscal policy, but also on its effectiveness in business cycle stabilization as a fundamental aspect (Gavin and Perotti, 1997). The consensus in this regard is that in developing countries fiscal policy is highly procyclical, owing mainly to the effects of political economy factors (Talvi and Vegh, 2005). The proposition is that while developed countries are equipped with strong institutions and political systems, developing countries rarely have strong, healthy and stable institutions (Lane, 2003; Kaminsky, Reinhart & Vegh, 2004).

North (1991) has given a definition for the institutions as "rules of the game" in a society, the formal and informal constraints on human interaction. "Good" institutions are viewed

as those who establish an incentive structure that reduces uncertainty and promotes efficiency, hence contributing to stronger economic performance (North, 1991).

Unquestionably, in modern years, the relationship between fiscal policy and the quality of a country's institutions and their level of economic growth has turned out to be an important and growing area of research in economic analysis on top of the traditional economic policy (Hashim, Alexiou & Tsaliki, 2011; Al-Masaeed & Tsaregorodtsev, 2018). The focal point of the idea supporting this research field is that institutions define the "rules of the game" and the conditions under which economic agents operate in an economy. Hence, attention has focused particularly on the role of institutions in augmenting the impact of economic policy in order to determine a country's economic growth. As a result, numerous empirical studies including Fosu (2013) and Yedgenov (2017) have arisen making an attempt to provide further evidence of the influence of fiscal policy and the mechanisms by which institutions may affect economic growth.

### **1.3 RESEARCH FOCUS**

This section introduces the research problem, question and aims of the study. It uses the following subheadings, research problem, research objectives, research questions and justification.

#### **1.3.1 RESEARCH PROBLEM**

All countries in the world have the same tools available for their use in the pursuit of economic growth. Hoeffler (2002) argued that a possible explanation for the African continent's poor economic performance is to be sought in the very same variables that help account for the growth performance in other developing countries. Post the 2008 financial crisis, economic growth has slowed down in most of the African countries resulting in depreciating currencies and increasing unemployment levels. Short-term macro-economic policy responses have improved noticeably over the past few decades and save for a few exceptions, most African countries were using fiscal and monetary policy to absorb the immediate shocks emanating from the global economic crisis, Willem te Velde (2018). A number of countries such as the Democratic Republic of Congo, made effective use of shock facilities provided by donors. The two biggest African countries, Nigeria and South Africa, continued to suffer from the impact of weak commodity prices. Nigeria particularly had an additional exchange rate problem. But the main challenge has continued to be weak structural transformation

policies (supporting exports, facilitating investment, co-ordinating skills and technology) (Chaudhary & Madni, 2017).

The African Development Bank (2018) reveals that is evident that although many sub-Saharan countries have extensively pursued aggressive fiscal policy as a way of achieving economic growth, they have not had much success as those countries undertaking the same policies but having better institutions. This shows that classical fiscal policy measures have failed to significantly impact economic growth. The Committee on the Global Financial System (2018) says the past few decades and financial crisis of 2008 revealed to the world that not enough attention was being paid to the significance of stable and sound institutions in the economies. This link between economic policy given sound institutions though established in studies, (Glawe and Wagner, 2019) has not received much attention in Africa. This research therefore seeks to analyse the impact of fiscal policy given functional institutions on economic growth so as to add to the discourse on the drivers of economic growth beyond the traditional monetary and fiscal policy measures, particularly in Africa, and argue that policy makers should also take into account the growing importance of the role of institutions in stimulating growth.

### **1.3.2 RESEARCH OBJECTIVES**

The primary objective is to investigate whether the impact of fiscal policy on economic growth is dependent on institutional quality. As such, the study seeks to better understand the effect of fiscal policy and institutional quality on economic growth as this joint effect is critical for the nexus element of the study. The specific objectives include:

- i. To investigate the effect of fiscal policy on economic growth.
- ii. To investigate the effect of institutional quality on economic growth.
- iii. Draw conclusions and make policy recommendations on the basis of the findings.

### **1.3.3 RESEARCH HYPOTHESES**

The current research argues that better institutions are associated with lessened information asymmetry making fiscal policy conduct more transparent, deliberate, and hence, less wasteful. Therefore, the hypotheses for this study are as follows:

### **Hypothesis 1**

Null hypothesis: There is no relationship between fiscal policy and economic growth.

Alternative hypothesis: There is a relationship between fiscal policy and economic growth.

### **Hypothesis 2**

Null hypothesis: There is no relationship between institutional quality and economic growth.

Alternative hypothesis: There is a relationship between institutional quality and economic growth.

### **Hypothesis 3**

Null hypothesis: Institutional quality is not an intermediating factor on the relationship between fiscal policy and economic growth.

Alternative hypothesis: Institutional quality is an intermediating factor on the relationship between fiscal policy and economic growth.

## **1.3.4 JUSTIFICATION**

In the research concerning the economic performance of African or SSA countries mainly focusing on macroeconomic features (Akitoby & Stratmann, 2010; Acaravci & Erdogan, 2017; Usman, 2016; Helgason, 2010; Bass, 2018), only a few of the studies went on to examine the interactions between institutions and their long-run economic performance. Of these few that tied economic growth to institutions as well as fiscal policy (Aron, 2000; Nguyen, Su & Nguyen, 2018; Acaravci & Erdogan, 2017), none looked at the interaction effects of these factors and they had another challenge as well, as they either used a small sample of countries (Acaravci & Erdogan, 2017; Adeyemi, 2017; Bass, 2018) or none of them are based on an African context (Glawe and Wagner, 2019) while some do include African countries and have a large sample size (Rodrick, 2008) with a sample of 27 countries, they however are significantly hindered by the quality of data and the methodology they used.

Furthermore, in the relevant literature, there is no clear evidence regarding the role of institutions on growth in the short run (Bass, 2018) and there is no significant relationship between institutional structure and economic growth in certain groups of



countries (Acaravci & Erdogan, 2017). However, in similar studies, findings suggest that institutional quality is the key driver of the growth of per capita income (Glawe & Wagner, 2019) and institutional structure has positive and statistically significant impact on economic growth in some countries (Acaravci & Erdogan, 2017). Thus, this has necessitated the need to explore the extent to which institutional features, fiscal policy and other macro variables employed in conventional growth analysis form an appropriate framework and platform upon which the inherent dynamics of the economies in the African continent should be sought.

This study makes an attempt to explore the purported link between fiscal policy, institutional quality and economic growth in Sub Saharan Africa for a group of 37 African countries for the time period 1996-2018.

#### **1.4 CONTRIBUTIONS OF THE STUDY**

The research is relevant to all policy makers as it stands to assist in the allocation of resources available to them in a more efficient manner and hence it is imperative for a number of reasons. Firstly, the study will enrich the existing literature on policy, institutions and economic growth, which is very important for research on growth and public administration. While there is a body of literature on the impact of fiscal policy on economic growth, the analysis on institutional quality can be considered to be relatively a new terrain.

Next, the study expands knowledge and scholarship on new dynamics of policy-making and implementation in the context of African economies. This study looking at the “institutional quality on economic growth” offers readers and scholars with an opportunity to explore this unique, contentious, yet promising instrument for economic growth. The hope is that findings from this research will stimulate intellectual debates and therefore help to spark interest in future research on this critical factor of economic growth.

Lastly, from the available literature on the study, there is scant evidence that exists on the relationship and on the few studies available most of them are not based on African countries (Glawe & Wagner, 2019; Acaravci & Erdogan, 2017; Bass, 2018), and on the few available studies on African countries, they use individual countries (Odetayo & Adeyemi, 2017) and finally there is no consensus on the role and impact of institutions in the implementation

of fiscal policy both in the short and long run on the available literature (Fosu, 2013; Yedgenov, 2017; Glawe & Wagner, 2019).

Furthermore, this research takes advantage of panel data methodologies so as to provide more robust estimates and confront the potential bias emanating from problems such as endogeneity, cross-country dependence and unobserved country-specific effects that could have affected the previous empirical work done on inflation-growth nexus.

## 1.5 RESEARCH STRUCTURE

The rest of the research is structured as follows:

**Chapter Two** will present a literature overview and trends on fiscal policy and institutional quality. It gives the meaning and measures of both fiscal policy and institutional quality. It shows how the trends in fiscal policy measures relate to trends in institutional quality and how the trends in growth relates to the trends in institutional quality and fiscal policy. It also contains an overview on the economic growth trends in the SSA region.

**Chapter Three** explores the link between fiscal policy, institutional quality and economic growth as advanced by theoretical frameworks and empirical studies on the subject. The chapter will also contain the latest research on the study and provides empirical evidence supporting this relationship.

**Chapter Four** gives the methodology to be adopted for this study and give the model to be used.

**Chapter Five** is about data presentation and discussion of the results.

**Chapter Six** gives an interpretation and discussion of the results, summarised conclusions and recommendations based on the analysis carried out in Chapter Five.

## 1.6 SUMMARY

The first chapter contained an introduction and background to the research being conducted. It gave the research focus which outlined the research problem, question and aims of the study. It went on to justify the need for a study such as this and the chapter was concluded by a research structure which highlights a summary of the chapters to follow. To follow next on Chapter two is the literature review on fiscal policy and institutional quality.

## **CHAPTER 2: OVERVIEW OF TRENDS OF THE KEY VARIABLES**

### **2 INTRODUCTION**

This chapter introduces the key variables, their meaning and measurement and it goes on to give an overview of fiscal policy and economic growth as well as institutions and economic growth.

#### **2.1 FISCAL POLICY**

The historical foundations of fiscal policy can be traced back to the great depression in the 21<sup>st</sup> century, where the Keynesian economists led by John Maynard Keynes were of the opinion that lower aggregate expenditures in the economy contributed to a massive decline in income and to employment that was well below the average which made the economy to reach equilibrium at low levels of economic activity and high unemployment (Tily, 2016). These Keynesian economists came to the conclusion that to achieve full employment, governments must run deficits in times of a slowing down economy since the private sector would not be investing enough to keep production at the normal level which would then bring the economy out of recession. As a result, the Keynesian economists call on government to intervene during times of economic crisis as a way of picking up the slack through as increasing government spending and/or cutting taxes (Kotlán, Machová & Janíčková, 2011).

With this background in mind, one can go on to define fiscal policy as the means by which a government adjusts its levels of spending to monitor and influence a nation's economy (Reem, 2009). The policy is used along with monetary policy in different combinations to direct a country's goals. It is generally used alongside monetary policy, which the central bank uses as a means to influence money supply in an economy. These two policies are used as an attempt to achieve macroeconomic goals which include full employment, high and sustainable economic growth, price stability, full employment, reduction of poverty levels, favourable balance of payment, and a reduction in a nation's debt in a nation.

As it has been highlighted, fiscal policy is based on the Keynesian economic theory which states that governments can influence economic growth by increasing or decreasing tax levels and public spending. This influence, in turn, maintains a healthy value of money, controls inflation, and increases employment. In support of this, Reem (2009), says fiscal policy is based on the theories of British economist John Maynard Keynes whose theory basically states that

governments can influence macroeconomic productivity levels by increasing or decreasing tax levels and public spending. This influence, in turn, curbs inflation, increases employment, and maintains a healthy value of money (Okran, 2011).

According to Mohr and Associates (2015), fiscal policy plays a significant role in an economic policy due to its ability to realize goals aimed at by a national economy. Its tools are considered one of the main economic tools to achieve economic growth and overcome obstacles to economic stability. In addition to its distributional and specialist effects, fiscal policy has stability-inducing effects such as government spending and taxes which influence aggregate demand, thereby affecting overall economic variables and economic growth. Van Rensburg, McConnell and Brue (2011) go on to say the importance of fiscal policy emanates from the fact that public spending is considered the prime drive for economic activity of a country by influencing the level of aggregate demand and hence economic growth. Public revenues serve as the main source of income for a country while public debt is part of the government's spending, whether internal or external.

Public finance is the chief tool implemented by governments to achieve economic, social, and political goals. Fiscal policy, therefore, has acquired a cardinal importance in current economic systems. Rentsendorj and Schellhase (2020) view the intent of fiscal policy as essentially to stimulate economic and social development by pursuing a policy stance that ensures a sense of balance between taxation, expenditure and borrowing that is consistent with sustainable growth. However, the extent to which fiscal policy engender economic growth continue to attract theoretical and empirical debate especially in developing countries.

Before going any further, it is worthy of note that fundamental to this discussion is the question of the actual representation of fiscal policy. On this aspect, the literature reveals that there are different views as to which variable or variables best capture the fiscal stance. Of the three usual fiscal policy variables, namely, taxation, government spending and deficits, the literature does not single any one of them as the most representative of fiscal policy. While a lot of papers have made use of tax rates as a proxy for fiscal policy (Rebelo, 1991; Xu, 1994; Stokey & Rebelo, 1995; Engen & Skinner, 1996) others such as Martin and Fardmanesh (1990) and Easterly and Rebelo (1993) have used deficits to account for the fiscal policy in their estimations. Yet still, there are other researchers who have gone on to use expenditure instead. Among the more popular papers that use expenditure to account for fiscal policy stance included is Barro (1991), Aschauer (1989), Easterly and Rebelo (1993).

In a study by Levine and Renelt (1992) the authors argue that none of the three policy variables has a robust association with economic growth when examined individually. Fu, Taylor and Yucel (2003) suggest that the inadequacy of any one of the identified fiscal policy indicators (as pointed by Levine *et al*, 1992) but disputed in the mainstream growth literature could be due to the inability of any one fiscal policy factor to adequately account for a given fiscal policy position.

When expenditure is considered, it is observed that while certain studies have considered aggregate government expenditure as a single variable while others have said that the variable ought to be decomposed into several categories. These categories should then be analysed separately. What has become increasingly acceptable is the division of government expenditure into investment and consumption. It is reckoned that the former stimulates growth while the latter impedes growth. In recent time however, people have gone a step further to disaggregate consumption into what has been called productive government and unproductive government expenditure following Devarajan, Swaroop and Zou (1996).

The argument here is that while certain consumption expenditures particularly those on health, education and infrastructure could foster growth or types of consumption spending can be growth distorting. Nonetheless, Zagler and Durneker (2003) concede that while certain public consumptive expenditures may not directly impact on long-term growth, they may well have positive welfare implications in the economy, an argument that is also made in Turnovsky (1996). When it comes to research and development (R&D) expenditures provided by the public sector it is expected that R&D spending would stimulate output growth but, in the literature, the empirical outcomes are not unanimous in that view (Grossman and Helpman, 1991; Morales, 2001; Jones, 2016). On the role of taxation, the assertion is that tax induced distortions affect private agent's allocative decisions unfavorably in terms of factor accumulation and supply and hence may affect growth. This position is due to the assumption that all taxes save lump-sum taxes are non-neutral and distortionary. There is also debate about taxation as a short-run fiscal policy instrument and its effect on long-term growth (Zagler & Durneker, 2003). Here again, while one group of taxes such as those on savings, R&D, profits, raw capital and labour are deemed to have direct impact on the growth prospects of an economy all other tax forms are regarded as inconsequential to growth. The net effect of taxes however, is understood to be the difference between the positive effects from productive government spending and the growth distorting (negative) effect of taxation

on growth. Indeed, there is a vigorous debate when it comes the decomposition of taxes and how individual tax components impact economic growth (Engen & Skinner, 1996; Milesi-Ferreti & Roubini, 1998; Turnvosky, 2000).

The size of the public debt and its effect on growth is also explained by a number of competing theories. The point here is that when government runs a deficit it tends to draw on resources that the private sector could have used to accumulate private physical capital. If government engages in any spending that is less productive as compared to that of the private sector, then we are faced with an overall negative growth effect (Araujo & Martins, 1999). A contrary view is espoused by Lin (2000) and others who take the position that public debt does not necessarily reduce growth. In a study by Levine *et al*, (1992) it is observed that none of the three conventional fiscal policy variables on its own adequately captures the fiscal policy stance of any give economy. Consequently, a third-generation strand of the literature on fiscal policy and economic development has emerged that attempts to examine at least two fiscal policy variables in simultaneously. Kneller, Bleaney and Gemmel (1999), is an example of such a study.

Thus, the literature review amply demonstrates that no single indicator sufficiently represents fiscal policy stance, however, as suggested by Fu *et al* (2003) pair-wise combinations of the fiscal indicators better illustrate a series of fiscal policy actions. Fu *et al* (2003) show that pair wise analysis using a various specification, produces a plausible stable result that lends itself to interpretation. Consequently, the study will use only taxation and government expenditure as a proxy for fiscal policy.

## **2.1.1 TRENDS IN THE MEASURES OF FISCAL POLICY IN AFRICAN COUNTRIES**

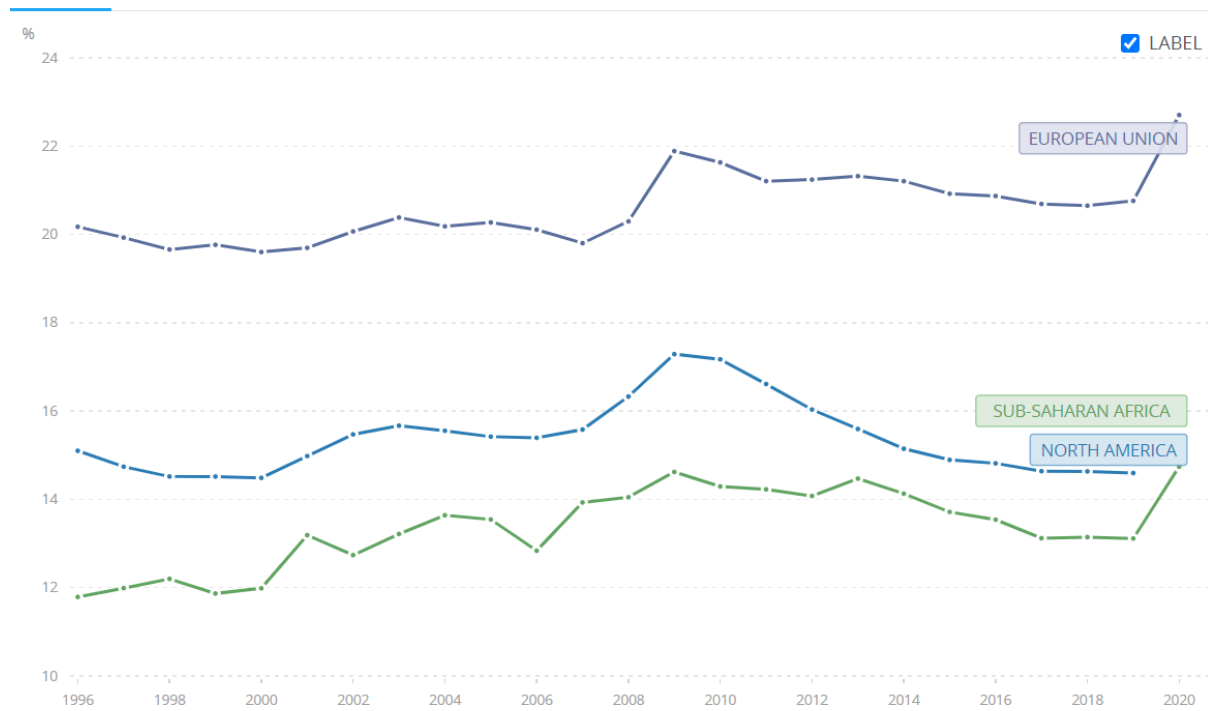
This section looks at the government spending and taxation in the real word and analyses the case for a few selected African countries.

### **2.1.1.a GOVERNEMENT SPENDING**

General government final consumption expenditure is used as a proxy for government spending and consists of expenditure incurred by government in its production of non-market final goods and services (except Gross Fixed Capital Formation) and market goods and services provided as social transfers in kind. Total general government final consumption is perhaps of less political relevance, from a fiscal perspective, than general government

expenditure but its importance as a component of total GDP, and, so, as a reflection of its direct role as a “consumer” of final goods and services is significant (OECD, 2014:42).

Looking at general government spending on final consumption for the whole of sub-Saharan Africa (SSA) and comparing with the rest of the world, using the world’s bank aggregated data for world regions, this is summarised in Figure 2.1 below.



**Figure 2.1: General Government Final Consumption Expenditure as a percentage of GDP: Sub-Saharan Africa, European Union, North America**

Source: Researcher’s own computation

This data for final consumption expenditure by the general government sheds a light on the involvement of governments in the provision of goods and services for the direct needs of the population. A high government share in providing for the individual consumption goods and services is often found in countries known as welfare states. This may be illustrated in the Figure 2.1 above by looking at data for the European Union which has the highest line above the other three regions.

Approximately close to a quarter of the economy-wide final consumption expenditure in the European Union of 27 member states is made by governments and of the constituent countries, those with relatively large government shares in final consumption expenditure are Denmark,

Luxembourg, the Netherlands, Finland and Sweden (and these comprise around one-third of their final consumption expenditure).

Of the figures highlighted in Figure 2.1, 22% of the governments' final consumption expenditure in the European Union of 27 member states is individual consumption. These findings mirror the importance of social transfers in kind in European countries, where the share of household final consumption expenditure in actual final consumption of the households is often less than 30%.

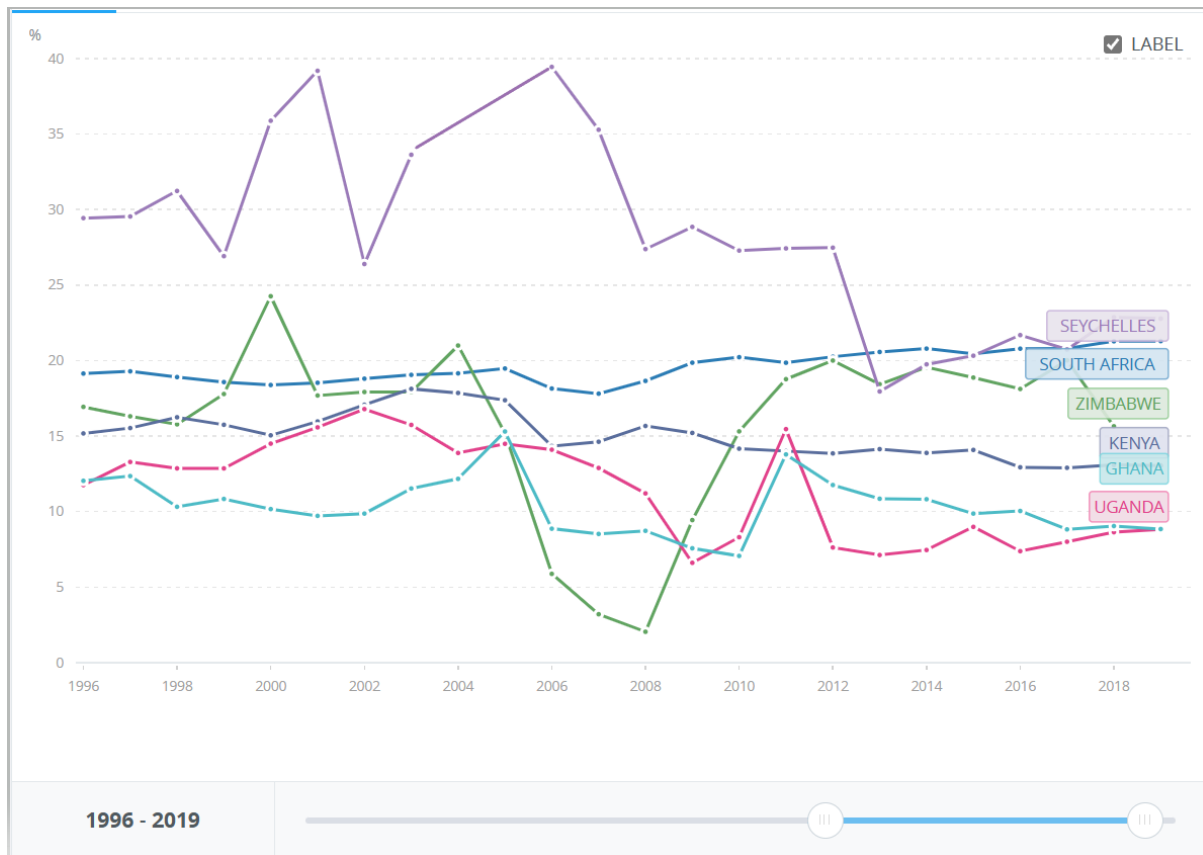
North American region is the second lowest in comparing government final consumption expenditure to GDP. Looking at the trends, the figures have been fluctuating around the 16% line with the government spending for the region becoming higher around the 2007 to 2009 era, possibly due to the massive spending by governments to intervene during the economic crisis. This is the trend in all the regions as well. For the North American region, although the average has been taken, the country with the highest value is Greenland, with a value of 44.13% and Mexico is the lowest in the region, with a value of 11.67 (Index Mundi, 2019).

On percentage terms, the graph shows that Africa comes in with the lowest consumption by government to GDP compared to the other two regions. The pattern of spending for sub-Saharan Africa closely follows that of the other 2 regions, with the average being around 13% until 2006 and then rising towards 14% for most of the years between 2006 and 2019, eventually shooting upwards after 2019.

### **2.1.1.b TAXATION**

To highlight a few fundamental characteristics of the taxation structure in the chosen sample study, six countries have been chosen and brief summaries of these countries is given below. The selection was based on the countries with the lowest, medium and highest taxation revenues as a percentage of GDP as well as upon the soundness of the institutions or lack of soundness for the countries in a way to assess the contribution of institutions to economic growth. In terms of tax revenue as a percentage of GDP, the highest recorded figures among these are Seychelles at 34.1% and South Africa at 28%, followed by the Kenya and Zimbabwe which can be considered to be on the medium range at 15,1% and 18% respectively. Among the lowest tax revenue to GDP contribution is Uganda and Ghana at 11% and 12,6% respectively.





**Figure 2.2: Tax Revenue (% of GDP) - South Africa, Zimbabwe, Kenya, Uganda, Ghana, Seychelles**

Source: Researcher’s own computation

**Highest tax revenues and high institutional quality**

***Seychelles Tax structure (34.1% tax revenue to GDP last observation)***

Seychelles has territorial taxation, meaning that only locally-sourced income is taxed. There is recent, well-formed legislation for international business companies, offshore banks, insurance companies, mutual funds, trusts, and extensive programmes of investment incentives, as well as the International Trade Zone, all of which are virtually free of taxes. In 2003, the government legislated for additional types of company: special licence companies, protected cell companies and limited partnerships.

Locally-sourced profits are taxed at up to 33%, and the income and non-monetary tax of 15% for Seychellois and non-Seychellois individuals applies in all sectors other than the Trade Zone. A tax of 20% is payable by employers on non-monetary employee benefits. There are no other taxes to speak of. There is a small withholding tax for some types of payment. All

foreign-source income is tax-free. VAT was introduced in 2013 (postponed from 2012), and there are import duties, but these have been substantially reduced in recent years. The Government's extensive investment incentive programmes give substantial tax benefits to incoming investors in many sectors and the free zones are ideal for locating regional distribution centres. No company with exclusively external assets and commercial operations pays tax (BBC News, 2021).

From Figure 2.2, Seychelles' tax revenue fluctuated around the 30% trendline between 1996 and 2012. There was a sharp drop in the tax revenue around 2013 possibly due to the introduction of VAT. The overall trend depicted in the graph for Seychelles closely resembles those of developed countries and as such, higher quality institutions could be a plausible explanation for this trend.

### ***South African taxation structure (26.5% tax revenue to GDP last observation)***

The South African tax system is determined by the laws that are administered by the Commissioner with the Income Tax Act 58 of 1962, the VAT Act 89 of 1991 and the Customs and Excise Act 91 of 1964 being the most important of these. Every year, the Minister of Finance presents the Budget, which outlines the total government expenditure for the following financial year and the ways in which this expenditure will be financed. South Africa has a residence-based system, which means residents are, subject to certain exclusions, taxed on their worldwide income, irrespective of where their income was earned. Non-residents are, however, taxed on their income from a South African source. Foreign taxes are offset against South African tax payable on foreign income. The majority of the state's income is derived from income tax (personal and company tax), although nearly a third of total revenue from national government taxes comes from indirect taxes such as VAT (South African Revenue Services, 2020).

In South Africa, the Corporate Income tax rate is a tax collected from companies. Its amount is based on the net income companies obtain while exercising their business activity, normally during one business year. Revenues from the Corporate Tax Rate are an important source of income for the government of South Africa. Corporate Tax Rate in South Africa averaged 32.98 percent from 2001 until 2020, reaching an all-time high of 37.80 percent in 2002 and a record low of 28 percent in 2013 (Trading Economics, 2021).

Figure 2.2 shows that South Africa has been the most stable country compared to the other countries in the sample with regards to tax revenues as a percentage of GDP. This is possibly explained by the high institutional quality of the country compared to the others in the sample.

### **Medium tax revenues and medium institutional quality**

#### ***Kenyan taxation structure (15.1% tax revenue to GDP)***

The current tax structure comprises two main direct taxes, namely, individual income and corporate tax and three main indirect taxes, which are, Value Added Tax, excise and customs duties. According to Rena (2011:31), looking at the relative use of these mentioned instruments over time, it can be seen that the importance of income tax has been declining, although it still plays a significant role in terms of its contribution to total tax revenue. Further, from the various Economic Surveys undertaken, income tax was accounting for an average of 44.6 percent over the period 1968/69 to 1972/73, but it declined to an average of 35.8 percent over the period of 2001/02 to 2005/06 and it dropped still in the period 2012 to 2021, eventually settling at 30 percent. When it comes to corporate taxes, they accounted for a bigger proportion than individual income taxes until the period 1997/98 where the individual taxes topped the corporate taxes thereby playing a more significant role. As an example, in the 2005/06 period, income taxes accounted for 38.5 percent of total tax revenue, of which 54.4 percent were individual income taxes, while corporate taxes accounted for 45.6 percent. Looking at Value added taxes, it can be shown that these have gained in importance over time, while trade taxes are seen to be taking a relatively declining role. Over the time frame 2001/02 to 2005/06, VAT accounted on average for 27.5 percent, with excise taxes accounting for 20.1 percent, while customs duties accounted for about 13.0 percent. These taxes have evolved over time from an initial tax structure that was inherited from the British system (Gordon & Wei, 2005).

Looking at Figure 2.2, Kenya is the second most stable in terms of revenue collection after South Africa. This could be attributed to the fiscal policy stance of the country since it does not have high institutional quality.

#### ***Ghana taxation structure (12.6% tax revenue to GDP last observation)***

In 1985, Ghana took two practical steps to strengthen revenue administration in the country. These were firstly, the establishment of the National Revenue Secretariat (NRS) and secondly, the creation of the two major revenue organizations, Internal Revenue Service (IRS) and the

Customs, Excise and Preventive Service (CEPS), as independent institutions outside of the civil service. The country saw the introduction of Income tax under the Income Tax Ordinance No.27 of 1943 (Adegboye, 2018). The three factors primarily cited for the increases in revenue are: the expansion in the tax base as a result of liberalizing the economy; the extensive reorganization of the institutions that administer taxes in the country as well as the changes made to the structure of taxation (Ackar & Agboyi, 2014). It is commonly accepted those reforms in tax administration are relevant and indispensable to the process of effective reform of the structure of taxes in any country.

Ghana's tax revenue from the figure has been a bit constant in the first 8 years of the study but it fluctuates a lot between 2004 and 2011. This could be attributed to the lower soundness of institutions in the country.

### **Lowest Tax revenues and low institutional quality**

#### ***Zimbabwean taxation structure (12.6% tax revenue to GDP last observation)***

Zimbabwe individual income tax is imposed at progressive rates up to 35%. Individuals pay tax only on Zimbabwe-source earnings or income deemed to be Zimbabwe source. Only income from a source within Zimbabwe or deemed to be from a source within Zimbabwe is subject to tax. This includes income from employment or income from trade and investments. (Musviba, 2013).

Corporate Tax Rate in Zimbabwe averaged 27.22 percent from 2006 until 2018, reaching an all-time high of 30.90 percent in 2007 and a record low of 24.72 percent in 2020. Personal Income Tax Rate in Zimbabwe averaged 40.76 percent from 2004 until 2020, reaching an all-time high of 51.50 percent in 2015 and a record low of 24.72 percent in 2020 (Trading economics, 2021).

As a total, tax revenue as a percentage of GDP in Zimbabwe was 15.79 percent as of 2017. Its highest value over the past 8 years was 18.06 percent in 2015, while its lowest value was 9.20 percent in 2009 (Indexmundi, 2019). The poor institutional quality of the country possibly explains this feature for Zimbabwe.

### ***Ugandan taxation structure (11.7% tax revenue to GDP)***

Uganda's tax system underwent dynamic reforms in the period 1990-2004 both in terms of policy as well as administration. Before 1991, administration of Central Government taxes was a direct function of the Ministry responsible for finance (Kaweesa, 2004). At this time, the public sector was much bigger compared to the private sector and yet it contributed very little to the economy's tax base. The private sector had a very low revenue productivity and this was dominated by subsistent agriculture, which was about 60 percent of GDP. Additionally, the commercial sector was largely informalized and thus very difficult to tax. Going back decades back, Uganda's tax base has remained significantly narrow since independence in 1962, leading to inadequate tax revenue. Up to the present time, the ratio of tax revenue to GDP is just about 13 percent compared to the sub-Saharan Africa's overall average of 18 to 20 percent. By the year 1989 the ratio of tax revenue to GDP had dropped to a mere 4 percent. Also, the composition of tax revenue was predominantly import dependent. More than 60 percent of the total tax revenue was raised from taxes on imports with less than 40 percent contribution actually came from Domestic taxes (Bird & Oldman, 1990).

The erratic nature of the trend for Uganda could be possibly explained by the changes in fiscal policy and other macroeconomic policies which in turn lowered the soundness of the country's institutions.

### ***Summary of taxes in sub-Saharan economies***

Basing in the analysis from the sampled countries above, it appears that countries with low and intermediate levels of income usually tend to have low levels of redistribution. The countries whose incomes exceed the intermediate levels of income will have high levels of redistribution, of which the high-income economies will have the largest levels of redistribution. The income redistribution from the private sector to the government is an increase in taxation. In coordination with the government expenditures is an increase in capital formation (Bird & Oldman, 1990; Rena, 2011).

When a country improves its fiscal policy by reducing tax, tariffs or other barriers to trade, it advances its integration into the world economy (OECD, 2014). Some of the developing countries are dependent on foreign aid for half of their national budgets and hence the capital formation in those countries will be difficult. One of the reasons have not been able to overcome the obstacles to expanding and diversifying their exports, tariffs rate is high and

failed to fuel their economic growth and keep up with changes in international demand. Given the negative impact of persistent unsustainable fiscal deficits on the emerging economy, there is now a consensus among interested parties on the need to address the problem effectively (Seidman, 2003; Gordon & Li, 2005).

The literature suggests three approaches for this purpose: increase in revenue, reduction in expenditure, or a continuation of both. Mostly an appraisal of the budgetary process shows that annual expenditure proposals are always anchored on projected revenue, thus the accuracy of revenue projection is a necessary condition for devising an appropriate framework for fiscal deficit management in any given country. It also suggests that a significant reduction in public expenditure and prudent management of financial resources are the most feasible solutions to the problem of unsustainable fiscal deficit (Nguyen, 2018).

In the case of Ghana, during the 1990s, the fiscal position of the central government has strengthened considerably. The economic performance continued to improve in Ghana during the first half of 2006, supported by strong macroeconomic policy implementation and a favourable external environment. The economic growth is relatively strong, inflation is falling, and the external position has strengthened considerably, allowing a build-up of international reserves that provides a cushion against shocks. Ghana's program implementation during the PRGF-supported program has been satisfactory. During the 1990s, the overall fiscal deficit (including grants) averaged about 9 percent of GDP, but it has declined steadily since then to about 3½ percent of GDP in 2004. This improvement is partly attributed to strong growth, but new tax measures, enhanced revenue administration, and expenditure discipline have all played a role (Nawaz *et al*). The tax revenue is at its highest level at about 24 percent of GDP, and this has allowed recurrent expenditure to rise to more than 20 percent of GDP. On present estimation, the government achieved its medium-term objective outlined in the Ghana Poverty Reduction Strategy, of halving the ratio of domestic debt to GDP from the end-2002 level by end-2005 (about 11.5% of GDP) (IMF, 2006). Fiscal policy appears on course in 2006 to deliver the targeted reductions in the ratio of domestic debt to GDP. The fiscal consolidation that has occurred during the PRGF-supported program has resulted in a significant reduction in domestic debt service and allowed the crowding-in of private sector investment through continuing declines in interest rates, while increasing poverty-related spending.

## **2.2 INSTITUTIONS AND INSTITUTIONAL QUALITY**

According to Boliari (2017) institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints, and these are, sanctions, taboos, customs, traditions, and codes of conduct, as well as formal rules, and these refer to, constitutions, laws, property rights (Friedman, 2021). Throughout history, institutions have been devised by human beings to create order and reduce uncertainty in exchange. Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity. They evolve incrementally, connecting the past with the present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story. Institutions provide the incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline (North, 1990).

Another different way in which the literature has pursued the role of public-order institutions in economic growth is by seeking to classify political as well as economic institutions according to whether they have, historically, proved favourable to growth. One part of the literature has distinguished between open-access social orders which have facilitated economic growth, and closed-access orders which have hampered it, for example, (North, 1991). Another approach has been to distinguish between political and economic institutions that have favoured growth by being inclusive, and those that have impeded it by being extractive (for example, Acemoglu and Robinson, 2012).

### **2.2.1 INSTITUTIONAL QUALITY**

In various model specifications of the study, six different indexes of institutional quality are employed in an attempt to capture the effect of as many possible aspects of the effects of institutions on economic performance. These indicators are given by the World Governance indicators (WGI).

WGI is a project of the World Bank and the Brookings Institution that assesses the quality of governance in more 213 countries and territories worldwide. ‘Governance’ is the word used to describe what a government does and ‘governance effectiveness’ describes how well the government exercises its powers to create and enforce policies

that benefit its citizens. Effective governance is essential to both successful development and maintaining environmental quality. “To achieve their environmental commitments and goals, States need strong legislative, political and judicial systems” (UNEP 2010).

The WGI starts by rating each and every country’s governance status for:

- (a) the process by which governments are selected, monitored, and replaced;
- (b) the government’s capacity to effectively formulate and implement sound policies;
- (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them (UNEP 2010).

Categories evaluated by WGI are namely, the government effectiveness indicator, corruption perceptions index, political stability index, rule of law indicator, the regulatory quality indicator and voice and accountability. These indicators are summarised below:

#### **2.2.1. a) Voice and Accountability**

This indicator captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. By enabling society to vocalize issues and participate in selecting their representative forces government to respond to public concerns including ocean and environmental priorities (The Global Economy, 2021).

#### **2.2.1.b) Political Stability and Absence of Violence/Terrorism**

It captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. Violence and instability shift government’s priorities and diminish the opportunity to devote resources to important ocean and environmental policy initiatives (ICRG, 2012).



### **2.2.1.c) Government Effectiveness**

This indicator measures the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to its stated policies (Duho, Amankwa & Musah-Surugu, 2020).

Countries with more effective governments tend to achieve higher levels of economic growth by obtaining better credit ratings and attracting more investment, offering higher quality public services and encouraging higher levels of human capital accumulation, putting foreign aid resources to better use, accelerating technological innovation, and increasing the productivity of government spending (The global economy, 2021).

### **2.2.1.d) Regulatory Quality**

Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (Duho, Amankwa & Musah-Surugu, 2020).

Improved regulatory quality can promote economic growth by creating effective and efficient incentives for the private sector. Conversely, burdensome regulations have a negative impact on economic performance through economic waste and decreased productivity (International Finance Corporation, 2019).

### **2.2.1.e) Rule of Law**

This indicator captures perceptions of the likelihood of crime and violence and the extent to which general public members have confidence in and abide by the rules of society, respect contract enforcement, property rights, the police, and the courts (WGI, 2021).

In its most basic form, the Rule of Law is the principle that no person is above the law. The rule follows from the idea that truth, and therefore law, is based upon fundamental principles which can be discovered, but which cannot be created through an act of will (The global economy, 2021).

The most important application of the Rule of Law is found in the principle that governmental authority is legitimately exercised only in accordance with written and publicly disclosed laws. These laws are adopted and enforced in accordance with established procedural steps that are referred to as due process. The principle is intended to be a safeguard against arbitrary governance, whether by a totalitarian leader or by mob rule. Thus, the Rule of Law is hostile both to dictatorship and to anarchy (ICRG, 2012).

Judicial independence is strongly linked to growth as it promotes a stable investment environment. On average, business environments characterized by consistent policies and credible rules, such as secure property rights and contract enforceability, create higher levels of investment and growth (WGI, 2021).

### **2.2.1. f) Control of Corruption**

The indicator captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests (Kaufmann, Kraay & Mastruzzi, 2011). Corruption ensures that only a privileged class of leaders is served whereas it is important to include all interested parties in the creation of policy else economic policy will not be balanced and sustainable. It also measures the strength and effectiveness of a country's policy and institutional framework to prevent and combat corruption (ICRG, 2012).

As such, Corruption deters economic growth as it increases costs, lowers productivity, discouraging investment, reducing confidence in public institutions, limiting the development of small and medium-sized enterprises, weakening systems of public financial management, and undermining investments in health and education (WGI, 2021).

## **2.2.2 TRENDS IN THE MEASURE OF INSTITUTIONAL QUALITY**

The nature of the political regime which fosters economic growth has remained inconclusive (Przeworski, Limongi & Giner, 1995). Two strands of view on how institutions affect economic growth are grounded on liberal and authoritarian institutions. Totalitarianism contributes significantly to poor economic outcome (Ndulu & O'Connell, 1999). The argument is based on the premise that good governance allows citizens to participate in the political process and this makes them feel as part of the process which consequently improves

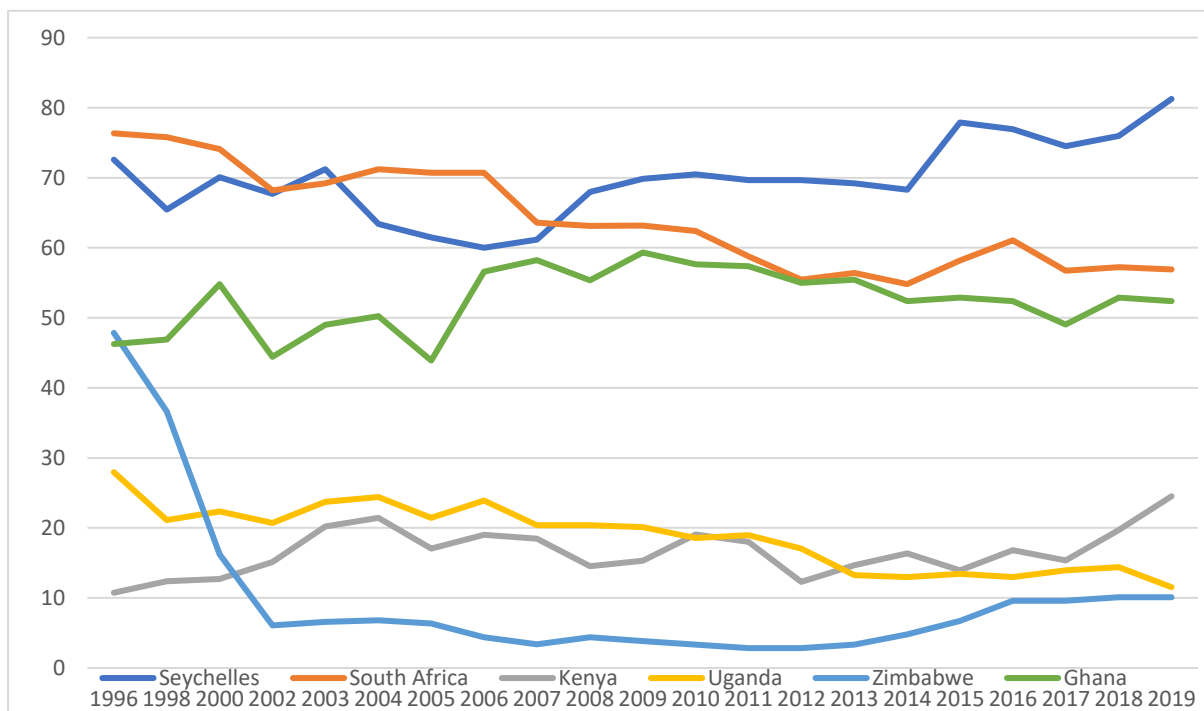
productivity. However, under authoritarian rule the citizens are detached from the political process of a country and this results in low morale among the public which negatively impacts on their productivity. Liberal institutions hypothesized that democracy positively impacts on economic growth. Rodrik (2008) argues that democracy significantly stimulates output growth. However, according to La Porta, Lopez-de-Silanes, Schleifer and Visnhy (1999) developing nations experience robust economic growth under authoritarian regimes and only adopt democracy after achieving economic growth.

According to Butkiewicz and Yanikkaya (2006), democratic institutions may either improve economic performance of a country or retard growth. Butkiewicz *et al.*, (2006) posits that democracy might undermine investment through pressures for immediate consumption. Immediate consumption leads to dissaving which undermines investment and thus reduces steady-state income. However, a number of studies have established that democracy promotes economic performance (Bardhan, 1997; Rodrik, 2008; Przeworski & Limongi, 1993). According to Rodrik (2008), “participatory and decentralized political systems enable higher-quality growth: they allow greater predictability and stability, are more resilient to shocks, and deliver superior distributional outcomes”. Political instability is associated with adverse effect on growth. According to Fosu (2013), political instability is associated with loss in capital since political instability may reduce availability of factors of production as investment risk tends to go high in the presence of political instability. Further, political instability is associated with uncertainty and risks which discourages foreign direct investments and instead would lead to capital flight.

The theory of rent-seeking also helps explain how institutions affect economic growth. Rent-seeking is the activity of an interest group in trying to seize an income flow as opposed to creating an income flow. Interest groups with vested interest in government projects will use resources to influence decisions of the governments thereby result in misallocation of the available resources. Rent seeking can be achieved through bribery, threats and lobbying of the institutions to make decisions that go against the will of the majority in the society. The end result of rent-seeking is skewed allocation of resources which may lead to poor economic performance of a country.

## 2.2.3 INSTITUTIONAL QUALITY AND GROWTH IN AFRICA

In terms of institutional quality, corruption is used as a proxy and this index captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, including capture of the state by elites and private interests. The study looks at CPIA with the corruption perceptions index by Transparency international which is given on a percentage basis, with 0% being very corrupt and 100% being very clean or free from corruption.



**Figure 2.3: CPIA transparency, accountability, and corruption in the public sector rating**

Source: Researcher's own computation

### Control of corruption in Seychelles

The country with the soundest institution in the sample is Seychelles at 66% indicating it as the cleanest among the chosen few in sub-Saharan Africa. For that indicator, data for the Seychelles from 1996 to 2020 was used. In terms of the graph, the Seychelles curve has been consistent, fluctuating about the 70% line. It reached its lowest in between the 2004 to 2006 period, and this could be attributed to the unrest in the country since in 2004, the then President Rene stepped down and the former vice president James Michel took his place although he won the presidential elections in 2006. Another notable event is that towards the end of the year

2006, Parliament banned political or religious organisations from running radio stations, sparking a rare outbreak of unrest (BBC News, 2021). The maximum value for Seychelles was 84.6% in 2020. For comparison, the world average in 2020 based on 192 countries was 48.8% points and this shows that Seychelles is doing very well in terms of this index.

### ***Public sector management, institutions and reforms***

In terms of public sector management, Seychelles has made significant progress, but it needs to make further efforts if it is to reap the benefits of recent reforms. The civil service in Seychelles is made up of 13 ministries, with each being headed by a politically appointed minister. The day-to-day running of each ministry is mostly overseen by the principal secretary, who is the administrative head. The principal secretary in turn is not politically appointed but nominated by the President of the Republic. Besides the main ministries, the civil service also consists of parastatal organizations, mainly commercial organizations, and a number of institutions that are constitutionally appointed. The Ministry of Public Administration is located under the Office of the Vice-President. It acts as the ministry of all ministries in that it is the administrative arm of Government. From the year 2008, the Government has implemented a number of reforms to address governance issues arising in the public sector. The reform in the Public sector management has focused on public financial management and it has seen the government approving a public finance law and revising financial instructions and human resource management. As a result, there was a reduction in the number of public servants, a review of service and retentions schemes, the removal of noncore public service functions (to be absorbed by private firms), and capacity strengthening of public sector institutions. In addition, the Government approved a detailed work plan for the public enterprise monitoring division, which was created to strengthen the governance of public enterprises while managing the public sector wage bill. To accelerate reforms, a more strategic approach to public sector governance is needed. It should include a solid analysis of the most compelling public sector governance opportunities and challenges – from both the supply and demand sides – in order to spur growth (African Development Bank, 2018).

### **Control of corruption in South Africa**

When it comes to South Africa, although it is at 58% as of 2020 the graph shows that prior to 2006, it was sounder than Seychelles, only dipping below Seychelles around 2006. A possible reason for this could be that Members of the South African Students' Congress (Sasco) and

African National Congress Youth League staged a violent protest at the North-West University's Mafikeng campus over the exclusion of some students because of unpaid fees while the whole time Jacob Zuma who was deputy president then was undergoing trials for rape coupled with corruption charges and this did affect the country's ratings. During the same year, Vladimir Putin, the President of the Russian Federation, arrived in Cape Town and met with Thabo Mbeki, the then president of South Africa and again this was a cause for a close look at the country's perceived direction since Russia was generally considered communist. The latest value of 58% for 2020 in comparison with the world average for 2020 based on 192 countries of 48.8%, shows that South Africa is above average on this index and it is doing well in the African continent.

### ***Public sector management, institutions and reforms***

Reforms in the public sector of South Africa must be understood from the confines of historical perspectives and political accommodation. An extensive review of the literature written by scholars of public administration and political transformation indicates clearly that adequate public sector reforms must be hinged on proper planning, efficient administration and political will. Considering the brief historical overview, it can be seen that prior to 1994 the South African public sector and in particular the public service, consisting of some 1,3 million employees, was characterised by fragmentation of structures, lack of co-ordinated policy frameworks, unequal allocation of financial and human resources as well as disregard for the democratic requirement of public accountability. This shows that the public service reform that the democratically elected government had to undertake was extensive as well as complex. Kuye (2006) highlights the fact that the legal and policy frameworks have been created to obtain an ethical workforce that operates in a public service that conforms to standards acceptable in an open and democratic society.

### **Control of corruption in Ghana**

For the year 2020, Ghana comes in closely to South Africa at 53%. From the graph, Ghana has been fluctuating around the 50% line and has been rather consistent in this trend. Ghana deviated from this average in 2005, hitting an all-time low of 44%, possibly due to President Kufuor being elected as president of Ghana, for the second time after the 2004 elections. It had its maximum of close to 60% in 2007, and this could have been due to the country's discovery of oil in huge commercial quantities and the country circulating a new currency. The latest

value from 2020 makes Ghana to be slightly better than the world average of 48.8% obtained in 2020 based on 192 countries.

### ***Public sector management, institutions and reforms***

Ghana has developed a "New Approach to Public Sector Reform", which seeks to focus reforms on results, particularly the delivery of the Government's main priorities for

- (i) Job creation and
- (ii) Food production, distribution and processing.

The push for the reform was led from the centre of Government, by the Presidency and through the strengthening of collective cabinet level coordination, while recognizing that implementation will continue to be the responsibility of the line Ministries that typically already have well-articulated sector strategies. These sector strategies are largely consistent with the two main priorities and are supported by Ghana's main international partners.

This new approach emphasized the need for greater coordination of the Government's activities, combined with mechanisms to encourage greater performance and accountability amongst senior managers, combined with innovative partnerships with the private sector that could help to ease the binding financial constraints.

There are significant future refinements which will likely be necessary and some very urgent steps will need to be taken in the light of the fiscal situation and managing from the centre of government, with the two key roles of the centre of government (defined as the offices of the President and Vice President, and the Cabinet Office) - ensuring that government is "reliable" and overseeing reform. There are significant capacity gaps in undertaking these roles, requiring a more detailed technical review of staff and organizational structures. This is an urgent priority. If a high-level institution/mechanism - such as a delivery unit - is to be established at the Presidency level then it must be sufficiently robust to remain in place across political transitions to help drive reforms. It will be important to minimize the risks associated with such an approach, specifically, in terms of the duplication of units and roles and responsibilities, and the need for broader buy-in from key actors across Government (World Bank, 2020).

## **Control of corruption in Kenya**

Again, for Kenya we review the data from 1996 to 2020 where the country is around 17%. However, looking at the trends, Kenya has been below Uganda only gaining a definitive advantage over Uganda in 2017 when Incumbent President Uhuru Kenyatta was declared the winner of the presidential contest with 54.17% of the vote, whilst his main rival Raila Odinga finished second with 44.94% of the vote. The average value for Kenya has been below 20% with the minimum of around 10% occurring in 1996 and a maximum of 25% in 2019. The latest value from 2020 is 24% which is still way below the world average of 48.8% obtained in 2020 based on 192 countries.

### ***Public sector management, institutions and reforms***

Public sector reform remains a necessary and on-going policy objective for many developing countries. In Kenya, this is being done to overhaul its administrative system to better serve the needs of both government and the citizenry with improved delivery of public services to reduce poverty, improve livelihoods, and sustain good governance. Although the first attempts at the reform and transformation of the public sector in Kenya began in 1965, it was not until the early 1990s that serious efforts were made toward the reform and transformation of the country's public sector management. This work analytically examines and reviews the public sector reform and transformation efforts in Kenya to improve public sector performance and overall public service delivery.

Like other African countries, these efforts in Kenya have been driven primarily by the fact that the state bureaucracy in the country has been underperforming and public service delivery has not been serving the public interest within its most optimal capability. The reforms in Kenya evolved and culminated in the notion of re-engineering of the public sector in the context of public sector transformation, drawing on elements of what came to be known in the literature and practice as the "New Public Management" (NPM). This NPM broad term symbolizes the aim of fostering a performance-oriented culture that seeks to revamp the process through which public organizations operate in order to increase efficiency, effectiveness, and encompassing client-oriented, mission-driven, and quality-enhanced management. It is intended to better serve the needs of both government and the citizenry with improved delivery of public services to reduce poverty, improve livelihoods, and sustain good governance (Hope, 2001).



## **Control of corruption in Uganda**

Towards the bottom of the list of sampled countries is Uganda with the latest value of 10% in 2019. For this indicator, data for Uganda is provided from 1996 to 2020 and the trend shows that Uganda has been on a constant decline over the years from close to 30% in 1996 all the way to 10% in 2019. The latest value from 2020 is 9% which is way below the world average of 48.8%.

### ***Public sector management, institutions and reforms***

The reforms that are target the coordination function of the public sector are among the most recent in Uganda. It was only in 2003 that cabinet approved a coordination framework under the Office of the Prime Minister (OPM) to ensure that all government programmes are monitored and evaluated in a rational manner. In practice, however, this role is shared among three other institutions: the Office of the President; the Ministry of Finance, Planning and Economic Development (MoFPED) and the National Planning Authority (NPA). This creates a state of ‘uncoordinated coordination’ that is functional to the members of the ruling inner circle. In Uganda, challenges around harmonising roles for coordination are not caused by lack of legal and policy frameworks, but rather a result of the political strategy of the inner circle elite to assign multiple agencies responsibility for the same function as a means of keeping tabs on the dealings within government. In an environment where government officials and politicians are not fully trusted, this acts as an insurance policy for the elite that one agency can take over the functions of another if required.

Therefore, whereas the function of coordination is legally under the mandate of OPM, in practice it is dispersed among several other institutions in case the former proves too powerful for the presidency to control. Public service management reforms are captured in the Public Sector Reform Programme (PSRP) of 2005/06–2010/11, which sought to address several public sector challenges in Uganda: skills gaps and weak management; weak performance and accountability; inefficient and over-extended public organisations; a disabling work environment; poor pay; and sustainable support for reform among political and technocratic leadership. Despite these PSRP initiatives, performance crises, incompetency, poor accountability and declining service standards have continued to bedevil Uganda’s public service. The management systems that have allowed the NRM government to thrive in an environment of heightened competition are contra to the Weberian ideals of a meritocratic

public service. Many ruling-party cadres, including army officers and politicians, have been recruited into sensitive public offices, often without interviews – suggesting the primacy of political affiliation in public sector employment. The ruling elite have also substituted professional development of civil servants with ideological building. These strategies have allowed the ruling elite to deploy trusted cadres in strategic positions that allows control of ministries, departments and agencies (MDAs) in its own interest and not necessarily public interest.

Public financial management (PFM) reforms pursued by Uganda since 2000 have had four major components: economic planning; modern budgeting systems; financial management systems that meet international standards; and building the oversight function of government including capacity of parliamentary financial accountability committees. Uganda enacted strong laws to support the implementation of PFM reforms and comply with international standards. In spite of their good intentions, there are many challenges that have undermined the full implementation of PFM reforms. There has been deterioration in budget credibility and predictability over the past years, indicating inadequate fiscal discipline. Potential suppliers align themselves to politically powerful elites to influence the contract awarding process. The ruling elite is forced to look into the public purse to obtain the necessary resources to run campaigns and fund activities aimed at maintaining the regime – actions that strongly undermine PSR. This finding is supported by evidence suggesting that the main beneficiaries from activities that are not compliant with PFM reforms, for example, supplementary budgets, are structures associated with regime maintenance, especially the State House and Ministry of Defence.

### ***Donors as part of the political manipulation***

The current wave of public sector reforms by and large did not originate internally from the vision of a political leader or set of leaders whose personal decision to sponsor reform resonates throughout cabinet and the executive branch. Instead, the reforms originated externally as a result of donor interests. Donors have been the driving force behind the major PSRs, with the NRM government only rallying behind those that support its continuity, while those that threaten its grip on power are either frustrated or manipulated to serve the regime's interests. By continuing to provide aid to a government that has publicly refused to confront corruption, donors are to some extent accomplices in aiding political leaders to abuse their state power.

## **Control of corruption in Zimbabwe**

Zimbabwe comes in last at 10% having dropped to close to 0% between 2006 and 2008. Notably, Zimbabwe is at the bottom of sub-Saharan countries as a whole along with Somalia and South Sudan (5% and lowest in the world), Eritrea (9%), Sudan (6%), Equatorial Guinea (6%) and Chad (7%). Key to note is that Zimbabwe used to be higher on ratings but with a massive fall coming in since soon after independence in 1986 (not visible in the graph) until the year 2002 where it reaches a low of below 10%. There was a series of corruption scandals in the country with more than one scandal occurring in the same year, bringing the total number of scandals to 19 in this 15-year period. This can be highlighted by the main documented scandals namely, National Railways Housing Scandal, the 1987, Zisco Steel blast Furnace Scandal and Air Zimbabwe Fokker Plane Scandal (\$ 100 million) followed by the Willowgate Scandal, ZRP Santana Scandal, War Victims Compensation Scandal, GMB Grain Scandal, VIP Housing Scandal, Boka Banking Scandal, ZESA YTL Soltran Scandal, Telecel Scandal, Harare City Council Refuse Tender Scandal, Housing Loan Scandal, Noczim Scandal, DRC timber and diamond Un reported scandals, another GMB Scandal in 1999, Ministry of water and rural development Chinese tender scandal, VIP Land Grab Scandal and finally the 2001 Harare Airport Scandal. The data used for Zimbabwe is from 1996 to 2020.

### ***Public sector management, institutions and reforms***

The era around the end of the twentieth century brought about a shift from the traditional public administration perspectives to a new public management (NPM) paradigm in many Southern Africa countries and the rest of the world. The departure from the traditional public administration of politics-administration dichotomy, scientific management and Weber's bureaucracy was a move perceived to drift away from the inherent weaknesses. New public management (NPM) appeared to be the best alternative providing diverse service as opposed to government monopolistic service provision. In the 1980s new public management became an international trend with its market-oriented approach to management. Zimbabwe began to implement administrative reforms based on the new public management in the mid-1990s in the public sector. There was need for change from colonial administrative structures to post-colonial structures.

After the 1980's political independence, the government inherited an administrative bureaucracy which in terms of compositions, operation, size and orientation, was heavily

inclined towards that of the colonial masters. As such, this structure was not commensurate with the socioeconomic-political imperatives of reconciliation, nation building and transformation of the economy along equity lines (Agere, 1998). Zhou (2012) notes that, there was lack of compatibility between the inherited systems and the new socio-economic dispensation. The inherited public bureaucracy had to go through an extensive reconfiguration. The administrative machinery derived its legal existence from the Lancaster House Constitution of 1979. This provided a governance structure with an executive Prime Minister, a ceremonial President, a bi-cameral legislature, a Public Service Commission, the Judiciary, Office of the Comptroller and Auditor General and the Attorney General among others. The constitution provided checks and balances through separation of power in which the legislative arm enacted laws which were enforced by the executive arm while the judiciary reviewed the legality of legislative and executive actions and decisions. Presidential executive powers were exercised on the basis of consultation with relevant professional bodies such as the Cabinet, Parliament, Public Service Commission, and the Judiciary Service Commission. Amendment number 7 of 1987 provided for a shift from an Executive Prime Minister to an Executive Presidency and abolished the question time in parliament. The question time was a key mechanism for executive accountability to the legislature. The Lancaster House Constitution was amended nineteen times since 1980 until February 2013 when a Constitutional referendum ushered in a new law of the land. Public administration in Zimbabwe is guided by the interplay between the legislature, judiciary and executive arms of government. The legislature provides law-making and policy approval roles, the judiciary reviews the legality of all government activities while the executive provides decision and policy implementing roles. The legislature's activities have a direct bearing on national public administration. Legislative approval and authorization are needed before any government policy is implemented. Legislative approval is also needed before government funds can be expended. Through these gate-keeping functions, the legislative arm ensures national administrative structures operate within the limits set by parliament. The legislative arm exercises its oversight functions through committees such as Public Accounts Committee and portfolio committee structures, among others (Zhou, 2012). Government ministries are grouped in clusters that are superintended by a portfolio parliamentary committee. Portfolio committees are empowered to invite everyone within their powers to appear before them and give oral evidence on oath. They are also empowered to conduct fact-finding missions

### *Summary of institutions in sub-Saharan economies*

The institutional crisis affecting economic management in sub-Saharan Africa (SSA) is a crisis of structural disconnect between formal institutions transplanted from outside and indigenous institutions born of the culture and traditional values of the African past. Building on the findings and recommendations of the new school of institutional economics, the study, *Africa's management in the 1990s and beyond: Reconciling Indigenous and Transplanted Institutions (AM90s)* posits that both formal and informal institutions are needed in Africa, but in a more flexible and adapted form. Formal institutions need to be adapted to the local culture/context, in order to build the legitimacy needed for enforceability. Informal institutions, although rooted in local culture, also need to adapt to the changing outside world and challenges. It is through this adaptation that formal and informal institutions can converge be reconciled and build on each other's strengths, transaction costs reduced and institutional performance maximized. This process for building convergence is at the heart of the institutional reconciliation paradigm proposed by the AM90s research program and calls for a truly participatory and synergistic approach. This institutional reconciliation is both possible and necessary to make civil services in SSA more service-oriented, develop the private sector, and improve the productivity of African enterprise.

### **2.3 SUMMARY**

The analysis on the experiences of the African countries do show a strong relationship between growth and the factors of fiscal policy and institutions. In terms of fiscal policy, the countries with lower tax rates and higher government spending being used productively are shown to be growing better than others. However, it has to be noted that looking at government spending only without a close scrutiny at the soundness of the institutions is illusionary, as most of this spending might not be directed at the nation at large but it is mostly being redirected by corrupt state officials for personal benefit. This brings out the importance of institutions and how any perceived action around political changes directly affect the nations.

## **CHAPTER 3: LITERATURE REVIEW**

### **3 INTRODUCTION**

This chapter presents the literature review revolving around the effect of fiscal policy on economic growth. The chapter first gives the theories of growth and is then followed by the theory underpinning the study with regards to institutions and fiscal policy. In terms of fiscal policy, the proxies discussed are government spending and taxation and as such, there is a subsection on the effect of government spending on economic growth and the effect of taxation on economic growth. After fiscal policy is the effect of institutions and institutional quality on economic growth. The last part before the conclusion of the chapter gives the combined effects of both institutional quality and fiscal on economic growth.

#### **3.1 THEORIES OF GROWTH**

Fiscal policy, as a part of state's economic policy is characterised by its basic aims to attain economic growth though looking at the means by which government adjusts its spending levels and tax rates to monitor and influence a nation's economy (Mohr, Fourie and Associates, 2008). Gemmel, Kneller and Sanz (2011) state that the impact of fiscal variables on economic growth is ambiguous and depends on their nature, that is, either the impact of distortion and non-distortion taxes, or productive and unproductive spending on economic growth. Distortion taxes and unproductive government spending decrease economic growth, while productive government spending will have a pro-growth effect only if they are financed by non-distortion taxes.

On the theoretical front, however, there are two main strands of literature regarding the role fiscal policy play in fostering economic growth. Proponents of government intervention, mainly the Keynesian school of thought, in economic activity maintain that such intervention can spur long term growth. They cite government's role in ensuring efficiency in resource allocation regulation of markets, stabilization of the economy, and harmonization of social conflicts as some of the ways in which government could facilitate economic growth. In the context of endogenous growth, government role in promoting accumulation of knowledge, research and development, productive public investment, human capital development, law and order can generate growth both in the short- and long-run (Easterly and Rebelo (1993), Mauro (1995), Folster and Henrekson (2001)). On the other hand, there is also the view that

governments are inherently bureaucratic and less efficient and as a result they tend to hinder rather than facilitate growth if they get involved in the productive sectors of the economy. Thus, government fiscal policy is thought to stifle economic growth by distorting the effect of tax and inefficient government spending. It seems then that as to whether government's fiscal policy stimulates or stifles growth remains an empirical question. Even so, the existing empirical findings are mixed, with some researchers finding the relationship between fiscal policy and growth either positive, negative, or indeterminate (M'Amanja & Morrissey, 2005).

As such, the body of the literature dealing with the effect of fiscal policy on economic performance outcomes is basically anchored on two broad positions. First we have the classical economic view which says that "with every dollar increase in real government spending is offset by a dollar reduction in private spending, so crowding out is complete" (Dornbusch, Swaroop & Zou, 1993). On the contrary the Keynesian view as represented in Blinder and Solow (2005) suggest that consumption has a positive effect on the economy. The proponents of the classical view assert that the effect of government spending is temporary and not effective particularly in the long-run when prices adjust and output and employment are at their optimum levels. Besides these 2 schools of thought, we also have Wagner's Law, Barro's theory and the endogenous growth model. These are given in the subsequent sections that follow.

### **3.1.1 WAGNER'S LAW ON GROWTH**

Barro and & Sala-I-Martin (1995) say expenditures are categorized as productive if they are included as arguments in private production functions and unproductive if they are not. The earliest of all theories of government growth is Wagner's Law of Increasing State Activity.

Wagner's law of state, which is also known as the law of increasing state spending, is a principle named after Adolph Wagner, a German economist. He first observed it for Germany and then for other countries and the theory is said to hold that for any country, public expenditure rises constantly as income growth expands. The law predicts that the development of an industrial economy will be accompanied by an increased share of public expenditure in gross national product.

According to Bird (1971), this theory posits a relationship linking industrialization, urbanization and education to the expansion of the public sector. Wagner's Law suggests that

increases in public goods are a product of increased demands by organized industrial workers, coming at the costs of growth in the private sector (Goffman and Mahar, 1971).

Wagner's law is a suggestion that a welfare state evolves from free-market capitalism due to the population voting for ever-increasing social services as general income levels grow across broad spectrums of the economy. Wagner's statement in formal terms has been interpreted by Musgrave (1988) as follows:

With the industrialisation of progressive nations, there is a continuous growth in the share of the public sector. Such an increase in State Expenditure is needed because of three main reasons which Wagner himself identified as:

- (i) Social activities of the state,
- (ii) Administrative and protective actions, and
- (iii) Welfare functions.

It is also necessary to mention the work of Tanzi and Zee (1997) explaining “Wagner’s law”. This law presents an analysis of the size of the government with respect to the degree of development and it postulates a positive covariance between these two variables. In simple terms, Wagner’s law states that economic growth can lead to increased demand for government services and “welfare spending”. According to this law, in fully developed countries government spending rises from three main reasons.

- (1) socio-political: for example, health and social insurance;
- (2) economic: thanks to the science and technology the increased engagement of the state in technological projects is required;
- (3) historical: growth of government spending lead in the end to the government debt increasing.

However, Bureau Voting Theory rejected the role of industrialization and urbanization, suggesting that the main driver of public sector expansion is an artificial demand for government services created by self-interested government employees (Niskanen, 1971).



### 3.1.2 CLASSICAL ECONOMICS ON GROWTH

The classical school of thought can be traced back to 1776 when Adam Smith published his *Wealth of Nations*. This ideology ended in 1871 when W. Stanley Jevons, Carl Menger, and Leon Walras independently published works expounding demand-based theories that ultimately became part of neoclassical economics.

The classical doctrine of economic is frequently called economic liberalism and it has its bases cast upon private property, personal liberty, private enterprise, individual initiative and minimal government interference. The major features of this ideology are summarized by Brue and Grant (2013) as follows:

**Minimal government involvement:** One of the founding principles of the classical school was that the best government governs the least. The forces of the free, competitive market would guide production, exchange, and distribution. The economy was held to be self-adjusting and tending toward full employment without government intervention. Government activity should be confined to enforcing property rights, providing for the national defence, and providing public education (Brue and Grant, 2013).

**Self-interest guides economic behaviour:** These economists assumed that self-interested behaviour is basic to human nature. Producers and merchants provided goods and services out of a desire to make profits; workers offered their labour services to obtain wages, and consumers purchased products as a way to satisfy their wants (Brue and Grant, 2013).

**Harmony of interests:** With the exception of Ricardo, the classicists emphasized the natural harmony of interest in a market economy. By pursuing their own individual interests, people served the best interests of society (Brue and Grant, 2013).

**Importance of all economic activities and resources:** The classical economists pointed out that all factors of production, namely, land, capital, labour and entrepreneurial ability, as well as all economic activities like agriculture, commerce, production and international exchange, contribute to a nation's wealth. The mercantilists had said that wealth was derived from commerce; the physiocrats had viewed land and agriculture as the source of all wealth (Brue and Grant, 2013).

**Economic laws:** The classicists made incredible contributions to economics by focusing analysis upon explicit economic theories or "laws." Examples include the law

of comparative advantage, the law of diminishing returns, the Malthusian theory of population, the law of markets (Say's law), the Ricardian theory of rent, the quantity theory of money, and the labour theory of value. The classicists believed that the laws of economics are universal and immutable (Brue and Grant, 2013).

The Classical Growth Theory postulates that a country's economic growth will decrease with an increasing population and limited resources. Such a postulation implies the belief of classical growth theory economists who think that a temporary increase in real GDP per person inevitably leads to a population explosion, which would limit a nation's resources, consequently lowering real GDP. As a result, the country's economic growth will start to slow (Corporate Finance Institute, 2021).

### **Limitations of the Classical Growth Model**

There are two major limitations that time has revealed with regards to classical theory. Firstly, there is *ignorance with respect to technology*. The classical model of growth ignores the role efficient technical progress could play towards obtaining a smooth-running economy and also, advancements in technology do minimize diminishing returns. Secondly, *there is inaccurate determination of wages*. The classical model of growth assumes that total wages do not exceed or fall below the subsistence level, yet, this is not entirely true. Changes in the industrial structure and substantial economic development can result in total wages exceeding or falling below the subsistence level. Moreover, the classical theory of growth does not consider the role played by trade unions in the process of wage determination (Corporate Finance Institute, 2021).

### **3.1.3 NEOCLASSICAL THEORY ON GROWTH**

The Neoclassical Growth Theory is an economic model of growth that outlines how a steady economic growth rate results when three economic forces come into play: capital, land and technology. Because “*neo*” means “new,” neoclassicism implies a new form of classicism. The neo-classical economists were “marginalists” in the crucial sense that they emphasized decision making and price determination at the margin. Nevertheless, at least three differences between the earlier marginalists and later neoclassical economists can be discerned. First, neoclassical thought stressed both demand and supply in determining the market prices of goods, resources and services, whereas the earlier marginalists tended to focus on demand alone. Secondly, several of the neoclassical economists, for example,

Wicksell and Fisher (1997), took a far greater interest in the role of money in the economy than did the earlier marginalists. Finally, neoclassical economists extended marginal analysis to market structures other than pure competition, duopoly and pure monopoly.

The most popular and yet simple version of the Neoclassical Growth Model is the Solow-Swan Growth Model. This version of the model states that short-term economic equilibrium is a result of varying amounts of capital and labour that play a vital role in the production process. The theory argues that technological change significantly influences the overall functioning of an economy. Neoclassical growth theory outlines the three factors necessary for a growing economy. However, the theory puts emphasis on its claim that temporary, or short-term equilibrium, is different from long-term equilibrium and does not require any of the three factors (King, 2016).

### **Production Function in the Neoclassical Growth Model**

The Neoclassical Growth Model asserts that capital accumulation in any economy, as well as how it is made use of by the people, is an important factor determining economic growth.

According to Corporate Finance Institute (2021), the theory further claims that the relationship between labour and capital in an economy determines its total output. Finally, the theory states that technology augments labour productivity, increasing the total output through increased efficiency of labour. Therefore, the production function of the neoclassical growth model is used to measure the economic growth and equilibrium of an economy. The general production function in the neoclassical growth model takes the following form:

$$Y = AF(K, L)$$

With: Y representing Income, or the economy's Gross Domestic Product (GDP), K is Capital, L is the amount of unskilled labour in the economy and A refers to the level of technology.

Furthermore, because of the dynamic nature of the relationship between technology and labour, an economy's production function is often re-stated as  $Y = F(K, AL)$ . This shows that technology is labour augmenting and that workers' productivity depends on the level of technology (King, 2016).

### **Assumptions of the Neoclassical Growth Model**

One of the major assumptions of the model is that Capital is subject to diminishing returns. provided the economy is a closed economy. Secondly, provided that labour is fixed or constant, the impact on the total output of the last unit of the capital accumulated will always be less than the one before. Finally, the model explains that in the short term, the rate of growth slows down as diminishing returns take effect, and the economy converts into a “steady-state” economy, where the economy is steady, or in other words, in a relatively constant state (King, 2016:217).

### **Conclusions on the Neoclassical Model of Growth**

***Output as a function of growth:*** The neoclassical growth model explicates that total output is a function of economic growth in factor inputs, labour, technological progress and capital.

***Growth rate of output in a steady-state equilibrium:*** The growth rate of total output in a steady-state equilibrium is equal to the growth rate of the population or labour force and is never influenced by the rate of savings.

***Increased steady-state per capita level of income:*** While the rate of savings does not influence the steady-state economy growth rate of total output, it does result in an increase in the steady-state level of per capita income and, therefore, total income as well, as it raises the total capital per head.

***Long-term growth rate:*** The long-term growth rate of an economy is solely determined by technological progress or regress (Corporate Finance Institute, 2021).

### **3.1.4 KEYNESIAN THEORY OF GROWTH**

The Keynesian ideology has over time become one of the most important schools in terms of economic thought. It began with the publication titled *The General Theory of Employment, Interest and Money* in 1936 by Keynes and it has remained a major presence in orthodox economics to date. It was a by-product of the neoclassical school, with Keynes himself being steeped in the Marshallian tradition. Although Keynes sharply criticized certain aspects of neoclassical economics, which he grouped together with the Ricardian doctrines under the heading of “classical economics,” he used many of its postulates and methods. His system was based on a subjective psychological approach, and it was permeated with marginalist concepts, including static equilibrium economics. Keynes disassociated himself from attacks on the neoclassical theory of value and distribution (King, 2016).

The major principles and characteristics of the Keynesian school of thought are summarized (Brue & Grant (2013); King (2016)) as follows:

**Macroeconomic emphasis:** Keynes and his followers concerned themselves with the determinants of the total or aggregate amounts of consumption, saving, output, income and employment. They were less interested, for example, in how an individual firm decides on its profit-maximizing level of employment than in the relationship between total spending in the economy and the aggregate of such employment decisions (Brue & Grant, 2013).

**Demand orientation:** Keynesian economists stressed the importance of effective demand (now called aggregate expenditures) as the immediate determinant of national income, output, and employment. Aggregate expenditures, said these economists, consist of the sum of consumption, investment, government and net export spending. Firms collectively produce a level of real output that they expect to sell (King, 2016). But sometimes aggregate expenditures are insufficient to buy all the output produced. As unsold goods accumulate, firms lay off workers and cut back output. That is, effective demand establishes the economy's actual output, which in some cases it is less than the level of output that would exist if there were full employment or potential output (Brue & Grant, 2013).

**Instability in the economy:** According to the Keynesians, the economy is given to recurring booms and busts because the level of planned investment spending is erratic. Change in investment plans cause national income and output to change by amounts greater than the initial changes in investment. Equilibrium levels of investment and saving are achieved through changes in national income, as opposed to changes in the rate of interest. Investment spending is determined jointly by the rate of interest and the marginal efficiency of capital, or the expected rate of return above the cost on new investments (Corporate Finance Institute, 2021). The interest rate depends on the liquidity preferences of people and the quantity of money. The marginal efficiency of capital depends on the expectation of future profits and the supply price of capital. The expected rate of profit from new investment is unstable, and, therefore, one of the most important causes of business fluctuations (Brue & Grant, 2013).

**Wage and price rigidity:** The Keynesian theorists pointed out that wages tend to be inflexible downward because of such institutional factors as union contracts, minimum wage laws, and implicit contracts (understandings between employers and their workers that wages will not be cut during downturns judged to be temporary) as given by King (2016). In periods of slack aggregate demand for goods and services, firms respond to lower sales

by reducing production and discharging workers, not by insisting on wage cuts. Prices also are sticky downward; declines in effective demand initially cause reductions in output and employment rather than declines in the price level. Deflation occurs only under conditions of extremely severe depression (Brue & Grant, 2013).

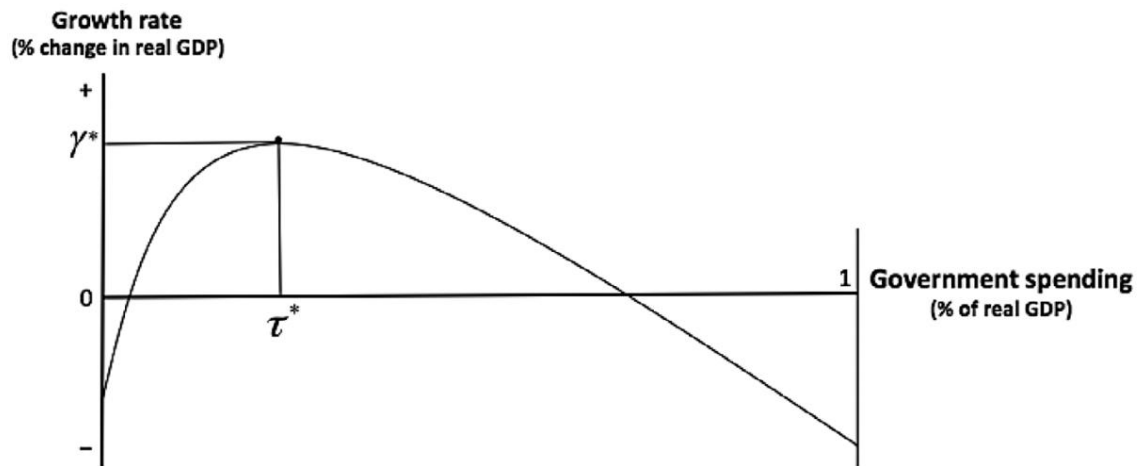
**Active fiscal and monetary policies.** Keynesian economists advocated for active government intervention through appropriate monetary and fiscal policies to promote price stability, full employment and economic growth. To fight recessions, government should either increase its spending or reduce taxes, the latter increasing private consumption spending. It also should increase the money supply to drive down interest rates in the hope that this will bolster investment spending. To counter inflation caused by excessive aggregate expenditures, government should reduce its own spending, increase taxes to reduce private consumption spending, or reduce the money supply to raise interest rates, which will dampen excessive investment spending. (Brue & Grant, 2013).

As such, Keynes argument was that inadequate overall demand could eventually lead to prolonged periods of high unemployment. An economy's output of goods and services was seen as the sum of the four components of consumption, investment, government purchases, and net exports. Any increase in demand has to come from one of these four components. But during a recession, strong forces often dampen demand as spending goes down. For example, during economic downturns uncertainty often erodes consumer confidence, causing them to reduce their spending, especially on discretionary purchases like a house or a car. This reduction in spending by consumers can result in less investment spending by businesses, as firms respond to weakened demand for their products. This places the task of increasing output on the shoulders of the government. The Keynesians maintained that state intervention is necessary in order to moderate the booms and busts in economic activity, otherwise known as the business cycle (IMF, 2021).

### **3.1.5 BARRO'S THEORY OF GROWTH**

In an endogenous growth model where government spending is a factor of production, Robert Barro (1997) suggests that: "The effects of government spending on growth involve two channels, that is, the negative effect of taxation on the after-tax marginal product of capital, and the positive effect of public services." He goes on to say, at low values of government spending, the positive effect of increased government spending on capital's marginal product dominates, hence growth rises. As government spending rises beyond this

point, the adverse effect of distorting taxation becomes more important, and growth reaches a maximum. For higher values of government spending, the taxation effect dominates and thus growth declines. This is illustrated in Figure 3.1 below.



**Figure 3.1: Government Spending and the growth rate**

Source: Barro, 1997.

As such, there are basically three main categories of government spending:

The first one is public investment which includes gross capital formation of property, plant, and equipment. The second one is Government consumption spending which is spending in order to produce non-market goods for example, justice, police and military payroll for collective consumption, not forgetting market goods and services such as health care and education. The last one relates to public social spending which is at times referred to as lateral transfers, and these are survivors and disability benefits, old age pensions, unemployment compensation for example but it does not include any expenditure on capital.

### **3.1.6 THE ENDOGENOUS GROWTH MODEL**

The Endogenous Growth Theory states that economic growth is generated internally in the economy, that is, through endogenous forces, and not through exogenous ones. The theory contrasts with the neoclassical growth model, which claims that external factors such as technological progress, etc. are the main sources of economic growth (Corporate Finance Institute, 2021).

According to endogenous growth theory, fiscal policy can affect both the level and growth rate of per capita output. A detailed illustration of the mechanism through which fiscal policy influences growth can be found in, amongst others, Barro (1990) and Barro and Sala-i-Martin (1992, 1995). These authors employ a Cobb-Douglas-type production function with government provided goods and services ( $g$ ) as an input to show the positive effect of productive government spending and the adverse effects associated with distortionary taxes. The production function, in per capita terms, can be given as follows,

$$y = k^{1-a} g^a \quad (1)$$

where  $y$  is per capita output,  $k$  is per capita private capital and  $A$  is a productivity factor. If the government balances its budget in each period by raising a proportional tax on output at rate ( $t$ ) and lump-sum taxes ( $L$ ), the government budget constraint can be expressed as,

$$ng + C = L + tny \quad (2)$$

where  $n$  is the number of producers in the economy and  $C$  is government consumption, which is assumed unproductive. Theoretically, a proportional tax on output affects private incentives to invest, but a lump sum tax does not. Subject to a specified utility function, Barro (1990) and Barro and Sala-i-Martin (1992) derive the long run growth rate ( $g$ ) in this model as,

$$g = \lambda(1-t)(1-a)A^{\frac{1}{1-a}} \left(\frac{g}{y}\right)^{\frac{a}{1-a}} - \mu \quad (3)$$

where  $\lambda$  and  $\mu$  stand for parameters in the assumed utility function. From (3), it is clear that the growth rate is a decreasing function of distortionary tax rate ( $t$ ) and an increasing function of productive government expenditure ( $g$ ). It is also evident that growth rate is not affected by both non-distortionary taxes ( $L$ ) and unproductive government expenditure ( $C$ ). The above specification assumes the government balances its budget each period, an assumption that is unlikely to hold in reality especially in the less developed countries. The empirical model developed by these researchers follows Kneller et al (1999) and Bleaney et al (2000) in which they take a more practical view by assuming a non-balancing government budget constraint in some periods. Taking this into account, they re-write (3) above to obtain the following expression.

$$ng + C + b = L + tny \quad (4)$$



Where  $b$  is the budget deficit/surplus in a given period. Since  $g$  is productive, its predicted sign is positive, but  $t$  is negative as it distorts incentives of private agents. Both  $C$  and  $L$  are hypothesised to have zero effects on growth. Similarly, the effect of  $b$  is expected to be zero so long as Ricardian equivalence holds, but may be non-zero otherwise (Bleaney et al, 2000). They specify their growth equation in the spirit of Kneller et al (1999) by considering both fiscal ( $x_{it}$ ) and non-fiscal ( $z_{it}$ ) variables so that the growth equation becomes,

$$y_t = \alpha + \sum_{i=1}^k \beta_i z_{it} + \sum_{j=1}^m \gamma_j x_{jt} + \varepsilon_{it} \quad (5)$$

where  $y_t$  is the growth rate of output,  $x$  is the vector of fiscal variables,  $z$  is the vector of non-fiscal variables, and  $e_{it}$  are white noise error terms. In theory, if the budget constraint is fully specified, then  $\sum_{j=1}^m x_{jt} = 0$  because expenditures must balance revenues.

### **Key Policy Implications of Endogenous Growth Theory**

According to Corporate Finance Institute, 2021, the key implications of this policy can be summed up as follows:

- Governmental policies can raise an economy's growth rate if the policies are directed toward enforcing more market competition and helping stimulate innovation in products and processes.
- There are increasing returns to scale from capital investment in the “knowledge industries” of education, health, and telecommunications.
- Private sector investment in R&D is a vital source of technological progress for the economy.

## **3.2 THEORETICAL AND EMPIRICAL LITERATURE**

This section focuses on the theoretical and empirical literature that the study aims to undertake. The section is divided into three main parts, starting with studies on fiscal policy and economic growth, followed by institutions and economic growth and the last part looks at research involving the effect of both fiscal policy and institutions on economic growth.

### **3.2.1 FISCAL POLICY AND ECONOMIC GROWTH**

This section is divided into three parts, firstly giving the theoretical foundations of the effect of taxation on economic growth, followed by the theoretical foundations of the effect of

government spending on economic growth and it ends with the empirical foundations of the effect of fiscal policy in general on growth as has been put forward by studies.

### **3.2.1.1 THEORETICAL FOUNDATIONS: EFFECT OF TAXATION ON ECONOMIC GROWTH**

In current economics, growth theories can be considered as fundamental elements in explaining the impact of key variables on economic growth. It is necessary to realize that taxation influences economic growth solely through its impact on individual growth variables, which are capital accumulation and investment, or human capital (Macek, 2015; Kotlán *et al*, 2011).

In terms of its genesis, modern income tax was introduced in Britain towards the end of the 17<sup>th</sup> century, to finance the Napoleonic wars. It was repealed in 1815 but reintroduced again as a temporary measure in the year 1842. In 1849, the Board of Inland Revenue was then created and until two hundred years after its first imposition, it was still regarded as a temporary tax, and it required new legislation every year (South African Revenue Services, 2020).

Dwenger (2009) states that corporate taxation lowers the return of invested capital and influences also the capital structure or the company's age. Drebler (2012) claims that taxation determines the foreign direct investment (FDI) inflow and plays a significant role in the investor's decision making about the investment localization. It is necessary to realize that entrepreneur's investment decisions can be influenced by the labour taxation, too. Alesina (1999) states that the main reason for this fact is that the growth of labour tax rate leads to the employees' effort to get salary increase at a same level (before the taxation). By this, pressure is created on companies to lower their profits, and consequently their investment, too.

Setting up an efficient and fair tax system in developing countries has proved to be a challenge, except when their economies are integrated with the international economy. In these developing countries, taxation is the only rational means of raising the revenue to government spending on the goods and services. The absolute tax system in those countries should raise essential revenue without excessive borrowing, and discouraging economy activity (Rena, 2011). The challenge however when it comes to the SSA region is that most workers are generally employed in agricultural sector or small enterprises and that results in any attempt at raising revenue through taxes playing a minimal role for those economics. This

could explain the puzzling fact why tax policies seen in developing countries, for example, revenue is surprisingly small compared with that in developed economies. Taxes on labour income play a minor role, and developing countries collect on average only two-thirds or less of the amount of tax revenue that richer countries do, as a fraction of GDP (Gordon & Li, 2005; Rena, 2011).

The argument then is that the low government expenditures in developing countries are the result of the pattern of taxation. If the pattern of taxation were to be changed, then expenditures would also change as a result of this. As a result, there is a need for fiscal policy not only by looking at government spending, but also by tax reform.

Reforming an efficient tax administration is not an easy process for an emerging economy, when the tax officials' wages are low and in the absence of an efficient computerized systems or well-trained staff. Domestic financial markets are, furthermore, critically important for reducing information problems in investment decisions. Much of Africa's growth potential remains locked away, because we have not been able to develop fast enough on the much-needed infrastructure links, particularly in transport and communications. As a result, most sub-Saharan Africa governments become forced to take any system that allows them to exploit whatever options are available, instead of actually establishing a rational, modern and efficient tax system (Rena, 2011).

In addition, the channels through which the effects of policies are transmitted to the economy may have some bearing on the relative importance of one policy over the other. The other side of strengthening this argument is that small taxpayers cannot be expected to pay tax based on a complex tax structure and that a simplified tax regime needs to be set up for them. This is the genesis of the idea of a "single tax," that emerged mainly in most of Sub Saharan, though the idea has certainly not been confined to this part of the world alone. Within such a framework, small taxpayers would have to pay only one tax, combined from various taxes that larger taxpayers would have to pay separately. Because of the introduction of such a composite tax, many tax administrators have argued that tax evasion among small taxpayers has gone down. However, the argument that tax evasion by small taxpayers has gone down is due to the fact simplified regimes tend to require less revenue from them compared to their revenue potential (Shome, 2004).

We should also point out that the tax system in many African countries is neither well-structured nor as effective as a source of revenue, and has made it virtually impossible to recover from the downward economy. A persistent revenue shortfall arising is a common experience from an ill-structured tax system. Simply by cutting the expenditure only without developing an effective tax system will undermine the growth and the construction of effective state institutions. As for the promotion of confidence in a strong and stable domestic economy, a stable currency is essential for price stability through a different control of mechanisms. (FitzGerald, 2003; Gordon & Li, 2005). A summary of the experiences of five such countries in our study was given in the preceding chapter to highlight this.

### **3.2.1.2 THEORETICAL FOUNDATIONS: EFFECT OF GOVERNMENT SPENDING ON ECONOMIC GROWTH**

Economic theory has shown how government spending may either be beneficial or detrimental to economic growth. In traditional Keynesian macroeconomics, many kinds of public expenditures, can contribute positively to economic growth through multiplier effects on aggregate demand. On the other hand, government consumption may crowd out private investment, dampen economic stimulus in the short run and reduce capital accumulation in the long run. Studies based on endogenous growth models distinguish between distortionary or non-distortionary taxation and productive or unproductive expenditures.

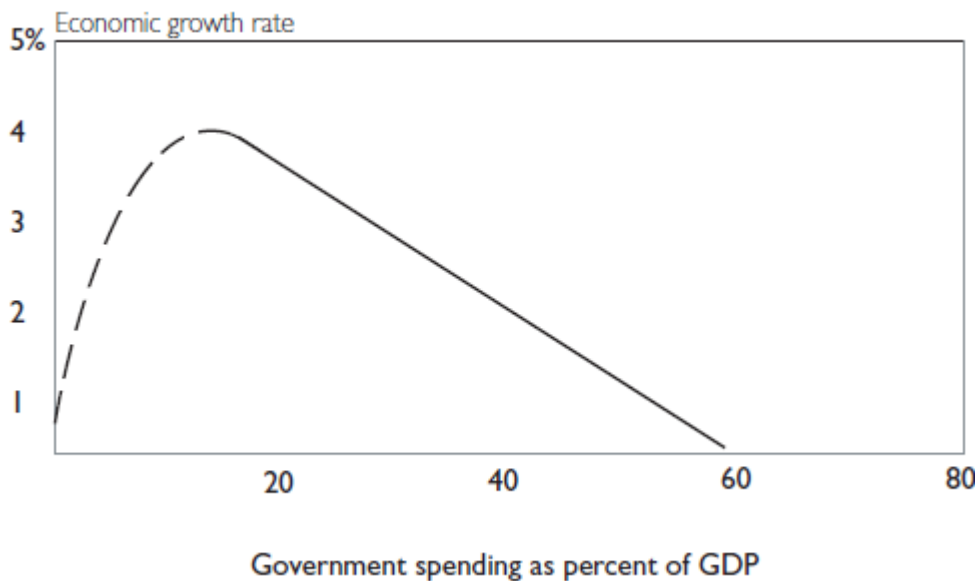
In Fiscal illusion theory which tries to explain government growth by linking convoluted tax systems to the masking of the costs of public goods. Also, tax systems can hide the costs of public goods and therefore stimulate their growth (Goetz, 1977). Empirical support for these theories has varied, causing them to lose some of their impetus. Verbek (2000) extends on that government spending is usually suggested that the net impact on growth (as measured by aggregate output) of the crowding-out effect of public expenditure clearly depends on the relative marginal productivity of the public and private sectors. The externality effect of public expenditure enhances growth by raising private sector productivity. Here, a higher level of such expenditure could achieve a high growth rate. The opposing natures of the crowding-out and externality effects rest on the proposition that the structure of public expenditure, rather than merely its level, would be of considerable importance (Obodoechi & Ibe, 2020).

Given these contradicting theories, Policymakers are divided as to whether government expansion helps or hinders economic growth. Advocates of bigger government argue that government programs provide valuable “public goods” such as education and infrastructure.

They also claim that increases in government spending can bolster economic growth by putting money into people's pockets (Obodoechi & Ibe, 2020). Proponents of smaller government have the opposite view. They explain that government is too big and that higher spending undermines economic growth by transferring additional resources from the productive sector of the economy to government, which uses them less efficiently. They also warn that an expanding public sector complicates efforts to implement pro-growth policies, such as fundamental tax reform and personal retirement accounts, because critics can use the existence of budget deficits as a reason to oppose policies that would strengthen the economy (Peacock-Wiseman, 1961).

Obodoechi and Ibe (2020) go on to say that economic theory does not automatically generate strong conclusions about the impact of government outlays on economic performance. Indeed, almost every economist would agree that there are circumstances in which lower levels of government spending would enhance economic growth and other circumstances in which higher levels of government spending would be desirable. If government spending is zero, presumably there will be very little economic growth because enforcing contracts, protecting property, and developing an infrastructure would be very difficult if there were no government at all (Okoro, 2013).

In other words, some government spending is necessary for the successful operation of the rule of law and this point is illustrated in Figure 3.2 below. Economic activity is very low or non-existent in the absence of government, but it jumps dramatically as core functions of government are financed. This does not mean that government costs nothing, but that the benefits outweigh the costs. Economists will generally agree that government spending becomes a burden at some point, either because government becomes too large or because outlays are misallocated. In such cases, the cost of government exceeds the benefit (Obodoechi & Ibe, 2020).



