Socio-economic and Political Determinants of Public Spending Allocations and its Consequences: An Empirical Analysis

By

Baber Amin

120-SE/PhD/F13

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Declaration of Authorship

I, Baber Amin, pronounce that this write-up titled "**Socio-economic and Political Determinants of Public Spending Allocations and its Consequences: An Empirical Analysis**" is my undertaking. I have carried it individually with the supervision and guidance of my supervisor. I further declare that this work has not been submitted to any institution for the award of a certificate, diploma or degree. It is done in partial fulfillment for the Doctor of Philosophy in Economics of the International Islamic University Islamabad.

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APPROVAL SHEET

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Dedication

To

The most respected and honorable

Prophet Muhammad (Peace and blessing be upon him)

My Father, Muhammad Amin (Late)

My Mother, Sumraya Begum

Acknowledgment

I owe my profound thanks to Almighty ALLAH- The Merciful- who blessed me with determination, potential, and ability not only to complete this piece of research work but also blessed me in countless ways throughout my life by providing favorable circumstances in the form of beloved mentors, teachers, friends, and colleagues. My wholehearted thanks go to the greatest reformer and educationist of the world, "Prophet Muhammad (SAW)". May the peace and blessing be on Prophet Muhammad (SAW) and on his family and his companions.

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List of Abbreviations

CORR	Corruption
DA	Democratic Accountability
DEFEXP	Defense Spending
DPSA	Determinants of Public Spending Allocation
EC	External Conflict
EDUEXP	Education Spending
EG	Economic Growth
GS	Government Stability
HEAEXP	Health Spending
HIC	High Income Countries
IC	Internal Conflict
INF	Inflation
INFEXP	Infrastructure Spending
INQ	Inequality
LIC	Low Income Countries
MIC	Middle Income Countries
MP	Military in Politics
POV	Poverty
TPS	Total Public Spending
UNE	Unemployment Rate

Abstract

A well-established segment of economic literature argues for the efficient allocation of resources to overcome the problem of poor growth performance, poverty, and inequality that most of the world's countries are facing. However, the response of resource allocation towards the said economic issues varies from country to country due to their different economic, social, and political profiles. Based on their own socio-economic and political fabric, countries set priorities and therefore allocate the available resources towards different sectors. The sectoral allocation of the available resource pie has repercussions for growth, poverty, and income inequality. In this context, this study contributes to the existing literature on the subject in four ways.

First, this study aims to assess the factors that determine public spending across economies by focusing on socioeconomic, political, and institutional factors. Second, the study examines the role of different socioeconomic, political, and institutional factors determining health, education, infrastructure, and defense spending. Third, this study investigates socioeconomic consequences (poverty, inequality, and economic growth) of public spending allocation across countries. Fourth, the study determines the behavior of different socio-economic, political, and institutional factors across different income group countries. The empirical analysis is carried out for 104 developed and developing countries at an aggregate level as well as for low, middle- and high-income countries separately from 1990-2016 using Fixed Effect-IV and system GMM methods.

The results of the study indicate that bureaucratic quality, democratic accountability, internal conflict, external conflict, government stability, military in politics are the main political and institutional variables that determine public spending allocations at the aggregate and sectoral levels. It is found that the impact of political and institutional variables is stronger in low-income countries. The results also indicate that education, health, and infrastructure spending significantly affect poverty, inequality, and economic growth. The study may help policy makers for optimal resource allocation among different sectors by considering their impact on poverty, inequality, and per capita income growth.

Keywords: Public spending allocation, democratic accountability, military in politics, poverty, inequality, economic growth

Chapter 1

INTRODUCTION

1.1. Background of the Study

At large, economics is considered as the science of efficient utilization of scarce resources since the time of Robbins (1935), who has given one of the economics' renowned definitions. Furthermore, in the 19th century, most economists proposed the idea of limited government intervention in economic affairs and advocated for Laissez-Faire. The main reason behind this argument was unsuccessful outcomes in the 18th century due to heavy government intervention (Tanzi & Schuknecht, 2000). However, after WWI, once again, arguments regarding the functions of government were changed as per recommendations of Keynes (1936) at the time of the great depression. According to Keynes (1936), the governments have a very important role to play to regulate and improve the economic performance of a country.[1] Hence, Keynes suggested clear recommendations for government involvement in the economic affairs of a country.

With the advent of Keynes framework, public spending programs have got space in economic literature. In received literature, public spending programs explored several channels through which these affect the economic performance of a nation. However, the complexity of these effects is not easy

[1] As a result, during the period of Great Depression (1936), USA presented key public sector expenditure plans to overcome the consequences of great depression.

to trace and measure, but the composition and allocation of public spending have emerged as a gauge for development agencies to measure the speed of economic development.

Several researchers have carried out empirical and theoretical works to investigate the government spending and economic growth (EG hereafter) relationship in the long run (Aschauer, 1989; Barro, 1990; Tanzi & Zee, 1997). But the findings of these researchers have got different results regarding the impact of public expenditures on EG of the economies. Barro (1990), for instance, stood at the top who properly endogenized public spending in a EG framework. To explore the effect of government spending on EG through saving channels, Barro (1990) argues that the rise in resources reserved for non-productive activates is negatively related to the growth of per capita income.

Moreover, Tanzi and Zee (1997) comprehensively discussed the existing literature on the relationship between EG and different fiscal policy tools such as tax policy, public expenditure policy, and overall budgetary policy. They have done this analysis from the efficient allocation of resources point of view, macroeconomic stability, and distribution of income. They found that fiscal policy plays a pivotal part role in influencing the EG of countries through its multiple tools by creating macroeconomic stability and more efficient allocation of resources.

Another aspect of public spending, like the non-military public capital stock, is investigated by Aschauer (1989). The study's empirical results indicate that non-military public capital stock has an essential role in determining the

productivity of factor inputs. In addition, it is also observed that the basic stock of infrastructure of streets, highways, airports, mass transit, sewers, and water systems has significantly contributed to factors' productivity. Moreover, many studies (Elias, 1985; Fan et al., 2000; Fan et al., 2004; Walton & Lopez, 2005) explored the linkage of public spending, growth of agriculture, along with alleviation of poverty (*POV* hereafter). The conclusion one can draw from the above discussion is that empirical findings show that public spending immensely contributed to the growth of agriculture and in the alleviation of *POV* reduction.

The socioeconomic and political norms of developing countries are not similar to developed ones. Therefore, public spending trends and patterns currently prevailing in underdeveloped countries changed intensely over the period (Fan et al., 2008). Thus, it is very relevant and vital to monitor changes in the levels of public spending and its composition and to examine the reasons for this change over time. It is also worthwhile to investigate the comparative influence of various expenditure heads on the growth of output, reduction in inequality (*INQ* hereafter), and *POV* reduction. Such analysis will prove beneficial for policy makers to have more efficient targeting for allocation of these scarce financial resources of their countries.

Allocation of public spending among public sectors has shown different consequences to economic development, *POV*, and *INQ*. A number of studies argued that potential gains of government policies are firmly connected with efficient determination, allocation, and accumulation of public resources (Walle, 1998). Different studies put different conditions to

harvest the potential gains of resource allocation. Literature has identified different conditions required for efficient allocation of economic resources. These conditions include the existing institutional framework of the country and the profile of the government that a nation holds (Walle, 1998).

Based on the received literature regarding resource allocations, studies conclude that efficient allocation of national resources led to improvement in the living standard of the nation's residents along with the achievement of the objectives of public policy managers (Welham, 2013). This entails that both size of the government composition, and allocation of public expenditures among different heads indicate the government's priorities along with the importance of certain sectors in the economy. Hence, it is not only aggregate government spending, but due attention is also required to the structure and composition of public expenditures, which indicates government priorities.

Thus, investigation of the determinants of the structure and distribution of public spending is essential due to two reasons. Firstly, it indicates the direction of government priorities. Secondly, it specifies the sectors that are relatively more effective to achieve higher EG, reduction in POV and equal income distribution. Similarly, the analysis of the consequences of public spending is equally important as it reports the end results of all government decisions and priorities regarding public expenditures.

In this association, the following issues should be addressed. How are the available resources allocated among different sectors? What will be the determinants that explain allocation criteria? What will be the consequences

that residents of a country must face as a result of government decisions about public spending?

All economies of the globe, even developed ones, holds limited resources. Hence, the allocation of resources plays a vital role in the growth and development process of an economy. Among these, health spending (*HEAEXP* hereafter), education spending (*EDUEXP* hereafter), defense spending (*DEFEXP* hereafter), and infrastructure spending (*INFEXP* hereafter) are the key sectors that play an important role in determining the living standard of a nation. It is also to be noted that allocation of resources should be a zero-sum game that in the case of developing countries, governments decide the fate of one sector at the cost of another one due to the limited nature of available resources. There is a body of literature in this regard that seeks to connect government budget goals with development (Barro, 1990; Devarajan et al., 1996). Moreover, many studies try to analyze factors that determine the structure and compositions of public spending at the state-level and sub-national level (Mahdavi 2004; Takero, 1999; Bocherding & Deacon 1972; Mauro 1998). Most of the developing countries face financial constraints and cannot meet the spending requirements with endogenous resources. Hence, to meet spending requirements in these countries, look toward external resources, for example, external debt, foreign aid, and remittances. The provision of external resources, particularly debt and aid, is linked with the prevailing political conditions, law and order situations, and performance of institutions because the availability of some external resources is specific to democratic government, the quality of the

institutions in controlling $CORR$ and protection to newly invented products and processes.

Another factor that has a crucial role in spending allocation is government fiscal performance. The fiscal performance of the government is measured by the government's decision about budget allocation among various heads and its revenue collection. A budget surplus implies the availability of more funds for various heads of the economy that reflect the betterment of the government's decision power. Whereas, the adverse side of it is shown by a budget deficit that might put a constraint on government spending allocation for some sectors of the economy while it might not be true for others (Moschovis, 2010).

In case of a budget deficit, the governments may finance it by borrowing. So, borrowing can increase government spending for some sectors of the economy due to more availability of funds but not necessarily for all sectors. At the same time, the increasing level of debt might reduce government spending as well if the government must pay debt services and principal amounts for some sectors of the economy. Theoretically, it is believed that good fiscal performance might be associated with efficient government spending at the aggregate level, along with more allocation of funds for different sectors of the economy. In the existing empirical literature, a meager portion of the studies focused that empirically this relationship is true or not?

Existing empirical insights have captured the impact of fiscal performance on the government spending allocation for different sectors of the economy with

its full length. In this context, the following queries should be addressed. Are there any changes in the level of political and institutional variables like the quality of bureaucracy (BQ hereafter), military in politics (MP hereafter) democratic accountability (DA hereafter) that effects spending decision of the government at an aggregate level as well as at disaggregate level for various sectors of the economy?

In the received literature, some single institutional factor studies exist which predicts that the effect of one factor like tax revenue on government spending may be conditional on other factors. For example, Moschovis (2010), the proposition is, good fiscal performance improves health or $EDUEXP$. But it might become only true in the case of those economies having a good quality of institutions. This appeals to investigate the role of institutions. Therefore, possibilities might arise; countries with similar fiscal performance, tax revenue collection, and other economic performance indicators may experience different kinds of allocations due to differences in their institutional sector.

Another aspect of public spending allocation which needs thorough investigation is the relation of public spending allocation with POV, income INQ, and growth. Different studies identified different factors which have significant effects on POV and INQ directly and indirectly through the channel of government spending allocation. Existing literature also indicates that studies have focused on single sector spending on POV and INQ without considering the impacts of many sectors simultaneously because some of the

sectors have complementarity or substitutability, which must be addressed in analyzing their impact on POV and INQ.

How do these different kinds of factors affect the allocation of public spending in countries that have a different level of income, such as high-income countries (HIC hereafter), Middle-income countries (MIC hereafter), and lower-income countries (LIC hereafter)? Because spending decisions are mostly based on their outcome and consequences. Moreover, the income of the country is also very important. The structure and condition of LIC, MIC, and HIC are different from each other's, so results of sectoral spending also differ.

1.2. Significance of the Study

Economists of various thoughts have the consensus that it is not only the availability of resources but the allocation of the resources that should be addressed while shaping macroeconomic policies. In this context, this study is devoted to investigating the factors that shape the allocation of resources. As per reviewed literature, no such study has been carried out which compared the determinants of government spending allocation and their consequences. This study will prove beneficial from both the literature and policy viewpoint. The following reasons may justify why? Firstly, to address the matter with its length comparison of different determents (socioeconomic, political, and institutional) has been made. Secondly, the analysis has been carried out for three groups of countries (that is, high-, middle-, and lower-income countries). Thirdly, the consequences of public spending allocation have been analyzed, that how public spending allocation

affect poverty, income distribution, and economic growth. As far as policy inferences are concerned, the study would be fruitful to direct policy makers about the determinants and consequences of public spending allocations.

1.3. Problem Statement

At large, economics focuses on the allocation of scarce resources, which is one of the primary issues of economies. It is not only the availability of resources but the allocation of the resources which captures an important place in the existing economic literature. Most of the relevant literature considers that countries can achieve higher economic growth, reduce poverty, and improve income distribution through efficient allocation. So, the question of what determines the allocation of resources is very important. The majority of theoretical and empirical literature reported that economic factors play a key role in determining the public spending allocation and its composition. But in most countries, political and institutional factors play a vital role in resources allocation. Hence, it is very important to analyze the effect of these factors on public spending allocation at aggregate as well as at disaggregated levels. Therefore, the current study is an empirical attempt regarding the investigation of socioeconomic, political, and institutional determinants of public spending allocation and its consequences on POV, INQ, and per capita income.

1.4. Objectives of the Study

The study aims to achieve the following objectives:

1.4.1. Determinants of Public Spending Allocation

i. To investigate the determinants of public spending allocation across countries.

ii. To examine the effectiveness of non-conventional factors (political and institutional) in the determination of public spending allocations.

iii. To identify the determinants of public spending for different sectors.

iv. To compare the determinants of public spending allocation across different income groups of countries.

1.4.2. Consequences of Public Spending Allocation

v. To analyze the impact of sectoral spending allocation on income distribution (INQ) for the aggregate of countries and across different income groups of countries.

vi. To evaluate the impact of sectoral spending allocation on poverty (POV) for the aggregate of countries and across different income groups of countries.

vii. To analyze the impact of sectoral spending allocation on economic growth (EG) for the aggregate of countries and across different income groups of countries.

1.5. Research Questions

This study focuses on the following research questions to address the issue of the determinants of public spending allocation and their consequences.

1.5.1. Determinants of Public Spending Allocation

i. Do socioeconomic, institutional, and political factors affect the level of public spending allocation at the aggregate level?

ii. Do socioeconomic, institutional, and political elements affect aggregate public spending allocation across different income groups of countries?

iii. How do various factors (socioeconomic, political, and institutional) determine the level of public spending allocation level for health, education, infrastructure, and defense spending for the aggregate of countries and across different income groups of countries?

1.5.2. Consequences of Public Spending Allocation

iv. Does sectoral public spending allocation affect inequality?

v. Does sectoral public spending allocation affect poverty?

vi. Does sectoral public spending allocation affect per capita income growth?

viii. How do these allocations affect POV, INQ, and on EG across different income groups of countries?

1.6. Contribution of the Study

The existing literature on public spending allocation shows that most of the studies analyzed the determinants of public spending allocation using cross-sectional data sets by focusing on a single determinant only. Some of the studies have analyzed determinants of public spending allocation. However, they have only used few conventional determinants and missed many other

important determinants like institutional factors, political factors, etc. Moreover, very few studies addressed the issue of consequences of public spending allocation. Therefore, this study contributes to the existing literature in the following ways:

Firstly, it undertakes comprehensive analyses of the determinants of aggregate public spending allocation through socioeconomic, political, demographic, and institutional variables. Secondly, this study makes an important addition to the existing literature by considering the effects of determinants of public spending allocation for different sectors, namely, health, education, infrastructure, and defense spending.

Thirdly, the study examines the impact of various socioeconomic factors, political factors, and institutional factors on public spending allocations across different income groups of countries. Fourthly, the study investigates the impact of disaggregated sectoral public spending on POV, INQ, and economic growth. Finally, the study contributes to the existing literature by recommending ideal budget allocation proposals for policymaking and their expected impact on POV, INQ, and on EG. The study enables us to propose that spending allocations for which sectors of the economy are pro-poor and helpful in reducing POV, INQ, and EG.

1.7. Organization of the Study

This study is structured in six chapters. Chapter one presents an introduction that contains the background of the study, existing gaps in the literature, statement of the problem, and objectives of the study. Chapter two presents a

review of related studies on the subject. Chapter three presents descriptive statistics profile of the important variables, scatter plots, and correlation matrix. Whereas chapter four illustrates a methodology that comprises empirical model, data, definition, construction of variables, sample, and estimation methodology. Chapter five presents empirical estimation and its interpretation. The study concludes with chapter six that presents a summary of the key findings, some relevant policy implications, limitations, and future avenues for further research in the area of public spending allocations and their consequences which is extracted from the existing study.

Chapter 2

REVIEW OF LITERATURE

Public spending allocation at an aggregated level and disaggregated level has got importance in the modern economic era. Patterns and composition of government expenditures in the world have changed dramatically and significantly in recent decades. Therefore, it is very important to track the structure, composition, and trend of levels and combination of public spending allocation. Moreover, it is equally important to find the determinant factors for assessing the causes of change in public spending allocation over time at the aggregate level as well as in LIC, MIC, and high-income counties. Analyzing the relative role of different sectoral expenditures in economic development, reducing INQ and eradicating POV is also more important. This delivers a significant indication for more effective targeting and allocation of scarce and often deteriorating financial resources for all countries and especially for poor, low-income developing countries.

Several theoretical enlightenments have been provided in the received literature to highlight the increase in public spending over the years. Wagner (1883) was the first economist to link growth of the economy and population growth as the main drivers of growth in public spending using the practice of industrial welfare states. Wagner's law argues that a welfare state is derived from free-market capitalism because of an electoral system in which populations vote for rising free-market capitalism by increasing the level of public income across a wide range of economies to rising social services.

Wagner (1883) also suggested that the increase in government activities, which is places where public spending increases due to the law on the collective enlargement of public activity. He believed that there was an ongoing trend towards an intensive and costly increase in government functions and activities. New tasks are performed continuously, and old-scale tasks are done with more expansion. As a result, public spending continues to rise. Wagner also presented the view that maintaining internal security is an important determinant in increasing public spending allocations. Law enforcement and the objective to maintain peace and security have led to the increase of legal and administrative systems, including police forces, etc. These have implications that have led to increased public spending.

Based on Wagner's (1883) study, Peacock and Weissman (1961) also claimed that public spending increases when governments spend on a variety of services, such as health, education, infrastructure, defense, etc. In addition, during the wars, tax rates were increased by the governments to create more resources to respond to increased defense expenditures. This increase in revenue thus leads to increased public spending (Peacock & Wiseman, 1961). Moreover, increased public spending, on the other hand, can have serious economic problems that could change appropriations and compositions for public expenditure.

Keeping in view the objectives of the study, we approached the literature review in two different sections. The first section is about the socioeconomic, political, and institutional *DPSA*. Whereas the 2nd section of the literature review consists of consequences of public spending allocations.

2.1. Determinants of Public Spending:

The structure and composition of public funds have attracted a lot of attention among economists since Samuelson's major work in 1954. Recently, the recognition of the important role of the nature and structure of budgets in economic development, POV reduction, and INQ has contributed to this concern. For example, the model introduced by Devarajan et al. (1996) explores the relationship between government spending and growth, as well as conditions through which a modification in spending structure leads to increased growth rates in a sustainable economy. Barro (1990) also points out that combining public spending in the process of economic development is very important considering its composition based on performance, as spending in productive sectors tends to have a positive impact on growth and unproductive costs tend to increase social welfare.

Okafor and Eiya (2011) studied the factors of growth of public spending in Nigeria between 1999 and 2008. Their outcomes show that the rate of inflation has an adverse relationship with public spending, while population growth has an encouraging relationship with public spending. Similarly, the study of Tayeh and Mustafa (2011) also showed that population growth rates, unemployment, and inflation have a significant impact on public spending in Jordan. At the same time, the conclusions of Ofori-Abebrese (2012) showed that growth in trade, real GDP, and inflation will lead to a reduction in public spending as a percentage of GDP.

On the other hand, Obeng and Sakyi (2017) analyzed the Ghana's economy to determine whether public spending for the period 1980-2012 is increasing

and concludes that per capita income, tax share, minimum wage, population growth, foreign aid, public debt, and democracy are important factors in long-term growth in public spending. However, in the short run, in addition to the minimum wage, all these variables have also emerged as key factors of increasing public spending. Contrary to that, oil revenues, GDP, socioeconomic population, open trade openness, oil prices, taxes, and inflation are key variables to explain the determinants of the size of public spending, in a recent study conducted by Jibir and Aluthge (2019) in Nigeria. All the above-cited studies have shown that growth in population is the solid and important determinant of public spending allocation. However, these studies ignored many socioeconomic, political, and institutional variables, which also play an important role in determining public spending decisions in high, low, and MIC.

Sanz and Valazquez (2003) studied fiscal illusion, fiscal consolidation, and structure of public spending in 26 OECD countries from the period 1970 to 1997 by applying panel data methodology *GMM* and modified median voter theorem model. The study stated that income appeared to be the most important factor in increasing health, education, social security, and other types of spending. In addition, other factors such as institutional variables, population, population density, and structure of the age also have a significant impact on the structure and formulation of public expenditures for economies.

The evidence for the support of Wagner's Law has received substantial attention in the existing literature. Many empirical studies have provided

indications in favor of the support of the Wagner's Law by concluding that results differ due to different factors such as the nature of the country and the methodology used to investigate the relationship (Fölster & Henrekson, 2001; Lamartina & Zaghini, 2011; Chang, 2002; Chletsos & Kollias, 1997; Islam, 2001).

Many empirical studies concluded trade openness is an important variable that affects public spending (Rodrik, 1998; Kimakova, 2009; Turan & Karakas, 2016). The conclusions based on these studies indicate a positive relationship between trade openness and public spending. Samadi and Homaire (2013) also studied determinants of *HEAEXP* in the Economic Cooperation Organization (*ECO*) using panel data and concluded that there is a long-term relationship between per capita *HEAEXP* and *GDP* per capita, population ratios under 15 and over 65, number of doctors and urbanization structure. In addition, all variables had an important short-term association with health care expenditures other than the proportion of population above 65 years old. Similarly, a study done by Getzen (1992) in 20 *OECD* countries found that the proportion of the elderly population affects health care expenditures and is independent of government budget constraints while it is being affected by an increase in the growth rate of the countries.

Similarly, another study by Sanz and Velázquez (2001) in the *OECD* for the 1970-1998-time span explored the existence of convergence and its prospects. Their results indicated that most of the *OECD* countries are near to steady state. However, countries differ in the level of expenditures due to

different individual factors which restrict composition convergence to a single point.

Empirically, several country-specific studies by (Jibir & Aluthge, 2019; Tayeh & Mustafa, 2011; Okafor & Eiya, 2011; Obeng & Sakyi, 2017; Ofori-Abebrese, 2012) reviewed the public spending determinants using the growth rate of the overall population as the main variable. While some of the other panel studies (Samadi & Homaire, 2013; Getzen, 1992) investigated the effects of the old age population on *HEAEXP*. However, their focus was not on investigating the role of socioeconomic, political, and institutional factors on public expenditure and its composition.

Tanzi and Davoodi (1997) investigated the relationship of *CORR* and quality of public investments using panel data set for the period of 1980 to 1995 and proposed *CORR* reduces infrastructure quality, measured by the condition of roads and power outages. Some studies have found an inverse relation between *CORR* and government services such as public health care provision. Gupta, et al. (2002) has also confirmed that *CORR* has reduced the government spending on education. Moschovis, (2010) has investigated the impact of *CORR* on public spending for fifteen EU countries 1995 to 2006. The empirical results indicated that *CORR* positively influences public spending like defense, order and safety, economic affairs and culture on the one hand, while on the other hand, literature on this issue show a negative relationship between *CORR* and social expenditure like health and education (Villoria et al., 2013).

The current movement is observed in the literature, which links the combination of public expenditure to *EG* as well as examines the seemingly likely reasons for such separation of budget decision takers. Mauro (1998), for example, investigated the impact of *CORR* on the composition of government expenditures in several underdeveloped economies. He said *CORR* has an adverse, momentous, and stable relationship with spending. Moreover, it points out that dishonest governments find this easy to gather bribes by spending in a few areas as compared to others, and such changes, shift funds to areas where high reimbursements and more *CORR* can be done.

For example, it seems that corrupt governments are trying to encourage greater spending on defense equipment and state-of-the-art technology in which the likelihood of adverse political consequences is low so that the cost of health, education, and welfare subsidies are ignored because people can more easily recognize unfair practices and *CORR* in these areas. Similarly, a number of other studies have examined the role of civil liberties in the internal distribution of public funds, such as Nader (1994), which indicates that, among the combined categories of public expenditure, health allocation, and social security funding, stocks are positively associated with levels of political freedom. Although, they are negatively linked to defense budgetary spending.

Davoodi et al. (2001) acknowledged that it was due to significant developments at the global level, particularly at the culmination of the Cold War, which caused a noteworthy move of resource spending farther from

military spending to other parts of fruitful and social expenditure, which absolutely stir EG, reduces INQ, and raises people's living standards.

The relationship between the level of $CORR$ in the country and budget allocation choices was recognized by Tanzi and Davoodi (1997) in their empirical work and Johnson et al., (1999). They concluded that total public expenditures and, therefore, the total size of the budget increased the volume of "bribes" when decision-makers and managers were corrupt. Also, where it is $CORR$, the budget expenditure side not only involves efficient and potentially reactionary public spending but also diverts amounts from one use to another. Thus, $CORR$ decreases the segment of current and real public spending that is important for increasing growth and reducing POV, given the limited nature of public sector resources.

In addition to the above debate, the overall size of the public budget, the level of $CORR$ during the budgetary procedure, depending on how the budgetary procedure is structured, affects expenditure options for multiple appropriations or budgetary areas. The relevant experimental work argues that $CORR$ decreases funding for operational and maintenance costs (Tanzi & Davoodi, 1997), increase military expenditures (Gupta et al. 2001), and decreases education and $HEAEXP$ as a percentage of GDP (Mauro, 1998; Gupta et al., 1998). It is also linked to the public procurement system in the country (Krueger, 1974, Hines (1995). There are general commissions in various sectors of the economy, particularly those that attract the bulk of valuable public investment expenditure, such as energy, defense, public

works, transport, and telecommunications equipment which increase public expenditures.

Empirical discussion of literature linking the overall size of funds to the level of *CORR* in the financial system and states that more *CORR* means more bribes which are indirectly financed by public money. The impact of *CORR* on resource allocation can be both quantitative and qualitative.

The impact of *CORR* on public spending and its composition, in general, is controversial in the literature. There is a disagreement between economists on the effect that either it is positive, negative, or neutral. *CORR* significantly changes the distribution of public expenditures (Tanzi & Davoodi, 1997; Tanzi, 1998; Johnson et al., 1999), having a positive effect and Mauro (1997) no effect. However, most researchers argue the belief that *CORR* increases the size of public spending. Changing the structure of public expenditure distribution on the one hand and the effectiveness of the fiscal policy, on the other hand, are also affected by *CORR*. *CORR* can lead to an increase in the size of the budget as a percentage of *GDP*, while making a significant change in spending distributed and allocated to different sectors.

A limited number of studies have tried to explain how *CORR* in the budget process changes the distribution of public spending between economic functions and different sectors of the economy. In some studies, Mauro (1998) has targeted a specific area of budget allocation or military spending (Gupta et al., 2001). However, all the above studies considered sector spending as a percentage of *GDP* and not as a percentage of the overall budget. However, a number of other studies (Delavallade, 2006) analyzed the

disadvantage of such an approach and measure in studying the impact of *CORR* on the distribution of public spending in different sectors of the economy during the budget procedure. They suggested channeling empirical analysis in a more realistic direction. But it is noted that a significant portion of the distribution of public sector spending is devoted to immaculate, openly necessary such as public salaries, pensions, interest expenses, etc., which in some cases exceed a quarter of all public sector spending. So, the exclusion of this kind of expenditure from the analysis will leave us alongside the costs that are devoted to consumer and investment projects, especially where we can see more opportunities for *CORR*.

In order to examine the nexus of the public expenditures and *CORR*, Delavallade (2006) has considered 64 countries in his analysis. He used three steps least square (3SLS) methodology and concluded that public CORR significantly distorted culture and defense spending by dropping the share of social sector spending and increasing the share of public spending on energy and public services. He argued that political and civil rights have viable effects on defense spending, which is not the case in *CORR*. Hence, we may conclude that political and institutional variables other than *CORR* also play an important role in determining sectoral spending allocations, which have been ignored by most of the studies which may behave differently for other income level countries.

Aidt et al. (2006) tried to examine the relationship between public spending and the quality of democracy. The analysis covered the time span of 1830-1938 for 12 Western European countries. Results concluded that public

spending increases as the socio-economic conditions of the voting franchise rise. Some sectors of public spending were positively correlated with the expenditures on internal security and building infrastructure. Also, the fact that women's votes reflect a small positive impact on public spending in health, education, and social assistance costs is observed and the shift from majority voting to proportional governance in the ten sampled countries did not help increase public spending. Hence, democracy significantly affects public spending in health, education, and other sectors, which affects public welfare.

CORR as a determinant to affect military expenditure was investigated by Sanjeev et al. (2001), who analyzed a dataset with the timespan of 1985-1998 for almost 120 countries. They had used panel data regression techniques for this purpose. The results of their study show that *CORR* has a significant and positive impact on military spending as a percentage of *GDP* and overall public expenditure. This led them to argue that the distribution of defense spending is considered important when governance indicators are used as determinants of the distribution of public spending. There is another view that supports the notion of strong evidence that lowering military spending can stimulate growth, as these funds can be used for other productive sectors of the economy, suggesting that higher levels of *CORR* could slow growth through an increase in military and defense expenditure.

Kimenyi and Mbaku (1995) investigated the nexus of democracy, renters, and military spending. Their results claim that in authoritarian regimes, military elites can accept rents as it supports the governments to survive. So,

we can conclude from this study that in democracy, defense spending reduces as political leaders must design policies which are according to the needs of the public.

Kwame and Gerdtham (1992) studied the determining factors of health care costs in Africa using the cross-sector-based approach. This study analyzed the relationship between the factors of demography and socioeconomic status with the per capita health care costs in Africa. They chiefly found that *GDP* per capita, the proportion of births dealt by qualified health professional staff and the amount of foreign aid per capita received together cost 78.3 percent of the diversity of health care costs.

Tanzi and Davoodi (2000) investigated that *CORR* affects industries, influences talent allocation, investment growth, and allocation of public funds in various sectors of the economy. The main findings of the study were that as public investment was increasing, *CORR* was increasing too. Additionally, results also indicated that government revenues are adversely affected due to an increase in the *CORR*. Therefore, it also reduces the funds available to finance costs in various sectors of the economy, including public investment. Thirdly, high stages of *CORR* reduce operating and maintenance costs, and lastly, the increase in *CORR* levels are linked to poor infrastructure quality, thereby dropping the economic value of existing infrastructure and its influence on production and development. In addition, the study indicates a strong effect of *CORR* on the cost of public investment. The study highlighted the determinants of public investment.

Nader (1994) Conducted a study to explore the impact of political freedom on tax policy and expenditures using a sample of 67 countries in a border framework. The main results of the study show that among the main categories of operational expenditures, budgetary stocks of health expenditures and social security are significantly and positively associated with the level of political freedom while negatively related to the defense budget. Moreover, he divided expenditures into two categories that are capital expenditures and current expenditures. The study concluded that capital spending and spending on goods and services were inversely linked to political freedom. It also argued that the relative size of public spending relative to GDP differs steadily in relation to the political freedom index but in a nonlinear way.

Facchini (2018) reviewed the determinants of public spending in the existing literature comprehensively. The focus of the study was on the results of different econometric methodologies. The study tried to find that do we have common determinants of public spending. The study elaborated 23 explanations and 78 variables to explore the research question and found that no common constants exist regarding determinants of public spending. The study showed that the size of the government spending depends on the priorities of the citizens or demands of the people, power of the politicians, and bureaucracy that how they exercise their power in terms of delivering various services to citizens or what is in their interest.

Gupta et al. (2000) examined the association among $CORR$, health and education service provision. Their results show that $CORR$ increases infant

mortality rates, the birth of underweight children, and dropout rates in primary schools. Their findings also suggested that it's not required for the government to have more spending rather than a reduction in $CORR$ can improve social indicators of health and education. Tait and Heller (1982) proposed six decisive types of variables that could affect the distribution of public spending across different sectors of the economy. Their study focused on determining technological, sociological, and environmental factors to explain differences between countries but ignored political and institutional factors that seem crucial in determining public spending decisions. In another study, Heller and Diamond (1990) recognized a significant part of political institutions but were unable to incorporate it into their own work.

Several studies have examined public spending determinants in Nigeria over the past two decades (Okafor & Eiya, 2011; Abeng, 2005; Akanbi, 2014; Aladejare, 2019). But these studies show biases in their results because their focus was only on a few common factors and missed many important variables such as oil prices, oil revenues, trade exposures, taxes, exchange rates, among others, are considered important in other studies for African countries and will play an important role in explaining the increase in public spending and changes in the composition of public spending in Nigeria.

Government revenues are known as another determinant that is widely studied as a vital factor affecting public spending. The revenue-spend hypothesis is presented by Friedman (1978). This hypothesis states that "changes in government revenue led to changes in public spending." Moreover, it shows that there is only one main reason for government

revenue to public spending. Many existing studies confirm this statement by analyzing empirical data from underdeveloped and developed economies. This empirical evidence consists of (Mutascu, 2017; Athanasenas et al., 2014; Aworinde, 2013). The practical consequence of this revenue–spend hypothesis is that a rise in government revenue collection would always be associated with an increment in public sector expenditures. This income-expenditure hypothesis recommendation can be considered devasting, especially for countries with unsustainable and low-income collections that are more common in underdeveloped countries.

Contrary to that, the spend–revenue hypothesis, Peacock and Wiseman (1961) argue that modifications in government expenditures are causing variations in government revenues. This hypothesis runs counter to the revenue spend hypothesis. This proposition is also verified by many theoretical and empirical works making use of different data sets (Saunoris & Payne, 2010; Richter & Dimitrios, 2013; Narayan & Narayan, 2006; Parida, 2012; Zapf & Payne, 2009). The spend–revenue hypothesis claims higher spending leads towards higher revenues. The result could be dangerous and devasting for the economy if appropriate policies are not designed to reduce the increase in the deficit, which will change the burden of repayments for future generations of taxpayers.

In line with the above discussion, another hypothesis named "the fiscal synchronization hypothesis" established by Musgrave (1966) postulates that "citizens associate the marginal benefits and marginal costs of government services in making fiscal policy decisions." Therefore, it represents a causal

link in both directions between government revenues and spending. Few researchers have supported this argument, like Baharumshah et al. (2016) studied the sustainable case of economic synchronous using data for South Africa. Moreover, a similar suggestion has been made by Phiri (2019). Instead, Ali and Amin (2018) have confirmed the neutrality hypothesis, which states that there is no causal link between tax variables and spending that confirm that income and expenditure aspects are independent of each other.

Ogboru et al. (2018) evaluated the impact of public spending on agriculture and their influence on the reduction of unemployment in Nigeria for the time from 1999 to 2015. Their empirical findings confirmed the insignificant impact of agriculture spending on a reduction in the rate of unemployment. Omodero and Alpheaus (2019) applied the OLS method to explore the relationship between public spending and human capital development that primarily includes the health and education sector of the country which are important for development and EG. The study comprehensively analyzed the data from the time span from 2003 to 2017. The results showed an insignificant relationship between public capital spending and human capital. Contrary to that, recurrent public spending expenditures significantly and positively affected human capital. The results of the study indicated that increase in public spending expenditures on human capital is essential for higher production and EG.

A number of studies have also examined the impact of public debt services on public spending. Aregbeyen and Akpan (2013) used data for Nigeria for

the period 1960 to 2010. The results of the studies confirm that debt servicing reduces all forms of public spending in Nigeria. Similarly, Okafor and Eiya (2011) showed a positive relationship exists between public debt and rising public spending in Nigeria.

Nwosa (2014) investigated the time series annually data from 1981 to 2011 and employed ordinary least squares (OLS) methodology to investigate the impact of public expenditures on unemployment and POV rates in Nigeria. The study found that public spending had a significant positive impact on the unemployment rate, while for the POV rate, these results are negative but insignificant. Odior (2014) investigated the possible impact of public expenditure on education and POV reduction in Nigeria after the Millennium Development Goals (MDGs) by the United Nations. Based on the results of this study, $MDGs$ was predicted to be extended in terms of improving education and reducing POV in the country. For example, the study proposed the allocation of more funds in the education provision in order to attain the Millennium Development Goals.

The rising level of prices is one additional macroeconomic factor that is considered important for determining public spending growth. High inflation is a central macroeconomic problem faced by many economies in the world, especially developing economies. For example, Ezirim et al. (2008) analyzed the relationship between inflation and government spending using time series data for the U.S. economy. Their results show that there is an important long-term relationship between inflation and public spending. Similar results were also found on Pakistan's public spending by Attari and Javed (2013).

In addition, numerous empirical studies have examined the relationship between population and public spending. For example, Goffman and Mahar (1971) noted that the population age dependency ratio is a key variable in increasing public spending in underdeveloped economies. Thorn and Montague (1973) had shown that rapid population growth, urbanization, and life expectancy are possible determinants of rising public sector spending. Similarly, theoretical and empirical arguments have been developed by different researchers (Epifani & Gancia, 2009; Aregbeyen & Akpan, 2013; Okafor & Eiya, 2001; Ofori-Abebrese, 2012), and showed that growing population is the main determinant of public spending.

A number of studies have studied the positive and important relationship between the openness of trade and the amount of public spending (Cameron, 1978; Rodrik, 1998; Shelton, 2007). The findings and results of these studies could be justified based on experience to outside global shocks by opening up trade, which raises public spending. Another recent study conducted by Aladejare (2019) used data set for the period 1970 to 2016 on the Nigerian economy, confirming that oil prices, price levels, and oil revenues were the main determinants of public spending.

In order to study changes in the composition and structure of public expenditure due to the foreign debt issue, Mahdavi (2004) reviewed the impact of foreign debt on the structure and composition of government expenditure in 47 developing countries in 1972-2001. He identified a system of equations that explained public spending with economic performance and sector. The relative share of expenditures in six categories of sections in

different samples was estimated using different methods. The study presented an inverse effect of the debt problem in African countries, where the level of debt was relatively high. It has also been shown that among the various segments of current expenditures, the increase in debt has transferred returns to goods, services, subsidies, and non-wage transfers, and the politically sensitive share of the "wages and salaries" category remains intact for the most part. He argued that the variation in the composition and structure of public expenditures over the past three decades is due to debt insurance changes. Increasing the debt burden can force public spending credits away from productive and social spending sectors to other non-performing sectors such as debt service payments etc.

As foreign debt services increase, developing poor countries are forced to re-consider spending priorities to cut public spending for various sectors of the economy. Lonney (1986) tried to explore this topic by looking at the different sectoral adjustments which happened in the major sectors or areas of the Argentinean government sending from 1961-1982. The study argued that spending on social services in general, particularly education and health, as well as government administration, had the hardest hit by the growing problem of serving government debt. In addition, the distribution of social spending has also been affected by regime changes, concluding that military dictatorship regimes that tend to reduce credit in the health and education sectors (social sectors) were reducing costs in these sectors of the economy even more severely than normal debt service restrictions.

Axel (2006) examined the link among globalization, taxes, and social spending for OECD countries for the time span 1970-2000. The study analyzed unbalanced panel data because of missing data for some countries. The main findings of the study conclude that the impact of globalization on total government and social sector spending is negative but insignificant. Furthermore, the relationship between dependency ratio and public spending was also insignificant. Finally, the conclusion was that the unemployment rate and size of public sector employment were the main determinants of TPS and social spending allocation as both increase public spending.

The association of fiscal behavior and foreign aid in economic development is investigated by Ouattara (2006). He used the panel data estimation methodology from the period of 1980 to 2000. The empirical work applied a framework of sustainable outcomes and showed that public investment was positively and significantly linked to foreign aid flows. Moreover, most foreign aid flows have positive and significant impacts on development public expenditures, while these aid flows are negatively related to non-development public expenditures. It was also clinched that more inflows of aid were not able to dampen tax revenue as generally argued of foreign aid, which develops the culture of dependency, and that getting loans from abroad was complimentary to aid flows. Because different economies are financially stretched, and government spending increasingly made it harder to fulfill their spending expenditure through the available domestic taxes. As a result, the borrowing option is used in local or international markets. This postulates that as the number of public debts rises, there will be a constant

change in resource allocations, which is shifting away from spending in the economic and social sectors to paying interest.

The same argument has been highlighted by Krugman (1988) in the "debt-overhang hypothesis," which states that "an increase in the debt burden beyond a certain limit may generate a disincentive for governments to carry out macroeconomic reforms and increase public investment."

Jonakin and Stephens (1999) explored the relationship between infrastructure developments and stabilization reforms during the decades of 1980s and 1990s. They stressed that central American countries face long budget crises and debt repayment problems during this time period experienced due to which they have to implement structural adjustment programs and agreements. A comparison was made between the pro and pre-crisis periods. They exhibited that the segment of public spending to create human and capital formation, especially spending in the infrastructure sector, decreased rapidly during the adjustment period. But, at the same time, the sectoral expenditures share, which is allocated for defense spending and subsidy categories along with those for interest payments on external debt, increased gradually.

Davoodi et al. (2001) carried out empirical work to explore the link between military spending, peace dividends, and financial consolidation of One Hundred and Thirty countries for 1972-1994. This was done through a process to evaluate panel data. The study focused on a public choice approach to finding a link between military spending and overall public spending. The central purpose of the study was to analyze the reasons for

peace dividends, which they believe could be split into international, local, and regional factors. The study confirmed that the reduction in international and regional tensions at the culmination of the cold war and the enforcement of IMF-backed adjustment programs attracted a reduction in military spending, respectively. It was also suggested that financial adjustments to IMF-backed programs would harm spending in the defense and military sectors.

Most of the available studies include the democratic system derived from the work of Bocherding and Deacon (1972), which focused on calculating demand for non-federal government services. The study was based on cross-section data for 44 U.S. states in 1962. Their study included analysis of eight specific and key sectors of the economy including, local education, higher education, highways, health and hospitals, police, fires, sewage, parks, and recreation. All these sectors were independently analyzed according to the average personal income of citizens, the population, urbanization, and the territory of the state. They clinched that the predictable elasticity of earnings was consistent with the results of other studies. Their study also confirmed that price elasticity is significant and negative. This went against the results of existing literature which says that often higher price stretches for higher education expenditures.

Bergstrom Goodman (1973) applies a model based on Bochering and Deacon (1972) to analyze additional demand for public goods. Their study applied a multi-sector model to obtain statistics on demographic variables and public spending from the 1960 and 1962 censuses. The research findings explored

that the calculated income elasticity coefficient with positive sign and significant, while the price elasticity was found negative and significant.

To empirically judge the importance of the Tiebout and median voter preposition, Gramlich and Robinfield (1982) adopted a micro-level method in assessing demand for public services. They analyzed cross-section data, including 2001 households in Michigan, which were randomly and immediately taken after the vote on a tax cut in Michigan in 1978. It was concluded that although the elasticity of earnings and prices was the same Based on aggregated data, positive compensation flexibility occurred due to which government amenities were distributed in a wealth-friendly means. The study also observed that there was a nonsignificant variation in expenditures needs between city and village societies in metropolitan areas with a wide range of public services. It is proposed that the Tiebout hypothesis worked.

Takro (1999) endeavored to examine the status of the median voter theorem in the Japanese economy. To check the proposition by modeling the demand functions of local public goods in each region. The study conclusion suggests that the median voter proposal was supported in provincial finances, as well as voter preferences affecting the outcome of legislative elections or the possibility of the re-election of the governor. The results showed that in a review of Japan's centralized introduction system, these results showed that central administration of pre-income spending by the government through regional subsidies between regions ultimately represents the average preferences of the jurisdiction's voters.

2.2. Consequences of Public Spending

The current renewal of attention in growth theory, POV and INQ has also developed the awareness among researchers in studying and exploring various associations and underlying associations between fiscal policy tools and growth of the economy, POV, and level of INQ. The use of fiscal policy for macroeconomic stability and growth etc. is considered more important after the great depression. Over the past three decades, considerable empirical work has been done in finding the foundations of public expenditures at the aggregate level and disaggregate planes that have an important relationship with the growth of the economy, POV, and INQ. The existing empirical literature differs from the data set, econometric techniques and has often shown conflicting results between them.

Different justifications provided by different researchers for adverse outcomes can be divided into two main classes. Firstly, different coping factors and initial conditions in different studies are the main reason for the opposite opinion in the results of different studies (Levine & Renelt, 1992). Secondly, some studies (Helms, 1985; Mofidi & Stone, 1990; Kneller et al., 1999) noted that the diversity of the results was due to the widespread willingness of researchers to ignore the effects of government budgetary constraints on their declines. The recent view focused on the need to simultaneously examine resources and use the budget to assess the impact of taxation or spending on EG, POV, and INQ.

Other than having conflicting views, the current results produce a disturbing trend. Some of the results relate to the effects of public spending on growth

either based on data sets of some developed countries or on large samples containing a combination of developed and developing countries. Therefore, it is necessary to understand the process in which global and analytical public spending policies shape the prospects for EG, POV reduction and INQ for LIC, MIC, and HIC, because the composition and structure of public spending vary between different countries in the income group that is missing in most studies.

Government spending at the aggregate level and sectoral spending at disaggregate level is always done by considering some outcomes and consequences. So, it is very important to discuss the impact of various spending allocations and overall public spending in terms of growth, POV, and INQ which are at the center of development policy makers.

Ajwad and Wodnon (2001) examined the impact of education and basic infrastructure on POV reduction in municipalities of Bolivia. They employed marginal benefit incidence methodology investigation to model the data set of 1996. Their results show that the marginal benefit incidence is larger for the poor individuals than for the non-poor individuals in education, but this effect is less in the case of access and availability of the infrastructure services. Moreover, another study was done by Agnor et al. (2004) in Ethiopia. They analyzed the aggregate microframework method to test the effects of infrastructure, educational, and health care expenditures on POV from 2003 to 2015. Their findings confirm that simulated reductions in consumer spending and redistribution of capital costs (with larger increases

in infrastructure costs than health and education costs) have a modest impact on POV.

One province-based study in China was conducted by Fan and Hazell (2001) by using the data from 1970-97 through the regression analysis (system equation) method. They examined the impact of public investment expenditures in rustic areas (research and development, road infrastructure, irrigation, education, electricity, telephones). Their results indicate that R&D expenditures and spending increase have a major impact on POV, efficiency, and productivity for growth. Likewise, a cross-country study by Foster and Szekely (2001) used the household data from 1976-99 to discuss the impact of government consumption expenditures on POV reduction. Using different regression methods, they concluded that government consumption as a percentage of GDP had a negligible effect on public instruments but was associated with higher income gains for the poorest populations.

Although the connection amid structure and composition of government spending and development is significant from a policy point of view, empirical evidence is scarce in the literature before 2000. However, with the exception of some studies that have analyzed different types of expenditure such as public consumption (Barro and Sala-i-Martin, 1992), current spending, and capital (Devarajan et al., 1996), $EDUEXP$ and health care expenditures. After the 2000s, various empirical works analyzed these problems both in developed and underdeveloped economies (Barro & Sala-i-Martin, 2004; Ghosh & Gregoriou, 2008; Bose et al., 2007; Colombier, 2011; Benos & Zotou, 2014; Gupta et al., 2005).

Sunkanmi and Abayomi (2014) explored the public spending and POV relationship in Nigeria using the Keynesian Macroeconomic structure by assuming that public spending and POV are positively related. The results showed that foreign aid, savings, and energy production are not important in reducing POV in the country. Adelowokan and Osuba (2015) used the normal method of square cuts and causal experiments to assess the role of oil revenues and government spending in reducing Nigeria's POV rate from 1970 to 2013.

Asimiyu and Saidi (2015) examined the impact of public funding indicators, such as government revenues received by the federal government and overall POV-level spending in Nigeria, using annual data in the series when it covers a period from 1980 to 2013. The study found that government revenues collected by the federal government and overall spending increased the POV rate in Nigeria. The negative results of the study were accompanied by reliance on oil revenues, high levels of $CORR$, and poor budgetary processes and implementation. The study suggested financial restructuring, which should be based on people's preferences.

Existing literature on public spending and its composition, both empirical and theoretical, indicate that, instead of the overall level and aggregate spending, that is the erection and composition of expenditures that matters a lot, built on their sectoral functions classifications and categories that give a vivid stance that how government works boosting EG, reduce POV, reduce INQ and promote economic development levels.

Much of the current empirical literature focuses on the links between public sector spending structure and EG in two respects: separation of public sector costs into two main categories of productive and unproductive sectors and analysis of identified factors in so-called production spending. These studies on production expenditures used panel data or cross-country data for several countries or groups that suffer from the incongruousness of the information provided.

Barro and Sala-E-Martin (1992) present endogenous theory of growth by incorporating government spending. Their conclusions confirmed that public spending is inversely related to long-term growth, while public investment expenditures are positively related to growth.

One another cross-country study from 1950-99 was done by Dollar and Kraay (2002) by using regression analysis. Their results indicate that the government consumption expenditures and social sector spending are associated with POV, but health care and education expenditures are proved to be unimportant in their analysis regarding affecting POV and INQ. Moreover, Dabla-Norris and Matovu (2002) employed a dynamic CGE technique to analyze the impacts of education and $INFEXP$ on POV. They explored the impact of primary, secondary and tertiary education and government intentions for infrastructure on POV in Ghana. Their results show that growing primary and secondary education expenditures have an important positive impact on reduction in POV projects, even if these expenditures are done on the cost of other $INFEXP$.

Similarly, Lofgrn and Robinson (2004) also employed a dynamic CGE model to estimate the impacts of agriculture, health, education, transport, communication, social security, and defense on POV reduction in Sub-Sahara Africa from 1998-2015. They come up with the conclusion that the rise in expenditure on agriculture, transportation, and communication affects EG moderately. While upsurge spending in health care projects primes to the additional speedy growth of the economy and momentous drop in POV.

Easterly and Rebelo (1993) surveyed a wide range of developed and developing countries to investigate the relationship between investment in education and EG. The results of the study show that investment in education is not only very important but also the amount of treatment it has from the impact of this variable on growth. For example, the growth rate of GDP increases by 1% if the public expenditure increases on education by 1.5%. The logic of this effect may lie in the important external factors of investment in education in increasing the productivity of human and physical capital, which then affects EG. Theoretical interpretation of this view is readily available in new literature on growth. Similarly, the study also predicted a positive and significant relationship between TPS in the transportation and telecommunications sector (infrastructure) and growth, similar to the outcome of the Aschauer study (1989).

The results are mixed on the impact of defense spending on EG. The relationship has sometimes been seen as positive and important (Benoit, 1978; Fredericksen & Looney, 1982). At the same time, other studies have shown that it is negative (Knight, 2002; Deger & Smith, 1983). In addition,

other studies have shown the impact of increased defense spending are seemed to be neutral (Biswas & Ram, 1986).

War (2003) considered the households in Thailand from the dataset of 1986, 1990, 1994 by employing partial equilibrium analysis to investigate the effects of the provision of education, health care, agriculture, and transportation expenditure on POV reduction. He concluded that an increase in expenditure on the provision of education, health, and agriculture lessens POV while increasing spending share on transportation surges POV. Moreover, in India, district-level research was conducted by Fan and Hazell (2001). They come up with the conclusion that roads which are part of infrastructure have the major impact on POV and productivity for all governmental investment expenditures, and less favorable areas deliver the highest return. Further, the impact of education and investment on POV is analyzed.

Jung & Thorbecke (2003) employed and standardized CGE models for Tanzania and Zambia. The results of their study have shown that targeted spending in the education sector can be more effective for developing and reducing POV. They also concluded that a relatively high level of physical investment was also needed, as a better correlation between educational production and the actual labor demand structure would be needed for better POV reduction outcomes.

Several studies have been conducted on the role of public spending in the long-term growth of different economies (Aschauer, 1998; Barro,1990; Tanzi & Zee, 1997). These studies have revealed conflicting results on the effects

of public spending on EG. Barro was one of the first economists who developed domestic public spending on a growth model and analysis of the relationship between government size, savings, and growth rate. He concluded that increased resources for unproductive government services (but perhaps increased benefits) were associated with lower per capita growth rates. Tanzi and Zee (1997) have also concluded that there is no connection between the growth of the economy and the size of the government.

On the other hand, empirical results show that civilian reserves of public capital are much more important in determining productivity than civilian or military spending flows, military capital has nothing to do with productivity, and the basic shares of infrastructure for roads, highways, airports, public transportation, health, and water systems have more explanation capacity. Several studies have also tried to link public spending to agricultural development and POV reduction (Elias 1985; Fan et al., 2000; Fan et al., 2004, Lopez 2005). Most studies have found that government spending has helped grow agricultural production and reduce POV, but different types of expenditures can have different effects on growth and POV reduction.

Nijkamp and Poot (2004) investigated association among public policies regarding public expenditures, taxation, education expenditures, spending on defense, infrastructure, and EG. They concluded that only spending on infrastructure and education had a significant and positive impact on EG, while other variables were insignificant and not important. A sample of 29 countries classified by GDP per capita for the period 1980 to 2004 is

analyzed by Lopea and Miller (2007), and the outcomes of the analysis demonstrate that a 10% increase in total public expenditures could directly raise the per capita income growth rate from 2.2% to 2.9%. However, they do not address the more important issue of sectoral spending.

Some studies have examined a mechanism by which public spending promotes EG (Kelly, 1997; Barro, 1990). But they analyzed the impact of TPS and overall GDP growth. Very few studies have tried to link different types of public spending, which essentially means spending in different sectors of the economy to boost the EG. Bose et al. (2003) examined the relationship between growth and public expenditure by considering disaggregated public spending by different sectors for a panel of thirty LIC. However, they focused on the issue of "sensitivity" caused by the initial conditions and many other conditional variables, as well as the partiality of the removal, which may be due to disregard for the impact of the entire budgetary constraint on the government budget. While on the other side, they paid attention only to developing economies by seeing the existence of the public budget limitation. Their study has made important contributions to the existing literature by overcoming many limitations of the existing literature. They have included the main financing variables which are important determinants of public spending. Hence their analysis is more valuable for policymakers, especially for developing countries, as they already have a shortage of resources.

Ramirez (2004) explored the relationship between sectoral public spending and economic growth. He used the Cobb-Douglas production function and a

$VECM$ and concluded that public spending in the above sectors had a positive impact on the growth of the economy. Similarly, Colombier (2011) analyzed the impact of structure and composition of public sector spending on economic development in Switzerland. The study used data from 1950 to 2004, concluding that public spending on education and transportation was strongly and positively linked to the growth of GDP.

Likewise, by focusing on Italy for the period 1990 to 2010, Magazzino (2011) employed Granger causality and cointegration methodology to analyze whether eight out of ten categories of $COFOG$ spending affects GDP growth, whether positive or negative? The findings are consistent with the results of other studies (Singh & Weber, 1997; Lamartina & Zaghini, 2011; Matins & Vega, 2014. Similar type of studies is also done by other researchers (Brückner et al., 2012; Afonso & Fuceri 2010; