THE ROLE OF INSTITUTIONAL QUALITY ON DEBT-GROWTH NEXUS

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CERTIFICATE

This is to certify that this thesis entitled: **"The Role of Institutional Quality on Debt-Growth Nexus"** submitted by Ms. Faiza Ghani is accepted in its present form by the Department of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics**.

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DEDICATION

DEDICATED TO MY FAMILY, TEACHERS AND FRIENDS.

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ABSTRACT

The dynamic changes are happening in the world economies and the traditional systems are transforming according to the needs and betterment of societies. Every economy needs to grow and to compete with the challenging world and for this purpose huge financial resources are needed. The misconception about foreign financial resources says that they always harm economies but on the real grounds, such resources are needed to boost economy and compete with the rest of the world. Foreign financial resources such as external debt is itself not a bad thing but how it is used is important. If it is used productively and effectively then it will boost economic growth. For this purpose the paradigm of thoughts are shifted towards institutions/governance. If the institutions are working properly and efficiently use the external and internal resources the economy will grow. The present study investigated the role of institutional quality between debt-growth nexus for less developed and developing economies. The study used cross sectional data of 70 countries, for time period 2017 and use structural equation modelling (SEM). The results of the study shows no proper role of institutional quality on debt-growth nexus in less developed countries while the strong impact of institutional quality on debt-growth nexus in developing countries. The present study suggest that the efficient use of foreign financial resources can be made through better institutions.

Keywords: External debt, Economic growth, Institutional quality

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CHAPTER 1

INTRODUCTION

1.1   Introduction

Countries are facing the problem of scarce resources and therefore, they often rely upon external finance to fill the gap between revenues and expenditure. The receiving country not only use the external borrowing to fill this gap but also to invest sufficiently to generate enough resources, which make the country capable to return its debt timely and enhance its revenues and economic growth. If countries are unable to utilize the external debt and invest insufficiently then it would become an alarming situation, because they have low repayment potential and limited financial resources which make them incompatible with the rest of the world.

It has been observed that good institutional quality along with better governance is considered as the crucial factor in the development of any country and it enables the countries to use its resources efficiently. In the same way, poor institutional quality cause huge problems for economies and uses all financial resources in non- productive projects and huge amount of financial resources are wasted due to corruption (Kraioornsak, 2018).

External debt is very important for the vitality of a country's economy. If a country`s external debt grows then the country is bound to make payments on or towards the debt which will hinders the country's ability to use those resources for other macroeconomic goals like economic growth or unemployment. This will make domestic and foreign firms to be pessimistic about the future growth and this will reduce future investment in the economy (Akinkunmi, 2017). The gist of the argument is that if the foreign debt

is used in increasing the productive capacity of the country then this debt is beneficial to the economy. Through increased productive capacity and value addition of the products, the economy can sustain and repay foreign debt. However, if the foreign debt is not used wisely and it is squandered away on unproductive projects and corruption then this foreign debt will not induce economic growth but rather will become a serious liability for a country.

External debt is considered as an important factor to boost economic growth but simultaneously it become an issue of debate for policy makers, researchers and economists. Currently, external debt is not only an issue for developing countries but also for many develop countries. The main concern is that whether external debt leads to growth or high economic growth is the main factor behind huge debt accumulation. The policy makers and researchers have also emphasis on the role of quality institutions among debt-growth relationship. According to North (1991), institutions are humanly developed constraints that shape political, economic and social interactions and they are both formal and informal set of rules. Institutions shapes economy and make its path toward growth, stagnancy or decline. In accordance, economies grow when their institutions perform better and unstable if institutions are poor.

Different studies has done to find the relationship among external debt, institutional quality and economic growth. Accordingly, these factors are interconnected to each other and the direction of causation among them is also varying. For example, among the studies that discusses the issue are Qayyum *et al*. (2012), they explored that foreign aid and good governance accelerate growth but external debt create burden on the economy. Foreign aid and external debt are initially considered favorable for economic

growth and the developing countries are encouraged to get assistance from develop countries to boost their economic growth. Despite the fact external debt became the main challenge faced by many nations form last few decades and it became a hindrance in increasing investment and achieving high growth (Malik et. al 2010).

While talking about the costs of external debt upon economic growth here are some views that support the opposite notion that high economic growth is also a reason behind high indebtedness. But accumulation of high debt in consideration that high GDP will make them able to pay back is a big misconception (Calea 2013). High economic growth of a country shows high credit worthiness of that country and the reliability of the country for paying back that debt therefore, these countries accumulate high debt on easy conditions. External debt was considered as problem for only developing countries but now it is a huge problem for almost every country and it is considered as main reason behind the major sovereign crisis in Europe (Calea 2013).

Institutional quality has not been given much importance in past decades but currently it's the main focus of the policy makers and researchers. It is believed that if the institutions are working properly and the resources are well managed then the road for growth and development will be smooth. Along with other factors like investment in physical capital and population growth, institutional quality is the central factor in determining of economic growth (Fabro and Aixalá, 2009). Theoretically assistance from foreign countries, either in aid form or in the form of external debt is not considered a negative phenomenon. The problem arises if the management of debt is not proper and its huge part is used in non-productive or useless projects. The institutional quality matters a lot in debt utilization. Presbitero (2008) suggests that the

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relationship among external debt and economic growth is highly dependent upon institutional frame work. External debt has no importance if there is low institutional quality or its use is inefficient rather it put more burden on the economy and loses for future generation. Kaufmann *et al.* (1999) construct aggregate indicators of bureaucratic quality, rule of law, and implementation and find out the causality relationship among institutional quality and economic growth.

The above discussion on debt-growth relationship and the role of quality institutions on this nexus suggests that there is still lack of fundamental research on the bidirectional relationship among external debt and economic. This brief background motivates us to explore the debt-growth nexus in the presence of institutional quality under the frame work of structural equation modeling.

1.2   Literature Gap

Major objective of previous studies Shokolnyk and Koilo (2018), Qayyum and Haider (2012), Presbitero (2008) is, to investigate the impact of external debt on economic growth and institutional quality on economic growth directly. Current study is going to explore the causal relationship of external debt and growth in the presence institutional quality. So, Study will explore the indirect effect of institutional performance on external debt and economic growth by mediation analysis through Structural Equation Modeling (SEM).

1.3   Objectives of the study

The current study aims to measure

1. The direct and indirect effect of institutional quality on economic growth by mediating external debt.

2. The direct and indirect effect of institutional quality on external debt by mediating economic growth.

1.4 Significance of the Study

The present study will show the bidirectional relationship between economic growth and foreign debt and it will highlight the factors like institution quality which might affect economic growth. Through this research the policy makers will be in a better position to make an effective policy which will help the economy to grow. The policy makers will have a better understanding of the direction of relationship between the external debt and economic growth and the insight given by this research will help them to make a more precise policy which can be targeted to specific sectors. Secondly this research will be beneficial for Multi-National Companies and other countries which are interested in investing or lending will have a better understanding and information of how to go about their decision. Thirdly, this study will tackle this misconception that all foreign debt is bad whereas if that foreign debt is used to increase productive capacity then this will be beneficial for that economy.

This study will play an important role in policy making for debt allocation. Current study will explore the significance of institutional quality for the efficient provision of external debt and its effectiveness on economic growth. This study will investigate that how better institutional quality plays important role in better use of foreign financial resources.

1.5 Organization of the Study

Following the introduction, the rest of the study is organized as second chapter will review the previous studies on the relationship among external debt and economic

growth and the role of institutional quality. Chapter three comprises on model and methodology by using structural equation modelling, chapter four is about results and discussions and chapter five will cover conclusion, policy recommendations and limitations of the study.

CHAPTER 2

LITRATERATURE REVIEW

2.1   Introduction

Review of different studies helps us to understand the relationship between external debt and economic growth and the role of institutional quality with this nexus. The literature review highlight three aspects of relationship between external debt and economic growth and divided in three sections. The first section examine literature for the positive and negative effect of external debt on economic growth, the second section explores the positive or negative influence of economic growth on debt accumulations and the third section took the studies highlighting the role of institutional quality on debt-growth relationship.