**Figure 3.2: The Rahn Curve - Economy Shrinks when Government grows too large**

Source: Okoro, 2013

The downward sloping portion of the curve in Figure 3.2 can exist for a number of reasons, including:

**3.2.1.2.a) The extraction cost**

Obodoechi and Ibe (2020) explain that government spending requires costly financing choices. The federal government cannot spend money without first taking that money from someone. All of the options used to finance government spending have adverse consequences. Taxes discourage productive behaviour, particularly in the current tax system of most African countries, which impose high tax rates on work, saving, investment, and other forms of productive behaviour due to the aftermath of covid-19. Borrowing consumes capital that otherwise would be available for private investment and, in extreme cases, may lead to higher interest rates. Inflation debases a nation's currency, causing widespread economic distortion (Musgrave, 1988).

**3.2.1.2.b) The displacement cost**

According to Abu and Abudallahi (2010), government spending displaces private-sector activity. Every dollar that the government spends necessarily means one less dollar in the productive sector of the economy. This dampens growth since economic forces guide the

allocation of resources in the private sector, whereas political forces dominate when politicians and bureaucrats decide how money is spent. Some government spending, such as maintaining a well-functioning legal system, can have a high “rate-of-return.” In general, however, governments do not use resources efficiently, resulting in less economic output (Liu, Hsu & Younis, 2008).

#### 3.2.1.2.c) **The negative multiplier cost**

Government spending finances harmful intervention. Portions of the federal budget are used to finance activities that generate a distinctly negative effect on economic activity. For instance, many regulatory agencies have comparatively small budgets, but they impose large costs on the economy’s productive sector (Liu, Hsu & Younis, 2008). Outlays for international organizations are another good example. The direct expense to taxpayers of membership in organizations such as the International Monetary Fund (IMF) and Organisation for Economic Co-operation and Development (OECD) is often trivial compared to the economic damage resulting from the anti-growth policies advocated by these multinational bureaucracies (Obodoechi & Ibe, 2020).

#### 3.2.1.2.d) **The behavioural subsidy cost**

Government spending encourages destructive choices. Many government programs subsidize economically undesirable decisions. Welfare programs encourage people to choose leisure over work. Unemployment insurance programs provide an incentive to remain unemployed. Flood insurance programs encourage construction in flood plains. These are all examples of government programs that reduce economic growth and diminish national output because they promote misallocation or underutilization of resources (Jhingan, 2004).

#### 3.2.1.2.e) **The behavioural penalty cost**

Government spending discourages productive choices in Jhingan (2004). Government programs often discourage economically desirable decisions. Saving is important to help provide capital for new investment, yet the incentive to save has been undermined by government programs that subsidize retirement, education and housing. Why should a person set aside income if government programs finance these big-ticket expenses? Other government spending programs, Medicaid is a good example, generate a negative economic

impact because of eligibility rules that encourage individuals to depress their incomes artificially and misallocate their wealth (Liu, Hsu & Younis, 2008).

#### 3.2.1.2.f) **The market distortion cost**

Government spending distorts the allocation of resources. Competitive market buyers and sellers set prices in a process that guarantees the most efficient resource allocation, but some government programs disrupt the competitive market (Musgrave, 1988). In both medical and education, government subsidies to reduce costs have caused problems for "third-party payers." When individuals are spending other people's money, they are not too worried about prices. This undermines a key role in competitive markets and creates significant inefficiencies in areas such as healthcare and education. Government programs also misallocate resources to allow individuals, organizations, and businesses to spend time, energy, and money to receive special benefits from the government or to minimize the burden of government costs (Liu, Hsu & Younis, 2008).

#### 3.2.1.2.g) **The inefficiency cost**

Government spending is viewed as a less effective way to deliver services as there is evidence that the private sector could provide these important services, education, healthcare for example, at a higher quality and lower cost. In other cases, such as postal services and airports, the improvement could take place due to privatization while in other cases, for example, education, the economic benefits would accumulate by shifting to a model based on competition and choice (Obodoechi & Ibe, 2020).

#### 3.2.1.2.h) **The stagnation cost**

This point illustrates that government spending in a way inhibits innovation. Because of the existence of competition and the desire to increase income and wealth, individuals and entities in the private sector constantly search for new options and opportunities (Musgrave, 1988). Economic growth is then greatly enhanced by this discovery process of "creative destruction." Government dealings on the other hand, are inherently inflexible, both because of centralization and because of bureaucracy. Reducing government, or devolving federal programs to the state and local levels, can eliminate or mitigate this effect. Spending on a government program, department, or agency can impose more than one of these costs. For instance, all government spending imposes both extraction costs and displacement costs.



This does not necessarily mean that outlays, either in the aggregate or for a specific program, are counterproductive. That calculation requires a cost-benefit analysis (Obodoechi & Ibe, 2020).

### 3.2.1.2.i) **Summary of effect of government spending on economic growth**

Within the impact of government spending on economic growth it is necessary to realize that their impact depends on whether productive or unproductive government spending prevail (Kneller *et al*, 1999). Barro and Sala-i-Martin (2004) or Kneller *et al*, (1999) among productive government spending incorporate examples like investment into education and human capital, spending on national defence, healthcare or infrastructure. Unproductive government spending on the other hand is mainly viewed as social security contributions.

As such, if these spending suppress investments or government spending into education, then the impact of total government spending cannot be pro-growth.

### **3.2.1.3 EMPIRICAL FOUNDATIONS: EFFECT OF FISCAL POLICY ON ECONOMIC GROWTH**

There are various studies that examined the relationship between fiscal policy and growth and these include Christie (2011), Babalola and Aminu (2011), Benos (2009), Kneller, *et al* (1999), Zhang (2016), Ocran (2011) and Medee and Nenbee (2011).

Christie (2011) highlighted various aspects of the relationship between government expenditures and economic growth in long term. A model has been developed through the application of a general method of moments (GMM) to find the dynamic nature of relation between the described variables for 136 developing and developed countries during the period of 1971 to 2005. The conclusions of the study indicate that government spending beyond the threshold level affects the growth negatively. The findings of the study indicate that public spending at 26- 32% of GDP is threshold level for developed economies and 33% of GDP for developing countries. Based on the findings, it was suggested to manage public spending; because 28 developed economies have the public spending more than 30% of GDP from 2001 to 2005. The expansion of public spending in these economies will have negative impacts on long term growth. The outcomes of research indicate that improving the quality of institutions may improve the economic growth in case of increasing public spending. It was also found that the threshold level of spending without imposing serious side effects

between production and non-productive spending, which alleviate the potential gain of increased government expenditure (Chuadhary & Madni, 2017).

The second study on the topic is by Babalola and Aminu (2011) who assessed how fiscal policy is related to economic growth using the economy of Nigeria over the period 1977 to 2009. The study applied Error Correction Model and Engle-Granger approach to test the long and short run relationship among variables. GDP growth rate was taken as dependent variable while productive government expenditure, unproductive government expenditure, direct income tax and capital expenditure are considered as independent variables. The results show that both productive and unproductive expenditures have insignificant impact on economic growth. On the other side, contrary to economic theory, direct income tax has positive effect while capital expenditure has negative impact on economic growth of Nigeria. Improvement in government expenditure on health, education and economic services is recommended to boost economic growth.

The work of Benos (2009) disintegrated public revenues and government spending into subcategories and analyzed the impact of each category on GDP growth of 14 European Union economies for the period 1990 to 2006. In this study, public spending on education, recreation, health, culture, housing, religion, defence, taxes on wealth, imports, income, capital, economic affairs, public order safety, production and fiscal deficit are considered as fiscal variables while private investment, population, secondary education, employment growth, imports and exports are treated as non-fiscal variables. Panel data techniques and ordinary least square methods were applied to estimate the results. The empirical analysis reveals that public spending on human capital has not significant effect on economic growth while infrastructure spending affects the economic growth positively. It was also found that taxation affect economic growth negatively while budget deficit has not a clear relation with economic growth.

Kneller, *et al* (1999) determined the relationships between government expenditure and economic growth for a group of 30 OECD countries during the period 1970-2005. The obtained results show that there is a long-run relationship between government expenditure and economic growth. Furthermore, they also found a unidirectional causality from government expenditure to growth for 16 out of the 30 countries that support the Keynesian hypothesis. However, causality runs from economic growth to government expenditure in 10 out of the countries, confirming the Wagner's law. They also found the existence of

feedback relationship between government expenditure and economic growth in four countries.

Also, another important study is by Zhang (2016), who used Vector Auto Regression (VAR) and Error Correction Model (ECM) to examine impact of fiscal policy variables on Nigeria's economic growth for the period 1970 to 2009. The findings of the study showed that there is a long run equilibrium relationship between economic growth and fiscal policy variables in Nigeria. In a similar study, Ocran (2011) examined the effect of fiscal policy variables on economic growth in South Africa covering the period 1990 to 2004. Finding from this investigation revealed that government consumption expenditure and taxation have a significant positive effect on economic growth.

Finally, Medee and Nenbee (2011) used Vector Auto Regression (VAR) and Error Correction Model (ECM) to examine impact of fiscal policy variables on Nigeria's economic growth for the period 1970 to 2009. The results of the study revealed that there is a long run equilibrium relationship between economic growth and fiscal policy variables in Nigeria.

The studies of the effect of public expenditure on the economy has shown a positive relationship according to Christie (2011), Babalola and Aminu (2011), Benos (2009), Kneller, *et al* (1999), Zhang (2016), Ocran (2011) and Medee and Nenbee (2011), while others such as Abu-Bader and Abu-Qarn (2003) could not find any relationship.

### **3.2.2 INSTITUTIONS AND ECONOMIC GROWTH**

The “institutional quality hypothesis” as proposed by Douglas North claims that the development of the economy is affected by the framework of the institutions within which the economic agents interact with one another in an economy. This view states that, what matters most are the “rules of the game” in a society, and these are defined by the prevalent implicit and explicit behavioural standards couple with their aptitude to create suitable incentives for desirable economic behaviour (Rodrik, Subramanian & Trebbi, 2004). In his famous book, *Wealth of Nations*, Adam Smith (1776) was the first to emphasize that nations will thrive after building institutions that encourage entrepreneurship and savings. However, most of the recent work on the “institutional quality hypothesis” has been associated with North's (1990) effort to explore the relationship between economic performance and institutional factors, such as political freedom and civil liberty. The majority of early studies focussed on the relationship

between economic development and political institutions, which were measured through indices of political instability and violence.

Over the years however, the development of new measures has highlighted a number of different institutional issues that will be addressed in the discussion that follows. The main indicators that will be used are voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption (World Bank, 2020).

Good institutions have been documented to be critical in providing an enabling environment for the juice of economic prosperity to trickle down to the poorer segments of the populations in sub Saharan Africa (Thorbecke, 2013). Inefficient collection of non-tax revenue and its misallocation are common in some African countries, reflecting a lack of systematic, transparent, accountable, coordinated and regularly monitored data compilation (Hodler and Raschky, 2015). This results in a lack of clarity about the amount of revenue collected and its allocation and increases the potential for misuse and corruption, thus weakening incentives to better report non-tax revenue. The lack of clarity, consultation and cooperation erodes trust in public institutions and thus weakens their authority (United Nations, 2020). As such, an improvement in institutions results in better rules of the game and lowers the asymmetric information problem which reduces risk, cuts down transaction costs, helps enforce property rights and enhances economic allocation efficiency (Ho & Roni, 1988). For these reasons, the literature generally supports that better institutional quality leads to better economic performance as this releases the pressure on government expenditure for economic stimulation (Zhang, 2016).

Hall and Jones (1999) initiated one of the first empirical research attempting to establish a relation between economic performance and institutions. They mentioned the relation between the provision of protection to private productive units from confiscatory diversion and institutions. Yielding that a perfect measurement of social infrastructures is not in rehearsal, they chose a proxy gained by pooling two indexes: “an index of government anti-diversion policies” and “an index of openness to international trade”. On the other hand, a fundamental basis to measure the institutions was provided in this study and adopted methodology to measure institutional variables was used in many studies to know the relation between institutions and economic performance in many studies later on.

On the relationship between institutional quality and economic growth, Nguyen, Su and Nguyen (2018), investigated the impacts of institutional quality on economic growth for 29 emerging economies over the 2002-2015 period by employing System Generalized Method of Moments (SGMM) estimators. They found significant positive impacts of institutional quality on economic growth and they concluded that the institutional quality impedes the positive effects of foreign direct investments (FDIs) and trade openness on economic growth. However, institutional quality improvement can mitigate the competition brought by trade openness in the areas FDIs operate to optimize their spill-over effect. Also, Louis *et al*, (2015), explored the effect of institutions on the economic development of African countries in 2013. According to their analysis conducted using data on 37 countries, institutions can be considered a powerful factor explaining differences in development, while geography isn't significant. The roles of physical infrastructure and human capital are also essential.

In a similar study, Wandeda, Masai and Nyandemo (2021) looked at Institutional quality and economic growth with evidence from sub-Saharan Africa countries. The study employed two step systems GMM to analyse the effect of institutional quality on economic growth for sub-Saharan African countries for the period from 2006 to 2018. Their findings showed that an improvement on institutional quality positively and significantly improve sub-Saharan African countries output. The findings further provided evidence that the effect of institutional quality on output varies with regional location of SSA countries. In particular, institutional qualities were seen to be more effective in driving income growth in West African region than the other three regions of Eastern Africa and Central Africa. Also, their findings indicated that the impact of institutional quality on output growth varies with income level of SSA countries. An improvement in institutional quality is more likely to improve economic performance of low income SSA economies than the middle income SSA countries. SSA countries should strengthen independent institutional bodies that prosecute economic crimes. They also suggested that African countries should support African agendas that are aligning with global development agenda. Their conclusion was that sub-Saharan African countries should strengthen institutions that widen democratic space, civil liberty and the participation of citizen in the development agenda of a country.

Furthermore, Louis *et al*, (2015), made an exploration into the effect of institutions on economic development using African countries in 2013. According to their analysis conducted

with a dataset of 37 countries, institutions are a powerful factor explaining differences in development.

Using a sample of 55 countries for the periods 1972-1995, Chong and Calderon (2000) examined the causation between institutional quality and output. Institutional quality was proxied by infrastructure quality, nationalization potential, contract enforceability and bureaucratic delay. The finding showed that reverse causality exists between economic growth and institutional quality.

In the same time frame, Aidt, Duta and Sena (2008) sampled 67 to 71 countries to examine how corruption and governance regime relates to a country's income growth. The sampled countries were all drawn from the five continents. The study used GMM to compute parameter estimates. The findings showed that the impact of corruption on output is regime specific. Evidence further showed that corruption slows down output growth for countries with quality political institutions.

Comeau (2003) investigated whether democracy contributes significantly to economic growth. The author sampled 82 countries for the period 1970-1980. The paper used OLS estimation technique to achieve the estimates. The study projected that democracy significantly and positively impacts economic growth. The result further established a nonlinear link between democracy and growth.

Dollar and Kraay (2003) examined the effects of trade and institutions on income growth of 168 countries between the years 1970-1980. The authors used OLS estimation technique. The result showed that both trade and institutions significantly impact income growth. One major drawback of this paper is the use of OLS to estimate panel data. OLS is known to be inconsistent if the unobserved characteristics are correlated with the explanatory variables.

The impact of institutions on output for a sample of 77 countries was done by Glaeser, La Port, Lopez-de-Silanes and Schleifer (2004) estimated. The author employed OLS to estimate the parameters for the periods 1960-2000. Result showed that human capital significantly impacts economic growth. However, the study found that institutional quality plays no significant role on economic growth. Glaeser *et al*, (2004) observed that proposition about the positive impact of institutions on economic growth is ambiguous and variables used to measure the institutional quality is unsuitable for this purpose. He argued that these variables do not measure the quality of institutions which is claimed as constraints in theoretical literature but

it is outcome of institutional variables. Author is of view that governance indicators are very volatile that do not reflect the actual position of political environment but it varies with variation in per capita income. The established empirical relationship between institutions and economic growth in literature was questioned about the instrumental techniques and common measures by author and his collaborators. The study also raised some interesting analytical questions regarding the conceptualization of institutions, the uncritical use of institutions and governance as similar concepts and the nature of the theoretical link between governance, institutions and economic development.

In the same year as Glaeser *et al*, (2004), Bräutigam and Knack (2004) sampled 32 SSA countries to assess if institutions, foreign aid impact income growth. The author employed OLS and 2SL and the quality of governance was measured by subjective indexes from the ICRG. The result indicated that increases in GDP per capita enhance quality of governance while governance deteriorates in the presence of political strife.

These studies were then followed by, Gwartney, Holcombe and Lawson (2004) studied the impact of economic freedom and institutional quality on income. The study sampled 100 countries for the period 1980-2000. Institutional quality was measured by Economic Freedom of the World (EFW) index. Evidence showed that countries with good and consistent institutions have better economic outcomes and higher income levels.

In a similar study, Méon and Sekkat (2005) controlled for corruption and quality of governance on examining income variation across 63 and 71 countries for the period 1970-1998. The study employed OLS estimation technique. The findings showed that corruption impedes both income level and investment. Djankov, McLiesh and Ramalho (2006) sampled 135 countries for the period 1993-2002. The research aimed at examining whether regulation has a bearing on income growth. Institutional quality was proxied by regulation index. The study analysed the magnitude of business regulatory index on growth by use of OLS. The result showed that government regulation of business significantly improves a country's income level.

In yet another study, Butkiewicz and Yanikkaya (2006) used two large samples of least developed economies and developed economies in examining how institutional quality impacts output growth. The study used five distinct measures of democracy and six composite index of rule of law. The model was estimated by seemingly unrelated regression (SUR) technique. The

result indicated that democratic institutions enhance growth while rule of law has non-significant effect on income level.

In 2008, Aixelá and Fabro (2008) applied OLS, 2SLS and GMM to study institutional quality and output growth. The study used a sample of rich and poor economies for the years 1996-2000. The result showed that economic growth is explained by the variation in control for corruption. Rule of law significantly explains economic growth in rich countries.

The importance of governance in Africa for the periods 1995-2004 was investigated by Fayissa and Nsiah (2013). The study employed GMM procedure for a sample of 39 SSA countries. The governance indicators were derived from factor analysis of World Bank governance indicators. The study showed that good governance significantly improves economic growth.

Nawaz, Iqbal and Khan (2014) analysed the link between institutional quality and income growth. Samples of the countries considered in the study were drawn from Asia. The study period was 1996-2012. Estimation technique involved application of dynamic GMM. Findings showed institutions significantly impact economic growth for Asian economies. The impact of institutional quality on output depends on the income level of countries. For example, the result showed that the impact of institutional quality on income level is stronger in developed economies of Asian countries than LSD counterparts.

Investigating if institutional quality impacts on output variation for 12 West African countries for the periods 1996-2015, Iheonu *et al*, (2017) employed FE, RE and the panel 2SLS technique. Institutional quality index that was used comprised of rule of law, regulatory quality, government effectiveness and control for corruption. The result showed institutional quality positively and significantly impact economic growth. Daniel, Fu and Dolfsma (2018) sampled 35 African countries. The study was conducted for the year 2006-2015. The paper investigated if institutional quality contributes to income level. A multi-level modelling technique was used in the estimation process. Result from the study showed that institutional quality significantly enhances firm's performance for African countries.

Kimaro, Keong and Sea (2017) analysed the impact of government expenditure and efficiency on economic growth of Sub Saharan African low-income countries spanning from 2000-2015. The paper used a panel data of 25 SSA low-income countries and employed Generalized Methods of Moments (GMM) to answer the research questions. The finding reveals that government expenditure enhances growth of low income SSA countries.



Abubakar (2020), using annual time series data covering the period 1979 to 2018, investigated the effect of institutional quality on economic growth in Nigeria. The study adopted Johansen Cointegration test in the econometric analysis of the relationship between the variables. The empirical findings showed that institutional quality significantly influences economic growth for Nigeria.

Feng (2003) investigated the economic development of economies in the Pacific Asian area though using the pattern of political economy theory of economic growth. The most notable argument of the study is that institutions are key to explaining the economic growth of the sampled countries. A much closer look at his work reveals that variables such as political stability, political polarization and government repression were some of the political variables affecting growth there.

### **3.2.3 FISCAL POLICY AND INSTITUTIONS IN ECONOMIC GROWTH**

There are not so many studies that have investigated the effect of fiscal policy on economic growth given sound institutional quality. Studies which do look at these phenomena are Nguyen and Nguyen (2017), Nguyen (2018), Adegboye (2018) as well as Avellan, Galindo and Leon-Diaz (2020).

Nguyen and Nguyen (2017) assessed institutional quality and fiscal policy in Asia Pacific countries from 2002 to 2013 and the results showed that better institutional quality tends to slow down the growth rates of tax revenue and government expenditure.

In a follow up study Nguyen (2018) evaluated the effectiveness of fiscal policy on economic growth under contributions from the differences in institutions and external debt levels. The outcomes of the study showed positive growth effects of fiscal policy across emerging markets in the examined periods. Notably, the improvement in institutions promotes higher crowding-in effects of fiscal policy.

The study by Adegboye (2018) considered the question of whether the effectiveness of fiscal policy is affected by institutional setups in Nigeria? From this study, it was seen that fiscal policy responds symmetrically to output cycles. It also found that fiscal institutions do not provide the expected guard against procyclical fiscal management because they still react based on oil price development in directing fiscal policy in Nigeria. More importantly, the study finds that fiscal dependence (state government dependence

on oil resources for fiscal activities) is the strongest institutional factor promoting fiscal procyclicality in Nigeria.

The concluding study by Avellan *et al* (2020) provided evidence on the effect of fiscal stimulus on economic activity in countries with different degrees of institutional quality. The study made use of data on military expenditure to instrument government consumption using local lineal projections and it was based on a panel of 113 countries during the period 1988-2017. The analysis found evidence that an increment of 1 percent in government consumption led to a sizable, persistent, and stable increase in economic activity of 0.9 percent in countries with higher institutional quality. In contrast, for countries with lower institutional quality, the effect was found to be smaller (0.4 percent) and short-lived.

### **3.3 ASSESSMENT OF LITERATURE**

Literature that explores institutional quality and income is ambiguous. Additionally, consensus is yet to be reached on what constitute the correct measure of institutional quality. Different authors have used various approaches to measure institutional quality and this has contributed to divergent results. The study contributes to the debate by using Kaufman, Kraay and Mastruzzi (2011) six indicators of governance which has the advantage over other measures. Empirical literature has also used various estimation techniques ranging from pooled OLS, static model (FE and RE) and dynamic panel. These estimation techniques are associated with different estimation problems which this study seeks to solve. The study also provided new evidence on the effect of institutional quality on income while taking into account the regional difference.

### **3.4 SUMMARY**

A majority of these studies and others seem to suggest a positive relationship between fiscal policy and economic growth given sound institutional quality but however, there is no general consensus between institutional quality and economic growth. Furthermore, not enough studies have been conducted for Africa and for those researches that have been undertaken, the main focus has been either fiscal policy and economic growth or institutional quality and economic growth as shown by the examples above, which is only a partial component of the intended study. It is this reason that necessitates looking into the correlation between good fiscal policy and economic growth depending on the soundness of institutional quality.

## **CHAPTER 4: METHODOLOGY**

### **4 INTRODUCTION**

This chapter deliberates a detailed methodological choice and research design process of the study. It mainly relies on the philosophical stance and the research problem to guide on the methodological choice. More specifically, it explains why explanatory sequential mixed methods research approach is considered appropriate for the research. In addition, the section sets the procedures to collect, analyse and report data.

#### **4.1 RESEARCH DESIGN**

The study uses quantitative research so as to maximize objectivity, reliability and generalizability of findings to enable these findings to be used to predict the behaviour of economic growth following a change in fiscal policy, once the institutional quality has been established. Quantitative techniques allow for the results to be deducted with absolute certainty and also makes them verifiable. The findings can then be used to make policy issues with regards to economic growth in addition to traditional monetary and fiscal policy.

