IMPACT OF INSTITUTIONAL QUALITY ON ECONOMIC PERFORMANCE OF EASTERN AFRICAN: A PANEL DATA ANALYSIS

A Thesis Submitted to the School of Graduate Studies, Jimma University, College of Business and Economics in Partial Fulfillment of the Requirements for the Degree of Master of Science in Development Economics

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ABSTRACT

Nowadays, studies argued that international difference in prosperity across a country is the matter institutional quality. Thus, the poor economic performance of African's is linked to their weak institutional quality. The aim of this study is to examine the extent to which institutional quality affect economic performance of 14 selected East African Countries; Burundi, Comoros, Djibouti, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe, over the period 2005-2016, using fixed effect and System GMM methods. The finding of this study confirms with the existing empirical study that economic institutions matter for economic performance. Among the four measures of quality of economic institutions examined, control of corruption and government effectiveness are the most driving factors of economic performance, while rule of law has adverse effect on economic performance. The finding of this study shows that that Eastern Africa with better institutions has a higher economic performance. Therefore, the Eastern Africa countries should improve those institutions that have positive impact, and promote and change those institutions that have adverse effect in way that it can promote economic development.

DECLARATION

I hereby declare, the thesis entitled ''**THE EFFECT OF INSTITUTIONAL QUALITY ON ECONOMIC PERFORMANCE OF EASTERN AFRICA: A PANEL DATA ANALYSIS**'' *is my original work* is my own except as specified in acknowledgments or in footnotes, and that neither the thesis nor the original work contained therein has been submitted to this or any other institution for the award of any degree or diploma.

Researcher Name:

FIKADU ABERA   _____   _____

                                             Signature   Date

CERTIFICATE

This is to certify that the research work presented in this thesis, entitled "**The Effect of Institutional Quality on Economic Performance of Eastern Africa: A Panel Data Analysis**", submitted to Jimma University office of Postgraduate in partial fulfillment of the requirements of Master's degree in Development Economics, was conducted by Mr. Fikadu Abera under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

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List of Acronyms

AFDB	Africa Development Bank
CSP	Center for Systematic Peace
DESA	United Nations Department of Economic and Social Affairs
DPAD	Development Policy and Analysis Division
FGLS	Feasible Generalized Least Square
GDP	Growth Domestic Product
GMM	Generalized methods of moment
ICRG	International Country Risk Guide
ICTP	Instability, Crisis, and Recovery Programs
IMF	International Monitoring Fund
IRIS	Institute of international relation strategies
ROEA	Regional Office for Eastern Africa
SNA	System Of National Account
SSA	Sub-Saharan Africa
UNCATD	United Nations Conference on Trade and Development
UNDP	United Nation Development Program
UNECA	United Nation Economic Commission for Africa
UNHCHR	The Office of the United Nations High Commissioner for Human Rights
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
WB	Work Bank
WGI	World Governance Indicator

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The concern of causes of Cross-country difference in economic growth and development is arguably one of the most important questions in social science. What can explain differences and the broader divergences in economic growth and development around the world? Such question has attracted the research scholars from various discipline including political economy, social policy, economic history, economic growth and economic development.

Decades ago, the emphasis was on the accumulation of factors of production and exogenous technological progress. Later on, the focus switched to policies and incentives endogenously affecting factor accumulation and innovation. More recently, the attention has moved to the institutional framework underlying these policies and incentives.

Since then, much of the pioneering work into institutional framework has been done by Douglass North, who defines institutions as "Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction and in consequence they structure incentives in human exchange, whether political, social, or economic". Following North institutional framework Vitola and Senfelde(2015) , define institutions as socially approved behavior models that restrict the rationality of an individual and constrain or encourage specific behavior, and assume that high quality institutions encourage an efficient use of limited production resources in order to fulfill the needs of society.

Nowadays, the topic of the role of institutions has become one of the most popular research areas in development economics over the last few years. Influenced by the broader revival of interest in institutions in economics, institutions started gaining popularity by the early 1990s as an explanation of international differences in economic development. However, it is from the late 1990s that institutions have moved to the center stage in the debate on economic development.

In this respect, there are number of growing studies that examine channel through which institution can affect economic performance of a country. The studies by (Jalilian et., 2003; Rodrik et al., 2004; Acemoglu and Johnson, 2005; Acemoglu et al., 2005; Fabro and Aixalá,

2009; Commander and Nikoloski, 2010; Acemoglu et al.,2014; Han et al., 2014; Iqbal and Daly , 2014; Nawaz, 2015; Alam et al.,2017) are some of the empirical studies that emphasis the importance of institution in economic performance of the world counties. The main message of these studies is that institutions are the fundamental cause of economic growth and development differences across countries. Additionally, poor quality of institution is the root cause of economic problem of third world countries. Developing countries generally have low quality institutions and fail at supporting productive investments and protecting property rights. However, the ways come to this inference is not without challenge.

The methodological weakness of the above studies motivates many scholars to re-examine the role of institution by separating countries based on certain unique features. To this extent , there are growing number of studies that examine the role of institutions in economic performance of African Countries (Habtamu, 2008; Batuo and Fabro, 2009; Osman et al., 2011; Fayissa and Nsiah, 2013; Kilishi et al., 2013; Temesgen, 2014; Effiong, 2015; Valipoor and Bakke, 2016).Similarly,these scholars confirmed to the statement that economic institutions matter for African economic performance. However, still the channel through which institutional quality affect economic performance is not clear.

Moreover ,the statement that instituuons matter is only justified if one can control for what makes institution to be matter.Accroding to commander and Nikoloski(2014) and Alsnso et al(2013),there are five main deep determinats of quality of economic institutions;income distribution,political power,economic openess to international trade ,tax revenue and level of education .Therefore,controlling for such factors makes statatemnt "insttition matter" clear ,otherwise thte statemt is trivial.Eventhough,there are few studies that have controlled for trade openesss (Kilishi et al.,2013;Fayisa and Nhisa ,2013;Effiong,2015 and Valipoor and Bakke,2016), with exception to Effiong(2015),who have controlled for political institutions using contriants on executive power,none of the above have not controlled for political power that emerge from politcal institutions.

1.2. Statement of the Problem

Today there are larger differences in prosperity across a country of the world. A stylized fact of the last century is that, with a few exceptions, the poorest countries of the world did not catch up with developed nations in any meaningful way. According to IMF (2016) report, the four poorest

countries of this world has income per capita less than $1000 while the top four richest has income per capita of more than $80,000. Why so much differences?

Economists have long history in determining the root causes of what makes one country prosper, while the other stagnate. Accordingly, one of the most important determinants of this difference is the quality of their economic institutions. Institutions are fundamental determinant of the welfare of nations, because they affect organization performance by fostering better policy choice. They are created to establish incentive structure that help to reduce transaction cost, minimize uncertainty and promote efficiency, maintain social harmony, hence contribution to strong economic performance of a nations(Wiggins and Davis, 2006;Tadic, 2006).When they fail trust become erode and economies become damaged. Moreover, weak institutions can increase uncertainty, unpredictability, instability, corruption and transaction costs (Acemoglu and A.Robinson, 2010; Acemoglu and Robinson, 2010; Vītola and Senfelde, 2012)

Unfortunately, there is a problem of institutional quality in East African. Despite increasing economic growth in the region, on average than other regions, the fundamental determinant of economic development and growth, that is institutions, is weakening in the region. Evidence state that the region has been plagued by civil wars, cross-border conflicts, social strife, and arms trafficking(UNODC, 2013).Additionally, Solomon(2014) stated that the region institutional environment is suffering from weak governance systems and authoritarian tendencies. The lack of an independent judiciary and the lack of accountability and significant human rights challenges (UNHCHR, 2012).These weak institutional qualities traps are discouraging the incentive of economic agents and brought about poor performance of the economy in Eastern Africa (ADB, 2011).

Nowadays, there are increasing number of studies that examine whether or not the quality of institutions matter for economic performance of Africa (Asfaw and Mbeche, 2004; Luiz, 2009a; Osman et al., 2011; Fayissa and Nsiah, 2013; Kilishi et al., 2013; Temesgen, 2014; Effiong, 2015; Valipoor and Bakke, 2016; Louis, et al., 2016; Adanu, 2017). Following the literature that examine the effect of institutional quality at global level (Rodrik, 2004; Acemoglu and Johnson, 2005; Acemoglu et al., 2005; Acemoglu nd Robinson, 2008, 2010, 2013, 2016, Robinson, 2009; Acemoglu et al., 2014; Nawaz, 2015), these African research team studies were stated that institution matter for Sub-Saharan Africa, meaning that institutions are important factor in

explaining economic prosperity ,even though they come to conclusion with different results. However, it is still not clear about the channel through which institution affect economic performance.

This because that, the relationship between institutions and economic performance is not always the same, meaning that it can be changed over time and space. In the same amount and in the same country, the same institution may promote growth at one point in time but not in another. Nevertheless, even the same institution in the same case may be good for one country but bad for another. Moreover , even if an institution in some case promotes growth, it may actually hamper economic growth in a larger case(Eicher and Leukert, 2006; Luiz, 2009; Chang, 2011).

On the other hand, comparing larger number of countries on cross-country basis does reflect institution matter everywhere. The statement that institution matter depend on what makes those institutions to be matter, otherwise the statement is trivial. There are five main factors that shape the quality of institutions; income distribution, the efficiency of its tax system, quality of political institution, economic openness and the educational level. Therefore, controlling for such factors makes that statement of institution matter non-trivial. With exception Effiong (2015), who have controlled constraint imposed on elite power, the above studies on Africa, particularly in SSA, were not controlled for quality of political institutions that shapes quality of economic institutions.

To fill the gaps in the above literatures by, first of all by, as Docquier (2014) suggested that instead of comparing a larger number of countries on a cross-country basis, it might be interesting to focus on a smaller sample of counties that are likely similar and experienced institutions change at different period. Second, by controlling for the deep factors that shapes quality of economic institutions that is quality of political institution, this study would have aimed to examine the effect of quality of economic institutions on economic performance of East African Countries

Particularly, in the views of the above statements, the aim of this study is to answer the following questions;
Are there statistically significant differences in economic performance of Eastern Africa Countries? If so, are these country differences explained by quality of economic institutions?

What is the effect of each specific quality of economic institutions on economic performance in these countries?

1.3. Objectives of the study

The general objective of this study is to investigate institutional quality and economic performance relationships in 14 selected Eastern Africa countries.

The specific objectives are:

- ❖ To examine the impact of quality of economic institutions on economic performance
- ❖ To analyze identify specific quality of economic institutions affect economic performance

1.4. Research hypothesis

Nowadays, there are Dozens of study which argued that institution matter for economic growth and development of a country. As the result, the poor economic performance of SSA has been linked to the matter of weak quality of their institutions. To this end, this study will have aimed to examine if quality of economic institutions is the matter for economic performance of Eastern Africa countries. For this reason, the hypothesis to be tested has been stated as in the following;

Null hypothesis: Quality of Economic Institution do not have statistically significant on impact economic performance of East African.

If institutions do matter, economic performance is adversely affected when institutional quality is very weak; otherwise better quality of institutions enhances economic performance. The matter of quality of institutions for economic performance is enhanced with better political institutions and when economy is more open to international trade.

1.5. Significance of the study

From the existing literature whether global sample studies or sub-sample of African, so many contribution has been made to clarify the effect of institutional quality on economic performance. We have learned a lot from those studies that, even if inconclusive, how institution affects economic performance. The use of modified econometric tools, such as fixed effect estimation to understand the heterogeneity among included sample countries for the study and Generalized Method of Moments (GMM) estimation to address the issue of endogeneity convey meaningful

information for policy makers and for academic purposes as well. However, still the debate in the current discourse is increasing; making the channel through which economic institutions affect economic performance is unclear.

Thus, the aim of this study contribute to these debate in the literatures by following similar methodological strategy as in the previous studies, but unlike the previous studies to control quality of political institutions that emerged from distribution of political power in a society, then to put how do institutional quality affect performance in Eastern Africa in the current position of the empirical literatures.

1.6. Scope and limitation of the study

This study examined the impact of quality of economic quality on economic performance of 14 selected eastern Africa countries; Burundi, Comoros, Djibouti, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe, over the periods of 12 years from 2005-2016.The Fixed effect and GMM estimation where employed to estimate the effect of quality of economic institutions on GDP per capita, along with the control variables such as polity2 as proxy measure for political institutions, trade openness, growth capital formation and population growth rate. However, this study did not control for other factors that can shapes quality of economic institutions, such as tax revenue, human capital and income distributions due lack of data for the county that included in this study.

The other challenge in this study is the reliability of measurement of institutional quality. Even though, the World Bank Governance Indicators (WGIs) were chosen because of its best available proxy for institutional quality, not only for greater accuracy but also for the wider geographical coverage, these indicators still have shortcoming. This is because of the fact that most of them are based on subjective opinions from firm managers, international bureaucrats or scholars; and the sample may not always representative(Voigt, 2013).

1.7. Organization of the paper:

The rest of this paper has been organized as follows; in chapter two measurements and related concept of institutional quality   stated in section 2.1, and then sections 2.2 and 2.3 will reviews theoretical of this study and empirical literatures of this study and this chapter concludes with the reviewing the some stylized facts about Eastern Africa .In chapter 3 the empirical methodology

of this study; data issue, study variables, model specification and tests of the validity of model were presented. Finally, the study results and discussion of this study will be presented in chapter four and then chapter 5 ends with the conclusion and recommendation for policy and future research.

CHAPTER TWO

REVIEW OF THE LITERATURE

The concept of institutions has gained a remarkable importance since the beginning of 1990s, but the term has no unique definition. However, the most widely used definition that has been used by many scholars is based on the World Bank's definition of institutions, which is based on that of Douglas North, namely that institutions are constituted by a set of formal rules (a constitution, laws and regulations, a political system, property rights, etc.) and informal ones (a system of values and beliefs, customs, ideas, social norms, etc.) that govern the behavior of individuals and organizations.

The above concepts constituted the term governance, which means the traditions and institutions by which authority in a country is exercised. This includes (a) the process by which governments are selected, monitored and re- placed; (b) the capacity of the government to effectively formulate and implement sound policies; and (c) the respect of citizens and the state for the institutions that govern economic and social interactions among them(Kaufmann et al., 2010).

Similar to the above concepts, UNDP (2011) offered the definition for institutional quality based on the notion of the ability of governments to design and implement the right combination of short- and long-term policy measures under the times of unexpected uncertainty. This concept also links institutional quality to institutions and governance principles that are critical for implementing e ective and equitable policy measures to mitigate the impact of economic crises. Thus, institutional qualities are defined with three main concepts; performance, adaptability, and stability. These three institutional quality criteria are evaluated based on the country systems that are involved in a crisis response, such as the civil service, procurement mechanisms, public financial management systems and monitoring and evaluation systems, need to incorporate and display these qualities and principles when responding to economic shocks(UNDP, 2011).