2.2   External Debt and Economic Growth

Economic literature discusses the main issue of budget deficit through two aspects. One is the accumulation of huge amount of debt (external or internal) and the second is through cross countries differences of public debt and deficits. The issue has been analyzed by Barro (1979), and Lucas and Stockey (1983), through the tax smoothening theory of government budget deficit. The theory based upon a closed economy that follows the conditions that government act as "benevolent social planner" that maximizes the utility of the agents (consumers, firms, etc.) and it finance a specific amount of spending every year through taxes. The government aims to keep the tax rate constant. In the economy the taxes are distortionary and both the government and agents works, consumes and saves. The theory states that government acts according to economic activity. In recession it imposes low taxes and in boom the taxes are high

so to maintain balance budget in the economy. The distortionary effects of taxation, the ideal policy of the government is to use budget deficits and surpluses to smooth the economy, given a specific path of spending: deficits occur when spending is temporarily high and surpluses when spending is low. Therefore, deficits should be observed under recessions and compensated by surpluses in expansions, so that cyclical fluctuations of output imply a cyclically adjusted balanced budget rule: the budget should be balanced over the business cycle but not every fiscal year.

The theory suggests that the government have to finance its spending, so increase or decrease the tax rate accordingly and government face huge deficit only if this pattern hit by any unanticipated shock. In such condition, the government borrow if its anticipated long run growth is higher than real interest rate, so the expected ability to repay debt is also high with growth of tax base (Franzese, 2001).

But from the last few decades this mechanism of balance budget does not works and the countries faces huge fiscal imbalances. Therefore, to cover such imbalances the nations accumulate large amount of debt. In the recent times, efforts have been done to search for the solution of such problems and now the focus of the studies has been shifted towards institutions, political and policy makers factors of such imbalances (Pinho, 2004).

Georgiev (2012), used Ricardo-Barro's proposition of expectations, explain the same phenomenon as government is running a balance budget then there is no need to increase debt but the real-life examples both Italy and Portugal have a balance budget but yet both has high debt (>90%). This shows that even if the countries run a balance budget but still the debt would increase as they have to pay interest upon it.

Almost every developed and developing country needs financial assistance to accelerate its growth, increase savings, investment and make their labors skillful. Such financial assistance should be well managed and use productively to enhance investment and compatible labors. If the nation fails in doing so, it faces huge imbalances in their payments. The important work on capturing the negative effects of debt on economic growth has been done by Diamond (1965), he investigated the effect of taxes on capital stock and suggests that high public internal and external debt affects the consumption of the tax payers, which further influence savings and thus capital stock.

The developing countries often have limited resources and therefore, receive enormous financial assistance in form of aid and debt to achieve high sustainable growth. Such financial assistance is really helpful in attaining targeted growth if it is used productively and efficiently. The relationship among external debt and economic growth explored by Malik *et al*. (2010), for Pakistan using data form 1972-2005 using OLS methodology. The results show that high foreign debt and payments on such debt harms economic performance of Pakistan. Similarly, Rehman *et al.* (2012), has done a cointegration analysis for Bangladesh for the period 1970-2010 and explore positive long run relationship among external debt and economic growth.

External debt is considered good if the accumulation of debt is less and it is used effectively but harmful if the situation is opposite. Chandia and Javed (2013), analyzed debt sustainability in the economy of Pakistan using VAR model for the period of 1971-2008 and suggests that debt will be considered sustainable if its ratio to GDP is low. For emerging economies the relationship among economic growth and external debt

has been examined by Shokolnyk and Koilo (2018), for the period 2006-16 using ARDL model and correlation analysis. It is explored that high level of external debt along with improper macroeconomic policy cause hurdle in economic growth.

External debt is beneficial if it is used on capital investment, research and development and to improve the skills of labors. Ali and Mustafa (2012), has done a study for Pakistan and examine the long-run and short-run impacts of external debt on economic growth for the time period 1970-2010 using Johenson cointegration to obtain long run equilibrium while Vector Error Correction model for short run equilibrium. The empirical results suggest that external debt harms economic growth while capital investment helps to boost economic growth. The impact of labor force on economic growth is also negative in the above study implies that unskilled labors causes hurdles in economic growth.

Debt is not always harmful to economic activity, it gives a broader path way towards high economic growth. Spilioti (2015), investigated the impact of government debt on economic growth for Euro area countries using data for 1981-2014 using panel data analysis, and the results shows that debt boost up the economic activity, hence there is positive and significant relationship among debt and GDP. The above literature suggests that external debt is an essential factor for economic growth but it is a burden if it is not utilized well.

2.3   Economic Growth and External Debt

The main perception behind high debt accumulation is considered as low economic growth and the less developed nations require foreign assistance to boost their growth. But the situation is opposite in some cases and some studies shows that high economic

growth is also a reason behind high debt accumulation. The same case is discussed by Bohn (2011), for the U.S economy, that U.S. has unbounded access to debt on low interest rate because of the high growth rate. U.S. high debt accumulations is the major concern of policy makers because it can create a threat to the government solvency and monetary stability.

Different studies show that debt rescheduling is also one of the reason behind huge debt accumulation and the lower growth or the financial constraints forces the countries to go for rescheduling. The significance of financial resources and political factors in determining the debt rescheduling investigated by Selami *et al.* (2004), for Turkey for time period 1955-2000 using probit model. The results suggest that the financial factors are significant in determining the debt rescheduling while political factors are not significant in this case.

An empirical study addressing the issue of high indebtedness of developing countries was investigated by Tiruneh (2004), exploring the reasons behind overseas borrowing markets that effect their international relations. The random and fixed effects models were used on cross-section pooled time series for HIPC, Low & middle income for time period 1980-1998, the results shows that the payments on debt service, capital flight, the ratio of imports to GDP, per capita income, and the GDP growth rate are the key factors of the for external borrowing.

We are unable to find comprehensive literature of a causal link going from growth to debt and therefore, we do not find studies that decompose the cause-effect relationship between economic growth and government debt.

2.4 Institutional Quality and Debt-Growth Nexus

From the last few decades the focus of the studies shifted toward institutions and governance. Previous empirical studies indicated that external financial assistance was initially considered a good option for developing countries to boost up their economic growth. But due to mismanagement, external debt became the main challenge faced by many nations form last few decades and it became a hindrance in increasing investment and achieving high growth. The management of external debt is very much dependent upon institutional quality and governance. Qayyum *et al.* (2012), investigated study of governance in an open economy that explored that foreign aid and good governance accelerate growth but external debt create burden on the economy. If institutions are fully organized and acting responsibly along with good governance bodies, it will achieve its developmental goals more easily and the economy become prosper.

Institutions quality is an important factor to properly manage the external resources in the economy. Qayyum and Haider (2012), has done an empirical study using fixed effect method for the panel of sixty developing countries for the period of 1984-2008, investigating the impact of external debt and foreign aid on economic growth in the presence of institutional quality. The results show that both institutional quality and foreign aid positively influence economic growth, but the effects of external debt on growth are adverse.

The developing countries are not only having poor institutional quality but also face the problem of limited resources. Even if these countries have sufficient resources but still the worse institutional quality leads to mismanagement of such resources. On the other hand, such countries have lack of skilled labors and investment to educate them

and make them compatible to the world markets. These countries have inadequate resources to finance developmental projects and depend solely on foreign assistance. A study done by Presbitero (2008) for panel of 114 developing countries, exploring the relationship among external debt and economic growth considering the role of policies and institutions using GMM method. The results suggest that the relationship between external debt and economic growth is highly dependent on institutional frame work. External debt has no importance if there is low institutional quality or its use is inefficient rather it put more burden on the economy and loses for future generation.

From the last few years greater emphasis is on the nation's management of their external debt and policies making. If the debt is well managed and utilized then it reduces the borrowing ratio of the nation as well as borrowing cost. Better policies also help to improve their financial markets and domestic resource utilization. A study conducted by Tarek and Ahmed (2017), on MENA (North African and Middle East) countries for the time period 1996-2015 and explored that how governance effects the accumulation of public debt. The six Worldwide Governance indicators i.e. voice and accountability, rule of law and control of corruption, government effectiveness, political stability and the absence of violence/terrorism, and regulatory quality were used to estimate the governance quality using Dynamic panel model. The three variables Regulatory Quality index, Political Stability and Absence of Violence index and Rule of Law index supports the view that poor governance leads to high debt to GDP ratio. The other indicators which are Government Effectiveness index, Control of Corruption index and Voice and Accountability index are positively related to debt to GDP ratio.

For a developing country like Pakistan with budgetary limitations, managing external debt is always costly. Highly indebted economies have to manage their constrained resources to pay their debt servicing which ultimately affects their spending on development and social sector. It is always difficult decision for government to cut their current spending as it has worse effects on welfare and employment. Such situation harm public interest and cause political instability. If the debt taken should applied efficiently on productive projects then it will enhance long run economic growth (Shabbir and Yasin 2015).