In this quantitative approach, since the economic data for the selected 38 countries is surveyed and then followed over a time period of 23 years, panel data methodology is used. Panel data refers to the pooling of observations on a cross-section of households, countries, firms, over several time periods (Baltagi, 2005).

There is a number of benefits that can be derived from using panel data and according to Hsiao (2003) and Klevmarken (1989), these include the following:

(1) Controlling for individual heterogeneity.

Panel data suggests that the chosen countries are heterogeneous. Time-series and cross-section studies not controlling this heterogeneity run the risk of obtaining biased results.

(2) Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency. Time-series studies on the other hand are plagued with multicollinearity

(3) Panel data are better able to study the dynamics of adjustment. Cross-sectional distributions that look relatively stable hide a multitude of changes.

(4) Panel data are better able to identify and measure effects that are simply not detectable in pure cross-section or pure time-series data.

Limitations of panel data include:

(1) Design and data collection problems. These include problems of coverage (incomplete data sets for some variables and or no data at all collected for some countries).

(2) Distortions of measurement errors. The same data collected from different sources show some slight discrepancies which shows that the results are going to be affected.

(3) Cross-section dependence. Macro panels on countries or regions with long time series that do not account for cross-country dependence may lead to misleading inference. Collecting panel data is quite costly, and there is always the question of how often one should interview respondents. Deaton (1995) argues that economic development is far from instantaneous, so that changes from one year to the next are probably too noisy and too short-term to be really useful.

## 4.2 MODEL SPECIFICATION

Despite considerable improvements in data collection, the quality and quantity of data from the SSA region create important barriers to advances in research. This may explain partially why this region remains marginalized in the academic literature, and why it is presented by a region dummy in most cross-country development studies. The present work aims at contributing to this literature by investigating the link between institutional quality, fiscal policy and other control variables on the one hand with economic performance on the other, in a group of 38 African Countries whose data is readily accessible and for the period 1996-2018, as this is the data obtainable from the World Bank, using panel data analysis.

The general model specification assumed in the undertaken analysis includes three categories of variables which in the relevant literature appear to play an important role in explaining economic performance. The three broad categories are: institutions, macroeconomic policies, and other control variables specific for each country. The model specification used in the analysis is set up as follows:

$$y_{it} = \beta_{0i} + \beta_1 Inst_{in} + \beta_2 FPoly_{ct} + \dots + \beta_4 Control_{it} + \varepsilon_{it} \quad (1)$$

where  $\alpha$  is the indicator of the cross-sectional component;

$t$  is the time component

$n$  is the country dimension

$c$  represents the fiscal policy variable

$y$  represents growth rate of GDP per capita income;

*Inst* is a measure of institutional quality;

*Policy* is a measure that approximates macroeconomic environment;

*Control* is a set of other country-specific variables.

The dependent variable is represented by  $GPGDP$ , which stands for the growth rate of real per capita GDP in constant US\$. In various model specifications of the study, six different indexes of institutional quality are employed in an attempt to capture the effect of as many possible aspects of the effects of institutions on economic performance. The first index will capture the degree of government effectiveness, covering a broad spectrum of factors ranging from infant mortality and medical provision to housing and interest rates.

According to conventional economic theory, countries with better socioeconomic conditions are expected to experience higher growth. The second index is an estimate of corruption which shows the extent to which government officials demand bribes connected with import and export licenses, exchange controls, tax assessment, police protection, loans, etc. On the basis of the relevant literature there is expected to be a negative relation between this index and the growth rate, although as mentioned above, some authors and studies argued for the opposite relationship. The third index will measure political stability and absence of violence and it depends upon factors such as armed conflict, violent demonstrations and social unrest.

The expectation is that countries with better political stability will experience higher growth. Next index looks at the rule of law and it includes factors such as crime, fairness and speediness of judiciary processes and enforceability of contracts. On this aspect, the expectation is that a negative correlation with states where the rule of law is not observed experiencing lower economic growth. Another index considered is regulatory quality and speaks to fair competitive prices, price controls and against discriminatory tariffs and taxes.

Better regulatory quality is tied to better economic quality. The final index for institutional quality to be used in the study will be a measure of voice and accountability regarding aspects of democracy, freedom of speech and a free media. The absence of voice and accountability of any kind is expected to have a negative impact on the growth performance of an economy.

On fiscal policy, following the relevant literature, government spending and the level of taxation will be considered. Higher levels of government spending measured as a percentage of government spending to GDP was used in attempting to capture the stimulating effect of an expansionary government policy, as well as low taxation levels which are generally associated with better economic performance. Given the existing theoretical approaches (Keynesian and mainstream), an ambiguous relationship is possible.

An additional set of explanatory variables (control variables in this analysis) often used in this type of research refers to a set of variables that describe the credit conditions, trade openness, population growth of the country will be introduced in an attempt to explain African cross-country differences in economic performance. Among the policy variables, inflation will be included as an indicator of macroeconomic stability which is proxied by consumer price index (CPI). It is expected that high inflation distorts economic activity and reduces economic growth. Furthermore, an index of trade openness measured by the sum of imports and exports as a percentage of nominal GDP will be included (Levine *et al*, 1992).

A country's open trade policies may increase profitability and, by extension, the incentives to invest and the growth of a country. Also, foreign direct investment (FDI), measured as a share of net inflows to GDP, is considered an important influence on growth performance for these countries and thus it is included in this research. An additional factor, that is, credit provided by the banking sector measured as a share of the domestic credit provided by the banking sector to GDP is included also in the pool of control variables to capture the domestic financial environment. A variable of population growth, will also be introduced in the empirical work in order to capture its effect on economic performance. The impact of the latter on growth is expected to be of a negative nature. Finally, foreign aid as a percentage to gross national income will wrap up the string of variables used to explain growth performance in SSA countries.

Equation 1 above is the baseline model for estimating institutional quality and GDP growth. Lagged value of GDP growth rate is introduced in the baseline model to capture the effect of

persistence of growth and then the first fiscal policy proxy, which is government spending (Gov) is used to interact with each of the individual institutional factors, starting with voice and accountability given in equation 2, followed by Political stability (equation 3) and Government effectiveness (equation 4), next is the interaction of government spending and Regulatory Quality in equation 5 and finally the interaction with Rule of law in equation 6.

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 Gov + B_3 Voic + \beta_4 Gov * Voice + \beta_5 Infl + \beta_6 Pop + \beta_7 Tradeop + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (2)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 Gov + B_3 PolStab + \beta_4 Gov * PolStab + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (3)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 Gov + B_3 GEff + \beta_4 Gov * GEff + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (4)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 Gov + B_3 RegQual + \beta_4 Gov * RegQual + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (5)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 Gov + B_3 RulofL + \beta_4 Gov * RulofL + \beta_5 Infl + \beta_6 Pop + \beta_7 Tradeop + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (6)$$

All these contain the six indicators of institutional quality a vector of control variables ( $Z_{it}$ ) which includes population, trade openness, inflation, infrastructural development, and foreign direct investment.

In equation 7 through 12, again fiscal policy using a proxy of tax revenue is interacted with the institutional factors again.

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + B_3 Voic + \beta_4 TaxRev * Voic + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (7)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + B_3 PolStab + \beta_4 TaxRev * PolStab + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (8)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + B_3 GEff + \beta_4 TaxRev * GEff + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (9)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + B_3 RegQual + \beta_4 TaxRev * RegQual + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (10)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + \beta_3 RulofL + \beta_4 TaxRev * RulofL + \beta_5 Infl + \beta_6 Pop + \beta_7 Tradeop + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (11)$$

$$y_{it} = \beta_{0i} + \beta_1 GDP_{-1} + \beta_2 TaxRev + \beta_3 ConofCor + \beta_4 TaxRev * ConofCor + \beta_5 Infl + \beta_6 Pop + \beta_7 TradeOp + \beta_8 FDI + \beta_9 InfraDe + \varepsilon_{it} \quad (12)$$

The models were adopted from Wandeda *et al* (2021), but then modified through excluding dummy variables and the regional differences and introducing tax revenue and government spending as the instruments for fiscal policy.

Table 4.1 below contains all variables used in the model specification, their definitions and measurement, the sources as well as their expected signs in accordance with the traditional growth theory.

**Table 4.1: Summary of Variables**

Variable	Definition and measurement	A-priori Expectations	Data Source
Political stability (PolStab)	It is a measure of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50% to 75% is regarded as fair and a value greater than 75% is stable.  Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources,	Positive	World Governance Indicators



	using a statistical technique known as unobserved components model (UCM).		
Government effectiveness (Geff)	<p>It is a measure of the quality of public and civil services and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to its stated policies. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50% to 75% is regarded as fair and a value greater than 75% is stable.</p> <p>Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources, using a statistical technique known as unobserved components model (UCM).</p>	Positive	World Governance Indicators
Rule of law (RulofL)	<p>It captures perceptions of the likelihood of crime and violence and the extent to which members of the public have confidence in and abide by the rules of society, respect contract enforcement, property rights, the police, and the courts. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50%</p>	Positive	World Governance Indicators

	<p>to 75% is regarded as fair and a value greater than 75% is stable.</p> <p>Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources, using a statistical technique known as unobserved components model (UCM).</p>		
Regulatory quality (RegQual)	<p>It is defined as the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50% to 75% is regarded as fair and a value greater than 75% is stable.</p> <p>Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources, using a statistical technique known as unobserved components model (UCM).</p>	Positive	World Governance Indicators
Voice and accountability (Voic)	<p>It captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom</p>	Positive	World Governance Indicators

	<p>of association, and a free media. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50% to 75% is regarded as fair and a value greater than 75% is stable.</p> <p>Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources, using a statistical technique known as unobserved components model (UCM).</p>		
Control of Corruption (ConofCor)	<p>It looks at the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. It is measured as a percentage with 25% and below being extremely unstable, between 25% but less than 50% being unstable, 50% to 75% is regarded as fair and a value greater than 75% is stable.</p> <p>Individual questions from the underlying data sources are assigned to each of the six aggregate indicators. Each of the six aggregate WGI measures are then constructed as a weighted average of the rescaled data from the individual sources,</p>	Positive	World Governance Indicators

	using a statistical technique known as unobserved components model (UCM).		
Infrastructural Development (InfraDe)	It is the construction and improvement of foundational services with the goal of sparking economic growth and improvements in quality of life. The measure of infrastructural development includes a clear policy framework, institutional development and legal framework, citizen/democratic participation and oversight, human resources improvements including education and training, and sustainability	Positive	World Bank 2020
Trade Openness (TradOp)	This is a measure of economic policies that either restrict or invite trade between countries. Trade openness is measured as the ration of imports plus exports to GDP.	Ambiguous	World Bank 2020
Government Spending (Gov2)	Government spending is spending by the public sector on goods and services such as education, health care and defence. It includes all government consumption, investment, and transfer payments. Government operating expenditures are standardized in terms of expenditures per capita, expenditures per \$1,000 personal income, and expenditures as a percent of all city expenditures	Ambiguous	World Bank 2020
Foreign Direct Investment (FDI2)	A foreign direct investment is an investment in the form of a controlling ownership in a business in one country by an entity based in another country. It is thus distinguished	Negative	World Bank 2020

	<p>from a foreign portfolio investment by a notion of direct control. FDI stocks measure the total level of direct investment at a given point in time, usually the end of a quarter or of a year. The outward FDI stock is the value of the resident investors' equity in and net loans to enterprises in foreign economies.</p>		
Tax Revenue (TaxRev)	<p>It refers to the funds collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. A tax-to-GDP ratio is used as a gauge of a nation's tax revenue relative to the size of its economy as measured by gross domestic product (GDP).</p>	Positive	World Bank 2020
Inflation (Infl)	<p>Inflation is the rate of increase in prices over a given period of time. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the cost of living in a country. The most well-known indicator of inflation is the Consumer Price Index (CPI), which measures the percentage change in the price of a basket of goods and services consumed by households</p>	Negative	World Bank 2020
Population (Pop)	<p>This relates to the whole number of people or inhabitants in a country or region. Two important measures of a population are population size, the number of individuals, and population density, the number of</p>	Negative	World Bank 2020

	individuals per unit area or volume. This is done through a census.		
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### 4.3 DATA SOURCES

The economic data for the study was obtained from secondary sources comprising of textbooks, journals, periodicals, previous studies and other sources on this topic that could be found on the internet. The empirical section of this study consists of an economic analysis of fiscal policy as a function of economic growth given institutional quality. The economic data on the indicators of fiscal policy growth, institutional quality variables was sourced from the World Bank as well as World Governance indicators from the internet.

### 4.4 DATA ANALYSIS TECHNIQUES

A panel data regression differs from a regular time-series or cross-section regression in that it has a double subscript on its variables, that is,

$$y_{it} = \alpha + X'_{it}\beta + u_{it} \quad i = 1, \dots, N; t = 1, \dots, T \quad (4.1)$$

With  $i$  denoting countries and  $t$  denoting time. The  $i$  subscript, therefore, denotes the cross-section dimension whereas  $t$  denotes the time-series dimension.  $\alpha$  is a scalar,  $\beta$  is  $K \times 1$  and  $X_{it}$  is the  $it$ th observation on  $K$  explanatory variables. Most of the panel data applications utilize a one-way error component model for the disturbances, with

$$u_{it} = \mu_i + v_{it} \quad (4.2)$$

where  $\mu_i$  denotes the unobservable individual-specific effect and  $v_{it}$  denotes the remainder disturbance.

However, Baltagi (2005) further notes that many economic relationships are dynamic in nature and one of the advantages of panel data is that they allow the researcher to better understand the dynamics of adjustment. These dynamic relationships are characterized by the presence of a lagged dependent variable among the regressors, that is,

$$y_{it} = \delta y_{i,t-1} + x'_{it}\beta + u_{it} \quad i = 1, \dots, N; t = 1, \dots, T \quad (4.3)$$

Where  $\delta$  is a scalar,  $x'_{it}$  is  $1 \times K$  and  $\beta$  is  $K \times 1$ .  $u_{it}$  is assumed to follow a one-way error component model:

$$u_{it} = \mu_i + v_{it} \quad (4.4)$$

where  $\mu_i \sim IID(0, \sigma_u^2)$  and  $v_{it} \sim IID(0, \sigma_v^2)$  independent of each other and among themselves.

The dynamic panel data regression described in (4.3) and (4.4) is characterized by two sources of persistence over time. Autocorrelation due to the presence of a lagged dependent variable among the regressors and individual effects characterizing the heterogeneity among the individuals.

Since multiple variables represent the model, a generalised method of moments (GMM) was used. Sichei (2013) defines GMM as a generic method for estimating parameters in statistical and econometric models which uses moment conditions (instruments) that are functions of the model parameters and the data such that their expectation is zero at the parameters' true values.

The generalized method of moments (GMM) is a method for constructing estimators, analogous to maximum likelihood (ML). GMM uses assumptions about specific moments of the random variables instead of assumptions about the entire distribution, which makes GMM more robust than ML, at the cost of some efficiency. The assumptions are called moment conditions (Drukker, 2015).

It was introduced by Hansen (1982) and it is also known as a dynamic panel estimator and it controls for:

- Endogeneity of the lagged dependent variable in a dynamic panel model, when there is correlation between the explanatory variable and the error term in a model
- Omitted variable bias
- Unobserved panel heterogeneity
- Measurement errors

Other techniques like the Pooled OLS, Fixed Effects and Random Effects cannot cater for this dynamic panel bias, only techniques such as GMM and Two-Stage Least Squares (TSLS) are able to cater for this dynamic term by using instruments. Instruments can be introduced through differencing which means that the variables such as  $y_{t-2}$ ,  $y_{t-3}$  (which is the second and third lags of the Y variable) can be used as instruments (Baltagi, 2005).

As such, GMM generalizes the method of moments (MM) by allowing the number of moment conditions to be greater than the number of parameters. Using these extra moment conditions makes GMM more efficient than MM (Baltagi, 2005). When there are more moment conditions than parameters, the estimator is said to be overidentified. GMM can efficiently combine the moment conditions when the estimator is overidentified (Drukker 2015). In simpler words, since N which represents the number of countries is greater than the time span T, this further demands the use of the GMM (Arellano & Bond, 1991).

#### **4.5 DIAGNOSTIC TECHNIQUES**

According to Moyi (2018), for system GMM, the convention is usually to undertake post-estimation diagnostic tests. The following tests apply:

(a) A test for second order autocorrelation, for example the Arellano Bond test. In this case, *Ho = there is no autocorrelation.*

(b) A test for over-identifying restrictions, for example, the Hansen test. In this case *Ho = over identifying restrictions are valid.*

(c) A test for joint significance of parameters, for example, the Wald Chi squared test.

#### **4.6 SUMMARY**

This chapter presented the methodology to be used for the study. It applied a quantitative approach by employing panel data analysis through the use of the generalised method of moments. The various models to be estimated for the regressions was also given. A summary table of all the relevant variable with their definition and how they are measure was presented.



## CHAPTER 5: EMPIRICAL RESULTS AND DISCUSSION

### 5 INTRODUCTION

This chapter provides the empirical results for the regressions to answer the objective of the study on whether the impact of fiscal policy on economic growth is dependent on institutional quality. It is sub divided into variables measurements and descriptive statistics, correlation analysis, empirical results and discussion as well as an assessment of whether the objectives of the study were met and it ends with a conclusion with some recommendations for policy makers.

#### 5.1 VARIABLE MEASUREMENTS AND DESCRIPTIVE STATISTICS

The dependent variable in this paper is economic growth while the explanatory variables include government spending, tax revenues, the six indicators of institutional quality and a number of other control variables. The paper adopted a panel data from 37 SSA countries for the period 1996-2018. Table 5.1 provides descriptive statistics in terms of mean, standard deviation as well as the maximum and minimum for pooled observations for SSA countries.

**Table 5.1: Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	870	2.476e+10	6.610e+10	2.065e+08	5.467e+11
Gov2	835	23.227	9.768	8.421	64.641
TaxRev	844	15.329	7.425	2.764	46.215
Voic	823	35.688	19.356	1.478	79.803
PolStab	760	37.71	22.51	.529	93.75
GEff	759	30.696	20.568	.957	83.06
RegQual	760	32.893	17.955	2.174	83.654
RulofL	760	33.631	20.259	.495	83.663
ConofCor	760	34.393	22.052	0	84.848
Infl	817	13.56	145.976	-9.616	4145.106
Pop	874	2.528	.993	-2.629	8.118
TradOp	830	72.863	38.389	20.723	311.354
FDI2	770	-5.722e+08	1.912e+09	-2.511e+10	8.749e+09
InfraDe	793	5.662e+09	1.285e+10	-20612328	8.246e+10

The number of observations in Table 5.1 reveal an unbalance, with some variables having more observations than others, this is mainly due to the lack of data in some of the countries in the study. However, the choice of the model ensured that this does not affect the results.

Looking at the descriptive statistics, on average, the sub-Saharan countries in the study use about 23% of their GDP as government spending yet only collecting about 15% as revenues in

the form of tax, which shows that most of the countries run a budget deficit. In contrast, European countries like France and Belgium have averages of 46% tax revenue as a percentage of GDP, while spending about 53% as government expenditure. Compared to European countries, these figures for the sub-Saharan countries are quite low.

In terms of the institutional quality, all the six institutional factors averaged between 30.73% and 37.70% while the standard deviation was between 18.00% and 22.50%. This is considerably low as the most developed countries have indices of more than 80% on average. At an individual level, the results from the 37 countries reveal that government effectiveness averaged the lowest at 30.70% with a standard deviation 20.57%. Looking at government effectiveness, this figure is still way below the mark, since about 86 countries in the world rank above 50% on average. Political stability is the highest at 37.71% with a standard deviation of 22.51% for the sampled countries and on world standards, 96 of the countries score more than 50.00% once again making the political stability in the sub-Saharan countries questionable.

The descriptive statistics further revealed that voice and accountability averaged 35.70% with a standard deviation of 19.40% which is still too low considering that in the world about 101 countries score 50.00% and above on this indicator. In terms of regulatory quality, the sampled countries averaged 32.89% with standard deviation 17.87%. Of the 192 countries in the world, 88 have a regulatory score of 50.00% and above making the average score for the sub-Saharan countries low again.

Closely following the regulatory quality indicator is the rule of law indicator at 33.63% and a standard deviation of 20.34%. 83 of the countries in the rest of the world are higher than 50.00% in terms of this average. The last indicator on the descriptive statistics is that for control of corruption at 34.43% with a standard deviation of 22.00%. This indicator is low as well since 80 countries average 50.00% and above.

## 5.2 CORRELATION ANALYSIS

**Table 5.2: Correlation Matrix**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) GDP	1.000													
(2) Gov2	-0.023 (0.506)	1.000												
(3) TaxRev	0.142* (0.000)	0.711* (0.000)	1.000											
(4) Voic	0.121* (0.001)	0.273* (0.000)	0.296* (0.000)	1.000										
(5) PolStab	-0.178* (0.000)	0.363* (0.000)	0.348* (0.000)	0.627* (0.000)	1.000									
(6) GEff	0.097* (0.007)	0.339* (0.000)	0.428* (0.000)	0.735* (0.000)	0.629* (0.000)	1.000								
(7) RegQual	0.116* (0.001)	0.184* (0.000)	0.337* (0.000)	0.712* (0.000)	0.563* (0.000)	0.871* (0.000)	1.000							
(8) RulofL	-0.005 (0.894)	0.337* (0.000)	0.374* (0.000)	0.786* (0.000)	0.733* (0.000)	0.900* (0.000)	0.846* (0.000)	1.000						
(9) ConofCor	-0.024 (0.506)	0.416* (0.000)	0.454* (0.000)	0.715* (0.000)	0.665* (0.000)	0.859* (0.000)	0.756* (0.000)	0.879* (0.000)	1.000					
(10) Infl	-0.009 (0.806)	0.050 (0.158)	0.128* (0.000)	-0.071* (0.046)	-0.071 (0.058)	-0.027 (0.472)	-0.067 (0.071)	-0.069 (0.064)	-0.053 (0.152)	1.000				
(11) Pop	-0.053 (0.117)	-0.383* (0.000)	-0.474* (0.000)	-0.420* (0.000)	-0.370* (0.000)	-0.513* (0.000)	-0.423* (0.000)	-0.500* (0.000)	-0.579* (0.000)	0.033 (0.340)	1.000			
(12) TradOp	-0.160* (0.000)	0.476* (0.000)	0.451* (0.000)	0.151* (0.000)	0.344* (0.000)	0.174* (0.000)	0.040 (0.281)	0.187* (0.000)	0.266* (0.000)	0.087* (0.015)	-0.364* (0.000)	1.000		
(13) FDI2	-0.246* (0.000)	0.043 (0.240)	0.024 (0.506)	-0.133* (0.000)	-0.007 (0.858)	-0.136* (0.000)	-0.168* (0.000)	-0.102* (0.007)	-0.061 (0.110)	0.003 (0.930)	0.111* (0.002)	0.001 (0.972)	1.000	
(14) InfraDe	0.971* (0.000)	0.036 (0.321)	0.206* (0.000)	0.119* (0.001)	-0.169* (0.000)	0.115* (0.002)	0.102* (0.007)	0.008 (0.827)	-0.019 (0.611)	0.032 (0.389)	-0.049 (0.171)	-0.144* (0.000)	-0.254* (0.000)	1.000

Note: Figures in brackets are t-values, \* is significant at 5%

Table 5.2 presents the correlational matrix and on the key fiscal policy proxy variables, government expenditure seems to be negatively related to economic growth at -0.02 which is and is insignificant while tax revenue is positively related to economic growth at 0.14 is and significant at the 5% level of significance.

On the institutional quality indicators, political stability, rule of law and control of corruption all show negative weak correlation with growth as shown by the coefficient of -0.18, -0.01 and -0.02 respectively. Government effectiveness, voice and accountability and regulatory quality are all positive at 0.10, 0.12 and 0.12 respectively, showing a weak but positive relationship with growth.

Of the institutional factors, political stability, government effectiveness, voice and accountability and regulatory quality are significant. This means that the results of these indicators cannot be attributed to chance but rather they do affect the level of economic growth.