Performance: Performing institutions, with the capacity to deliver basic public services and to design and implement policies, are critically important to countries' efforts to achieve their development goals, and even more so during crisis. For example, the quality of governance, as measured by the level of corruption and the quality of bureaucracy, can explain differences in the ability of public spending to improve health and education. Measured by effectiveness and

efficiency, institutional performance is the foundation of the state's capacity to manage its executive, legislative and judiciary functions, to administer the economy, to deliver social services, to use natural resources sustainably, to ensure protection of human, economic and social, civil and political rights, and to provide security. Effectiveness is the degree to which an institution's objectives are achieved, and an understanding of where and how an institution is more or less effective can help people to design programmatic responses to develop capacities in these particular areas. Efficiency is the ratio of produced outputs (or what has been achieved) to the resources used to create them.

Adaptability: In times of crisis, countries need institutions with the capacity to anticipate, adapt and respond to changing needs and shifting priorities. Adaptability is thus an ability to perform in future conditions and to innovate to meet future needs. Adaptable institutions are flexible and able to continuously invest in endogenous improvements, while anticipating and responding to crises with innovative solutions.

Stability: Stability is the degree to which an institution can decrease volatility of performance through institutionalization of good practices and norms and can identify and mitigate internal and external risks through risk management.

Based on the above concepts, today there are several databases have been developed to characterize the quality of institutions. The following two databases; the Worldwide Governance Indicators (WGI) and Polity4 project, are some of the many databases that measures quality of economic institutions and political institutions around the world respectively.

The Worldwide Governance Indicators (WGI) are a research dataset summarizing the views on the quality of governance provided by a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. These data are gathered from a number of survey institutes, non-governmental organizations, international organizations, and private sector firms. The Worldwide Governance Indicators (WGI) database was developed by Kaufmann et al. (1999) in which they entailed as "Governance matters" and it reports six broad dimensions of governance quality for over 200 countries over the period 1996-2016.These six dimensions of governance indicators include, voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruptions and the definition for these will be in the next chapter 3. The most recent methodology is described in Kaufman et al.

(2010). The six aggregate indexes are reported in standard normal units, ranging from approximately -2.5 to 2.5(for detail see Appendix B).

With respect to political institutions, the Polity project records the authority characteristics of many states in the world. The latest version, Polity IV, covers all major, independent states in the global system (that is states with total population of 500,000 or more in the most recent year) over the period 1800-2016. The Polity IV data set provides an index of democracy. This index combines two eleven-point scales (0-10) of democracy and autocracy. The democracy index is a variable aggregating three characteristics of institutions: first is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; second is the existence of institutionalized constraints on the exercise of power by the executive; third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. The autocracy index is derived from coding of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. Other country-specific variables are provided in the Polity IV database, such as the occurrence of coups (1946-2011), major episodes of political violence (1946-2016), size of forcibly displaced populations (1964-2008), a fragility index (1995- 2011), etc. In addition, Beck et al. 2001 built another database covering 177 countries over 21 years (1975-1995). The latter database includes 108 variables describing elections, electoral rules, types of political system, party composition of the government coalition and opposition, and the extent of military influence on government.

2.2. Theoretical Literature

2.2.1. The new institutional economics

The question of what makes societies economically successful has been the interest of many social scientists. However, economists were unpreceded in developing theoretical framework with purposes of explaining causal relationship among economic variables, to understand the world better and provide basis for policy design. In such framework, economic variables such as; the division of labor limited to the market size, the capital accumulation, government spending and interest rate, the emergence and maintenance of innovations, savings and investment, the efficiency of the private and public sector are crucial factors that identified as source of growth and economic development(Popescu, nd).

After 1980s, three main brands of theories of economic growth can be distinguished; a Neoclassical theory based on Solow's growth model who emphasized the importance of investment and saving, a new growth theory (theory of endogenous growth) developed by Roomer and Lucas that take into account human capital and innovation capacity and the neo-institutional theory which emphasized the role of institutions in economic performance. The neoclassical theorist stated that markets are competitive and without government intervention, the optimal level of production and resource allocation is achieved. In addition, it assumes that technology and technical progress as exogenous factors of production. However, the new growth theory come to contradict the neoclassical theorist view by considering technical progress and technology as production factor of economic activity(Sardadvar, 2011).

The Institutional economics stresses the crucial role of institutions in economic performance of a Country. It provides a framework for understanding the interaction of government structures, firm organization, and individual decisions, emphasizing transaction costs as a central component of economic activity. The founder of the field is Ronald Coase, who put the roots of new institutional economics in his two articles of "The Nature of the Firm 1937" and "The problem of Social Cost 1960". The term was latter coined by Oliver Williamson in 1975.Latter on , Douglass North, along with Ronald Coase and Oliver Williamson, transformed the early intuitions of new institutional economics into powerful conceptual and analytical tools that laid a robust base of empirical research(Wajda, 2016).

Wajda (2016), identified the three main theories which are part of the New Institutional Economics are: Agency Theory, Property Rights Theory and Transact on Costs Theory.

Transaction coast theory: Transaction costs are the costs stemming from applying the price mechanism. In other words, these are the costs of negotiating contracts, monitoring performance and getting to know trading partners. The sources of transaction costs are: searching for information on, analyzing options, selecting a product, drawing up the contract and realizing it as well as the costs resulting from bounded knowledge and the tendency towards making mistakes. The main idea here is that without taking into account transaction costs it is impossible to understand properly the working of the economic system and have a sound basis for establishing economic policy, as it has not been assumed by the neoclassical theory, which assumes the zero transactions cost (North 1992,1994,2005).

Property rights theory: property is not a thing like Asset, but Property is about rights in a thing. Something is a "property" if it has value to someone after costs are considered. Then, right is relationships among "social actors (Individuals, groups, legal people, legal, commercial, social, family, personal)" having an interest in a "thing. Right exist only to extent; when recognized, Enforced, Rationale - value of right exceeds cost of enforcement. Thus, property right can be defined as enforceable claim to some use or benefits of something. The state, customs, community, family, need legitimacy and capacity are characteristics of enforcements. The right use access that 'valuable thing" is given with the duties protect and maintain it. Property rights can be held by individuals, groups and state. Property rights held by individuals are private property rights; by groups are collective property rights; by state-it is an extended form of collective rights (Dirimanova, 2009).

The institutional economic linked the problem of externality to and property rights. Property rights theory assumes that the product on or consumption of a service or goods impacts market participants, that is, there are externalities n each economy. According to this theory, owing to the internalization of externalities, the range of unchangeable relations can be reduced. The main task of the government should be ensuring the accurate division of property rights. Internalization is connected with transact on costs because, for example, securing of property rights has a price.

The agency Theory: This theory very helpful in understanding the relationship between employee and employer, owners and managers, buyers and suppliers. This theory assumes that the two parties are involved in the agency relationship among the dual characteristics; One the principal and the other agent. While the principal (head) assumed to have a delegation worth, the agent has the responsibility to work under the principal. There is case that the principal shares his authority to the agent, in which both the principal and the agent face different aim and preferences. Then there is an opportunity that the agent will not work in the principal interest. At this time two problems can be created; one the problem of agency and the other the problem of risk sharing. The agency problem occurs when there is a conflict between the agent's goal and the principal desires and the risk sharing problem occur the two parties' takes risk differently.

According to the agency theory one to solve the first problem is by establishing the incentives for the agents. If the agent has an opportunity to have a valuable gain, they do not want to act against

the principal's interest, because it will not produce the expected profit. The principal often resorts to incurring monitoring costs. The monitoring of the agent's action should limit the aberrant activities of the agent. Causing the agent to act on behalf of the principal is a very common problem. It exists in all organizations and cooperative effort at each level of the management process. These are agency costs which result from the first problem of Agency Theory. There are three sorts of agency costs: the principal's costs, the agent's costs and the alternative costs. The principal's costs involve monitoring the agent's action. The second sort of the agency costs concern the agent's expenditures made to gain the principal's trust, e.g. insurance costs. These are also bonding costs which ensure that the principal will receive compensation if the agent does not act on the principal's behalf the third sort of agency costs are residual losses. These are the costs of the reduction in welfare experienced by the principal as a result of the divergence between the agent's decisions and actions and the principal's interest (Gorynia, 1999).

The principal and the agent have different attitudes towards risk. The risk aversion of the agent is understandable-the main agent's asset is their position: employment, contract or agreement. The agent is unable to diversify their position. The principal, who usually owns many assets, often represents an attitude of risk-seeking (Urbanek, 2005, p. 100). That problem can be observed in big organizations, where shareholders hire managers to manage their assets. The manager's behavior is strictly connected with their job contract. If they have been employed to manage the company, they will not have to be focused on company profit, because no matter what, they will receive their gratification on. However, if their contract is accompanied with a clause linking their gratification with the company's profit, their behavior will be completely different (Urbanek, 2005).

2.2.2. Institutions and Economic performance

The use of the term institution has become widespread in the several social sciences field including economics, philosophy, sociology, politics, and geography, but the definitions and uses of term has been more advanced in institutional economics in the recent time. However, even today, there is no agreement in the definition of this concept, most of the literatures are now days working under the North (1990) definition of institutions. According to north (1990)," institutions are the rules of the game in a society or, more formally, are the humanly devised

constraints that shape human interaction and inconsequence they structure incentives in human exchange, whether political, social, or economic". The following figure 2.1 show the theoretical framework of the New Institutional Economics which developed by the North (1993).

Figure 2. 1: Institutions and Economic performance relationships

Cumulative through time .... **Learning through time** .... *Mantained by the culture*

Beliefs ↓

INSTITUTIONS

The rules of the game

Formal constraints   Enforcement charasterstics   Informal constraints

Institutional constraints

Incentives ↓

Economic performance

The game

Objectives ↑

Organisations

The players

Tecnological, income and other constraints

Source: Adopted from (North, 1993)

The main idea here is that, according to North (1993), institutions are humanly devised constraints that shape human interaction and they are made up of formal constraints (rule of law, constitution) and informal constraints (norms of behavior, conventions and self-imposed codes of conduct), and their enforcement characteristics. From figure 2.1, according to North, History demonstrates "that ideas, ideologies, myths, dogmas, and prejudices matter; and an understanding of the way they evolve is necessary for further progress in developing a framework to understand societal change" and Time dimension regarding institutions, as institutions evolve as a result of learning processes of human beings – not just individuals, but

societies. North (1990), continue to stated that institutions are endogenous, determined by the choice of society and a result of learning through time, which is maintained through culture Moreover, as knowledge is transferred between generations through the communal culture, institutions are strongly influenced by path dependence.

Furthermore, as depicted in the above figure 2.1, North makes a clear distinction between institutions and organizations. The main theory here is that, in the language of game theory, is that economic performance is "the play of the game", institutions are the rule of "the game" and organizations (political – parties, the parliament, city council, agency; economic – firms, trade unions, farms, cooperatives; social – churches, clubs, associations; educational – schools, universities, training centers) are "the players". Organizations are created as a function not only of institutional, but also technological, income and other constraints and the level of knowledge and skills by the organizations and their entrepreneurs determine the economic performance.

On the other hand, Acemoglu et al. (2005) by classifying institutions as economic institutions, political power, and political institutions, they stated how these are interrelated concepts are interacted with each other and how they can affect economic performance. These three concepts are defined as the following;

Economic institutions: Acceding Acemoglu et al. (2005), economic institutions include factors governing the structure of incentives in society (meaning that, incentives of economic actors to invest, accumulate factors, make transactions, etc.) and the distribution of resources. For instance, the structure of property rights, entry barriers, set of contract types for business offered in contract law; redistributive tax-transfer schemes are affecting economic performance and growth.

Political power: Acemoglu et al. (2005) defined political power as the power emerging from societies as the result of conflicting interest and in turn lead to economic institutions, meaning that economic institutions are the outcome of collective choices of the society. A society is made of different groups with conflicting interests. The relative political power of these groups governs their capacity to decide the administration of resources and implement policies. The distribution of political power determines the design and the quality of economic institutions. It results from de facto political power (meaning that political power emerging from economic

outcomes) and de jure political power (meaning that political power in accordance with formal institutions; constitutions and law)

Political institutions – These includes institutions that allocate de jure political power across groups. They are linked to the characteristics of the government and the design of the constitution.

 The above three concepts can be summarized by the following framework in figure 2.2 as Acemoglu et al. (2005) did it.

Figure 2.2 : Interaction between Economic institutions , political power and Political institutions

$$
\left.
\begin{array}{l}
\text{political institutions}_t \rightarrow \text{de jure political power}_t \\
\qquad\qquad\qquad\qquad\qquad \& \\
\text{distribution of resources}_t \rightarrow \text{de facto political power}_t
\end{array}
\right\}
\begin{array}{l}
\rightarrow \text{economic institutions}_t \\
\\
\rightarrow \text{political institutions}_{t+1}
\end{array}
\rightarrow
\left\{
\begin{array}{l}
\text{economic performance}_t \\
\& \\
\text{distribution of resources}_{t+1}
\end{array}
\right.
$$
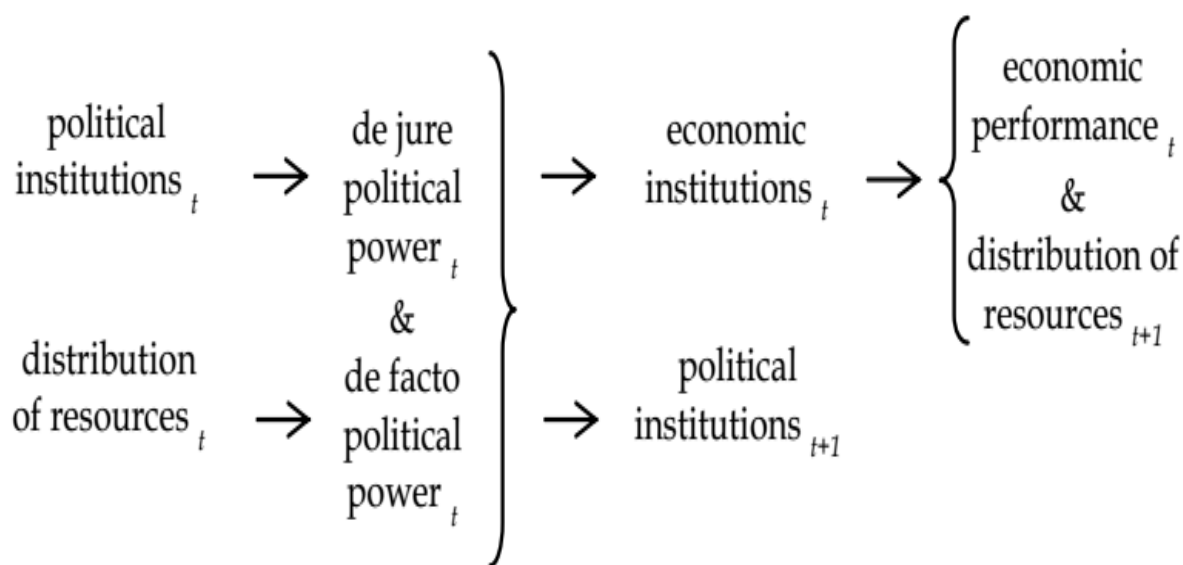
Source: Adopted from Acemoglu et al. (2005)

Figure shows interactions between economic, political power and political institutions. It indicates that the interactions among them govern institutional development and development. The de jure political power, political power emerges from the practices of the formal institutions (constitutions, laws) over time span" t" is shapes the economic institutions and this will lead to economic performance to occur. Similarly, the future resources distribution is based on the de facto political power, political power emerged from the informal institutions (values, customs and others) then this also bring about the economic performance and resource distribution. According to this theory, there also a reverse causal effects of the economy on these institutions.

As emphasized by Acemoglu et al. (2005), political institutions and the distribution of political power in society are determined by the distribution of resources. They govern the design of economic institutions, which in turn determine the level of development and the dynamics of the distribution of resources. For example, in a very unequal society, prejudiced groups can engage in activities (exit, protest, revolt, military coup) that will change political and economic institutions

2.3. Review of Empirical Literature

It has been argued that the fundamental difference in property across countries of the World is the quality of their institutions. Since the revival of the institutional economics at center Development Economics, after 1990, empirical literatures are exponentially increasing in searching for what explain this larger difference in property across a country. The following sections will be going to review some of these that studies that contributed this empirical testing.

2.3.1. Review of studies of Global Status Institutions and Economic Performance

The paper by Jalilianet al., (2003) explored the role of regulation in affecting economic outcomes using an econometric model of the impact of regulatory governance. More precisely, it assesses through econometric modelling the impact of variations in the quality of regulatory governance on economic growth. The proxies for regulatory quality are included as determinants of economic growth. The results based on two different techniques of estimations, the direct cross-section analysis estimated by OLS and fixed effects technique; suggest a strong causal link between regulatory quality and economic performance. The results confirm that "good" regulation is associated with higher economic growth, which in turn is conducive to the expansion of international business.

One of the very interest paper that investigated respective contributions of institutions, geography, and trade in determining income levels around the world, using recently developed instrumental variables for institutions and trade was done by Rodrik et al., 2004). By employing a two-stage least squares estimation procedure their results indicated that the quality of institutions "trumps" everything else. Once institutions are controlled for, conventional measures of geography have at best weak direct effects on incomes, although they have a strong indirect effect by influencing the quality of institutions. Similarly, once institutions are controlled for,

trade is almost always insignificant, and often enters the income equation with the "wrong" (i.e., negative) sign. Finally, they stated that the existing relative literatures suffer from choices on samples, specification, and instrumentation.

Acemoglu et al. (2005) examined the quality of institutions on income per capita of developed and developing countries. They relate quality of institutions in developing countries to the type of colonial experience. They distinguished two types of European colony. Colonized countries with a temperate climate (e.g. North America, Australia, etc.) were suitable for agriculture and settlement. Colonial powers put in place institutions of settlement, which are very similar to those in their home countries. In contrast, countries with adverse climatic conditions and rampant diseases were seen mainly as sources of rent. Colonial powers put in place institutions of extraction, which were designed to facilitate extraction of resources and their transfer to the imperial power. The latter give much less importance to property rights, political and economic freedom. After the end of the colonial era, these institutions proved to be persistent: colonial powers were replaced by home-grown dictators who continued to use the extractive institutions for their personal benefit. Hence, in their IV regressions, Acemoglu et al. (2005) used data on mortality of European settlers, soldiers and missionaries to predict the quality of institutions in developing countries. In the first stage, they found a strong negative correlation between Europeans' mortality and quality of institutions. When using institutions instrumented by the mortality figures to explain differences in per-capita incomes across countries, they found that institutions account for up to three quarters of the variation in incomes across countries.

Fabro and Aixalá (2009) examined the importance of institutional quality on growth, as well as about the factors responsible for the differences in institutional quality between countries. Using World governance indicator as a proxy for aggregate institutional quality, religion affiliation and other macroeconomic indicator and dynamic panel approach and Instrumental variable estimation techniques ,they estimated the effect institutional quality of both for the sample of 145 countries and for different income level, they found that for the total sample of countries in the growth equation, institutional infrastructure is a fundamental factor for explaining the level of economic development. However, when countries divided up based on income level, they found no evidence that institutional quality are important in poor countries.

Iqbal and Daly(2014) have explored the growth effects of rent seeking activity for a group of 52 developing/ transitional countries, using a dynamic panel data approach, over the period of 1986-2010. The empirical analysis this study suggested that, for this group of countries, rent seeking activities retards economic growth, in that (i) democratic institutions — which are unfriendly to rent seeking activity, are growth enhancing and (ii) reduction in the extent of corruption is growth-enhancing if supported by well-developed democratic institutions. In addition, they found that health is more relevant than educational participation as a measure of human capital development, that path dependence is absent where democracy is weak, and that the Mankiw et al. (1992), model characterizes the growth process more successfully in the stronger democracies.

Han et al., (2014) examined the effect of institutional quality on economic performance of in developed and developing countries over the period 1998-2011.This have employed two estimation techniques, Fixed effect and System GMM Estimation techniques. By classing the countries of sample of world into two groups: one with (initial) governance in surplus and the other with governance in deficit, they found that government effectiveness, political stability, control of corruption and regulatory quality all have a more significant positive impact on country growth performance than voice and accountability and rule of law. In addition ,the finding of this study has shown that ,Developing Asian countries with a surplus in government effectiveness, regulatory quality and corruption control were observed to grow faster than those with a deficit in these indicators—up to 2 percentage points annually, while Middle East and North African countries with a surplus in political stability, government effectiveness, and corruption control were observed to grow faster than those with a deficit in these indicators by as much as 2.5 percentage points annually. Thus, Good governance is associated with both a higher level of per capita GDP as well as higher rates of GDP growth over time.

Nawaz (2015) also examined the impact of various institutions on economic growth using panel data for 56 countries over the period 1981–2010. They examined the effect of institutional quality at aggregated level for world representative sample as well as for the sample disaggregated by the development level of the countries. In addition, they have estimated static panel using fixed effects model and dynamic panel using system GMM. The empirical analysis this study stated that a positive relationship between institutions and economic growth. The

positive impact of control over corruption, qualitative and effective bureaucracy and desirable law and order situation on economic growth is greater in high income countries as compared to low income countries. The impact of investment profile is more growth enhancing in developing countries in contrast to developed economies.

Alam et al., (2017) examined the impact of government effectiveness on the economic growth of a panel of 81 countries. By classing the countries under the consideration, and using System Generalized Method of Moments (System GMM) technique, this study found significant positive effect of government effectiveness on economic growth in sub-samples of high and low-income countries. Moreover, this study stated that governance is a large determining factor in the allocation of foreign aid by many multilateral development banks such as World Bank and Asian Development Bank, and many countries such as USA. Therefore, our finding has policy relevance for many economic and development issues such as aid conditionality. However, we find asymmetry in the government effectiveness-growth relationship among different income groups. Exactly what drives the governance-growth relationship could be an interesting research project and we leave it for future study

2.3.2. Review of studies of Institutions and Economic Performance in Africa

Habtamu (2008) has assessed the role of institutions in explaining the slow growth of Africa. In this study the impact of institutions on economic growth of 35 Sub-Saharan Africa (SSA) over the period 1996-2005 was evaluated using dynamic panel data of GMM estimation methods, in addition, it explores one of the possible transmission channels — aggregate technical inefficiency — through which institutions affect economic growth. The main finding of this study is that institutional qualities such as Rule of law, government effectiveness, regulatory quality, political instability, and voice and accountability were found to influence the growth of SSA. However, according this study control over corruption has no relation to growth in the region. Depending on the estimation result of technical Inefficiency on his final conclusion, Habtamu (2008) stated that, Sub-Saharan Africa's poor economic performance can in part be attributed to bad governance.

The paper by Batuo and Fabro (2009) is also interesting in determining the determinants of per capita income in African countries, with particular attention to the effects of governance institutional quality and sub-regional integration on income level. In their study, they have been

used a sample of 49 countries from the period 1996-2004 and the Generalized Method of Moments Estimation model for dynamic panel. According to this study African regional groups with better institutions, higher degrees of regional integration cooperation, higher rates of investment in human capital and lower rates of population growth, show a higher level of per capita income.

Osman et al., (2011) examined the link between institutional quality and economic performance in 27 Sub-Saharan Africa (SSA) countries during the period 1984-2003.In their study four institutions' quality indicators, namely government stability, corruption, ethnic tensions and socioeconomic conditions, along with other control and policy variables were estimated by model, random and fixed effect estimations. Additionally, the study employed dynamic panel estimation method and the main finding of this study is that the institutional variables assume a key role in the process of economic development whereas the control variables display a limited effect. In their conclusion they stated that, the "conventional variables" of economic theory may not be able to fully explain the SSA experience.

Kilishi et al., (2013) examine the impact of institutions and governance on economic performance Africa's. They explore the relationship between institutions and economic performance for 36 SSA using state art methods of dynamic panel data, Arellano and Bond first difference and Blundell-Bond System Generalized Method of Moment (GMM) estimators. According to this study institution really matter for Sub-Saharan Africa's economic performance, among which regulatory quality appeared to be the most important. Thus the economic performance of the region could be enhanced by improving regulatory quality.

On the other hand, Fayisa and Nsiah (2013) investigated the role of governance in explaining the sub-optimal economic growth performance of African economies. Using a panel of data for 39 Sub-Sahara African countries and employing a dynamic and static panel data destination they found that good quality of institutions has a positive and significant impact on growth .in addition the results of this study indicated that the impact of good governance differs by the conditional distribution of the GDP per capita under consideration and this also impact depend on income level.

Effiong (2015) has examined the extent to which institutional quality, particularly the constraints on the executive, exerts influence on the economic performance in 44 countries of SSA. In

addition ,both political and economic institutions proxied by Worldwide Governance Indicators(WGI) and Polity IV index on the Executive Constraints respectively have been used in this studying the System Generalized Method of Moments (SGMM) dynamic panel modeling technique for the period 2002 to 2013 found that voice and accountability, political stability, regulatory quality and the rule of law has an insignificant positive influence on economic performance in the selected SSA countries. According to Effiong (2015), institutions are associated with faster economic performance in the region, although their coefficients are statistically insignificant. On the other hand, this study found that control over corruption is negatively related with economic performance, weak executive constraints has a significant negative influence on economic performance of the region. Finally, Effiong conclude that, lon run economic performance of the SSA region can in part, be attributed to the inherently weak or missing institutions and governance systems that cannot support the SSA states and the influence of quality of institutions on economic performance is undoubtedly very weak or dysfunctional.

Valipoor and Bakke (2016) examined the effects of political leadership on economic development in 40 countries of Sub-Saharan Africa. They use quality of political institution as proxies for political leadership, data from the World Bank Governance Indicator. By using panel data and a fixed effect model, this study has found that institutional quality matters for economic growth in Sub-Saharan Africa. Moreover, Foreign Direct Investment, trade and foreign aid is found to be significant for economic growth in Sub-Saharan Africa. Interestingly, Foreign Direct Investment is found to have a greater effect on GDP per capita growth than foreign aid in Sub-Saharan Africa.

Louis et al., (2016) has explored the effect of institutions on the economic development of African countries. They estimated effect of institutions on economic development for 48 countries in 2013.This cross-sectional study shown that institutions can be considered a powerful factor explaining differences in development. In addition, this study emphasized the importance roles of physical infrastructure and human capital. But, this study did not control the endogeneity problem and reverse causality at all.

To sum up, with previous studies two problems deserve attention; sample heterogeneity, and factors/determinants of economic performance endogeneity. From the existing literature whether global sample studies or sub-sable of African, so many contribution has been made to Cleary the

effect of institutional quality on economic performance. Thus, we have learned a lot from those studies. But, the debate in the current discourse is increasing, making the channel through which economic institutions affect economic performance unclear. This because that measuring those factors that the effect economic performance is very challenging, the challenge that the absence commonly agreed what those institutions and which of them are important and which one is detrimental to economic performance(Chang, 2011; Voigt, 2013).

What the new institutional Economics called "The Economics of governance", which is currently taken attention to be measured under the responsibility of the world Bank with what they named as "The Governance Matter" database, has taken ahead of the topic of current debate in literature. Those previous studies have used this source as the proxy measure of quality of economic institutions. As stated in the above section of this chapter, this database measure six dimension of governance indicators: the two of them measures political institutions environment while four of them the measured economic institutions. These indicators of quality of economic institutions are much correlated to each other and they are at the same time endogenous to each other (Acemoglu, 2006).

Thus, estimating the effect of these variables need serious cautious. Estimating only single (only one of these institutional quality of indicators) by using the modified econometrics tools cannot save from the problem of endogeneity. Because, these indicators are interrelated, measuring only single one alone cannot reflect what almost all of the previous studies argued that institutions matter for economic performance. However, some the above studies (Jalilianet al., 2003; Iqbal and Daly, 2014; Alam et al., 2017) have did such problem. On other hand, aggregating of these all dimension of governance quality cannot identify which of those institution is important and which are detrimental to current economic performance, because when the quality of those institutions are very weak cannot affect economic positively. This problem also occurred the above studies (Fayisa and Nsiah,2013;Fabro and Aixalá 2009).

The critical issue that we have seen in the above literature is that the problem of sample heterogeneity. The global study that have used the sample developing or developed high income or other income level cannot always repressive for all country. The world very diverse in terms of not only income level, but also when comes to think about institutions diversity become deepen. This problem at least has been minimized by those who focused to study only on African

or elsewhere by comparing countries that are at least their institutional environment and other determinants of economic performance alike to some extent. Still, the argument that quality of institutions matters for Africa or Sub-Saharan African, meaning that institutions are the fundamental determinant of economic performance is still incomplete. This because that, when we consider the institutional environments of sub-Saharan Africa, it's the region which have very diverse countries. Especially, as evidence shows the Eastern Africa countries are the dynamic part of the world(Finlay et al., no date).

Moreover, as the solution to the above problems, Docquier (2014) suggested that instead of comparing a larger number of countries, having heterogeneous characteristics, on a cross-country basis, it might be interesting to focus on a smaller sample of counties that are likely similar and experienced institutions change at different period.

Once again, the argument that institution matter economic performance depend on what makes those institutions to be matter, otherwise the statement is trivial. There are five main factors that shape the quality of institutions; such as income distribution, the efficiency of tax system, political system, economic openness and the educational level of population. Therefore, controlling for such factors makes the statement that institution matter non-trivial. With exception Effiong (2015), who have controlled for constraint imposed on elite power, the above studies on Sub-Saharan Africa are biased against the factors that shape the quality of economic institution.

CHAPTER THREE

METHODOLOGY

3.1. Study Coverage: The Eastern Africa

As name indicates the East Africa is located at Eastern part of Africa also referred to Eastern Africa. According to the United nation, there 20 countries that make up East Africa, Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Sudan, Tanzania, Uganda, British Indian Ocean Territory, French Southern Territories, Re Union, Seychelles, South Sudan and Somalia. The region is commonly characterized by sharing common geopolitics, History and Economy(DPAD, 2014).

Until recently, with some exception to Kenya, Tanzania, and Djibouti relatively, several East African countries were riven with political rebellions, ethnic violence and oppressive dictators. Since the end of Africa colonialism, the region has endured the following conflicts: The Horn of Africa civil war ; Ethiopian Civil War 1974–1991, Eritrean War of Independence 1961–1991, Eritrean-Ethiopian War 1998–2000, Ogaden War 1977–1978, Somali Civil War 1991–2009 South Sudan, Second Sudanese Civil War 1983–2005,Internal Political-ethnic Conflict 2011-ongoing, South Sudanese Civil War 2013–2015, Burundi Civil War 1993–2005 and the Genocide of Hutus in 1972 and genocide of Tutsis in 1993,Uganda-Tanzania War 1978–1979, Ugandan Bush War 1981–1986, Lord's Resistance Army insurgency in Uganda, South Sudan and Democratic Republic of the Congo ongoing, Rwandan Civil War 1990–1993 and the Rwandan Genocide of Tutsis. These all challenges conflict and instability trends in East Africa continue to make it one of the most unstable regions in the world (USAID, 2012; UNODC, 2013).

The East African countries that are selected for this study are; Burundi, Comoros, Djibouti, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Mauritius, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe. Seven countries Comoros, Djibouti, Kenya, Madagascar, Mauritius, Mozambique and Tanzania are coastal land countries, while the rest seven are land locked country. These countries are similar in level economic development with some exception to Kenya, Mauritius and Zambia. According to 2017 World Bank countries ranking based on their income level, Mauritius ranked in upper middle group and Kenya and Zambia are in lower

middle income groups while the rest ten(countries) in this study are low (called least developed countries). In addition, Comoros and Mauritius are Small Island Developing States (SIDS). These countries are selected for this study among others Easter African based on the data availability.

3.2. Data Source and Type

To examine the effect of institutional quality on economic performance of selected Eastern Africa, this study employs a panel dataset of 14 selected Eastern African countries over 2005-2016.The data for this study are mostly obtained from the World Bank's World Development Indicators. For quality of Economic institutions indicators, the Worldwide Governance Indicators, compiled at the World Bank by Kaufmann et al. (1999), which are produced annually since 2002, are used as source. The indicators are based public opinion and perception-based surveys of various governance measures from investors, consulting firms, non-government organizations, governments, and multilateral agencies; and classified into six clusters (Kaufmann, Kraay and Mastruzzi, 2011).

The other development indicators, GDP per capita in 2010 $US constant prices, and annual population growth rate were also sourced from the World Development Indicators. Trade openness measured by the share of imports and exports to GDP has been obtained from UNCATD(2016) database, and polity2,proxy for quality of political institution was obtained from Polity IV Project of CSP(G.Marshal, Gurr and Jaggers, 2016) and Total investment was obtained from IMF database.

3.3. Study Variables

i). Dependent Variable

In this study, level of Per **capita Growth Domestic Product(GDPpc)** is the dependent variable, which is measured in 2010 constant price at $US. It is a basic economic indicator and measures the level of total economic output relative to the population of a country.

ii). Independent variables: Institutional quality indicators

As introduced in the above section 3.3, the four indicators for economic institutions quality are obtained from the World Bank governance institutions (WGI) database. Thus, they are defined by Kaufman et al (1999) as follows;

Government effectiveness (GEE): It captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Regulatory quality (RQE): It captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Rule of law (RLE): It captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

Control of corruption (CCE): It 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 the "capture" of the state by elites and private interests.

iii) Other independent variables: Control variables

Annual Population growth (popg): The average annual rate of change of population size during a specified period is used to measure how fast the size of population is changing. Population growth represents a fundamental indicator for national decision-makers and rapid population growth can place strain on a country's capacity for handling a wide range of issues of economic, social and environmental significance, particularly when rapid population growth occurs in conjunction with poverty and lack of access to resources, or with unsustainable patterns of production and consumption, or in ecologically vulnerable zones((DESA, 2016).

Polity2: According to Polity4 (2016) project, Polity revised Combined **Polity Score**. This variable is a modified version of the Polity variable added in order to facilitate the use of the Polity regime measure in cross-sectional -time-series analyses. By **Polity Score** mean that combined score, which is computed by subtracting the indicator of Autocracy score from the

indicator of Democracy score; the resulting unified polity scale ranges from +10 (strongly democratic) to-10 (strongly autocratic).

On the other hand, by **democracy score mean**, according to the expert of Polity4 project terminology, Institutionalized Democracy where Democracy is conceived as three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. The Democracy indicator is an additive eleven-point scale (0-10) where it's operational indicator are derived from coding of the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive (see Appendix B).

Moreover**,** by indicator of **Autocracy score** means that, according to Plity4 project definition, Institutionalized Autocracy and regime chrematistics where autocracies sharply restrict or suppress competitive political participation. In autocratic countries, chief executives are chosen in a regularized process of selection within the political elite, and once in office they exercise power with few institutional constraints. This indicator is also an eleven-point Autocracy scale is also constructed additively and its operational indicator is derived from coding of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment and constraints on the chief executive(see Appendix B), (G.Marshal, Gurr and Jaggers, 2016).

Trade openness (Topen): It is expressed as the sum of exports and imports of goods and services measured as a share of gross domestic product. Trade increases competition (by boosting productivity and innovation), enables country to capitalize on economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation. Therefore, it best determinant for both economic institutions and economic performance.

Total investment (inv): It is the Investment as a percentage of GDP is calculated at market prices, which defines in the System of National Accounts (SNA, 1993) as the total value of gross fixed capital formation plus changes in inventories and acquisitions less disposal of valuables. Or it is the total value of produced assets used in the production process for more than one year

(IMF, 2008). The SNA is an international definition of National Accounts and is used by IMF, OECD, UNCATD, World Bank. Total investment includes, fixed capital formation which is the total value of acquisitions less disposals of new or existing fixed assets(DESA, no date).

Table 3.1: Description of variables, expected sign and the sources of data.

Code	Variables	Proxy measures for	Expected sign	Source
GDPpc	Per capita GDP	Economic performance		WB
CCE	Control of Corruption	Quality of Economic institutions	+	WB
GEE	Government effectiveness	Quality of Economic institutions	+	WB
RQE	Regulatory quality	Quality of Economic institutions	+	WB
RLE	Rule of Law	Quality of Economic institutions	+	WB
Polity2	Political institution index	Quality of Political institution	+	CSP
Inv	Investment	Control variable	+	IMF
popg	Population Growth	Control variable	$\pm$	WB
Topen	Trade openness	Control variable	+	UNCATD

3.4. Econometrics Model Specification

In order to examine the effect of institutional quality on economic performance of selected Eastern Africa, this study framed under the theoretical framework the new growth theory, which is an extension of neoclassical growth theory. The new growth theory, which emerged after 1980s, holds that investment in human capital, innovation, and knowledge are significant contributors to economic development. Following Hall and Jones(1999) and Han et al,(2014),the following general static panel regression model is specified as follows;

$$Y_{it} = \beta' X_{it} + {}_i + \varepsilon_{it} \tag{3.1}$$

Whereas i = 1, 2..., N is the number of countries; t = 1, 2, …, T is time period, Y dependent variable , X_{it} is a K-dimensional vector of explanatory variables, β,a K 1 vector, the slopes, is independent of individual country i and time span t , ${}_i$ is the unobserved country fixed effect and ε_{it} is the error, which varies over i and t.

Then, the panel regression model that will estimate the effect of economic institutions on economic performance in this study, with the variables that are specified above, is specified as;

$$\ln Y_{it} = \beta_0 + \beta_1 I_{it} + \beta_2 \text{polity2}_{it} + \beta_3 \text{topen}_{it} + \beta_4 \text{inv}_{it} + \beta_5 \text{popg}_{it} + {}_i + \varepsilon_{it} \qquad (3.2.)$$

where '" lnY" is logarithm of level of GDP per capita, "I" represent the indicators of quality of economic institutions (such as, Control of corruption, government effectiveness, regulatory quality and rule of law), topen is trade openness, polity2 is the indicator of political institution, "inv" is investment and "popg" represents population growth rate. Note that, only GDP per capita is log form, this because that because other variables (topen, inv, and popg are expressed as percent of GDP) and the other have negative values (I and polity2).

With the equation of the model (3.2), we cannot estimate the effect of economic institution by including all of them in regression at the same time due to the presence of perfect multi-collinearity among them. For this reason, the method of principal component analysis is used to deal with the possible multi-collinearity problem. Principal component analysis (PCA) is a statistical technique used for dimension reduction.

Using PCA, this study designed to examine the effect of quality of economic institution on economic performance by two analytical strategies. First, the composite indicator of quality of economic institution will computed by aggregating each individual index of economic institutions; namely control of corruption(CCE), government effectiveness GEE), regulatory quality(RQE) and rule of law(RLE). The Second strategy analysis disaggregated analysis of each these individual institutions, in order to understand their individual effect on economic performance by examining them disaggregate. In fact, this analytical design is exercised in most of the previous studies(Fayisa and Nsiah, 2013; Kilishi et al., 2013; Valipoor and Bakke, 2016).

3.5. Estimation Technique

When doing a multivariate regression of panel data, one wants to find out the true relationship between the dependent variable and the independent variables. The variables may be spuriously correlated but causally unrelated, when the unobserved factors that affects both of estimated relationships exists. The association between variables can be also driven by a reverse causality relationship. Additionally, when there is serious measurement problems it is difficult estimate the relationships. Thus, there is need to choose the best methods which overcome such problems.

3.5.1. Static Panel Data Estimation

With the above equation (3.2), the most popular estimation methods are methods of instrumental variables (IV) and the static, fixed and random effect, panel estimation. The IV estimation method cannot apply for this because of any available data on variable that may be instrument for endogenous institution. Some Study stated that the direct IV estimation technique is even not appropriate approaches for estimation the institutional variable, which are highly endogenous to economic performance because of lack good instrument (Docquier, 2014).According to Roodman (2009) ,IV estimation not appropriate when there are instrument than endogenous repressors.

On the other hand, depending on the nature of $_{i}$, two models can be distinguished.The Fixed Estimation Method and Random Estimation Method. The fixed effect estimation assumes that F_i are each individual effect parameter. Contrary to the fixed effect model, the random effect model assumes that the individual effect, $_{i}$, are uncorrelated with error term(ε_{it}). Thus, if we think that unobservable country fixed effect is uncorrelated with explanatory variables term, then random effect is preferable to use. However, it's good to think of that economic shocks cannot be independent of error term and other variables. Especially, institutional variables are correlated with country fixed effect such as geography, culture, history and distance to equator. Therefore, using random effect estimation by putting them in error term, assuming that such characteristics in error term, as uncorrelated with explanatory variables is not imaginable (Watson, 2003). Thus fixed effect is best to estimate the effect institutional quality on economic performance. In such case, equation (3.2) becomes;

On one hand, the Heterogeneity across individual country can be taken into account by the following fixed effect regression model;

$$\ln Y_{it} = \beta_0 + \beta_1 I_{it} + \beta_2 \text{polity2}_{it} + \beta_3 \text{topen}_{it} + \beta_4 \text{inv}_{it} + \beta_5 \text{popg}_{it} + C_i + \varepsilon_{it} \qquad (3.3)$$

Where "C_i" is i^{th} country fixed effect.

The following model also estimate the heterogeneity across individual countries and it include time fixed effect to Control for time effects whenever unexpected variation or special events my affect the outcome variable;

$$\ln Y_{it} = \beta_0 + \beta_1 I_{it} + \beta_2 \text{polity}2_{it} + \beta_3 \text{topen}_{it} + \beta_4 \text{inv}_{it} + \beta_5 \text{popg}_{it} + C_i + T_i + \varepsilon_{it} \qquad (3.4)$$

Where T_i is time fixed effect for individual country "I". Equation (3.3) and (3.4) are usually known as the Least squares Dummy Variable Estimation (LSDV)

However, economic relationships usually involve dynamic adjustment processes and dataset are panel data with small time period there has been often problem of inference, such as sample bias in coefficients and hypothesis tests. Therefore, neither the fixed effect (3.3) nor the random effects of static panel regression equation (3.2) are unbiased and consistent. Thus, under such problem the appropriate model is dynamic panel data modeling, which will be discussed in the following section.

3.5.2. Generalized Method of Moment

The Dynamic Panel Data approach is considered the work of Arellano and Bond and popularized the work of Holtz-Eakin, Newey and Rosen (Econometrical, 1988). It is based on the notion that the instrumental variables approach used in previous studies does not take advantage of all of the information available in the sample and the dependent variable depends on its own past realizations. In such case the above equation (3.2) can be specified as in the following;

$$\ln \text{GDPc}_{it} = \beta_0 + \beta_1 \ln \text{GDPc}_{it-1} + \beta_2 I_{it} + \beta_3 \text{polity}2_{it} + \beta_4 \text{popg}_{it} + \beta_5 \text{topen}_{it} + \beta_6 inv_{it} +$$
$$_i + \varepsilon_{it} \qquad (3.5)$$

The popular method to estimate equation (3.5), is called Generalized Method of Moments (GMM), which is very Popular technique to tackle the endogeneity and the reverse causality problem. It is the extension of Instrumental Variable (IV) methodology in order to form the instrument for endogenous variables from its own past lag value (called internal instrument, will discussed later). The main advantage of GMM estimation is that the model need not be homoscedastic and serially independent. Another advantage of the GMM estimation is that it finds the parameters estimates by maximizing an objective function which includes the moment restriction that the correlation between error term and lagged repressor is zero. In essence, the GMM takes into account the time series dimension of the data, non-observable country specific effects, and inclusion of lagged dependent variables among the explanatory variables.

In fact, there are two types of GMM, the first difference GMM (DIFF-GMM) and System GMM (SYS-GMM). DIFF-GMM is not chosen for this study because since it less the efficient and consistent than of System GMM in most cases. Hence, it has not been discussed in this study. The system GMM approach is preferred for controlling endogeneity bias, omitted variable bias, reverse causality, unobserved heterogeneity, the weak instruments problem and unit root effects in the choice of instruments (Blundell & Bond, 1998). Moreover, the use of system GMM approach will take care of flaws and statistical problems that are associated with OLS, fixed and random effects models and that of the first-difference GMM by producing consistent and efficient parameter estimates (Bond, 2006).

3.6. The Tests of Model Specification

3.6.1. Test for Fixed Effect Regression (FE)

The fixed effect regression model of equation (3.3) and (3.4) are always sensitive to two problems; heteroscedasticity and autocorrelation. There two test statistics that check whether there is or not the FE suffered from such problem, Breush pagan and Pesaran test. The Brush pagan test has null hypothesis of the three is constant variance and the Pesaran test has the null hypothesis of there is group wise independence in the estimation. The larger probability value is required to accept to these test hypotheses. When these null hypotheses are rejected the Feasible Generalized Least squares (FGLS) is employed in order to improve the efficiency of the FE. With FGLS we can estimate the Fixed effect regression model of equations (3.34) and (3.4) under the assumptions of homoscedastic and no autocorrelation. In addition, FGLS allows estimation in the presence of first order autocorrelation, AR (1), within panels and cross-sectional correlation and heteroscedasticity across panels (Greene, 2012).

3.6.2. Test for Dynamic Panel Model

As stated in section 3.5.2, System GMM chosen to estimate the dynamic regression model of equation (3.5) as alternative to Difference GMM. The System GMM estimated at one and two step process. The one and two step is due to the fact that, one step System GMM the covariance matrix is not robust. Therefore, the "two step" SYS- GMM should be performed in order to improve the efficiency of the estimation result.

The GMM is the extension of instrumental variables, which in it based on the notion that strictly exogenous variables used as an instrument for endogenous variable. In this notion instruments we need to find those strictly exogenous variables outside the model. But, the GMM can easily generate instruments for endogenous variables by using lagged value and first differencing. First of all, System GMM creates two system of equation; one equation in level form and one other in differenced form. Then, it generates two kinds of instruments using one group of instruments are the lagged level and the other group are the first differenced instruments. Finally, equations in level forms are instrumented with differenced instruments while equations in first difference are instrumented with instrument in lagged level.

At this time, a crucial assumption for the validity of GMM is that the instruments are exogenous and there should not autocorrelations. To evaluate these assumptions, Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998) suggested the following tests;

i). The Hansen J-statistic Test of instrument validity

This is a test to check the constraints of over-identifying restrictions and the validity of instruments, which has null hypothesis of instruments, are valid. Put differently, the instrumented variables are exogenous and are uncorrelated with the error term in our first-differenced equation, and that any excluded instruments are correctly excluded from the estimated equation. The Hansen J-test can be carried out to provide a test statistic for the test of over-identification (that is, a joint validity test of the moment restrictions). Thus, the Hansen J-test for over-identifying restrictions theoretically detect any violation of this assumption by testing the null hypothesis of correct model specification (that is, the suitability of the model) and validity of the instruments created by the system GMM procedure (Baum, 2006). This follows chi-square -$\chi2$ distribution with the degrees of freedom equal the degree of over-identification J-Where J and K are the number of instruments and endogenous variables respectively. If null hypothesis will be rejected, it implies that either or both assumptions are not fulfilled. As such, if the null hypothesis is not rejected at any conventional level of significance, this therefore indicates that the model has a valid instrumentation.

ii). Arellano and Bond Test (AR)

According to Arellano and Bond (1991), the GMM estimator requires that there is first order serial autocorrelation, AR (1) process in the residuals but that there is no second order serial autocorrelation, AR (2) process in the residuals. This test is particularly important since lags are used as instruments. This tests the hypothesis of no second-order serial autocorrelation in the error term. Thus, the null hypothesis of no first-order serial autocorrelation be rejected but not to reject that of second-order serial autocorrelation test in order to get appropriate diagnostics. Therefore, the estimated result is consistent if there is no evidence of significant second order serial autocorrelation, AR (2) process in the residuals.

iii). The Hansen J-statistic Test of instruments in subset of instrument

In order to check the validity of subsets of instruments, that is instrument in levels, and differenced, Roodman (2009b) suggested the use of a difference-in-Sargan/Hansen test, also known as the **C statistic**, to all the system-GMM instruments. This test estimates the system GMM with and without a subset of suspect instruments, thereby enabling the testing of the validity, meaning that exogeneity, of any subset of instruments, as well as computing the increase in J-test when the given subset is added to the estimation (Roodman, 2009). The regression without the suspect instruments is called the "unrestricted" regression because it imposes fewer moment conditions. The difference-in-Sargan/Hansen test is therefore only feasible if this unrestricted regression has enough instruments to be identified. The null hypothesis of the C statistic tells us that the specified variables are proper instruments.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Descriptive statistics

Table 4. 1 Summary of institutional quality and other variables

Variable	Observations	Mean	Std. Dev.	Min	Max
GDPc	167	2713.514	3866.583	721.1766	19548.64
Popg	168	2.52928	0.781929	0.068723	3.477316
Topen	165	62.66475	24.25886	24.82857	124.1436
Inv	164	24.7853	10.32504	9	69.581
polity2	168	3.482143	4.4358	-4	10
CCE	168	-0.5922	0.496167	-1.45294	0.762483
GEE	168	-0.66651	0.587456	-1.77554	1.049441
RQE	168	-0.59827	0.640922	-2.23625	1.12727
RLE	168	-0.58651	0.57555	-1.8523	1.02916

Source: Own estimate using Stata 13

Table 4.1 shows that the average economic performance of Eastern Africa is $2713.514 with minimum GDP per capita $721.1766 and maximum of $19,548.68 and this has 3866.5833 variation. Annual average population growth of the region is 2.53, with minimum growth rate of 0.0687 and maximum growth of 3. 477. And the variation of population growth rate is 0. 782. The descriptive statistics of table 4.1 shows that the investment environment in the region has average performance of 24.78 percent, with minimum of 9 percent and maximum performance of 69.88 percent. This has only 10 percent variation across the countries.in addition, table 4.1 indicated that the Eastern African countries economy has 63.665 percent open to world market on average, which has minimum of 24.823 percent and maximum of 124.1436 percent open to international trade.

With respect to institutional quality, polity2 has average score of 3.48, which has -4 minimum and maximum score of 10, And has variation of 4.436 score. Table 4.1 shows that the first quality of economic institution indicator, Control of corruption (CCE) has mean score of -0.598, with minimum score of -1.4453 and maximum of 0.7625 score. This has the variation of 0.496

across countries of the region. The second quality of economic institution government effectiveness has mean score of -0.6665, with minimum score of -1.7755 and maximum score of 1.0494 and it varies by 0.5874 standard-deviations. Third indicator is regulatory quality which has mean score of -0.5982, with minimum of -2.2362 and maximum of 1.1272 and this varies by 0.6409 standard-deviations across the region. Finally, rule of law has score of -.5865, with minimum of and maximum of 1.0291 and this varies by 0. 0.5755.

Table 4.2 shows the average performance of institutional quality and other variables for all countries under the consideration. Among the Eastern Africa, Mauritius has the highest economic performance whose average GDP per capita is $16,173 over the last 12 years, whereas Zambia economy is the second highest with $3200.2251 and then Djibouti Economy is the third with $2657. 8321. Among the countries of the region, country with least economic performance is Burundi who has GDP per capita of $758.9178, whereas Ethiopia's Economy is the second least economy with $1136.8521 over the past 12 years. In addition, the descriptive analysis of table 4.2 shows that the East Africa is very diverse in terms of economic performance.

Table 4. 2: Twelve years (12) average of each variable across Eastern Africa Countries

Country	CCE	GEE	RQE	RLE	polity2	Topen	Popg	inv	GDPc
Burundi	-1.192	-1.169	-1.034	-1.114	4.833	40.853	3.184	13.784	758.918
Comoros	-0.750	-1.664	-1.337	-0.997	8.750	28.897	2.390	15.186	1431.577
Djibouti	-0.528	-0.929	-0.629	-0.815	2.333	87.394	1.675	35.799	2657.832
Ethiopia	-0.599	-0.547	-1.009	-0.667	-3.000	47.142	2.637	29.811	1136.855
Kenya	-0.987	-0.507	-0.242	-0.796	8.083	52.651	2.694	20.355	2536.433
Madagascar	-0.498	-0.904	-0.492	-0.676	4.583	58.521	2.794	23.069	1403.901
Malawi	-0.573	-0.588	-0.623	-0.194	6.000	62.652	2.964	16.946	999.687
Mauritius	0.402	0.854	0.844	0.918	10.000	111.163	0.285	24.208	16173.444
Mozambique	-0.583	-0.626	-0.497	-0.678	5.000	85.025	2.918	35.729	944.281
Rwanda	0.279	-0.135	-0.244	-0.337	-3.250	44.595	2.510	22.950	1397.432
Tanzania	-0.553	-0.563	-0.414	-0.423	-0.333	45.474	3.113	28.546	2160.251
Uganda	-0.936	-0.541	-0.221	-0.375	-1.000	47.017	3.406	27.679	1537.559
Zambia	-0.414	-0.688	-0.509	-0.401	6.417	69.873	2.888	33.650	3200.225
Zimbabwe	-1.359	-1.326	-1.969	-1.656	0.333	80.383	1.952	11.021	1646.161

Source: Author's estimates using Stata 13 from (IMF, WB, UNCATD and CSP)

With respect to the indicator of economic institutions quality, as table 4.2 indicate quality of economic institutions in Eastern Africa is very weak. On average, with exception to Mauritius, all of eastern African countries have negative(weak) score of indicator of quality of economic indicators; control of corruption, government effectives, regulatory quality and rule of law are all in negative over the last 12 years. This implies the EA region is characterized by having similar weak institutional environment (poor quality of economic institutions), including political system.

The quality of Political institutions in East Africa, indicated by polity2, is weak. Table 4.2 shows that, with exception Comoros, Kenya, Mauritius and Zambia, other countries have low score on polity2.As shown in table 4.2, the Eastern Africa has shown to have an autocratic state, among which Rwanda and Ethiopia are the autocratic countries with polity2 score of -3.25 and -3.00 respectively. Mauritius has polity2 score of 10 on average over the last 12 years, showing that Mauritius the country has strong democratic country and Comoros and Kenya have a score 8.75 and 8.00 respectively, showing that these countries have good political institution.

Moreover, table 4.2 shows that, Mauritius, Djibouti and Mozambique are counties who's their economy more open to international trade having 111.16 ,87.3940 and 85.0252 trade openness indicator, whereas three countries who's their economy is less open are Comoros, Burundi and Rwanda with 28.8974,40.8526 and 44.5952 respectively. The countries with High annual population growth rate are Uganda, Burundi and Tanzania with 3.40, 3.18 and 3.11 annual growth population growth rate and Mauritius, Djibouti and Zimbabwe are countries with slowest annual population growth with 0.28, 1.67 and 1.95 annual population growth rate respectively.

Finally, the descriptive statistics of table 4.2 shows that, investment share of GDP in Eastern Africa very small. Three Countries with very small percent share of GDP are Zimbabwe, Burundi and Comoros with 11.02, 13.78 and 15.18 percent and Djibouti, Mozambique and Zambia are countries the highest investment share of GDP among Eastern Africa with 35.79, 35.72 and 33.65 percent respectively. From this descriptive analysis, we can see that Eastern African countries have very different macroeconomic performance, but they have similar weak institutional environment characterized. Their political system is almost similar being autocratic state and quality of economic institutions is deteriorating.

4.2. Regression Analysis

Before running the regression analysis of equation (3.3) and (3.5), it is important to deal with the problem of multi-collinearity. To deal with this issue let us look at the following correlation between the explanatory variables.

Table 4. 3: Correlations between all independent variables

Variables	CCE	GEE	RQE	RLE	polity2	Topen	popg	inv
CCE	1							
GEE	0.7447	1						
RQE	0.7096	0.8567	1					
RLE	0.7972	0.8717	0.876	1				
polity2	0.0573	0.0633	0.244	0.2643	1			
Topen	0.2761	0.4015	0.3017	0.3151	0.2299	1		
Popg	-0.4402	-0.4297	-0.2877	-0.3752	-0.2751	-0.5991	1	
Inv	0.2997	0.2495	0.3398	0.2547	-0.0826	0.2695	0.0443	1

Source: Own estimate using Stata 2013.

From table 4.3, we can see that the indicators of quality of economic institutions are highly correlated. RQE and GEE has correlated of 86%, GEE and RLE 87.17%, and RQE and RLE 87.6% and CEE has correlation with of 74.5%, 70.92%.79.72% correlation with GEE, RQE and RLE respectively. The other independent variable has no high correlation with quality of economic institution and with others independent variables. Therefore, for quality of economic institutions we should not do the regression analysis by including all of them at the same time

Therefore, to deal with the above problem, this study has been designed to analysis the effect of economic institutions quality by two analytical strategies. The first strategy is by aggregating all of this individual quality of economic institutions as one indicator. The method of principal component analysis was employed for computing this indicator. The results for this were presented Appendix A. The second strategy is by examining the effect of each the individual indicator separately (meaning that disaggregate analysis), that is while we running regression we should include only one indicators at time.

These analytical strategies have been also exercised in most of previous studies (Kilishi et al., 2013; Fayisa and Nsiah, 2013; and Batuo and Fabro, 2009).

4.2.1. Model diagnostic Testing

Before discussing about the results of this study, it's important to check whether the estimation results are valid or not. For checking the validity of Fixed Effect Regression (FE), the Breush-Pagan test for presence of heteroscedasticity has been performed. The results show that, as indicated by Breusch-Pagan test statistics, there is a problem of heteroscedasticity and the null hypothesis for Breush-Pagan test statistics; Ho: Constant variance has been rejected at 1%. As the solution for this problem, the Feasible Generalized Least square (FGLS) estimation method was employed. The results of this model estimation was presented in the next sections

With respect to System Generalized Method of Moments (SYS-GMM) estimation, the critical assumption that should be tested are the validity of the instruments and autocorrelations problems. As stated in the above section 3.7.2, SYS-GMM generates an internal instrument for variables that are endogenous. In such process, System GMM form two system of equation in order to create internal instrument for endogenous variables; one equation with "in differenced form" and the other equation "in original (equation in level)" form. Then, Equation in differenced form is instrumented with lagged level of variables and equations in level form are instrumented with differenced variables. However, we must identify which variables of our interests are endogenous and which are not. For this study, one period lagged dependent variable (l. lnGDPpc) is treated as predetermined variable meaning that it's not strictly endogenous. But, all of the independent variables employed are treated as endogenous.

Table 4.4 shows the results for System GMM diagnostic testing for all of the estimation results that performed in the next sections. The list of the column name indicated as 'Table 4.5, Table 4.6 Table 4.7, Table 4.8, and Table 4.9" are the diagnostics tests of the estimation results that performed in the next sections of "section 4.2.2, section 4.2.3.1, section 4.2.3.2, section 4.2.3.3, section 4.2.3.4, and section 4.2.3.5" respectively. In all cases the thing should be evaluated are; the number of instruments relative the number of observations, the number of lag limits imposed on the variables to be used an instruments, second order Autocorrelation AR (2), instruments exogeneity as group and for level equation separately.

Table 4. 4: Model Diagnostic test results for System GMM

Evaluation criteria	Table 4.5	Table 4.6	Table 4.7	Table 4.8	Table 4.9
Observations	153	153	153	153	153
Number of Instruments	16	14	16	14	42
Lag limit (min/max)	(1/4)	(1/2)	(1/4)	(1/2)	(1/2)
Second order Autocorrelation(AR2) :p-value	0.422	0.095	0.417	0.065	0.544
Hansen test of Overid. restrictions: p-vale	0.939	0.605	0.939	0.730	1.00
Testing the validity of instruments in subsets of equations					
Gmm(endogenous var.) type instruments					
Hansen test excluding group: p-value	0.986	0.607	0.986	0.744	1.00
Gmm(predetermined var.) type instrument					
Hansen test excluding group: p-value	0.971	0.305	0.976	0.318	1.00

Note: The term in parenthesis "(min/max)" used with lag limit means minimum and maximum lag imposed on variables used as instrument, here on predetermined variables **Source**: Own estimate using Stata 13.

From table 4.4, we can see that the number of instrument in each regression is smaller than the number of observations (N=153), which pretty what is desirable. Through table 4.4, it presents the number of lag limits imposed on predetermined variables, in this case one period lag of dependent variable (L. lnGDPpc). As table 4.4 shows, the results of these arguments lag (1 4), lag (1 2), lag (1 4) lag (1 2) and lag (1 2) in column 1-5. The rationale for doing this is that, predetermined variables should be used as an internal instrument with lag one and deeper since the one period lag of weakly endogenous variables are not assumed to be correlated with current shocks. The choice of the deeper maximum lag is based on the test result reported immediately at the time of doing regression. It's so up to the researcher to choose how much maximum desirable number of lag should use. However, as the number of lag increase the number of observation become deceasing, leading to undesirable results (Roadman, 2009).

With respect to endogenous variables, the minimum lag limit used is 2 and the maximum lag limit used is also is 2, in each case lag (2 2). The result for this not presented, because, as stated here lag (2 2), they are similar in each of the regression model.