The recent year's literature mainly focuses on institutions quality and its different aspects. Kaufmann *et al.* (1999), construct combined indicators of bureaucratic quality, rule of law, and implementation and find out the causation among institutional quality and economic growth. Easterly and Levine (1997), explains that the difference in the growth rates among different countries are due to its difference in political stability, public policies and other economic indicators. They explore the factors behind the low growth of African countries are political instability, low schooling, underdeveloped financial system, huge government deficit, inefficient infrastructure and distortions in foreign exchange market.

Good governance is an important factor in the development of any country and United Nations has also set it as important goal among sustainable development goals. Paitoon Kraipornsak (2018), has conducted a comparative study for sixteen Asian countries analyzing good governance on income per head for the time period 1996-2016 using the fixed effect model indicated by the Hausman Test. The results suggest that along

with other factors of growth, good governance is a significant factor that contributes to income per head growth.

Most of developing countries are facing issues related to constraint resources, poor institutional quality and political instability and these issues create hurdle in the way of high economic growth. Fayissa and Nsiah (2010), conducted a study for 28 Sub-Sahara African countries for the time period 1995-2005 using fixed effect and Random effect models to explain the role of governance in the economic growth performance of these countries. The results suggest that the governance contributes to the gaps among rich and poor African countries.

A study for the sample of 145 countries investigated by Fabro and Aixalá (2009), and for sub samples of different income level countries using simultaneous equations of growth and institutional quality and apply GMM, SUR, 2SLS and 3SLSW models for estimation of level per capita in the context of institutional quality. Results of the growth equation suggests that institutional quality is the fundamental factor for the level of economic growth along with other factors like investment on physical capital and population growth. Similarly, a study of 107 developing countries investigated by Ahmed (2017), a study of for the time period of 1996 to 2015, using Pooled OLS, fixed and random effect panel estimators. He explored the role of institutional quality in defining the debt growth relationship and the results suggests that the growth of countries does not suffer from external borrowing if the institutional quality is good. The literature suggests that poor institutional quality is the hurdle in achieving economic goals and efficient allocation of external debt.

Conclusion

External debt is considered as an important factor in the growth of any country but if it is used inefficiently then it will be burden for economies. It is important that studies should be conducted which focus on the relationship between economic growth and external debt. Past studies show a direct relationship among external debt and economic growth while the present study will explore the bidirectional relationship between external debt and economic growth. This study will further incorporate the role of institutional quality in this nexus.

CHAPTER 3

THEORITICAL FRAMEWORK

3.1   Introduction

This chapter will discuss the economic theory for economic growth, external debt and the role of institutional quality. Initially the theory behind growth model will be discussed and after that the theory behind external debt model will be discussed. In both models the role of institutional quality will be discussed. The chapter will further explain the econometric methodology that will be used for estimation in the study.

3.2   Growth Model

The fundamental problem of economics is the scarcity and the basic production function taking two factors as contributes to output is given by Solow, and further elaborate it through different stages given as:

$$Y = f(K, L) \text{-------------------- (3.1)}$$

This function explains that with existing level of labors (L) and capital (K), a specific level of output can be produced. The production function shows constant returns to scale and the labors and capital are changing at a constant proportion, exhibits a Cobb-Douglas production function given in 1965 by Solow.

$$Y = K^\alpha L^{1-\alpha} \text{------------------- (3.2)}$$

The model is adopted by Coupet (2011), for his study in a modified form. He modified the growth model by incorporating the corruption factor in it, exploring the impact of corruption on level of productivity. The modified functional form of Cobb-Douglas production function is given as:

$$Y_t = K_t^\alpha \, H_t^\beta \, [A_t \, (\rho) \, L_t]^{\,1-\alpha-\beta} \text{ --------------- (3.3)}$$

Where Y_t is the aggregate level of real income, K_t shows the level of physical capital, H_t is the level of human capital, L_t shows the total amount of labor working, A_t shows the level of multifactor productivity and ρ shows the corruption level in a country. Corruption is one of the six dimensions of institutional quality given by World Governance Indicators. Therefore, this model provides a basis for a relationship among growth and institutional quality. Institutional quality has been added to our model with the notion that poor institutional quality negatively affects economic growth. Nawaz *et al.* (2014), suggests that as the institutional quality improves, the rent seeking behavior decreased and economic activity boost up.

A more specified model of Cobb-Douglas production function augmented with an external debt Stock used by Akinkunmi (2017).

$$Y = \gamma^k K + \gamma^d D + \varepsilon \text{ ------------------ (3.4)}$$

Where Y denotes aggregate GDP, K is capital stock and D represents the total external debt stock.

Considering both models we can make an argument that economic growth is affected by institutional quality and external debt along with other exogenous Y_t factors.

The final model of the study will incorporate the effects of institutional quality and external debt along with other exogenous factors.

Economic Growth= f (External Debt, Institutional Quality, Human Capital, Gross Domestic Investment, Inflation, Trade Openness, Foreign Direct Investment) -------

(3.5)

3.3   External Debt Model

External debt is the main issue for almost all developing as well as develop economies. Waheed (2017), analyzed the factors which causes or affects external debt, suggesting two channels through which debt is caused. The two gap model which is the saving investment gap given by Chenery and Strout (1966), and the three gap model which is the foreign exchange and fiscal constraints gap given by Bacha (1990). Different studies suggest that the budget deficit can be financed through at least four ways which are printing money, resources management, external and domestic borrowing. The model used by Waheed (2017), to determine external debt is:

External Debt=f (Economic Growth, Trade Balance, General Government Revenue, Oil Prices, Interest on External Debt, Foreign Direct Investment, Gross Domestic Savings, Investment)   ----------------------- (3.6)

Tarek and Ahmed (2017), estimate debt to GDP by incorporating the effects of governance (computed through six indicators of institutional quality), previous debt along with other controlled variables to the model.

  Debt to GDP ratio = f (Previous year Debt to GDP ratio, Governance, X) ------- (3.7)

In the above equation X is the vector for controlled variables in the study.

The literature provides the basis that external debt is affected by both growth rate and institutional quality. In the present study the model is constructed considering the previous studies and incorporating the combine effects of institutional quality and growth rate on external debt.

External Debt = f (Economic Growth, Institutional Quality, Terms of Trade, Gross

Domestic Investment, Fiscal Deficit, Interest on Debt Servicing, Inflation) -------------

------ (3.8)

3.4   Econometric Model

This section explains the econometric technique used in the study which is Structural

Equations Modeling. The SEM estimations are consist on two models, one is the

measurement model and other is structural regression model.

The aim of the study is to explore the debt growth nexus in the presence of institutional

quality. To fulfill this objective Structural Equation Modeling (SEM) will be used. It is

an approach to measure causality among variables. Structural equations or Path

analysis were introduced by Wright in 1921 to investigate quantitative cause, its

direction and effect by combining theoretical assumption of cause and effect with

statistical data. SEM is based upon a set of equations to measure the cause and effects

through all possible paths while the other methodologies such as Granger Causality

measure the cause and effect through single path or direct channel. Therefore, SEM is

preferred to use if we have to find a phenomenon where multiple directions involved

and the cause is not through any single channel. SEM is a simultaneous equation

modeling technique which explains the possibility that the dependent variable in any

one equation may also appears in any other equation as independent variable (Urbach

& Ahlemann, 2010). SEM has an advantage over other models which deals with only

controlled or exogenous variables but it allows the use of mediator variables to find the

indirect effect (Fox 2002).

Path diagram showing external debt as mediating variable

Figure 1.1 explains the directions of causes and effects showing that economic growth (GDPPCG) is affected by both external debt (ED) and institutional quality (IQ). The path diagram shows direct effect of external debt and institutional quality on economic growth but institutional quality has also an impact on economic growth through an indirect channel i.e. external debt. If the institutional quality is poor and the resources are mismanaged then it creates hurdle in achieving economic goals. Institutional quality is measured by six governance indicators which are government effectiveness (GEFF), rule of law (RL), control of corruption (CCOR), political stability and absence of violence (PSAV), regulatory quality (RQ) and voice and accountability (VAA). External debt (ED) is affected by institutional quality (IQ) and other controlled variables which are terms of trade (TOT), gross domestic investment (GDI), fiscal deficit (FD), interest on debt servicing (IDS) and inflation (INF). Economic growth is affected by ED and IQ along with other controlled variables such as gross domestic investment (GDI), inflation (INF), trade openness (TO), foreign direct investment (FDI), and human capital (HCI). In the figure 1.1 IQ not only effects GDPPCG directly but also through ED, here ED is a mediator variable.