On the other control variables, inflation and population seem not to hold a significant correlation with economic growth while trade openness, foreign direct investment and infrastructural development have a significant relationship with growth. Trade openness and foreign direct investment hold a negative relationship of 0.16 and 0,25 respectively while infrastructural development has a positive strong relationship with economic growth of 0.97. This correlation coefficient between infrastructural development and GDP is too high, this could be pointing to some collinearity in these variables.

Furthermore, the correlation between the institutional quality variables themselves is high so they will be used separately in regression models.

### **5.3 EMPIRICAL RESULTS AND DISCUSSION**

Results for the two-step system GMM estimation are presented in the Tables 5.3 and 5.4. The standard errors, presented in the parentheses, are robust and corrected according to Windmeijer (2005). Because of the two-step procedure, the Hansen test is an appropriate test for overidentifying restrictions. Results for the Hansen test, the difference-in-Hansen test and the Arellano-Bond autocorrelation test are also reported. The columns differ from each other based on the regression equation being estimated as indicated in the methodology section in the previous chapter. The first column for example, gives the regression equation with government spending interacting with the institutional quality index of voice and accountability, while in the second column, government spending interacts with political stability.

**Table 5.3: GMM results - Government Expenditure**

	(1)	(2)	(3)	(4)	(5)	(6)
	GDP	GDP	GDP	GDP	GDP	GDP
L.GDP	.3243***	.4835***	.4957***	.5065***	.49***	.4915***
	(137.4456)	(283.8038)	(343.5323)	(284.2384)	(362.8067)	(318.5753)
Gov2	-4.302e+08***	-3.084e+08***	-3.502e+08***	-2.152e+08***	-4.986e+08***	-4.886e+08***
	(-6.8368)	(-5.9682)	(-8.975)	(-5.2186)	(-14.0004)	(-13.7448)
Voic	-38453791					
	(-.8683)					
c.Gov2#c.Voic	4427059.3***					
	(2.9231)					
Infl	10297911	226538.27	-614924.66	-4720207.3	6417645.6	6587748.2
	(1.6385)	(.0293)	(-.0856)	(-.7986)	(.8443)	(.9228)
Pop	-1.610e+09***	-1.362e+09***	-1.682e+09***	-1.472e+09***	-1.152e+09***	-1.377e+09***
	(-2.9786)	(-3.6415)	(-3.9755)	(-3.976)	(-3.0606)	(-3.9329)
TradOp	-7802705.5	-1780490.4	4044143	6831138.3	6236799.5	6591531.5
	(-.8694)	(-.233)	(.4395)	(.6968)	(.7232)	(.8428)
FDI2	.3531***	.2414***	.1951***	.269***	.1606***	.1896***
	(31.5577)	(18.395)	(19.8736)	(27.2504)	(10.2504)	(16.0133)
InfraDe	3.6091***	2.7995***	2.7561***	2.7058***	2.7784***	2.7806***
	(325.6698)	(410.8413)	(434.145)	(384.1194)	(471.4522)	(424.5773)
PolStab		-66270595*				
		(-1.9319)				
c.Gov2#c.PolStab		3097697.2***				
		(2.7455)				
GEff			-1.168e+08***			
			(-5.871)			
c.Gov2#c.GEff			4241404.9***			
			(4.6081)			
RegQual				23401744		
				(.8893)		
c.Gov2#c.RegQual				89290.349		

				(.082)		
RulofL					-1.869e+08***	
					(-7.514)	
c.Gov2#c.RulofL					7704937***	
					(7.8588)	
ConofCor						-1.643e+08***
						(-7.1251)
c.Gov2#c.ConofCor						6564198.3***
						(7.5045)
_cons	1.031e+10***	9.021e+09***	1.094e+10***	5.994e+09***	1.250e+10***	1.257e+10***
	(3.5493)	(4.183)	(6.8129)	(4.0556)	(7.3663)	(7.8345)
Observations	615	583	583	583	583	583
r2_p	.z	.z	.z	.z	.z	.z
Arellano-Bond test for AR(1) in first difference	z = -0.80 Pr > z = 0.424	z = -0.98 Pr > z = 0.329	z = -1.01 Pr > z = 0.311	z = -1.01 Pr > z = 0.312	z = -1.02 Pr > z = 0.308	z = -1.02 Pr > z = 0.306
Arellano-Bond test for AR(2) in first difference	z = -1.02 Pr > z = 0.308	z = -1.12 Pr > z = 0.265	z = -1.10 Pr > z = 0.272	z = -1.09 Pr > z = 0.275	z = -1.14 Pr > z = 0.252	z = -1.13 Pr > z = 0.259
Hansen test of overid. Restrictions (Robust, but weakened by many instruments.)	chi2(14) = 18.57 Prob > chi2 = 0.182	chi2(14) = 10.82 Prob > chi2 = 0.700	chi2(14) = 19.05 Prob > chi2 = 0.163	chi2(14) = 20.29 Prob > chi2 = 0.121	chi2(14) = 13.55 Prob > chi2 = 0.484	chi2(14) = 14.34 Prob > chi2 = 0.424
<i>t-values are in parentheses</i>						
*** p<.01, ** p<.05, * p<.1						

In all the models, the initial value of GDP (lagged value) and government spending are significant as is shown in Table 5.3 above. This means that this result cannot be attributed to chance but rather, the lagged value of GDP does affect the current level of GDP. Research shows differing results

for the effect of lagged GDP on economic growth. Barro (1997) found a negative relationship between lagged GDP and economic growth, while (Blomstrom, 1996; Mamo, 2012) found a positive relationship between lagged GDP values and economic growth.

Of the control variables, Population, foreign direct investment and infrastructural development are also significant. Literature revealed that population, FDI and infrastructural development are key factors of growth and also that government spending would mostly be pro-growth given sound institutional quality.

This positive and statistically significant result for population is in line with the findings of Mamo (2012) who also found a positive relationship for population with economic growth although it was statistically insignificant.

The findings on Foreign Direct Investment also show a result that is in line with a-priori expectations, that is, economic growth and foreign direct investment are positive and significant in most specifications. This confirms the findings of other researchers including Aron (2000). However, this is not without any question, as other researchers, for example, Matekenya, Moyo and Jeke (2020), found the effect of FDI on economic growth to be largely insignificant in African countries.

Intuitively, one would expect for developing nations that infrastructural development ought to constitute a significant proportion of total expenditure to lay the foundation for economic growth and sustainable development, as economic theory stipulates. This is the result the study also confirmed, the statistically significant figure means that infrastructural development does positively impact on economic growth.

Interacting Government spending with all the institutional variables shows that they all significantly impact economic growth except for regulatory quality. These results are in line with a-priori expectations as formulated from trends in African economies in Chapter Two and general economic theory covering the theories of growth in Chapter Three. Institutional quality promotes economic growth, as shown by the positive and significant findings in most models (Matekenya, Moyo & Jeke, 2020).

Government effectiveness positively and significantly impacts economic growth at 1 percent level. An improvement in government effectiveness leads to an increase in economic performance for SSA. The coefficient of political stability and absence of violence is positive and significant ( $p < 0.01$ ).

This implies that an increase in political stability and absence of violence causes an increase in economic growth for SSA. The econometrics estimates further show that rule of law has a positive and significant effect on economic growth in SSA ( $p < 0.01$ ). An improvement in rule of law leads to an increase in economic growth in SSA. Control for corruption is associated with positive and significant effect on economic growth in SSA ( $p < 0.01$ ). An increase in control for corruption will lead to an improvement in economic performance of SSA. The findings further shows that regulator. This is result although close to others of a similar nature (Wandeda et al, 2021; Nawaz *et al*, 2014; Iheonu, Ihedimma & Onwuanaku, 2017), not all measures of institutional quality contribute significantly to economic growth since regulatory quality is positive but insignificant.

The Arellano-Bond test for AR(1) and AR(2) as well as the Hansen test are insignificant for the interaction of all the institutional indicators of voice and government effectiveness, regulatory quality and control of corruption with government spending.

In conclusion, this means that the GMM model passes the diagnostic tests since the Arellano-Bond tests for second order autocorrelation and the results shows that there is no autocorrelation as the null hypothesis was not rejected. Secondly, since the Hansen test is also insignificant, this means that we fail to reject the null hypothesis and conclude that over identifying restrictions are valid.

The study now proceeds to a different specification where tax revenue is used as a proxy for fiscal policy and the result are displayed in Table 5.4 below.



**Table 5.4: GMM results - Tax Revenue**

	(1)	(2)	(3)	(4)	(5)	(6)
	GDP	GDP	GDP	GDP	GDP	GDP
L.GDP	.3814***	.4812***	.5143***	.5119***	.5122***	.515***
	(.0019)	(.0015)	(.0012)	(.0015)	(.0013)	(.0014)
TaxRev	-3.171e+08***	-3.116e+08***	-3.398e+08***	-2.013e+08***	-4.346e+08***	-4.912e+08***
	(69790861)	(49771882)	(32168263)	(35961314)	(33285249)	(35150580)
Voic	56468939					
	(40155275)					
c.TaxRev#c.Voic	-1389331.1					
	(1697671.3)					
Infl	13387713	8406422.3	9276969.4	5167520.6	13059415*	22230454***
	(8570148.3)	(7216959.5)	(5823302.1)	(6402245.3)	(6541587.8)	(5589680.2)
Pop	-2.508e+09***	-1.887e+09***	-1.547e+09***	-1.746e+09***	-1.007e+09**	-1.208e+09***
	(4.419e+08)	(3.273e+08)	(4.226e+08)	(3.323e+08)	(4.110e+08)	(4.184e+08)
TradOp	2754071.5	-365438.59	600517.15	5190748.6	2495299.6	-4444688
	(10512548)	(9981101.9)	(9032257.3)	(10628668)	(8234048)	(7848666.8)
FDI2	.418***	.277***	.2216***	.3198***	.2015***	.2144***
	(.014)	(.012)	(.0101)	(.0106)	(.011)	(.0088)
InfraDe	3.3636***	2.8395***	2.6777***	2.703***	2.6808***	2.6811***
	(.0088)	(.0073)	(.0064)	(.0071)	(.0054)	(.0055)
PolStab		-44038624*				
		(22811231)				
c.TaxRev#c.PoS~b		1704175.7*				
		(984071.22)				
GEff			-87534219***			
			(13807135)			
c.TaxRev#c.GEff			3998505.3***			
			(853002.99)			
RegQual				53083181**		
				(20504350)		
				-2209528.9**		

c.TaxRev#c.RegQ~1						
				(937006.61)		
RulofL					-1.361e+08***	
					(15711549)	
c.TaxRev#c.RulofL					7193735.7***	
					(781028.28)	
ConofCor						-1.371e+08***
						(23914423)
c.TaxRev#c.Cono~r						7389197.9***
						(994374.7)
_cons	8.200e+09***	9.092e+09***	8.656e+09***	5.540e+09***	8.641e+09***	1.020e+10***
	(2.126e+09)	(1.571e+09)	(1.656e+09)	(1.419e+09)	(1.805e+09)	(1.756e+09)
Observations	613	581	581	581	581	581
r2_p	.z	.z	.z	.z	.z	.z
Arellano-Bond test for AR(1) in first difference	z=-0.97; Pr > z=0.334	z = -0.98 Pr > z = 0.329	z = -1.01 Pr > z = 0.313	z = -1.03 Pr > z = 0.305	z = -1.00 Pr > z = 0.320	z = -1.01 Pr > z = 0.312
Arellano-Bond test for AR(2) in first difference	z = -1.07 Pr > z = 0.287	z = -1.05 Pr > z = 0.295	z = -1.06 Pr > z = 0.291	z = -1.05 Pr > z = 0.295	z = -1.10 Pr > z = 0.273	z = -1.09 Pr > z = 0.276
Hansen test of overid. Restrictions (Robust, but weakened by many instruments.)	chi2(14) = 21.86 Prob > chi2 = 0.082	chi2(14) = 18.02 Prob > chi2 = 0.206	chi2(14) = 19.73 Prob > chi2 = 0.139	chi2(14) = 17.38 Prob > chi2 = 0.237	chi2(14) = 16.20 Prob > chi2 = 0.301	chi2(14) = 17.92 Prob > chi2 = 0.211
<i>Standard errors are in parentheses</i>						
*** p<.01, ** p<.05, * p<.1						

Again, in the second specification, all the models, columns 1 to 6, the initial value of GDP (lagged value) and tax revenues are significant as is shown in Table 5.4 above. There is no consensus though when it comes to economic research on this relationship, as some researchers have found

initial GDP values to be negatively related to current GDP (Barro, 1997; Jones, 2002) while others found a positive relationship (Blomstrom, 1996; Mamo, 2012) between initial GDP values and economic growth.

Interacting Tax revenue with all the institutional variables shows that they all significantly impact economic growth except for political stability and voice and accountability. These results are partially in line with a-priori expectations as formulated from trends in African economies in Chapter Two and general economic theory covering the theories of growth in Chapter Three.

However, the two institutional indicators of political stability and voice and accountability goes against a-priori expectations as general economic theory indicate that these have an influence on the level of economic output. Wandeda et al (2021) found a positive and significant result for political stability as well as the voice and accountability indicators on growth.

Of the other control variables, Population, foreign direct investment and infrastructural development are also significant. This is also in line with literature as already revealed in the section above. Population, FDI and infrastructural development were seen to be key factors of growth and it was also established that government spending would mostly be pro-growth given sound institutional quality.

The Arellano-Bond test for AR(1) and AR(2) as well as the Hansen test are insignificant for the interaction of all the institutional indicators of voice and government effectiveness, regulatory quality and control of corruption with government spending.

In conclusion, this means that the GMM model passes the diagnostic tests since the Arellano-Bond tests for second order autocorrelation and the results shows that there is no autocorrelation as the null hypothesis was not rejected. Also, since the Hansen test is also insignificant, this means that we fail to reject the null hypothesis and conclude that over identifying restrictions are valid.

## **5.4 ASSESSMENT OF FINDINGS**

The main objective of the study which was to investigate whether the impact of fiscal policy on economic growth is dependent on institutional quality was achieved by the study. This was done through interacting the fiscal policy proxies of taxation and government spending with all institutional quality indices. The study revealed that the impact of fiscal policy does depend

on the soundness of institutions and as a result, employing fiscal policy in an institutionally sound country does lead to economic growth.

Regarding the specific objectives, the effect of fiscal policy on economic growth as well as the effect of institutional quality on economic growth was analysed through conducting a GMM model and testing the coefficients of the instruments for significance. Both fiscal policy and institutional quality do individually influence economic growth positively.

## **5.5 SUMMARY**

The chapter gave the empirical results and interpreted as well as gave meaning to these results. Variable measurements and descriptive statistics section gave a quick overview of the variables in terms of the measures of central tendency as well as deviation. The correlation analysis showed the significant variables as well as the strength of each of the variables with GDP. The final part which was the empirical results and discussion first evaluated fiscal policy using government spending as a proxy and intermediated it with institutional quality. The results of this section showed that they all affected economic growth except for regulatory quality. The second evaluation used tax revenue as a proxy for fiscal policy and found the institutional quality indicators to be impactful on economic growth save for political stability and voice and accountability which were found to be insignificant.

## **CHAPTER 6: CONCLUSION AND POLICY IMPLICATIONS**

### **6 INTRODUCTION**

This chapter summarizes and concludes the study and it also offers policy implications based on the main results of the study. The main sections of this chapter are as follows: Section 6.1, which summarizes the entire study followed by Section 6.2 which offers a brief discussion of the empirical findings of the study. Next is Section 6.3 presenting the policy implications and recommendations and the chapter is concluded by Section 6.4 highlighting the limitations of the study and suggests areas for further research.

#### **6.1 SUMMARY OF THE STUDY**

The main objective of this study was to gain a better understanding of the effect of fiscal policy and institutional quality on economic growth and whether sub-Saharan African countries in particular are striving towards economic growth. In order to achieve this, the study investigated the effect of fiscal policy on economic growth, the effect of institutional quality on economic growth and it also investigated whether the impact of fiscal policy on economic growth is dependent on institutional quality.

In order to meet these broad objectives, the study investigated the dynamics of fiscal policy, institutional quality and GDP in SSA countries over the period 1996-2018 and went on to explore both theoretical and empirical research on the effect of institutional quality on economic growth, under sound institutions, and it used panel-data analysis methods to examine this relationship.

This section offers a summary of the main findings per chapter, except empirical findings which are discussed separately in Section 6.3. Chapter one introduced the background of the study, noting how over time the different countries and different continents, seemingly starting from a similar point have grown differently, with some growing in a seemingly exponential rate while others have even stagnated. In an attempt to explain these grounds of differing rates in the growth amongst various countries, the study turned to fiscal policy and further examine the role of institutions. It further revealed the lack of convincing evidence regarding the role of institutions on growth in either in the short or long run as well as the limitations of the present studies in terms of either scope or depth which justified the current study.

In Chapter Two, an overview of the trends of the key variables, namely, fiscal policy with the proxies of tax revenue and government spending and the institutional quality indicators was

presented. On the sub section on the experiences of African countries, a comparison with the rest of the world was done with respect to these key variables and it was shown that in terms of government spending as a percentage of GDP, the sub-Saharan countries on average spent the least compared to North America and the European Union. In terms of taxation, it appeared that countries which collected more taxes actually outdid the countries which collected less in terms of taxes, with countries like south Africa and Seychelles having the highest tax revenues and being part of the African countries, whose performance can be said to be good. The chapter also gave the trends in terms of institutional quality and once again, the sounder the institutions, the greater the economic growth has been in the African countries.

Next was Chapter Three, presenting the literature review of the study. From the theoretical literature, the different theories of growth that have been put forward were laid out and their relevance was analysed for different countries using relevant empirical findings. Although the general trends of the key variables had already been given in chapter 2, the empirical foundations of these relationships were analysed and economic theory validated the observations of chapter 2. Although the theory was shown to be diverse, majority of the scholars propose a positive relationship between government spending and economic growth and since tax revenues make up the bulk of this spending, again, a positive relationship between economic growth and tax revenues is also supported. It was also found out that literature which explored institutional quality and the level of GDP was ambiguous. Different authors have used various approaches to measure institutional quality and this is partly what has contributed to these divergent results.

The methodology chapter which came as Chapter Four, employed a panel data approach to investigate the objectives of the study. The general model specific which was linear in nature was specified, with a number of different equations arising from this general equation were given subsequently. A-priori expectations of each variable, its definition as well as its measure were also given in this chapter. Having critically assessed the available data with respect to the time frame and the number of years, the Generalized Method of Moments (GMM) was then employed for the study.

## **6.2 SUMMARY OF EMPIRICAL FINDINGS**

The main objective was to examine the effect of institutional quality on output in SSA. Two step systems GMM was preferred since it provides consistent estimates when faced with the problem of endogeneity. The findings showed that an improvement on institutional quality

positively and significantly improve SSA output. The disaggregated analysis indicates that the six indicators of institutional quality (government effectiveness, political stability, rule of law, voice and accountability, control of corruption and regulatory quality) have positive and significant effects on economic growth in SSA.

### **6.3 POLICY IMPLICATIONS AND RECOMMENDATIONS**

The significance of the role of institutions in economic growth was confirmed by the study for the sub-Saharan economies. For fiscal policy to be effective in bringing about growth for the economy, the study revealed that the presence of sound institutions is a must and it needs to be ensured by the relevant authorities.

As such, the sub-Saharan African countries should create statutory bodies that determine and prosecute economic crime. This would work towards combating incidences of corruption. Equally, participatory decision-making processes and transparency need to be adopted, and dissemination of information to the citizens.

To promote economic growth, the sub-Saharan African countries must consider the six indicators of institutional quality. In terms of Voice and Accountability, a country's citizens should be able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. On Political Stability and Absence of Violence/Terrorism, the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism should be minimized and or eliminated.

This would lead to the improvement of institutional quality and hence enhance output level. Understanding the regional difference in the effect of institutional quality output is equally significant to policy makers. This is because different countries require different set of institutions and policies to promote long run output level. Each country should adopt joint strategies that strengthen institutional quality and African countries should support African agendas that are aligning with global development agenda. These policies should widen democratic space, civil liberty and the participation of citizen in the development agenda of a country.

Also, on Government Effectiveness, the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to its stated policies

should be prioritized and adhered to. To improve on Regulatory Quality the government should formulate and implement sound policies and regulations that permit and promote private sector development. Improved regulatory quality can promote economic growth by creating effective and efficient incentives for the private sector.

Coming to the Rule of Law, the likelihood of crime and violence and the extent to which members of the public have confidence in and abide by the rules of society, respect contract enforcement, property rights, the police, and the courts should also be made a priority in the country. As such, African states need to make sure that no person is above the law.

Finally, on the Control of Corruption the state needs to endeavour to make sure that public power is not exercised for private gain. This is one of the most problematic areas for the sub-Saharan African countries, with a lot of corruption scandals occurring and hence undermining the states' control of corruption. Corruption has been shown to hinder economic growth by increasing costs, lowering productivity, discouraging investment, reducing confidence in public institutions, limiting the development of small and medium-sized enterprises, weakening systems of public financial management, and undermining investments in health and education.

Besides the government of the individual countries, other agencies may be interested in the results include the AU and other regional bloc leaders such as those in SADC, ECOWAS and the African Development Bank. These results may assist them in their policy making by giving them a solid understanding on where some of the countries who are not doing so well might be going wrong and hence make it is easier to come up with remedial measures.

#### **6.4 LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

The focus of this study was to assess the extent to which good institutions help the achievement of economic growth through the conduct of fiscal policy. It delimits that the study adopted the panel approach and thus caution may have to be taken when applying the results to individual countries.

Furthermore, since focus is only on certain countries, this may limit generalisation to the whole world and the data used is only for a particular time period, this means results cannot be generalised for all times.



Finally, some variables are not directly measurable and proxies were used instead, for example, institutional quality.

Future research needs to go into more detail to account for regional differences and split the countries into low-, middle- and high-income countries and go on to explore the impact of fiscal policy on economic growth given institutional quality so as to expand knowledge on the subject.