On the other hand, as shown in the table 4.4 above, there is no second order autocorrelation. The Arellano – Bond test for autocorrelation of null hypothesis no autocorrelation cannot be rejected. Moreover, Hansen test for instrument over identification indicate that instrument used are valid and the null hypothesis of instruments as a group are valid cannot be rejected. The results for these are also presented in the above table 4.4 for each of the model estimated. Roadman (2009) suggested that the validity of internal instrument that are used as instrument for equation in subset should be tested subsequently. As the result, as shown in the table 4.4, the instruments used in subsets of equations are valid.

4.2.2. Aggregate effect of institutional quality on economic performance

Table 4.5 shows the result of the aggregate effect of institutional quality on economic performance. In column 1 the fixed effect(FE) results was presented, in column 2 the robust estimation results of the FE, that is Feasible Generalized Least squares(FGLS) has been presented and in column 3 the endogeneity robust estimation results, System Generalized method of moment(SYS-GMM). Notice that the interpretation of FE was based its robust estimation, the FGLS. In addition, the coefficients for country and time fixed effect estimation were not presented here, because the aim this study is to estimate the effect of institutional variables while taking into account such country and time fixed effect. Thus, the coefficients of country and time dummies are left to be presented.

Therefore, aggregate indicator of quality of economic (Einst) has positive significant on economic performance. The coefficient of Einst is positive as expected and statistically significant at 1% level under FGLS, this is with country and time fixed effect, and similarly significant at 5% level under SYS-GMM. The robust estimation of FE, FGLS results, indicate that this significant positive effect depends on individual country and time fixed effect that affect quality of institutions. These fixed effects can be unexpected shocks that can be happen individual country over time such as culture, history, geography, conflict and etc. from the result of SYS-GMM, we can infer that improvement in quality of economic would have huge contribution for economic welfare and country with better quality of institution have better economic performance. In fact, this finding is in accordance with previous studies Kilishi et al (2013), Fayisa and Nsiah (2013); and Batuo and Fabro (2009).

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Table 4. 5: The effect of aggregate quality of economic institutions on economic performance

Dependent variable is GDP per capita (lnGDPpc)					
Independent variables	FE		FGLS		SYS-GMM
	C	C &T	C	C &T	
Einst	0.140***	0.124***	0.140***	0.124***	0.036**
	(0.0348)	(0.0228)	(0.0327)	(0.0207)	(0.015)
polity2	0.0197***	0.00740	0.0197***	0.00740*	0.006
	(0.00699)	(0.00466)	(0.00658)	(0.00422)	(0.008)
Topen	0.00000	-0.00013	0.00000	-0.00013	0.00000
	(0.000851)	(0.000601)	(0.000801)	(0.000544)	(0.001)
Inv	0.00560***	0.00284** *	0.00560** *	0.00284** *	0.000
	(0.00126)	(0.000842)	(0.00119)	(0.000763)	(0.001)
Popg	-0.168**	-0.0696	-0.168**	-0.0696	-0.069*
	(0.0724)	(0.0485)	(0.0681)	(0.0439)	(0.036)
L.lnGDPpc					0.894***
					(0.047)
Constant	7.113***	6.756***	7.113***	6.756***	0.942**
	(0.228)	(0.152)	(0.214)	(0.137)	(0.417)
Observations	167	167	167	167	153
R-squared	0.979	0.992			
Number of Countries			14	14	14

Note: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect. **Source**: Own estimates using Stata 13.

With respect to quality of political institution, measured by polity2 index, the robust estimation of FE result, FGLS in column 3 and 4, indicate polity2 has positive significant effect, with country and time fixed effect, on economic performance. Controlling for country and time fixed effect, the coefficient of polity2 is positive and significant at 1% level and 5% level respectively. But, even the result of FGLS shows that polity2 has significant for Eastern Africa, the results of SYS-GMM indicate it is insignificant. In fact, Commander and Nikoloski (2010) found similar result to finding. This implies the deteriorations of political institution in Eastern Africa. In addition, table 4.5 shows that trade openness not significant at all in East Africa. This finding also confirm with Effiong (2015).

Moreover, table 4.5 shows that investment (inv) has positive significant impact on economic performance under the FE estimation. The robust estimation result of FE, the FGLS result in

column 3 and 4, indicate that "inv" has positive significant impact at 1% level, with country and time fixed effect respectively, positive signed coefficient as expected. This result shows that the effect of investment on Eastern Africa economic performance depends on the country and time fixed effect. However, after controlling for endogeneity, investment has significant impact on GDP per capita. Moreover, the effect of population growth has only country fixed effect significance and the overtime popg has no significant to GDPpc. In fact, the sign of popg coefficient is negative as expected, and has significant effect at 5%. But, after controlling for endogeneity problem population growth has no contribution for economic performance of this region.

Finally, the endogeneity robust estimation results of SYS-GMM indicate that one period lag of GDP per capita (l. lnGDPpc) has positive significant effect on economic performance. The coefficient of l. lnGDPpc is positive, 0.894, and significant at 1% level. These results imply that Eastern Africa Economic performance depends on its own past performance than other factors.

4.2.3. Disaggregated Analysis of institutional quality effect on economic performance

From the above aggregate analysis, we don't know which specific institution has significant impact for economic performance. To this end, the second analytical strategy, as stated in the above section 3.6, employed to deal with this issues in which we run a regression analysis by including only single indicators of quality of economic institution at time, which we call it **disaggregate analysis.**

4.2.3.1. The effect of Control of corruption on economic performance

Table 4.6 shows that the estimated results of control of corruption (CCE) on Eastern African economic performance. The result indicates that CCE has positive effect on GDP per capita (GDPpc) at 1% under the robustness estimation result of the FE, that is FGLS and at 10% under SYS-GMM. The FE estimation implies that each country of the region has their own unique corruption control institution. This finding confirms with the hypothesis of this study and previous literature (Batuo and Fabro, 2009; Han et al., 2014; Valipoor and Bakke, 2016).Thus, using the endogeneity robust estimation result of SYS –GMM, we can infer that an improvement in control of corruption would have high contribution for economic development and country that have better score of CCE have better economic performance.

Table 4. 6: The effect of Control of corruption on economic performance

Dependent variable is GDP per capita(lnGDPpc)					
Independent Variables	FE		FGLS		SYS-GMM
	C	C & T	C	C & T	
CCE	0.159***	0.212***	0.159***	0.159***	0.054*
	(0.0575)	(0.0363)	(0.0541)	(0.0541)	(0.030)
polity2	0.0245***	0.0119**	0.0245***	0.0245***	0.001
	(0.00725)	(0.00462)	(0.00683)	(0.00683)	(0.003)
Topen	-0.00009	-0.00020	-0.00009	-0.00009	0.001**
	(0.000875)	(0.000591)	(0.000824)	(0.000824)	(0.001)
Inv	0.00551***	0.00228***	0.00551***	0.00551***	0.001
	(0.00131)	(0.000844)	(0.00123)	(0.00123)	(0.001)
Popg	-0.183**	-0.103**	-0.183**	-0.183**	-0.038
	(0.0769)	(0.0489)	(0.0724)	(0.0724)	(0.043)
L.lnGDPpc					0.977***
					(0.024)
Constant	7.214***	6.992***	7.214***	7.214***	0.222
	(0.261)	(0.165)	(0.246)	(0.246)	(0.230)
Observations	167	167	167	167	153
R-squared	0.978	0.992			
Number of Countries			14	14	14

Note: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect. **Source**: Own Estimates using Stata 13.

In addition, table 4.6 shows that, with for country and time fixed, polity2 has positive significant effect at 1% level on GDP per capita. This implies that each country has different quality of political institutions. However, SYS-GMM estimation result indicates that polity2 insignificant. Again, this finding confirm with (Commander and Nikoloski, 2010).Moreover, table 4.6 shows, when allowing country and time fixed effect, trade openness insignificant. But, the result of SYS-GMM in table 4.7 indicate that trade openness indicator(Topen) has statistically positive significant effect on GDP per capita at 5% level .This confirms with(Fayisa and Nsiah, 2013; Kilishi et al., 2013) .

Furthermore, table 4.6 shows that investment share of GDP (inv) has positive significant effect under FE estimation result at 1% level., and this depend on country and time fixed effect. But, the SYS-GMM result revealed that **inv** has no significant effect on region economic performance. This also implies that even though there is individually positively significant effect of inv, overall it is not significant. The robust estimation result of FE, that is the FGLS in column

3 and 4 of table 4.6, shows that population growth rate(popg) has negative significant effect at 5% level. After controlling for endogeneity problem, apopg is insignificant.

Finally, one period lag of GDP per capita, which has been introduced as explanatory variables under the SYS-GMM, is significant at 1% level. This indicates that, as in the above case with Einst, economic performance depends on it past performance than the other factors.

4.2.3.2. The effect of government effectiveness on economic performance

Table 4.7 present the estimated results of the effect of government effectiveness (GEE) on economic performance. The result indicates that GEE has positive effect on GDP per capita (GDPpc) at 1% under the robustness estimation result of FE, FGLS, and at 5% under SYS-GMM. The FGLS estimation shows that there is a positive significant effect of GEE, with for country fixed and time fixed effect, on economic performance of the region. This imply that each country different in terms of their GEE. The result of SYS-GMM also reinforces the FE estimation result. This finding also confirm with the hypothesis of this research and the previous studies (Habtamu, 2008; Batuo and Fabro, 2009; KILISHI, MOBOLAJI and YARU, 2013; Effiong, 2015).Therefore, using the SYS-GMM estimation we can infer that one unit improvement in government effectiveness would leads to 6.3% increase in GDP per capita.

On the other hand, table 4.6 shows that polity2 is statistical significant at 1% level and 10% allowing for country and time fixed effect respectively, results from FGLS.However, the SYS-GMM estimation result shows that quality of political institution in Eastern Africa Countries has no significant effect to economic performance, it has insignificant positive coefficient. Once Again (Commander and Nikoloski, 2010) found the same result. Based on the FE estimation result we can infer that each counties of East Africa have unique quality of political institution and there is also time fixed effect in which polity2 affect GDP per capita. But, overall this comes insignificant when the endogeneity problem addressed

Table 4.7: The effect of Government effectiveness on economic performance

Dependent Variable is GDP per capita(lnGDPpc)					
	FE		FGLS		SYS-DGMM
Independent Variables	C	C&T	C	C&T	
GEE	0.239***	0.211***	0.239***	0.211***	0.063**
	(0.0592)	(0.0389)	(0.0557)	(0.0352)	(0.026)
polity2	0.0197***	0.00740	0.0197***	0.00740*	0.005
	(0.00699)	(0.00466)	(0.00658)	(0.00422)	(0.008)
Topen	0.000001	-0.000131	0.000001	-0.000131	0.000000
	(0.000851)	(0.000601)	(0.000801)	(0.000544)	(0.001)
Inv	0.00560***	0.00284***	0.00560***	0.00284***	0.000
	(0.00126)	(0.000842)	(0.00119)	(0.000763)	(0.001)
Popg	-0.168**	-0.0696	-0.168**	-0.0696	-0.067*
	(0.0724)	(0.0485)	(0.0681)	(0.0439)	(0.036)
L.lnGDPpc					0.896***
					(0.048)
Constant	7.272***	6.897***	7.272***	6.897***	0.962**
	(0.242)	(0.161)	(0.228)	(0.146)	(0.415)
Observations	167	167	167	167	153
R-squared	0.979	0.992			
Number of Countries			14	14	14

Note: Standard errors in parentheses, *** $p<0.01$ means significant at 1%, ** $p<0.05$ means significant at 5%, * $p<0.1$ means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect. **Source**: Own estimates using Stata 13.

Moreover, table 4.7 shows the effect of trade openness is insignificant in all case of the estimation. But the effect of Investment is statistically significant at 1% level with positive coefficient with under the country and time fixed effect respectively. However, the endogeneity robust estimation result of SYS-GMM shows that it becomes insignificant.

Furthermore, table 4.7 shows that, the effect of population growth on economic performance is significant at 5% under FGLS and has country fixed effect that affect popg. This implies that each country has different population growth rate. But when the time fixed effect considered it comes to be insignificant. The SYS -GMM estimation shows that there is negative significant effect of popg on GDPpc at 10% level.

Finally, one period lag of GDP per capita has significant on current economic performance of the Eastern African. The SYS-GMM estimation result of table 4.8 shows that l. lnGDPpc statistically

significant at 1% level, with positive sing of 0. 896. This indicates that the Eastern African Economic Performance is more depends its past performance than GEE and other factors.

4.2.3.3. The effect of regulatory quality on economic performance

The third measure of quality of economic institution employed in this study is regulatory quality (RQE) indicator. According to the result of table 4.8, this indicator is significant at 1% level, with positive coefficient as expected, under the static panel estimation technique of country fixed effect estimation. But, when time effect is considered RQE become insignificant implying that the effect of RQE on economic performance is very slow or absent. After robust checking for fixed effect (FE) estimation using FGLS the result remains as in FE. But, after the endogeneity problem is treated with SYS-GMM the significance of RQE become disappeared. The result implies absence of regulatory quality in the region

With respect to quality of political institution, the robust estimation result of FE, FGLS of table 4.8 shows that, Polity2 indicator is significant at 5% significant level, taking into account for country and time fixed effect. However, the endogeneity robust estimation result of SYS-GMM shows RQE has no significant impact on GDP per capita. Similarly, it does not mean that Polity2 is not matter rather it implies the deterioration of quality of polity2. This finding is also in accordance with commander and Nikoloski (2010) and WB (2002).

In addition, table 4.8 shows that trade openness (Topen) is not significant, when country and time fixed effect are taken into consideration, results under FGLS column 3 and 4. However, after controlling for the endogeneity problem using SYS GMM, it turns out to be significant at 10% level of significance, with positive coefficient. This finding confirm with Valipoor and Bakke (2016). This implies that Eastern African countries that's their economic more open to international trade can boost their economic productivity and enables to get the advantages of economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation.

Table 4. 8:The effect of Regulatory quality on economic performance

Dependent variable is GDP per capita					
	FE		FGLS		SYS-GMM
Independent Variables	C	C&T	C	C&T	
RQE	0.236***	0.0599	0.236***	0.0599	0.027
	(0.0535)	(0.0411)	(0.0503)	(0.0373)	(0.037)
polity2	0.0215***	0.00927*	0.0215***	0.00927**	-0.000
	(0.00692)	(0.00510)	(0.00651)	(0.00462)	(0.002)
Topen	0.000067	-0.000449	0.000067	-0.000449	0.001*
	(0.000844)	(0.000660)	(0.000795)	(0.000598)	(0.001)
Inv	0.00488***	0.00303***	0.00488***	0.00303***	0.001
	(0.00128)	(0.000929)	(0.00120)	(0.000842)	(0.001)
Popg	-0.156**	-0.0419	-0.156**	-0.0419	-0.039*
	(0.0712)	(0.0530)	(0.0670)	(0.0480)	(0.018)
L.lnGDPpc					0.958***
					(0.024)
Constant	7.198***	6.619***	7.198***	6.619***	0.354*
	(0.230)	(0.173)	(0.217)	(0.157)	(0.188)
Observations	167	167	167	167	153
R-squared	0.980	0.991			
Number of countries			14	14	14

Note: Standard errors in parentheses the Asterisk; *** $p<0.01$ means significant at 1%, ** $p<0.05$ means significant at 5%, * $p<0.1$ means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect. **Source**: Own estimates using Stata 13.

In addition, table 4.7 shows that, population growth rate has negative significant effect of GDP per capita. With time fixed effect popg is not significant, as the results in column 2 and 4 shows, but with country fixed effect, results in Colum 1and 3, popg is significant at 5% level. The SYS-GMM results also indicate that, result in column 5, popg is significant at 10% level.

Finally, lagged value of GDP per capital (l. lnGDPpc) introduced as explanatory variables with SYS GMM is significant at 1% level with positive coefficient. This implies that current economic performance of the region depends on its past performance than institutional quality factors.

4.2.3.4. The effect of rule of law on economic performance

Finally, the fourth measure of quality of economic institution employed in this study is rule of law (RLE) indicator. Table 4.9 shows that RLE has positive significant effect on GDP per capita

at 1% level in under the Fixed Effect (FE) estimation. The robust estimation for FE results, FGLS also evident the same results as in to FE. This implies that the effect of RLE is significantly different across country and overtime. In addition, this means that country with better quality of economic institution have higher economic performance. Unfortunately, the endogeneity robust estimation this study SYS-GMM shows the effect of RLE has negative impact on economic performance of the region. The results show that RLE has negative (-) 0.179 coefficient statistically significant at 1% level. This contradicts what expected in this study and not in accordance with any of the previous studies that are relevant to this study. In fact, there is some of the study that found RLE has no significant impact on GDP per capita (Effiogn, 2015). This result may due the current situation that is facing the Eastern Africa. The Eastern Africa has very weak score on rule of law, indicated by negative RLE score according the World Bank (2016).

With respect to quality of political institutions, polity2 has no significant impact on GDP per capita. Table 4.9 shows that, polity2 has positive significant country effect after robustness test for FE estimation at 10% level, but overtime this effect if not significant. The SYS-GMM results, on the other hand, show that polity2 has no contribution to East Africa economic performance. This finding confirm with (Commander and Nikoloski, 2010; Iqbal and Daly, 2014). Similar justification deserves, as in case of RLE, meaning that this results can be due to the deterioration of quality of political system in Eastern Africa

Trade openness indicator (Topen) is not significant with country and time fixed effect, but overall significant in Eastern Africa. The robust FE estimation result, FGLS results, shows that Topen has no significant impact on GDP per capita, but after controlling for endogeneity, turn out to be significant at 1% level. Thus, we can infer that, from the result of SYS-GMM, as trade openness improved by one unit GDP per capita would be increased by 1%.

Table 4. 9:The effect of Rule of law on Economic performance

Dependent variable is GDP per capita(lnGDPpc)					
Independent Variables	FE		FGLS		SYS-GMM
	C	C &T	C	C &T	
RLE	0.320***	0.232***	0.320***	0.232***	-0.179***
	(0.0631)	(0.0440)	(0.0594)	(0.0399)	(0.058)
polity2	0.0110	0.00283	0.0110*	0.00283	0.018
	(0.00710)	(0.00481)	(0.00668)	(0.00436)	(0.010)
Topen	0.000217	-0.000112	0.000217	-0.000112	0.001***
	(0.000831)	(0.000605)	(0.000782)	(0.000548)	(0.000)
Inv	0.00554***	0.00307***	0.00554***	0.00307***	0.000
	(0.00123)	(0.000844)	(0.00116)	(0.000765)	(0.001)
Popg	-0.167**	-0.0782	-0.167**	-0.0782*	-0.016
	(0.0700)	(0.0491)	(0.0659)	(0.0444)	(0.039)
L.lnGDPpc					0.948***
					(0.058)
Constant	7.381***	6.950***	7.381***	6.950***	0.215
	(0.237)	(0.167)	(0.223)	(0.151)	(0.479)
Observations	167	167	167	167	153
R-squared	0.981	0.992			
Number of Countries			14	14	14

Note: Standard errors in parentheses, *** p<0.01 means significant at 1%, ** p<0.05 means significant at 5%, * p<0.1 means significant at 10% level. Whereas, C indicate country fixed effect and C & T indicate country & Time effect. **Source**: Own estimates using Stata 13

Furthermore, the effect of population growth is only significant when country fixed effect and time effect have taken into account, but overall not significant. Table 4.9 shows that population growth rate(popg) has negative significant impact on GDP per capita at 1% level controlling for country fixed effect and after dealing for robust estimation it has negative effect at 5% level and 10 % controlling for country and time fixed effect respectively. But after controlling for endogeneity, popg is not significant.

Finally, the lagged value of GDP per capital (l. lnGDPpc) introduced as explanatory variables with SYS GMM is significant at 1% level, with positive coefficient Again, this imply that current economic performance of the region depends its past performance than institutional quality and other factors.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Using a sample of 14 selected Eastern African Countries over the time period 2005-2016, this study has carried out an empirical analysis of the effect of institutional quality on economic performance by using two estimation techniques; the fixed effect and SYS-GMM. The method of Feasible Generalized Least Squares (FGLS) has been also employed to deal with autocorrelations problem and variance heteroscedasticity in fixed effect estimation and the System Generalized methods of Movements (SYS-GMM) has been employed to deal the problem of endogeneity, probably the problem of omitted variable bias, the problem of reverse causality and stationarity problem. In addition, the method of principal component analysis (PCA) has been also employed to deal the problem of multi-collinearity in the data. Using the result from PCA, after a composite indicator of institutional quality has been computed, the aggregated effect of institutional quality on economic performance of Easter Africa has been estimated by efficient result of FE that is by FGLS and SYS-GMM. The estimated result shows that institutional quality, economic institutions in particular, has positive significant effect on economic performance.

In addition, to understand which institutions has the most significant effect and which institutions has lacking in the region, the effect of each individual institutional quality indicators were estimated separately, along with the two macroeconomic performance, investment and population and two factors that shapes quality of economic institutions, particularly quality of political institutions and trade openness. The results also found that quality of economic institutions has shown to have significant impact on economic performance, among which control of corruption and government effectives are the most important. The effect of rule of law institution in Eastern Africa has negative significant effect, while regulatory quality is lacking in the region. These effects also depend on individual and time fixed effect, implying that each country has its own specific fixed effect that shapes economic institutions, which in turn affect economic performance by affecting individual quality of economic institutions.

5.2 Recommendation

It has been already demonstrated that economic institutions are the major source of economic development across countries. On the other hand, economic institutions have decisive influence on investments in physical and human capital, technology, and so on. It is also well-understood that in addition to having a critical role in economic development, economic institutions are also important for resource distribution.

This study of the impact of quality of economic institution on economic performance of Eastern African countries, on its side found that control of corruption and government effectiveness are the fundamental factors for Eastern African economic performance. Thus, there is a need to strengthen these institutions.

In addition, this study found that rule of law has a negative significant impact on economic development in Eastern Africa. Therefore, changing such institution in a direction in which it will improve economic development would be huge contribution for the region economic welfare.

5.3. Future Research

In the light of the limitation of this study, the following implication will have proposed for future research;

Even though this study has tried to control for deep factors that shapes quality of institutions, such as trade openness and quality of political institutions, still others factors such as income distribution, efficiency of tax system and education are not considered.

Income distribution affect affects both institutional predictability and legitimacy, because a strong inequality causes divergent interests among different social groups, which, in turn, leads to conflicts, socio-political instability and insecurity and it facilitates that institutions remain captured by groups of power, whose actions are orientated to particular interests rather than to the common good. On the other hand, education related to institutions dynamic efficiency, more educated population demands more transparent and dynamic institutions and permits to build them. In addition, tax is crucial variable that affects both the static efficiency and the legitimacy of institutions. A sound tax system not only provides the necessary resources to build high quality institutions, but also enables the consolidation of a social contract that gives rise to a more demanding relationship between state and citizens. As a result, there will be higher transparency and accountability, which leads to better institutional quality(Alonso and Garcimartín, no date).

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APPENDIX A

Principal component Analysis

Principal component analysis (PCA) is a statistical technique used for data reduction, in which the eigenvectors from the Eigen decomposition of the correlation matrix of the variable describe a series of uncorrelated linear combinations of the variables that contain most of the variance. In this study, it employed to deal with the problem of multi-collinearity (see following table A.1, A2 and figure A.1).

Table A-1 shows the result of PCA of the four components of quality of economic institutions; Control of corruption (CCE), government effectiveness (GEE), regulatory quality (RQE) and rule of law (RLE). In column 1-4 of table A1, the components equal the number of included variables is presented. What we mean by component here is that the number of component we should retail (reserve) for regression analysis.

Table A 1: Principal components (eigenvectors)/Factors Loading

Variable	Comp1	Comp2	Comp3	Comp4
CCE	0.4716	0.8511	0.0571	0.2234
GEE	0.5071	-0.2705	-0.8015	0.1652
RQE	0.5027	-0.4426	0.5664	0.4802
RLE	0.5175	-0.0807	0.1831	-0.832

Note: Comp1 mean component one, comp2 means component two, comp3 means component three, comp4 means component four **Source**: Author's estimate using Stata 13

Table A2 shows the eigenvectors, which indicate the correlation of four measures of quality of economic institutions and four principal component matrix computed by PCA. The result indicates that there is almost zero unexplained variation in the four principal components. The first component has positive and approximately explain 50% variation in CCE, GEE, RLE and RQE. But, the others components have less explained the four indicators of measures of quality of economic institutions.

The number of component that should be used in multiple regressions is the eigenvalues of the above eigenvectors. Table A2 shows the eigenvalues and proportion of variation that can be

explained each of the components. The components that have eigenvalues above one are retained for using in the regression analysis.

From table A 2, the proportion of variation explained by component one is 85.6%, which is cumulatively 85.6%, the proportion of variation explained when we use two components is 0.0797%, cumulatively 93.376% percent variation, with three components 0.0356% with cumulative variation of 97.32% and if we use all components together 100%.

Table A 2 Principal Components, Eigenvalues and proportion

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.43164	3.11287	0.8579	0.8579
Comp2	0.318774	0.176394	0.0797	0.9376
Comp3	0.14238	0.035172	0.0356	0.9732
Comp4	0.107208	.	0.0268	1

Source: Authors computation using Stata 13.

Additionally, the number of component that be used in the regression analysis can be examine with graphically (see figure A1). It shows that only one component has Eigen value of above mean value and hence only one component should be retailed for regression analysis.

Figure A 1:Scree plot of eigenvalues for After principal component analysis
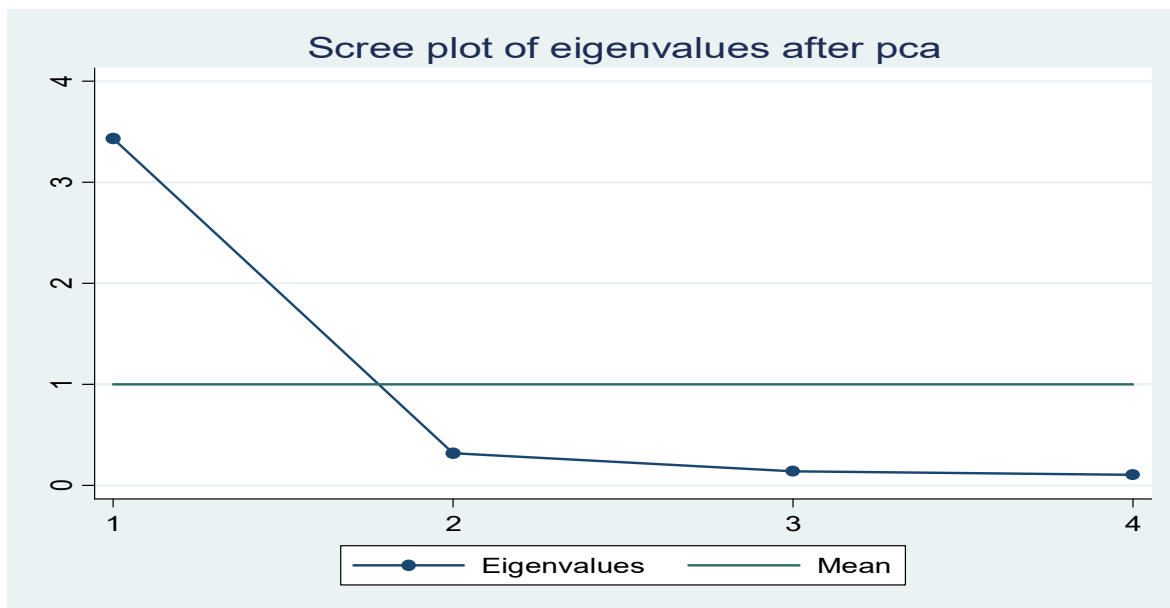
Source: Author's estimate using Stata 13.

APPENDIX B

B 1: World Bank Governance Indicators Methods and Related Concepts

B 1.1: Control of Corruption indicator

Definition: Control of corruption 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. This table lists the individual variables from each data source used to construct this measure in the Worldwide Governance Indicators. **Corruption**: The risk that individuals/companies will face bribery or other corrupt practices to carry out business, from securing major contracts to being allowed to import/export a small product or obtain everyday paperwork. This threatens a company's ability to operate in a country, or opens it up to legal or regulatory penalties and reputational damage.

Concept Measured: Corruption among public officials, Public Trust in Politicians, Diversion of Public Funds, Irregular Payments in Export and Import, Irregular Payments in Public Utilities, Irregular payments in tax collection, Irregular Payments in Public Contracts, Irregular Payments in Judicial Decisions, State Capture, Level of "petty" corruption between administration and citizens, Level of corruption between administrations and, local businesses. Level of corruption between administrations and foreign companies.

B 1.2: Government effectiveness

Definition: It captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. This table lists the individual variables from each data source used to construct this measure in the Worldwide Governance Indicators: Government effectiveness.

Concept Measured: Quality of bureaucracy / institutional effectiveness, Excessive bureaucracy / red tape, Infrastructure, Quality of primary education, Satisfaction with public transportation system, Satisfaction with roads and highways, Satisfaction with education system, Coverage area: public school, Coverage area: basic health services, Coverage area: drinking water and sanitation, Coverage area: electricity grid, Coverage area: transport infrastructure, Coverage area: maintenance and waste disposal, Bureaucratic quality

Infrastructure disruption: This reflects the likelihood of disruption to and/or inadequacy of infrastructure for transport, including due to terrorism/insurgency, strikes, politically motivated shutdowns, natural disasters; infrastructure includes (as relevant) roads, railways, airport ports, and customs checkpoints.

State failure: The risk the state is unable to exclusively ensure law and order, and the supply of basic goods such as food, water, infrastructure, and energy, or is unable to respond to or manage current or likely future emergencies, including natural disasters and finance or economic crises.

Policy instability: The risk the government's broad policy framework shifts over the next year, making the business environment more challenging. This might include more onerous employment or environmental regulation; local content requirements; import/export barriers, tariffs, or quotas; other protectionist measures; price controls or caps; more "political" control of monetary policy, or simply more direct intervention into the operations and decisions of private companies etc.

B 1.3. Regulatory quality

Definition: 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. This table lists the individual variables from each data source used to construct this measure in the Worldwide Governance Indicators.