Figure 1.1. **External debt as mediating variable**
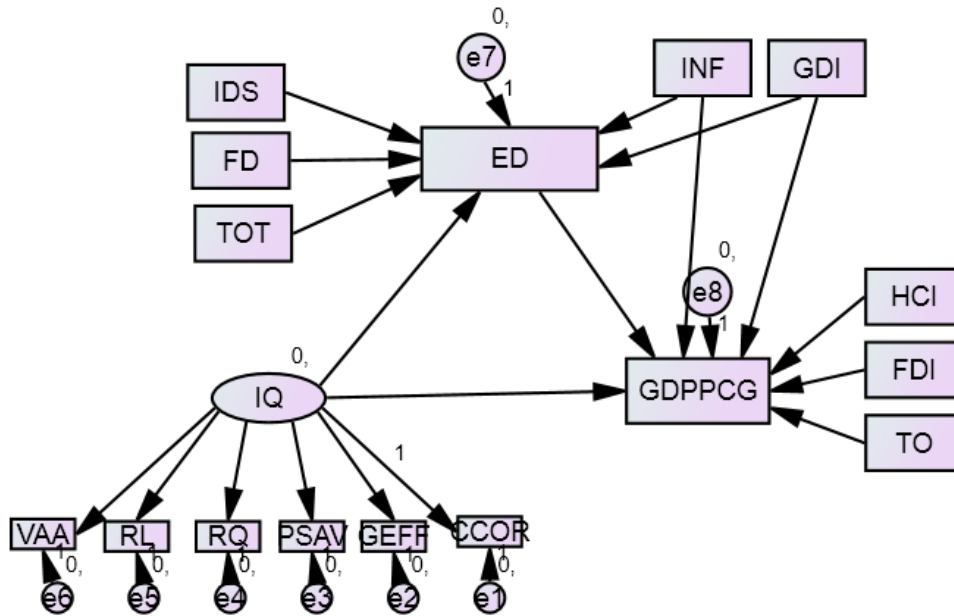
Path diagram showing economic growth as mediating variable

Figure 1.2 explains the same directions of causes and effects as discussed in above figure but here the mediator is economic growth showing that external debt (ED) is affected by both economic growth (GDPPCG) and institutional quality (IQ). The path diagram shows direct effect of economic growth and institutional quality on external debt but institutional quality has also an impact on economic growth through an indirect channel i.e. economic growth. If the institutions are not working properly and resources are using inefficiently then it create burden and accumulation of high debt. Similarly, the economies with high economic growth has an incentive to pay back easily therefore accumulate huge debt. In the figure 1.2 IQ not only effects ED directly but also through economic growth, here economic growth is a mediator variable.

Figure 1.2. **Economic growth as mediating variable**
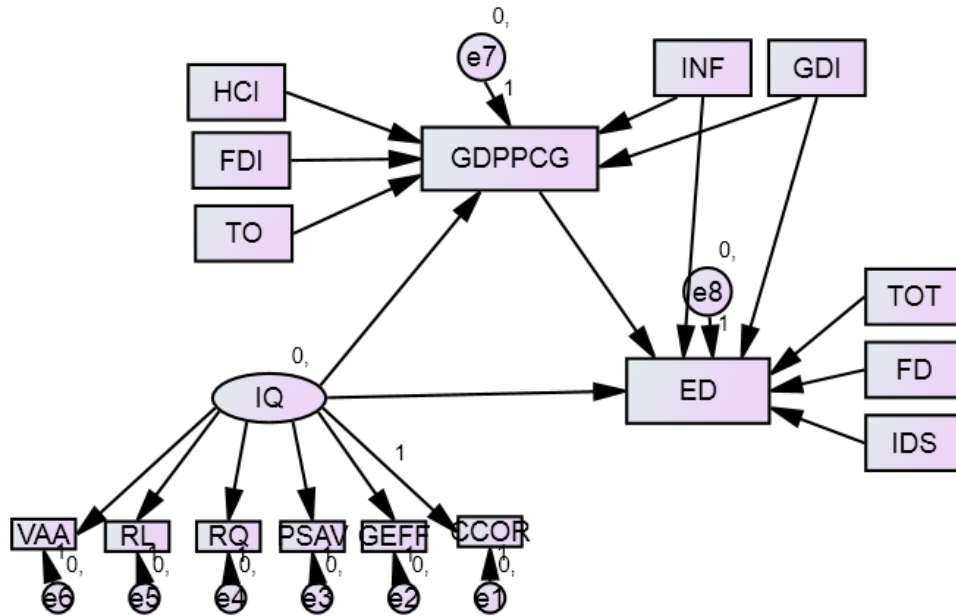
3.5   Mathematical Model

There are two parts of mathematical model, first is the measurement model and second is structural regression model. The model will contain three variables Economic Growth (GDPPCG), External Debt (ED) and Institutional Quality (IQ). In the present study IQ is latent variable which is unobservable and the other two variables ED and GDP are observable.

3.5.1   Measurement Model

$$CCOR = \alpha_1 + \beta_1 IQ + \varepsilon_1 \text{ ----------------------- (3.9)}$$

$$GEFF = \alpha_2 + \beta_2 IQ + \varepsilon_2 \text{ ------------------------ (3.10)}$$

$$VAA = \alpha_3 + \beta_3 IQ + \varepsilon_3 \text{ -------------------------- (3.11)}$$

$$PSAV = \alpha_4 + \beta_4 IQ + \varepsilon_4 \text{ ------------------------- (3.12)}$$

$$RQ = \alpha_5 + \beta_5 IQ + \varepsilon_5 \text{ --------------------------- (3.13)}$$

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$$RL = \alpha_6 + \beta_6 IQ + \varepsilon_6 \quad \text{------------------------------ (3.14)}$$

IQ: is for institutional quality which is latent exogenous variable.

Errors: $\varepsilon_1 \varepsilon_2 \ \varepsilon_3 \ \varepsilon_4 \ \varepsilon_5 \ \varepsilon_6$

The measures of IQ in this model are CCOR: control of corruption, GEFF: government effectiveness, VAA: voice and accountability, PSAV: political stability and absence of violence, RQ: regulatory quality and RL: rule of law.

3.5.2 Structural Model

The current study will analyze two scenarios, in one case the ED will be taken as mediator while in the second scenario GDP will be taken as mediator.

Equation according to first scenario:

$$ED_i = \gamma_1 + \gamma_2 GDPPCGg_i + \gamma_3 IQ_i + \gamma_4 TOT_i + \gamma_5 GDI_i + \gamma_6 FD_i + \gamma_7 IDS_i + \gamma_8 INF_i$$
$$+ \epsilon_1 \text{------------ (3.15)}$$

Equation according to second scenario:

$$GDPPCGg_i = \eta_1 + \eta_2 ED_i + \eta_3 IQ_i + \eta_4 GDI_i + \eta_5 INF_i + \eta_6 TO_i + \eta_7 FDI_i + \eta_8 HCI_i + \epsilon_2 \text{--}$$
$$\text{--- (3.16)}$$

In the above structural model ED and GDPPCG are endogenous observed variables while IQ is latent variable as explained above. In equation (3.15) TOT (terms of trade), GDI (gross domestic investment), FD (fiscal deficit), IDS (interest on debt servicing) and INF (inflation) are controlled variables. In equation (3.16) GDI (gross domestic investment), INF (inflation), TO (trade openness), FDI (foreign direct investment), and HCI (human capital index) are controlled variables.

3.5.3 Mediation Test

To check the significance of mediation effect, Sobal test is used which is based on the work of Michael E. Sobel. It is basically a specialized t-test incorporating a reduction in the effects of independent variables, after the insertion of a mediator in the model. In the current study economic growth and external debt is used as a mediator and the casual relationship among these variables will be checked in the presence of institutional quality.

$$Z = \frac{(\hat{\gamma}_{11} * \hat{\beta}_{21})}{\sqrt{\hat{\gamma}_{11}^2 \, \delta_{\beta_{21}}^2 + \hat{\beta}_{21}^2 \, \delta_{\gamma_{11}}^2}}$$

3.6   Data, Description and Measurement

Cross sectional data is taken from World Development Indicators (WDI), World Governance Indicators (WGI) for single time period 2017 for 70 countries. Countries are divided according to their per capita GDP in two groups, which are 19 lower income and 51 middle income countries. We have taken data of all middle income and lower income countries but due to unavailability of data our sample size reduced to 70 countries. Most of such studies has been done for lower income countries such as Latin American and African countries. This study took sample of two income groups' countries in order to investigate the role of institutional quality between debt-growth nexus in different income countries.