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# APPENDIX 1: TURNIT REPORT

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TITLE:  
Fiscal Policy, Institutional Quality and Economic Growth Nexus: Evidence from Sub-Saharan Africa

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## APPENDIX 2: GOVERNMENT SPENDING RESULTS FROM STATA

```
. do "C:\Users\clement\AppData\Local\Temp\STD395c_000000.tmp"

. asdoc xtabond2 GDP L1.GDP c.Gov2##c.Voic Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.Voic Infl Pop TradOp

> FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t) replace

Favoring space over speed. To switch, type or click on mata: mata set matafavor
speed, perm.
```

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       615
Time variable : Year              Number of groups   =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 365057.30        avg =       16.62
Prob > F      =      0.000        max =        22
-----
```

```
-----
      GDP |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
      GDP |
      L1. |   .3242774   .0023593    137.45  0.000   .3194925   .3290623
      |
      Gov2 | -4.30e+08   6.29e+07    -6.84  0.000  -5.58e+08  -3.03e+08
      Voic | -3.85e+07   4.43e+07    -0.87  0.391  -1.28e+08   5.14e+07
      |
c.Gov2#c.Voic |   4427059   1514499     2.92  0.006   1355513   7498606
      |
      Infl |   1.03e+07   6284984     1.64  0.110  -2448627   2.30e+07
      Pop | -1.61e+09   5.40e+08    -2.98  0.005  -2.71e+09  -5.14e+08
      TradOp |  -7802706   8974499    -0.87  0.390  -2.60e+07   1.04e+07
      FDI2 |   .3530872   .0111886    31.56  0.000   .3303956   .3757788
-----
```

InfraDe	3.609138	.0110822	325.67	0.000	3.586662	3.631614
_cons	1.03e+10	2.91e+09	3.55	0.001	4.42e+09	1.62e+10

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

Gov2 Voic c.Gov2#c.Voic Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -0.80 Pr > z = 0.424

Arellano-Bond test for AR(2) in first differences: z = -1.02 Pr > z = 0.308

-----  
Sargan test of overid. restrictions: chi2(14) = 345.62 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 18.57 Prob > chi2 = 0.182

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 16.67 Prob > chi2 = 0.215

Difference (null H = exogenous): chi2(1) = 1.91 Prob > chi2 = 0.167

iv(Gov2 Voic c.Gov2#c.Voic Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 7.99 Prob > chi2 = 0.239

Difference (null H = exogenous): chi2(8) = 10.58 Prob > chi2 = 0.227

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```
. asdoc xtabond2 GDP L1.GDP c.Gov2##c.PolStab Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.PolStab Infl Pop
```

```
> TradOp FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t)
```

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Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       583
Time variable : Year              Number of groups   =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 373317.69        avg =       15.76
Prob > F      =      0.000        max =        19
-----
```

	GDP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
GDP	L1.	.4835319	.0017038	283.80	0.000	.4800765	.4869873
	Gov2	-3.08e+08	5.17e+07	-5.97	0.000	-4.13e+08	-2.04e+08
	PolStab	-6.63e+07	3.43e+07	-1.93	0.061	-1.36e+08	3299222
c.Gov2#c.PolStab		3097697	1128274	2.75	0.009	809451.3	5385943
	Infl	226538.3	7721380	0.03	0.977	-1.54e+07	1.59e+07
	Pop	-1.36e+09	3.74e+08	-3.64	0.001	-2.12e+09	-6.03e+08
	TradOp	-1780490	7641491	-0.23	0.817	-1.73e+07	1.37e+07
	FDI2	.2413506	.0131204	18.40	0.000	.2147411	.26796
	InfraDe	2.799502	.0068141	410.84	0.000	2.785682	2.813321
	_cons	9.02e+09	2.16e+09	4.18	0.000	4.65e+09	1.34e+10

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

Gov2 PolStab c.Gov2#c.PolStab Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -0.98 Pr > z = 0.329

Arellano-Bond test for AR(2) in first differences: z = -1.12 Pr > z = 0.265

-----  
Sargan test of overid. restrictions: chi2(14) = 386.20 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 10.82 Prob > chi2 = 0.700

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 8.70 Prob > chi2 = 0.795

Difference (null H = exogenous): chi2(1) = 2.12 Prob > chi2 = 0.146

iv(Gov2 PolStab c.Gov2#c.PolStab Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 5.98 Prob > chi2 = 0.425

Difference (null H = exogenous): chi2(8) = 4.84 Prob > chi2 = 0.775

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. asdoc xtabond2 GDP L1.GDP c.Gov2##c.GEff Infl Pop TradOp FDI2 InfraDe,  
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.GEff Infl Pop TradOp

> FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t)

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       583
Time variable : Year              Number of groups   =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 519804.34          avg =       15.76
Prob > F      =      0.000         max =        19
-----
```

```
-----
      GDP |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-----+-----
      GDP |
      L1. |   .4957258   .001443    343.53   0.000   .4927992   .4986524
      |
      Gov2 | -3.50e+08   3.90e+07   -8.97   0.000  -4.29e+08  -2.71e+08
      GEff | -1.17e+08   1.99e+07   -5.87   0.000  -1.57e+08  -7.64e+07
      |
c.Gov2#c.GEff |   4241405   920416.5    4.61   0.000   2374714   6108096
      |
      Infl | -614924.7   7182703   -0.09   0.932  -1.52e+07   1.40e+07
      Pop | -1.68e+09   4.23e+08   -3.98   0.000  -2.54e+09  -8.24e+08
      TradOp |   4044143   9201976    0.44   0.663  -1.46e+07   2.27e+07
      FDI2 |   .1950734   .0098157   19.87   0.000   .1751662   .2149806
      InfraDe |   2.756112   .0063484   434.14   0.000   2.743237   2.768987
      _cons |   1.09e+10   1.61e+09    6.81   0.000   7.68e+09   1.42e+10
-----
```

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

Gov2 GEff c.Gov2#c.GEff Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.01 Pr > z = 0.311

Arellano-Bond test for AR(2) in first differences: z = -1.10 Pr > z = 0.272

-----  
Sargan test of overid. restrictions: chi2(14) = 387.57 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 19.05 Prob > chi2 = 0.163

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 17.23 Prob > chi2 = 0.189

Difference (null H = exogenous): chi2(1) = 1.81 Prob > chi2 = 0.178

iv(Gov2 GEff c.Gov2#c.GEff Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 5.52 Prob > chi2 = 0.479

Difference (null H = exogenous): chi2(8) = 13.52 Prob > chi2 = 0.095

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```
. asdoc xtabond2 GDP L1.GDP c.Gov2##c.RegQual Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.RegQual Infl Pop
```

```
> TradOp FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t)
```

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Dynamic panel-data estimation, two-step system GMM

```

-----
Group variable: ID                Number of obs    =      583
Time variable : Year              Number of groups =      37
Number of instruments = 24        Obs per group: min =      8
F(9, 36)      = 530101.50         avg =      15.76
Prob > F      =      0.000        max =      19
-----

```

	GDP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	GDP					
	L1.	.5065367	.0017821	284.24	0.000	.5029225 .5101509
	Gov2	-2.15e+08	4.12e+07	-5.22	0.000	-2.99e+08 -1.32e+08
	RegQual	2.34e+07	2.63e+07	0.89	0.380	-3.00e+07 7.68e+07
	c.Gov2#c.RegQual	89290.35	1088863	0.08	0.935	-2119026 2297607
	Infl	-4720207	5910494	-0.80	0.430	-1.67e+07 7266830
	Pop	-1.47e+09	3.70e+08	-3.98	0.000	-2.22e+09 -7.21e+08
	TradOp	6831138	9803612	0.70	0.490	-1.31e+07 2.67e+07
	FDI2	.2690482	.0098732	27.25	0.000	.2490245 .289072
	InfraDe	2.705795	.0070442	384.12	0.000	2.691509 2.720081
	_cons	5.99e+09	1.48e+09	4.06	0.000	3.00e+09 8.99e+09

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

Gov2 RegQual c.Gov2#c.RegQual Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.01 Pr > z = 0.312

Arellano-Bond test for AR(2) in first differences: z = -1.09 Pr > z = 0.275  
-----

Sargan test of overid. restrictions: chi2(14) = 389.64 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 20.29 Prob > chi2 = 0.121

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 18.96 Prob > chi2 = 0.124

Difference (null H = exogenous): chi2(1) = 1.33 Prob > chi2 = 0.248

iv(Gov2 RegQual c.Gov2#c.RegQual Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 6.09 Prob > chi2 = 0.413

Difference (null H = exogenous): chi2(8) = 14.20 Prob > chi2 = 0.077

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```
. asdoc xtabond2 GDP L1.GDP c.Gov2##c.RulofL Infl Pop TradOp FDI2 InfraDe,  
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.RulofL Infl Pop Tr
```

```
> adOp FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```

-----
Group variable: ID                Number of obs    =      583
Time variable : Year              Number of groups =      37
Number of instruments = 24        Obs per group: min =      8
F(9, 36)      = 583250.30        avg =      15.76
Prob > F      =      0.000        max =      19
-----

```

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
GDP						
L1.	.4899583	.0013505	362.81	0.000	.4872194	.4926971
Gov2	-4.99e+08	3.56e+07	-14.00	0.000	-5.71e+08	-4.26e+08
RulofL	-1.87e+08	2.49e+07	-7.51	0.000	-2.37e+08	-1.36e+08
c.Gov2#c.RulofL	7704937	980418.4	7.86	0.000	5716556	9693318
Infl	6417646	7601563	0.84	0.404	-8999038	2.18e+07
Pop	-1.15e+09	3.76e+08	-3.06	0.004	-1.91e+09	-3.89e+08
TradOp	6236799	8623822	0.72	0.474	-1.13e+07	2.37e+07
FDI2	.1606493	.0156725	10.25	0.000	.1288641	.1924345
InfraDe	2.778385	.0058932	471.45	0.000	2.766433	2.790338
_cons	1.25e+10	1.70e+09	7.37	0.000	9.06e+09	1.59e+10

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

Gov2 RulofL c.Gov2#c.RulofL Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.02 Pr > z = 0.308

Arellano-Bond test for AR(2) in first differences: z = -1.14 Pr > z = 0.252  
-----

Sargan test of overid. restrictions: chi2(14) = 388.44 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 13.55 Prob > chi2 = 0.484

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 12.21 Prob > chi2 = 0.511

Difference (null H = exogenous): chi2(1) = 1.34 Prob > chi2 = 0.246

iv(Gov2 RulofL c.Gov2#c.RulofL Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 5.72 Prob > chi2 = 0.455

Difference (null H = exogenous): chi2(8) = 7.83 Prob > chi2 = 0.450

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```
. asdoc xtabond2 GDP L1.GDP c.Gov2##c.ConofCor Infl Pop TradOp FDI2 InfraDe,  
gmm(L1.GDP, lag(2 15) collapse) iv(c.Gov2##c.ConofCor Infl Po
```

```
> p TradOp FDI2 InfraDe, equation(level)) two small nest dec(4) rep(t)
```

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Dynamic panel-data estimation, two-step system GMM  
-----





GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.02 Pr > z = 0.306

Arellano-Bond test for AR(2) in first differences: z = -1.13 Pr > z = 0.259  
-----

Sargan test of overid. restrictions: chi2(14) = 391.35 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 14.34 Prob > chi2 = 0.424

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 13.31 Prob > chi2 = 0.424

Difference (null H = exogenous): chi2(1) = 1.03 Prob > chi2 = 0.310

iv(Gov2 ConofCor c.Gov2#c.ConofCor Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 6.04 Prob > chi2 = 0.419

Difference (null H = exogenous): chi2(8) = 8.30 Prob > chi2 = 0.404

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.

## APPENDIX 3: TAX REVENUE RESULTS FROM STATA

```
. do "C:\Users\cecily\AppData\Local\Temp\STD395c_000000.tmp"

. asdoc xtabond2 GDP L1.GDP c.TaxRev##c.Voic Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev##c.Voic Infl Pop Tr
> adOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t) replace

Favoring space over speed. To switch, type or click on mata: mata set matafavor
speed, perm.
```

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       613
Time variable : Year              Number of groups   =        37
Number of instruments = 24         Obs per group: min =         8
F(9, 36)      = 572393.87          avg =       16.57
Prob > F      =      0.000         max =        22
-----
```

GDP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
GDP						
L1.	.3813993	.0018607	204.98	0.000	.3776256	.385173
TaxRev	-3.17e+08	6.98e+07	-4.54	0.000	-4.59e+08	-1.76e+08
Voic	5.65e+07	4.02e+07	1.41	0.168	-2.50e+07	1.38e+08
c.TaxRev#c.Voic	-1389331	1697671	-0.82	0.419	-4832368	2053706
Infl	1.34e+07	8570148	1.56	0.127	-3993353	3.08e+07
Pop	-2.51e+09	4.42e+08	-5.67	0.000	-3.40e+09	-1.61e+09
TradOp	2754071	1.05e+07	0.26	0.795	-1.86e+07	2.41e+07
FDI2	.4179818	.0140134	29.83	0.000	.3895613	.4464024
InfraDe	3.363563	.0087525	384.30	0.000	3.345812	3.381314

\_cons | 8.20e+09 2.13e+09 3.86 0.000 3.89e+09 1.25e+10

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

TaxRev Voic c.TaxRev#c.Voic Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -0.97 Pr > z = 0.334

Arellano-Bond test for AR(2) in first differences: z = -1.07 Pr > z = 0.287

-----  
Sargan test of overid. restrictions: chi2(14) = 368.29 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 21.86 Prob > chi2 = 0.082

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 21.79 Prob > chi2 = 0.059

Difference (null H = exogenous): chi2(1) = 0.07 Prob > chi2 = 0.794

iv(TaxRev Voic c.TaxRev#c.Voic Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 5.68 Prob > chi2 = 0.460

Difference (null H = exogenous): chi2(8) = 16.18 Prob > chi2 = 0.040

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```
. asdoc xtabond2 GDP L1.GDP c.TaxRev#c.PolStab Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev#c.PolStab Infl
```

```
> Pop TradOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       581
Time variable : Year              Number of groups   =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 864465.59          avg =       15.70
Prob > F      =      0.000          max =        19
-----
```

```
-----
-
Interval]      GDP |      Coef.  Std. Err.      t    P>|t|      [95% Conf.
-----+-----
-
                GDP |
.4843164      L1. |   .4811748   .001549   310.63   0.000   .4780332
                |
2.11e+08      TaxRev |  -3.12e+08   4.98e+07   -6.26    0.000   -4.13e+08  -
2224698      PolStab |  -4.40e+07   2.28e+07   -1.93    0.061   -9.03e+07
                |
c.TaxRev#c.PolStab |   1704176   984071.2    1.73    0.092   -291613.3
3699965      |
2.30e+07      Infl |   8406422   7216959    1.16    0.252   -6230250
1.22e+09      Pop |  -1.89e+09   3.27e+08   -5.77    0.000   -2.55e+09  -
1.99e+07      TradOp |  -365438.6   9981102    -0.04    0.971   -2.06e+07
-----
```

.3012672	FDI2	.2769915	.0119697	23.14	0.000	.2527158
2.854279	InfraDe	2.839515	.00728	390.05	0.000	2.82475
1.23e+10	_cons	9.09e+09	1.57e+09	5.79	0.000	5.91e+09

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)  
L(2/15).L.GDP collapsed

Instruments for levels equation

Standard  
TaxRev PolStab c.TaxRev#c.PolStab Infl Pop TradOp FDI2 InfraDe

\_cons  
GMM-type (missing=0, separate instruments for each period unless collapsed)  
DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -0.98 Pr > z = 0.329  
Arellano-Bond test for AR(2) in first differences: z = -1.05 Pr > z = 0.295

-----  
Sargan test of overid. restrictions: chi2(14) = 379.26 Prob > chi2 = 0.000  
(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 18.02 Prob > chi2 = 0.206  
(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels  
Hansen test excluding group: chi2(13) = 14.25 Prob > chi2 = 0.357  
Difference (null H = exogenous): chi2(1) = 3.77 Prob > chi2 = 0.052  
iv(TaxRev PolStab c.TaxRev#c.PolStab Infl Pop TradOp FDI2 InfraDe, eq(level))  
Hansen test excluding group: chi2(6) = 6.18 Prob > chi2 = 0.403

Difference (null H = exogenous): chi2(8) = 11.83 Prob > chi2 = 0.159

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```
. asdoc xtabond2 GDP L1.GDP c.TaxRev##c.GEff Infl Pop TradOp FDI2 InfraDe,  
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev##c.GEff Infl Pop Tr
```

```
> adOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----  
Group variable: ID                Number of obs    =       581  
Time variable : Year              Number of groups =        37  
Number of instruments = 24        Obs per group: min =         8  
F(9, 36)      = 867081.47          avg =       15.70  
Prob > F      =      0.000          max =        19  
-----
```

```
-----  
      GDP |      Coef.  Std. Err.      t    P>|t|    [95% Conf. Interval]  
-----+-----  
      GDP |  
      L1. |      .514268   .0012354   416.28   0.000   .5117625   .5167735  
      |  
      TaxRev | -3.40e+08   3.22e+07   -10.56   0.000  -4.05e+08  -2.75e+08  
      GEff | -8.75e+07   1.38e+07    -6.34   0.000  -1.16e+08  -5.95e+07  
      |  
      c.TaxRev#c.GEff | 3998505    853003     4.69   0.000   2268535   5728476  
      |  
      Infl | 9276969    5823302     1.59   0.120  -2533235   2.11e+07  
      Pop | -1.55e+09   4.23e+08    -3.66   0.001  -2.40e+09  -6.90e+08  
      TradOp | 600517.1    9032257     0.07   0.947  -1.77e+07   1.89e+07  
      FDI2 |  .2215737   .0100583    22.03   0.000   .2011746   .2419728  
-----
```

InfraDe	2.677729	.0064157	417.37	0.000	2.664718	2.690741
_cons	8.66e+09	1.66e+09	5.23	0.000	5.30e+09	1.20e+10

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

TaxRev GEff c.TaxRev#c.GEff Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.01 Pr > z = 0.313

Arellano-Bond test for AR(2) in first differences: z = -1.06 Pr > z = 0.291

-----  
Sargan test of overid. restrictions: chi2(14) = 378.49 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 19.73 Prob > chi2 = 0.139

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 18.27 Prob > chi2 = 0.147

Difference (null H = exogenous): chi2(1) = 1.45 Prob > chi2 = 0.228

iv(TaxRev GEff c.TaxRev#c.GEff Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 6.42 Prob > chi2 = 0.378

Difference (null H = exogenous): chi2(8) = 13.31 Prob > chi2 = 0.102

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```
. asdoc xtabond2 GDP L1.GDP c.TaxRev##c.RegQual Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev##c.RegQual Infl
```

```
> Pop TradOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs    =       581
Time variable : Year              Number of groups =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 1.25e+06          avg =       15.70
Prob > F      = 0.000             max =        19
-----
```

```
-----
-
Interval]      GDP |      Coef.  Std. Err.      t    P>|t|      [95% Conf.
-----+-----
```

```

GDP |
L1. |   .5118778   .0015039   340.36   0.000   .5088276
.5149279

|
TaxRev | -2.01e+08   3.60e+07   -5.60   0.000   -2.74e+08 -
1.28e+08

RegQual | 5.31e+07   2.05e+07    2.59   0.014   1.15e+07
9.47e+07

|
c.TaxRev#c.RegQual | -2209529   937006.6   -2.36   0.024   -4109866 -
309191.4

|
Infl | 5167521   6402245    0.81   0.425   -7816835
1.82e+07

Pop | -1.75e+09   3.32e+08   -5.25   0.000   -2.42e+09 -
1.07e+09
-----
```

2.67e+07	TradOp	5190749	1.06e+07	0.49	0.628	-1.64e+07
.3412366	FDI2	.319823	.0105585	30.29	0.000	.2984094
2.717458	InfraDe	2.703024	.0071171	379.79	0.000	2.68859
8.42e+09	_cons	5.54e+09	1.42e+09	3.90	0.000	2.66e+09

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

TaxRev RegQual c.TaxRev#c.RegQual Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.03 Pr > z = 0.305

Arellano-Bond test for AR(2) in first differences: z = -1.05 Pr > z = 0.295

-----  
Sargan test of overid. restrictions: chi2(14) = 378.30 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 17.38 Prob > chi2 = 0.237

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 15.44 Prob > chi2 = 0.281

Difference (null H = exogenous): chi2(1) = 1.94 Prob > chi2 = 0.164

```
iv(TaxRev RegQual c.TaxRev#c.RegQual Infl Pop TradOp FDI2 InfraDe, eq(level))
Hansen test excluding group:      chi2(6)      =    6.08  Prob > chi2 =  0.414
Difference (null H = exogenous):  chi2(8)      =   11.30  Prob > chi2 =  0.185
```

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```
. asdoc xtabond2 GDP L1.GDP c.TaxRev##c.RulofL Infl Pop TradOp FDI2 InfraDe,
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev##c.RulofL Infl Po
```

```
> p TradOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----
Group variable: ID                Number of obs      =       581
Time variable : Year              Number of groups   =        37
Number of instruments = 24        Obs per group: min =         8
F(9, 36)      = 720045.15          avg =       15.70
Prob > F      =      0.000          max =        19
-----
```

GDP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
GDP						
L1.	.5121814	.001284	398.91	0.000	.5095774	.5147854
TaxRev	-4.35e+08	3.33e+07	-13.06	0.000	-5.02e+08	-3.67e+08
RulofL	-1.36e+08	1.57e+07	-8.66	0.000	-1.68e+08	-1.04e+08
c.TaxRev#c.RulofL	7193736	781028.3	9.21	0.000	5609737	8777734
Infl	1.31e+07	6541588	2.00	0.053	-207540.1	2.63e+07
Pop	-1.01e+09	4.11e+08	-2.45	0.019	-1.84e+09	-1.74e+08

TradOp		2495300	8234048	0.30	0.764	-1.42e+07	1.92e+07
FDI2		.2014854	.0109719	18.36	0.000	.1792333	.2237374
InfraDe		2.680824	.0054342	493.32	0.000	2.669803	2.691845
_cons		8.64e+09	1.80e+09	4.79	0.000	4.98e+09	1.23e+10

-----  
Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

TaxRev RulofL c.TaxRev#c.RulofL Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.00 Pr > z = 0.320

Arellano-Bond test for AR(2) in first differences: z = -1.10 Pr > z = 0.273

-----  
Sargan test of overid. restrictions: chi2(14) = 378.97 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 16.20 Prob > chi2 = 0.301

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 15.37 Prob > chi2 = 0.285

Difference (null H = exogenous): chi2(1) = 0.83 Prob > chi2 = 0.361

iv(TaxRev RulofL c.TaxRev#c.RulofL Infl Pop TradOp FDI2 InfraDe, eq(level))

Hansen test excluding group: chi2(6) = 5.42 Prob > chi2 = 0.491

Difference (null H = exogenous): chi2(8) = 10.78 Prob > chi2 = 0.215

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```
. asdoc xtabond2 GDP L1.GDP c.TaxRev##c.ConofCor Infl Pop TradOp FDI2 InfraDe,  
gmm(L1.GDP, lag(2 15) collapse) iv(c.TaxRev##c.ConofCor Inf
```

```
> l Pop TradOp FDI2 InfraDe, equation(level)) two small nest dec(4)rep(t)
```

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Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM

```
-----  
Group variable: ID                Number of obs      =       581  
Time variable : Year              Number of groups   =        37  
Number of instruments = 24         Obs per group: min =         8  
F(9, 36)      = 814596.01          avg =       15.70  
Prob > F      =      0.000         max =        19  
-----
```

```
--  
-----+-----  
--  
Interval]      GDP |      Coef.  Std. Err.    t    P>|t|    [95% Conf.  
-----+-----  
--  
                GDP |  
                L1. |   .5149733   .0014489   355.43  0.000    .5120348  
.5179118  
                |  
                TaxRev | -4.91e+08   3.52e+07  -13.97  0.000   -5.63e+08  -  
4.20e+08  
                ConofCor | -1.37e+08   2.39e+07  -5.73  0.000   -1.86e+08  -  
8.86e+07  
                |  
c.TaxRev#c.ConofCor |    7389198   994374.7    7.43  0.000    5372513  
9405883  
                |  
                Infl |   2.22e+07   5589680    3.98  0.000   1.09e+07  
3.36e+07
```

3.59e+08	Pop	-1.21e+09	4.18e+08	-2.89	0.007	-2.06e+09	-
1.15e+07	TradOp	-4444688	7848667	-0.57	0.575	-2.04e+07	
.2323373	FDI2	.2144401	.0088246	24.30	0.000	.1965429	
2.692192	InfraDe	2.681065	.0054863	488.68	0.000	2.669939	
1.38e+10	_cons	1.02e+10	1.76e+09	5.81	0.000	6.64e+09	

-----  
--

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

GMM-type (missing=0, separate instruments for each period unless collapsed)

L(2/15).L.GDP collapsed

Instruments for levels equation

Standard

TaxRev ConofCor c.TaxRev#c.ConofCor Infl Pop TradOp FDI2 InfraDe

\_cons

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.GDP collapsed

-----  
Arellano-Bond test for AR(1) in first differences: z = -1.01 Pr > z = 0.312

Arellano-Bond test for AR(2) in first differences: z = -1.09 Pr > z = 0.276

-----  
Sargan test of overid. restrictions: chi2(14) = 382.56 Prob > chi2 = 0.000

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(14) = 17.92 Prob > chi2 = 0.211

(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(13) = 17.07 Prob > chi2 = 0.196

Difference (null H = exogenous): chi2(1) = 0.85 Prob > chi2 = 0.358  
iv(TaxRev ConofCor c.TaxRev#c.ConofCor Infl Pop TradOp FDI2 InfraDe, eq(level))  
Hansen test excluding group: chi2(6) = 6.51 Prob > chi2 = 0.369  
Difference (null H = exogenous): chi2(8) = 11.41 Prob > chi2 = 0.180

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