Concepts Measured: Unfair competitive practices, Price controls, Discriminatory tariffs, Excessive protections, Discriminatory taxes, Burden of government regulations, Extent and effect of taxation, Prevalence of Trade Barriers, Intensity of Local Competition, Ease of starting a new business, Effectiveness of anti-trust policy, Stringency of environmental regulations, Investment Freedom, Financial Freedom, Ease of starting a business governed by local law?, Ease of setting up a subsidiary for a foreign firm?, Share of administered prices, Does the State, subsidize commodity prices (i.e. food and other essential goods, excluding oil)?,Does the State subsidize the price of petrol at the pumps?

Importance, de facto, of barriers to entry for new competitors in markets for goods and services (excluding the financial sector and beyond the narrow constraints of the market) … related to the administration (red tape etc.),Importance, de facto, of barriers to entry for new competitors in,

markets for goods and services (excluding finance and beyond the narrow constraints of the, market)… related to the practices of already established competitors, Efficiency of, competition regulation in the market sector (excluding financial sector),Investment profile

Regulatory burden: The risk that normal business operations become costlier due to the regulatory environment. This includes regulatory compliance and bureaucratic inefficiency and/or opacity. Regulatory burdens vary across sectors so scoring should give greater weight to sectors contributing the most to the economy.

Tax inconsistency: Tax inconsistency also captures the risk that fines and penalties will be levied for non-compliance with a tax code that appears disproportionate or manipulated for political ends.

B 1.4. Rule of Law

Definition: Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. This table lists the individual variables from each data source used to construct this measure in the Worldwide Governance Indicators

Concept Measured: Violent crime**,** organized crime**,** Fairness of judicial process**,** Enforceability of contracts**,** Speediness of judicial process**,** Confiscation/expropriation**,** Intellectual property rights protection**,** Private property protection**,** Business Cost of Crime and Violence**,** Cost of Organized Crime**,** Reliability of Police Services**,** Judicial Independence**,** Efficiency of Legal Framework for Challenging Regulations**,** PR protection**,** Property Rights**,** Informal Sector**,** Confidence in the police force**,** Confidence in judicial system

Have you had money property stolen from you or another household member?

Efficiency of the legal means to protect property rights in the event of conflict between private stakeholders?

Generally speaking, does the State exercise arbitrary pressure on private property?

Does the State pay compensation equal to the loss in cases of expropriation (by law or fact) when the expropriation concerns land ownership?

Does the State pay compensation equal to the loss in cases of expropriation (by law or fact) when the expropriation concerns production means?

Degree of observance of contractual terms between national private stakeholders

Degree of observance of contractual terms between national and foreign private stakeholders

In the past 3 years, has the State withdrawn from contracts without paying the corresponding compensation... vis-à-vis national stakeholders?

In the past 3 years, has the State withdrawn from contracts without paying the corresponding compensation... vis-à-vis foreign stakeholders?

Respect for intellectual property rights relating to… trade secrets and industrial patents

Respect for intellectual property rights relating to… industrial counterfeiting

Does the State recognize formally the diversity of land tenure system?

Law and Order

Trafficking in People

Liberal component index (measuring rule of law, judicial independence, checks and balances)

Expropriation: The risk that the state or other sovereign political authority will deprive, expropriate, nationalize, or confiscate the assets of private businesses, whether domestic or foreign.

State contract alteration: The risk that a government or state body alters the terms of, cancels outright, or frustrates (usually through delay) contracts it has with private parties without due process.

Contract enforcement: The risk that the judicial system will not enforce contractual agreements between private-sector entities, whether domestic or foreign, due to inefficiency, corruption, bias, or an inability to enforce rulings promptly and firmly.

B 2: Poliy4 Project Methods for Constructing Polity2 Indicator

Polity2: As aforementioned, polity2 is a modified version of the POLITY variable added in order to facilitate the use of the POLITY regime measure in cross-sectional -time-series analyses, where by Polity Score mean the Combined POLITY score which is computed by subtracting the AUTOC score from the DEMOC score; the resulting unified polity scale ranges from +10 (strongly democratic) to-10 (strongly autocratic).

The Democracy indicator is an additive eleven-point scale (0-10). The operational indicator of democracy is derived from coding of the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive using the following weights:

<u>Authority Coding</u>	<u>Scale Weight</u>
Competitiveness of Executive Recruitment	
○ Election	+2
○ Transitional	+1
Openness of Executive Recruitment	
○ Dual/election	+1
○ Election	+1
Constraint on Chief Executive	
○ Executive parity or subordination	+4
○ Intermediate category	+3
○ Substantial limitations	+2
○ Intermediate category	+1
Competitiveness of Political Participation	
○ Competitive	+3
○ Transitional	+2
○ Factional	+1

An eleven-point Autocracy scale is also constructed additively, where operational indicator of autocracy is derived from coding of the competitiveness of political participation, the regulation

of participation, the openness and competitiveness of executive recruitment and constraints on the chief executive using the following weights:

Competitiveness of Executive Recruitment

 o Selection   +1

Openness of Executive Recruitment

 o Closed   +1

 o Dual/designation   +1

Constraints on Chief Executive

 o Unlimited authority   +3

 o Intermediate category   +2

 o Slight to moderate limitations +1

Regulation of participation (PARREG):

 o Restricted   +2

 o Sectarian   +1

Competitiveness of Participation

 o Repressed   +2

 o Suppressed   +1

APPENDIX C

Stata Commands for doing this project

The following Stata command is added here instead of the model estimation because of the output of the estimation results for this study entitled as "**The Effect of Quality of Economic Institutions On Economic Performance of Eastern Africa: Panel Data Analysis**" is too much to report all of them.

use "D:\Fikadu R\datasest\The end with this analysis.dta", clear

*the name of the Directory is:

cd "D:\Fikadu R"

egen id=group (country name)   /// to crated country identification

xtset id p   /// declaring data as papel data

    panel variable: id (strongly balanced)

    time variable: p, 2005 to 2016

        delta: 1 unit

describe

Contains data from D:\Fikadu R\Final results\Decribe.dta

  obs: 168

  vars: 14   20 May 2018 22:17

  size: 14,952

variable Name	storage Type	display Format	value label
countryname	str10	%10s	country name
p	int	%10.0g	Time Span
GDPc	double	%10.0g	GDP per capita
popg	double	%10.0g	Annual population Growth
Topen	double	%10.0g	Trade Openness
inv	double	%10.0g	Total investment
CCE	double	%10.0g	Control of Corruption
GEE	double	%10.0g	Government effectiveness
RQE	double	%10.0g	Regulatory quality
RLE	double	%10.0g	Rule of law
polity2	byte	%10.0g	political system
id	float	%9.0g	group(country name)
Einst	float	%9.0g	Aggregate institutional quality indicator
lnGDPpc	float	%9.0g	Log of GDP per capita

Table 4.4. Aggregate institutional quality effect Estimation

#To run Model 1: individual fixed effect of Aggregate Economic institutions

reg lnGDPpc popg Topen inv polity2   Einst i.id

The following command will send the output that should be reported for analysis to excel as;

outreg2 using regreinst, replace keep(popg Topen inv polity2 Einst) excel ctitle(Individual FE)

To run Model 2: individual and time effect of Aggregate quality of economic Institutions

          reg lnGDPpc popg Topen inv polity2   Einst i.id i.p

Then the command to send the output that should be reported for analysis to excel is

outreg2 using regreinst, append keep(popg Topen inv polity2 Einst) excel ctitle(Individual and Time FE)

To run Model 3:FGLS estimation of individual fixed effect of aggregate institutional quality

xtgls lnGDPpc popg Topen inv polity2   Einst i.id

Then the command that will send the estimation results to excel is

outreg2 using regreinst, append keep(popg Topen inv polity2 Einst) excel ctitle(FGLS with Individual and Time FE)

To run Model 4: XTGLS Estimation for indiual fixed effec and Time effect

xtgls lnGDPpc popg Topen inv polity2   Einst i.id i.p

Then the command that will send the estimation results to excel is

outreg2 using regreinst, append keep (popg Topen inv polity2 Einst) excel ctitle(FGLS with Individual and Time FE)

 *Model 5: System GMM Estimation of the effect of Economic institutions

xtabond2 lnGDPpc l.lnGDPpc popg Topen inv polity2   Einst , two ///

gmm(Einst popg Topen inv polity2 ,lag(2 2)collapse) gmm(lnGDPpc ,lag(1 4) collapse)   ///

 small robust

*Exporting the result from here below:

outreg2 using regreinst,bdec(3) rdec(3) adec(3) tdec(3)   ///

alpha(0.01,0.05,0.10) addstat(No. of Instruments ,e(j),AR2 p-value,e(ar2p),hansen p-value,e(hansenp)) // ctitle(SYS-GMM) append excel keep(popg Topen inv polity2 Einst l.lnGDPpc)

Table 4.5. Estimating the Effect of Control of Corruption

*Model 1: Estimating the effect of CCE using individual fixed effect

        reg lnGDPpc popg Topen inv polity2 CCE i.id

outreg2 using regCCE, replace keep(popg Topen inv polity2 CCE l.lnGDPpc) excel ctitle(IFE)

*Model 2: Estimating the effect of CCE with country and time fixed effect

        reg lnGDPpc popg Topen inv polity2 CCE i.id i.p

outreg2 using regCCE, append keep(popg Topen inv polity2 CCE l.lnGDPpc) excel ctitle(ITFE)

*Model 3: Estimating the effect of CCE FGLS with country fixed effect

        xtgls lnGDPpc popg Topen inv polity2 CCE i.id

outreg2 using regCCE, append keep(popg Topen inv polity2 CCE l.lnGDPpc) excel ctitle(IFGLS)

*Model 4: Estimating the effect of CCE FGLS with country and time fixed effect

        xtgls lnGDPpc popg Topen inv polity2 CCE i.id

outreg2 using regCCE, append keep(popg Topen inv polity2 CCE l.lnGDPpc) excel ctitle(IFFGLS)

*Model 5: Estimating the effect of CCE using System GMM

xtabond2 lnGDPpc l.lnGDPpc popg Topen inv polity2 CCE , two ///

gmm(CCE popg Topen inv polity2 ,lag(2 2)collapse) gmm(lnGDPpc ,lag(1 2) collapse)   ///

 small robust

*Exporting the result from here below:

        outreg2 using regCCE,bdec(3) rdec(3) adec(3) tdec(3)   ///

        alpha(0.01,0.05,0.10) addstat(No. of Instruments ,e(j),AR2 p-value,e(ar2p),hansen p-value,e(hansenp)) ///

         ctitle(SYS-GMM) excel append keep(popg Topen inv polity2 l.lnGDPpc CCE)

***Table 4.6: Estimating the effect of GEE**

 *Model 1: Fixed effect estimation with country dummy

        reg lnGDPpc popg Topen inv polity2 GEE i.id

outreg2 using regGEE, replace keep(popg Topen inv polity2 GEE) excel ctitle(IFE)

 *Model 2: Fixed effect estimation with country and time dummy

        reg lnGDPpc popg Topen inv polity2 GEE i.id i.p

outreg2 using regGEE, append keep(popg Topen inv polity2 GEE) excel ctitle(IFE)

 *Model 3: FGLS estimation with country dummy

        xtgls lnGDPpc popg Topen inv polity2 GEE i.id

outreg2 using regGEE, append keep(popg Topen inv polity2 GEE) excel ctitle(IFEGLS)

 *Model 4: FGLS estimation with country and time dummy

xtgls lnGDPpc popg Topen inv polity2 GEE i.id i.p

outreg2 using regGEE, append keep(popg Topen inv polity2 GEE) excel ctitle(IFEGLS)

 ***Model 5:** System GMM estimation

xtabond2 lnGDPpc l.lnGDPpc popg Topen inv polity2 GEE , two ///

gmm(GEE popg Topen inv polity2 ,lag(2 2)collapse) gmm(lnGDPpc ,lag(1 4)collapse) ///

 small robust

*Exporting the result from here below:

outreg2 using regGEE,bdec(3) rdec(3) adec(3) tdec(3) alpha(0.01,0.05,0.10) addstat(No. of Instruments ,e(j),AR2 p-value,e(ar2p),hansen p-value,e(hansenp)) ///

        ctitle(SYS-DGMM) excel append

 ***Table 4.7: Estimating the effect of RQE**

 ***Model 1:** Fixed effect with country dummy

        reg lnGDPpc popg Topen inv polity2 RQE i.id

outreg2 using regRQE, replace keep(popg Topen inv polity2 RQE) excel ctitle(IFE)

 ***Model 2**: Fixed effect with country dummy and time dummy

        reg lnGDPpc popg Topen inv polity2 RQE i.id i.p

outreg2 using regRQE, append keep(popg Topen inv polity2 RQE) excel ctitle(IFE)

 ***Model** 3:FGLS with country dummy

        xtgls lnGDPpc popg Topen inv polity2 RQE i.id

outreg2 using regRQE, append keep(popg Topen inv polity2 RQE) excel ctitle(IFEGLS)

 ***Model** 4: FGLS with country dummy and time dummy

        xtgls lnGDPpc popg Topen inv polity2 RQE i.id i.p

outreg2 using regRQE, append keep(popg Topen inv polity2 RQE) excel ctitle(IFEGLS)

Model 5: System GMM estimation

xtabond2 lnGDPpc l.lnGDPpc popg Topen inv polity2 RQE , two ///

gmm(RQE popg Topen inv polity2 ,lag(2 2)collapse) gmm(lnGDPpc ,lag(1 2) collapse) ///

 small robust

*Exporting the result from here below:

outreg2 using regRQE,bdec(3) rdec(3) adec(3) tdec(3) alpha(0.01,0.05,0.10) addstat(No. of Instruments ,e(j),AR2 p-value,e(ar2p),hansen p-value,e(hansenp)) ctitle(SYS-GMM) excel append

*Table 4. 8.: Estimating the effect of RLE

***Model 1:** Fixed effect with country dummy

        reg lnGDPpc popg Topen inv polity2 RLE i.id

outreg2 using regeRLE, replace keep(popg Topen inv polity2 RLE) excel ctitle(IFE)

 ***Model 2:** Fixed effect with country dummy and time dummy

        reg lnGDPpc popg Topen inv polity2 RLE i.id i.p

outreg2 using regeRLE, append keep(popg Topen inv polity2 RLE) excel ctitle(IFE)

 ***Model 3:**FGLS with country fixed effet

        xtgls lnGDPpc popg Topen inv polity2 RLE i.id

outreg2 using regeRLE, append keep(popg Topen inv polity2 RLE) excel ctitle(IFEGLS)

 ***Model 4:**FGLS with country and time fixed effect

        xtgls lnGDPpc popg Topen inv polity2 RLE i.id i.p

outreg2 using regeRLE, append keep(popg Topen inv polity2 RLE) excel ctitle(IFEGLS)

 ***Model 5:** System GMM Estimation

xtabond2 lnGDPpc l.lnGDPpc popg Topen inv polity2 RLE , two ///

gmm(RLE popg Topen inv polity2 ,lag(2 2)collapse) gmm(lnGDPpc ,lag(1 2))   ///

 small robust

*Exporting the result from here below:

outreg2 using regeRLE,bdec(3) rdec(3) adec(3) tdec(3)   alpha(0.01,0.05,0.10) addstat(No. of Instruments ,e(j),AR2 p-value,e(ar2p),hansen p-value,e(hansenp))   ctitle(SYS-GMM) excel append

*_____