3.7   Variable Descriptions

External Debt (ED): As in the present study the important dependent variable is external debt. Total external debt is the sum of public, publicly guaranteed, and private

nonguaranteed long-term debt, use of IMF credit, and short-term debt. Data will be taken as percentage to GDP. Ali and Mustafa (2012), and Malik et al. (2010)

GDP Per Capita Growth (GDPPCG): The second important and focus variable is economic growth which is captured through GDP per capita growth. It is taken as Annual percentage growth rate of GDP at market prices based on constant local currency. Waheed (2017) and Korkmaz (2015)

Institutional Quality (IQ): The third important variable of the study is institutional quality. In the present study it is considered as exogenous variable. Kaufmann *et al.* (2010) gives a proper defined for governance as "The traditions and institutions by which the authority in a country is exercised". The six worldwide indicators of governance are developed which value ranged between -2.5 to +2.5, the high value here indicates good institutions quality or good governance and vice versa. Tarek and Ahmed (2017) simply classify the this definition in three parts, (a) the way through which the government is elected, examined and changed, (b) the role of government in making and implementation of sound policies and (c) the respect of citizens and the state for the institutions that govern economic and social interaction among them. Each part explains the institutional quality through measuring two features of governance that collectively giving six dimensions:

- The **Voice and Accountability (VAA)** captures the involvement of citizens of a country in selecting government, along with their freedom of association, freedom of expression and a free media.

- The **Political Stability and Absence of Violence/Terrorism (PSAV)** is capturing the possibility that the government will be overthrown or destabilized by politically motivated violence, unconstitutional or and terrorism.

- The **Government Effectiveness (GEFF)** captures the extant of the quality of the civil service, the quality of public services, and its independence from political pressures, the quality of policy formulation and implementation, and the trustworthiness of the government's pledge to such policies.

- The **Regulatory Quality (RQ)** captures insights of the capabilities of the government in making and implementations of comprehensive policies-and regulations that allows and encourage private sector growth.

- The **Rule of Law (RL)** captures the views of the extent to which authorities have awareness in and abide by the instructions of the society, and in specific the contract implementation, the police, the courts and property rights as well as the likelihood of crime and violence.

- The **Control of Corruption (CCOR)** is taking insights of the degree to which public power is implemented for private gain, including both minor and impressive forms of corruption, as well as capture of the state by elites and private interests.

The description of the control variables are given in appendix Table no. 1.

3.8 Descriptive Statistics

In the below tables descriptive statistics for lower income and middle income countries is given. In lower income countries the average ED is 37.24 and average GDPPCG is 2.719. For the middle income countries the average ED is 58.603 and average GDPPG is 2.719.

Table 3.1: Descriptive Statistics for Lower Income Countries

Variable Name	Mean	Std. Dev.	Min	Max
ED	37.245	16.572	14.511	83.955
GDPPCG	2.719	2.727	0.139	10.26862
IDS	.436	.335	.016	1.454
INF	7.562	9.707	.982	41.5
FD	.792	4.040	6.704	10.083
TOT	58.256	22.292	21.211	98.605
GDI	29.025	14.105	9.702	73.777
TO	17.199	15.650	3.070	64.202
FDI	4.0123	3.872	.789	18.339
HCI	.389	.045	.316	.49
CCOR	-.670	.469	1.418	.633
GEFF	-.908	.520	2.056	.261

PSAV	-.755	.660	2.302	.045
VAA	-.480	.538	1.443	.378
RL	-.730	.449	1.689	.129
RQ	-.744	.433	1.563	.1463

Table 3.2: Descriptive Statistics for Middle Income Countries

Variable Name	Mean	Std. Dev.	Min	Max
ED	58.604	53.662	1.385	264.296
GDPPCG	2.985	1.775	.166	7.619
IDS	1.694	2.032	.021	12.022
INF	4.924	6.136	.417	32.352
FD	2.090	3.414	5.021	10.429
TOT	83.862	21.420	46.090	130.818
GDI	26.190	8.943	11.698	51.259
TO	24.373	19.466	4.524	105.199
FDI	3.756	3.393	1.417	12.499
HCI	.500	.174	.1	.755

CCOR	-.390	.571	1.545	1.568
GEFF	-.175	.452	1.415	.810
PSAV	-.307	.769	2.399	1.128
VAA	-.285	.768	1.826	1.111
RL	-.343	.491	1.208	.680
RQ	-.195	.517	1.560386	1.053121

CHAPTER 4

RESULTS AND DISCUSSION

4.1   Introduction

This chapter will incorporate and analyze all the results. Data was taken for lower income and middle income countries for the time period 2017. The estimation is done through AMOS using structural equation modelling (SEM). Simple estimation is done and then mediation test is applied to check the significance of mediation.

4.2   Mathematical Model

The mathematical model is consist of two parts, the first part is the Measurement Model and the second part is the Structural model. Both models are estimated and the results are discussed in this chapter.

4.3   Measurement Model

In our analysis the institutional quality (IQ) is a latent variable, it means it is not directly observed but it can be capture through some indicators. World Bank has calculated data for different indicators of IQ in World Governance Indicators (WGI). Institutional quality is reflected in six indicators like control of corruption, government effectiveness, political stability and accountability, voice and accountability, rule of law and regulatory quality.

Table 4.1: Estimation of Latent Variable IQ

			Unstandardized Estimate	Standardized Estimates	S.E	P-Value
CCOR	<---	IQ	1.000	.884		
GEFF	<---	IQ	1.106	.902	.198	0.01
PSAV	<---	IQ	.730	.462	.361	.043
VAA	<---	IQ	1.027	.677	.188	0.01
RL	<---	IQ	1.007	.936	.165	0.01
RQ	<---	IQ	.966	.930	.161	0.01

The results of the structural model shows that one standardize unit increase in IQ leads to 0.884 unit increase in control of corruption (CCOR). Similarly one standardize unit increase in IQ brings 0.902 units changes in government effectiveness (GEFF). The value of political stability and absence of violence (PSAV) shows that one standardize unit increase in IQ leads to 0.462 units changes in PSAV. Similarly the value of voice and accountability (VAA) shows that one standardize unit increase in IQ leads to 0.677 units change in VAA. In the same way, one standardize unit increase in IQ brings 0.936 and 0.930 units changes in rule of law (RL) and regulatory quality (RQ).

4.4 Structural Model

The structural model is estimated for two income groups, lower income and middle income countries. The estimation is done taking two scenarios which are; to check the impact of Institutional quality on economic growth through mediating external debt

and impact of institutional quality on external debt through mediating economic growth. First we will discuss both these cases for less developed economies and then for developing economies.

4.4.1 ED as Mediating Variable for Lower income

The estimations are done to check the impact of institutional quality on economic growth directly and through mediating external debt. Following are the obtained results:

Table 4.2: ED as Mediating Variable

			Unstandardized Estimate	Standardized Estimates	S.E	P-Value
ED	<---	IDS	38.722	.715	6.949	0.01
ED	<---	INF	-.450	-.240	.240	.061
ED	<---	IQ	-10.988	-.252	5.868	.061
ED	<---	FD	-1.271	-.275	.593	.032
ED	<---	TOT	.034	.039	.111	.759
ED	<---	GDI	-.147	-.114	.166	.375
GDPPCG	<---	TO	-.128	-.436	.032	0.01
GDPPCG	<---	FDI	.545	.520	.114	0.01
GDPPCG	<---	ED	-.118	-.539	.026	0.01
GDPPCG	<---	IQ	-.471	-.049	1.105	.670
GDPPCG	<---	HCI	24.595	.258	10.381	.018
GDPPCG	<---	INF	-.091	-.223	.046	.048
GDPPCG	<---	GDI	.136	.721	.020	0.01

In the first stage of estimation a path analysis is done to observe the significance of independent variables over dependent variables. The focused variables were taken along with some control variables. Table 4.2 shows that the independent variable IQ is the significant predictor of ED but the insignificant predictors of GDPPC. But the first condition for the analysis of mediation says that there must be significant relationship between independent variable (IQ) and predictor (ED), and also significant relationship between predictor (ED) and dependent variable (GDPPCG), there for this condition satisfies here.

The above table 4.2, also take the effects of other variables on the ED and GDPPCG. For the ED the determinants IDS, INF, FD, TOT and GDI along with IQ were taken on the basis of previous studies. The analysis shows that IDS has significant and positive relationship with ED, one standardized unit increase in interest on debt servicing (IDS) leads to increase in ED by 71.5 standardized units. Interest on Debt servicing can lead to further accumulation of debt, and this problem is faced by many countries. Most of the oil importing countries face the same situation and they borrow more in order to repay their current debt (Waheed, 2017). On the contrary, there is negative but significant relationship between INF and ED, one standardized unit increase in inflation rate leads to reduce in ED by 0.24 standardized units. The relationship between IQ and ED turns out negative, it says that one standardize increase in IQ leads to decrease in ED by 0.252 standardized units and it is significant at 10% confidence interval. But here it's a good indication that if IQ is better than it leads to the reduction of ED and for a lower income country it is important to emphasis on the improvement of its IQ. Similarly there is a negative and significant relationship between FD and ED, the

results shows that one standardize unit increase in FD leads to decrease in ED by 0.275. In our analysis TOT and GDI turns out to be insignificant factors to ED.

In our analysis to check the impact of ED and IQ on GDPPCG, we also took some of its other determinants as suggested by theory and other studies like TO, FDI, HCI, INF and GDI. Results in table 4.2 shows that TO has negative significant effect on GDPPCG, which says that in lower income countries one standardized unit increase in TO leads to -0.436 standardized units decrease in GDPPCG. The FDI has positive significant relationship with GDPPCG, according to our results one standardized unit increase in FDI leads to 0.52 standardized units increase in GDPPCG. The results of the present study are in accordance with the results of Ali (2013), indicates that resources gap of the lower income countries can be filled by FDI. The relationship between ED and GDPPCG comes to be significant but negative as suggested by many studies. Our results shows that one standardized unit increase in ED leads to a decrease in GDPPCG by 0.539 standardized units. The results of our study are in-lined with Junaid, (2017), indicates that ED has negative effects on GDPPCG. The relation between IQ and GDPPCG turns out to be insignificant indicates that there is no role of IQ in the growth of lower income countries (Junaid, 2017). Most of the lower income African countries were in war since 1970 and these countries are facing severe economic crisis and famines etc. due to these reasons there institutions are poor and unable to build up their economies (Copson, 2016). Nawaz et al. (2014), also find out the results that in lower income countries the contribution of institutions is relatively low towards economic growth. According to our analysis HCI and GDI both are positive and significant towards GDPPCG and shows that one standardized unit

increase in HCI and GDI leads to increase in GDPPCG by 0.258 and 0.721 standardized units respectively. The results are consistent with Ali and Mustafa (2012), which shows that human capital and investment both have positive influence on economic growth. According to our results INF is significant and negatively related to GDPPCG, results shows that one standardize unit increase in INF leads to 0.223 standardized units decrease in GDPPCG. The results of our study are consistent with the results of kasidi and Mwakanemela (2013), suggest that raising inflation negatively affect economic growth.

Sobal`s test Results

H0: The mediator (External debt) does not significantly mediate the relationship between the Predictor (Institutional Quality) and outcome Economic Growth.

H1: The mediator (External debt) significantly mediate the relationship between the Predictor (Institutional Quality) and outcome Economic Growth.

Table 4.3: Sobal`s Test Results

	Sobel`s Test	**P-Value**	**Remarks**
IQ → **ED** → **GDPPC**	1.73	0.083	Reject H0

The above table explains that the mediator (external debt) significantly mediate the relationship between institutional quality and economic growth. Mediation is said to be complete if there is only indirect significant relationship between the predictor and the outcome. If there is any direct effect between the predictor and outcome then the

mediation is said to be partial. In the above case there is full mediation as shows only direct significant relationship between independent and dependent variable.

In the above table the Sobel test value is 1.73 and it is significant, here partial mediation exists as there is no direct relation of IQ and GDPPCG. Hence the predictor (IQ) has only indirect effect on outcome (GDPPCG) through mediator (ED), and no direct impact of predictor (IQ) on outcome (GDPPCG).

4.4.2 GDPPCG as Mediating Variable for Lower income Countries

The estimations are done to check the impact of institutional quality on external debt directly and through mediating economic growth. Following are the obtained results:

Table 4.4: GDPPCG as Mediating Variable

			Unstandardized Estimate	Standardized Estimates	S.E	P-Value
GDPPCG	<---	IQ	-.841	-.116	1.338	.529
GDPPCG	<---	TO	-.121	-.554	.039	.002
GDPPCG	<---	FDI	.156	.199	.141	.269
GDPPCG	<---	HCI	14.708	.227	6.867	.032
GDPPCG	<---	INF	-.020	-.065	.055	.718
GDPPCG	<---	GDI	.143	.742	.020	0.01
ED	<---	IQ	-8.682	-.183	5.203	.095
ED	<---	INF	-.559	-.280	.209	.008
ED	<---	GDPPCG	-2.983	-.458	.688	0.01
ED	<---	IDS	39.274	.679	6.050	0.01
ED	<---	GDI	.289	.209	.144	.045
ED	<---	FD	-.763	-.155	.516	.139
ED	<---	TOT	.027	.029	.097	.783

This section discuss the results of path analysis by taking economic growth as mediation variable for lower income countries. Table 4.4 shows that the independent variable IQ is the insignificant predictor of GDPPCG but the significant predictors of

ED. But the first condition for the analysis of mediation says that there must be significant relationship between independent variable (IQ) and predictor (GDPPCG), and also significant relationship between predictor (GDPPCG) and dependent variable (ED), but here this condition does not satisfies. So in this case the condition for mediation does not satisfied.

In our analysis to check the impact of GDPPCG and IQ on ED, we also took some of its other determinants as suggested by theory and other studies like TO, FDI, HCI, INF and GDI. The Table 4.3 shows the results for impact of IQ on ED through mediating effects of GDPPCG for lower income countries. The first value shows that IQ has no proper role in the economic growth of lower income countries, as its relationship comes insignificant. The studies like Junaid (2017) also shows the same results, and Nawaz et al. (2014) also suggests low relevance of IQ towards economic growth in underdeveloped economies. The value of TO comes significant but negatively related to economic growth, shows that one standardize unit increase in TO leads to 0.554 standardize units decrease in GDPPCG. Grossman and Helpman (1990), explains the phenomenon that less developed countries gain less from removing trade barriers because of the slow transfer of technology from the developed economies. Both FDI and INF comes insignificant towards GDPPCG. The values of HCI and GDI shows positive significant relationship with GDPPCG, it shows that one standardize unit increase in HCI and GDI leads to 0.227 and 0.742 standardized units increase in GDPPCG respectively. Benhabib and Spiegel (1994), also concluded that both human and physical capital are important factors for economic growth.

The Table 4.4, we also take the effects of other variables on the ED and GDPPCG. For the ED the determinants IDS, INF, FD, TOT and GDI along with IQ were taken on the basis of previous studies. The above results shows that IQ is significant but negatively related to ED, the value of IQ shows that one standardized unit increase in IQ leads to 0.116 standardized units decreased in ED. The results indicates that good institutions can make better policies and effectively use foreign resources and resultantly they can reduce the accumulation of more external debt. A study by Tarek and Ahmed (2017), also shows that poor governance can results in high debt accumulation. Inflation is significant and negatively related to ED, results shows that one standardized unit increase in INF makes 0.280 standardized units decrease in ED. In an economy with a consistent increase in inflation, the debt to GDP increased forces the agents to borrow less (Assibey Yeboah et al. 2016). The value of GDPPCG shows that it is negative but significantly related to ED, one standardize unit increase in GDPPCG leads to 0.458 standardized units decrease in ED. Again it's a good indication, that if economy grows the need for more accumulation of debt will be reduced. It has been observed from the theories that if a country has high income and it may not require any external funding. The significance of GDPPCG coefficient shows the effectiveness of economic growth in the reduction of external debt Waheed (2017), (Imimole et al. 2014). Interest on debt servicing (IDS) and gross domestic investment (GDI), both are positive and significantly related to ED. Their values shows that one standardize unit increase in IDS and GDI can increase ED by 0.679 and 0.209 standardized units respectively. The results are in accordance with the study of (Imimole et al. 2014) and Waheed (2017). The values of fiscal deficit (FD) and terms of trade (TOT) comes out to be insignificant.

We also check the impact of GDPPCG on IQ but the results shows no relationship among these two variables.[1]

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[1] Table no. 2 in appendix showing results of lower income countries taking IQ as mediating variable between GDPPCG and ED.

4.4.3 ED as Mediating Variable in Middle Income Countries

The estimations are done to check the impact of institutional quality on economic growth directly and through mediating external debt. Following are the obtained results:

Table 4.5: ED as Mediating Variable

			Unstandardized Estimate	Standardized Estimates	S.E	P
ED	<---	IQ	-.684	-.005	8.316	.934
ED	<---	IDS	27.664	.886	1.722	.01
ED	<---	FD	.982	.045	1.212	.418
ED	<---	TOT	-.545	-.160	.187	.004
ED	<---	INF	-1.491	-.142	.579	.010
ED	<---	GDI	.928	.110	.464	.046
GDPPCG	<---	ED	.006	.224	.003	.088
GDPPCG	<---	IQ	.874	.230	.513	.088
GDPPCG	<---	TO	.001	-.044	.004	.738
GDPPCG	<---	FDI	.026	.050	.069	.702
GDPPCG	<---	INF	-.038	-.138	.036	.293
GDPPCG	<---	HCI	4.121	.339	1.610	.010
GDPPCG	<---	GDI	.013	.059	.029	.656

Estimations are done using a path analysis to check the significance of independent variable over dependent variables for developing economies. Table 4.5 shows that the independent variable IQ is insignificant towards ED but it is significant predictors of GDPPC. But the first condition for the analysis of mediation says that there must be significant relationship between independent variable (IQ) and predictor (ED), and also significant relationship between predictor (ED) and dependent variable (GDPPCG), so this condition does not satisfies hare indicates that there is no possibility of GDPPCG being effected by ED through mediation.

On the basis of previous studies we also take other determinants of ED along with IQ. The results shows that IQ is insignificant towards ED in developing countries. Interest on debt servicing (IDS) is highly significant and positively related to ED, its value shows that one standardize increase in IDS leads to 0.886 standardized units increase in ED. this result implies that debt accumulation of a country will be high if the country ability to service debt is high (Naeem et al. (2016). The value of fiscal deficit (FD) comes insignificant, showing no role of FD towards ED in developing countries. TOT and INF are significant and negatively related to ED, their values shows that one standardize unit increase in TOT and INF leads to 0.160 and 0.142 standardized units decrease in ED (Chiminya and Nicolaidou, 2015). Gross domestic investment-is significant and positively related to ED, the value of GDI shows that one standardize unit increase in GDI makes 0.11 standardized units increase in ED. the results are consistent with the results of Akpan (2009).

In our analysis to check the impact of ED and IQ on GDPPCG, we also took some of its other determinants as suggested by theory and other studies. In developing countries

ED turns out to be significant and positively related to GDPPCG, its value shows that one standardized unit increase in ED brings 0.224 standardized units increase in GDPPCG. The results of the present study are consistent with the study of Sulaiman and Azeez (2012), indicating that debt is beneficial for economic growth when it is used productively. Institutional quality is significant and positively related to GDPPCG, the value of IQ shows that one standardized increase in IQ leads to 0.23 standardized units increase in GDPPCG. The results of the study are in accordance with the studies of Qayyum et-al. (2012) and Qayyum and Haider, (2012). TO, FDI, GDI and INF comes out insignificant in this case. Human capital index shows positive relationship with GDPPCG, its value shows that one standardized unit increase in HCI leads to 0.339 standardized units increase in GDPPCG in middle income countries. The results of the present study are consistent with the studies of Pelinescu (2015), and Park (2006).

4.4.4 GDPPCG as Mediating Variable in Middle Income Countries

The estimations are done to check the impact of institutional quality on external debt directly and through mediating economic growth. Following are the obtained results:

Table 4.6: GDPPCG as Mediating Variable

			Unstandardized Estimates	Standardized Estimates	S.E	P
GDPPCG	<---	IQ	.880	.234	.519	.090
GDPPCG	<---	FDI	.015	.028	.069	.835
GDPPCG	<---	TO	.006	.168	.005	.206
GDPPCG	<---	GDI	.019	.089	.029	.501
GDPPCG	<---	INF	-.027	-.101	.036	.446
GDPPCG	<---	HCI	4.121	.339	1.610	.01
ED	<---	GDPPCG	5.620	.144	2.120	.008
ED	<---	IQ	-6.979	-.048	8.161	.392
ED	<---	TOT	-.184	-.054	.177	.300
ED	<---	INF	-1.091	-.104	.551	.048
ED	<---	IDS	27.409	.880	1.630	.01
ED	<---	FD	.812	.037	1.147	.479
ED	<---	GDI	1.452	.173	.441	.01

This section discuss the results of the path analysis by taking economic growth as mediator variable for middle income countries. Table 4.6 indicates that the independent variable IQ is the significant predictor of GDPPCG but the insignificant predictors of

ED. The first condition for the analysis of mediation says that there must be significant relationship between independent variable (IQ) and predictor (GDPPCG), and also significant relationship between predictor (GDPPCG) and dependent variable (ED), this condition fulfilled here. So in this case the condition for complete mediation satisfied hare.

In our analysis to check the impact of IQ on GDPPCG, we also took some of its other determinants as suggested by theory and other studies The above results shows that IQ is positively related to GDPPCG, the value shows that one standardized increase in IQ brings 0.234 standardized units increase in GDPPCG. The study done by Qayyum et al. (2012), shows that good institutions encourage economic growth. Better institutions or governance stimulate economic activity while poor institutions makes hurdles in the path of economic growth (Qayyum and Haider, 2012). Except HCI the other four determinants of GDPPCG comes insignificant. INF is insignificant but negatively related to GDPPCG. The value of HCI shows that one standardized unit rise in HCI leads to 0.339 standardized units rise in GDPPCG. The results of the present study are in accordance with the studies of Pelinescu (2015), and Park (2006).

In the light of previous literature we check the impact of other factors such as IDS, INF, FD, TOT and GDI on ED along with IQ. The results in table 4.4 shows that GDPPCG is highly significant towards ED, its value shows that one standardized unit increase in GDPPCG brings 0.144 standardized units increase in ED. These results are quite interesting as the perception says that high economic growth can make reduction in accumulation of more debt (Sulaiman and Azeez, 2012). The institutional quality is insignificant but negatively related to external debt, shows no role of IQ towards ED.

ref. The value of TOT is negative but insignificant, but this can give us indication that improving TOT can reduce ED (Imimole et al. 2014). The value of FD comes out to be positive but insignificant towards ED. The value of INF shows that it is negatively related to ED, one standardized increase in INF brings 0.104 standardized units decrease in ED. The results are consistent with Chiminya and Nicolaidou (2015). The values of IDS and GDI both are highly significant and has positive relationship with ED, the results shows that one standardize unit increase in IDS and GDI leads to 0.88 and 0.173 standardized units increase in ED respectively. The results of the current study are in line with the results of Naeem et al. (2016) and Akpan (2009).

Sobal`s test Results

H0: The mediator (Economic Growth) does not significantly mediate the association between the Predictor (Institutional Quality) and Outcome (External debt).

H1: The mediator (Economic Growth) significantly mediate the relationship between the Predictor (Institutional Quality) and Outcome (External debt).

Table 4.7: Sobal`s Test Results

	Sobel`s-Test	P-Value	Remarks
IQ → GDPPCG → ED	1.42	0.09	Reject H0

The above table describes that the mediator (external debt) significantly mediate the relationship between institutional quality and economic growth. Mediation is said to be complete if there is only indirect significant relationship between the predictor and the outcome. If there is any direct effect among the predictor and outcome then the

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mediation is said to be partial. In the above case there is full mediation as shows only direct significant relationship between independent and dependent variable.

In the above table the Sobel test value is 1.42 and it is significant, here partial mediation exists as there is no direct relation of IQ and ED. Hence the predictor (IQ) has only indirect effect on outcome (ED) through mediator (GDPPCG), and no direct impact of predictor (IQ) on outcome (ED).

4.4.5 IQ as Mediating variable in Middle income countries

Initially we have taken IQ as exogenous variable but later on we also took IQ as endogenous variable affected by economic growth (GDPPCG). In the case of middle income countries it comes significant.

Table 4.8: IQ as mediating variable

			Unstandardized Estimate	Standardized Estimates	S.E	P
GDPPCG	<---	FDI	.061	.115	.067	.361
GDPPCG	<---	TO	.005	.139	.004	.268
GDPPCG	<---	GDI	.038	.172	.027	.170
GDPPCG	<---	INF	-.023	-.085	.034	.501
GDPPCG	<---	HCI	4.560	.369	1.613	.005
IQ	<---	GDPPCG	.087	.331	.036	.017
ED	<---	GDPPCG	4.972	.131	2.185	.023
ED	<---	IQ	-6.346	-.044	8.497	.455
ED	<---	TOT	-.512	-.153	.178	.004
ED	<---	INF	-1.234	-.119	.554	.026
ED	<---	IDS	27.308	.885	1.640	.01
ED	<---	FD	.621	.029	1.154	.591
ED	<---	GDI	.889	.107	.449	.047

Table no. 4.8 shows the results of estimations in which IQ was taken as mediating variable among GDPPCG and ED along with other control variables on the basis of

theory. The results indicates that the independent variable GDPPCG is the insignificant predictor of ED but it is significant predictors of IQ. But the first condition for the analysis of mediation says that there must be significant relationship between independent variable (GDPPCG) and predictor (IQ), and also significant relationship between predictor (IQ) and dependent variable (ED), so this condition does not satisfies hare indicates that there is no possibility of ED being effected by GDPPCG through mediation IQ.

Previously our analysis considered IQ as completely exogenous but now these results shows that there is reverse causation among GDPPCG and IQ. The results indicates that one standardized unit increase in GDPPCG leads to increase IQ by 0.331 standardized units. The results are in lined with Fabro and Aixalá (2009), their results shows that developed and developing countries have better institutions while the less developed countries have poorer institutions. The reason behind such condition is their low investment on physical capital, income inequality, poor policies and religious extremism. The developing countries have better institutions because of low religious extremism and better implementations of policies.

For the GDPPCG only HCI comes significant and shows positive relationship towards economic growth, rest of the variables comes insignificant. For the external debt, all the variables comes significant except institutional quality and fiscal deficit.

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

5.1   Introduction

In the present study this chapter will give an overview of the whole study. This chapter consist on two sections. The first section will explain the main findings of the study while the second section give some policy recommendations in accordance to the present study.

5.2   Conclusion

The principal objective of the study was to analyze; the direct and indirect effect of institutional quality on economic growth by mediating external debt, and the direct and indirect effect of institutional quality on external debt by mediating economic growth. The study has used the Structural equations or Path analysis introduced by Wright (1921). This method is used to investigate quantitative cause, its direction and effect by combining theoretical assumption of cause and effect with statistical data. The present study took two income groups i.e. less developed and developing countries for time period 2017. The estimation was based upon two steps, the first step was to estimate a simple path analysis and the second step was to test the mediation.

The results of our study comes quite interesting and but the mediation analysis comes different for both income groups countries. The analysis on lower income countries when we take external debt as mediating variable, it gives the results that institutional quality has negative effects on external debt but it is has no impact on economic growth. Alongside external debt is also negatively affecting economic growth. In this case we go for mediation test as the conditions were satisfied and the results of the mediation

test comes significant, shows that institutional quality is affecting economic growth through the channel of external debt. When we reverse the exercise by taking economic growth as mediating factor between institutional quality and external debt, the other results were same but this time the economic growth has also negatively effect on external debt. In this case we did not go for mediation analysis as its conditions were not satisfied.

The same analysis is done for developing countries when took external debt as mediating variable, the results shows that institutional quality has no effect on external debt but it has positive effects on economic growth. Alongside external debt has positive effects on economic growth. Here we do not found any mediation between institutional quality and economic growth but only a direct effect. The same analysis is done by taking economic growth as mediating factor between institutional quality and external debt. The results shows-that institutional quality is affecting external debt through the channel of economic growth. Here the mediation analysis comes significant.

The primary findings of the present study is for the lower income countries, there is a causation among economic growth and external debt, both are causing each other and no particular role of institutional quality. The middle income countries have also the same causation between external debt and economic growth but with the influence of institutional quality. In middle income countries the institutions are better and helps in smooth economic growth. Our results also shows that there is bidirectional relationship between economic growth and institutional quality.

5.3   Policy Recommendations

On the basis of the findings from the present study the following policy suggestions are given;

The root cause of the problems faced by less developed countries are due to inefficient use of their foreign financial resources and no importance towards betterment of institutions. This problem can be tackled if these countries gives attention towards the betterment of institutions.

Institutions are the backbone of every country and they are need to be free of every wrong practice. There is need to make policies that can make improvement in institutions and resultantly it will bring improvement in the other sectors of economy.

5.4   Limitations of the Study

Due to the purpose of simplicity this study take the cross sectional data on time period 2017. However, this analysis can also be extended on panel data, which require the estimation of SEM via latent growth modelling. For future studies the direct and indirect effect of external debt on economic growth can be measured by mediating/ moderating institutional quality. We also plan to do this analysis separately on different regions.

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Gas Exporting and Importing Countries. *International Journal of Economics and
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Appendix

Table. No. 1

	Variable	Definition	Data source
1	External Debt (ED)	Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Data will be taken as percentage to GDP. Ali and Mustafa (2012), and Malik et al. (2010)	World Development Indicators (WDI)
2	GDP Per Capita Growth (GDPPCG)	Annual percentage growth rate of GDP per capita based on constant local currency. Waheed (2017) and Korkmaz (2015).	WDI
3	Terms of Trade (TOT)	TOT is calculated by dividing the price of the export by the price of imports and multiplying the result by hundred. Data will be taken percentage to GDP. Al-Fawwaz (2016)	WDI
4	Investment (GDI)	Investment is captured by Gross capital formation. Waheed (2017)	WDI
5	Fiscal Deficit (FD)	It is calculated by subtracting government expenditure minus government ravenue. Naeem et al. (2016)	WDI
6	Interest on Debt	Interest payments are actual amounts of interest paid by the borrower in currency, goods, or services in the year specified. Data are in local currency percentage to GDP. Waheed (2017)	WDI

	Servicing (IDS)		
7	Inflation (INF)	Inflation is measured by the annual percentage change in consumer price. Shabaz et al. (2008)	WDI
8	Trade Openness (TO)	The Openness is calculated through the sum of exports plus imports, to the country's gross domestic product. Akram (2011) and Shkolnyk and Koilo (2018)	WDI
9	Foreign Direct Investment (FDI)	Foreign direct investment refers to direct investment equity flows in the reporting economy. It is the sum of equity capital, reinvestment of earnings, and other capital. Data will be taken as percentage to GDP. Waheed (2017)	WDI
10	Population Growth (Popg)	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Data will be taken in annual percentage. Shkolnyk and Koilo (2018)	WDI
11	Human Capital (HCI)	Human Capital is calculated by Human Capital Index. The HCI calculates the contributions of health and education to worker productivity. The final index score ranges from zero to one and measures the productivity as a future worker of child born today relative to the benchmark of full health and complete education. Ali and Mustafa (2012)	WDI

Lower Income countries taken IQ as mediating variable between GDPPCG and ED

Table no. 2 IQ as mediating variable between GDPPCG and ED

			Unstandardized Estimate	Standardized Estimates.	S.E	P
GDPPCG	<---	@TO	-.062	-.370	.019	.001
GDPPCG	<---	FDI	-.092	-.136	.077	.235
GDPPCG	<---	HCI	9.347	.160	6.680	.162
GDPPCG	<---	INF	-.011	-.040	.031	.728
GDPPCG	<---	GDI	.142	.763	.021	***
IQ	<---	GDPPCG	.026	.170	.037	.476
CCOR	<---	IQ	1.000	.871		
GEFF	<---	IQ	1.143	.897	.209	***
PSAV	<---	IQ	.723	.447	.363	.046
RQ	<---	IQ	.995	.938	.165	***
RL	<---	IQ	1.029	.935	.172	***
ED	<---	IQ	-5.599	-.128	5.443	.304
ED	<---	INF	-.446	-.242	.219	.042
ED	<---	GDPPCG	-3.492	-.512	1.261	.006
ED	<---	IDS	38.236	.718	6.317	***
ED	<---	FD	-.341	-.077	.524	.516
ED	<---	TOT	-.075	-.093	.095	.432

			Unstandardized Estimate	Standardized Estimates.	S.E	P
ED	<---	GDI	.278	.220	.232	.231
VAA	<---	IQ	.506	.383	.302	.094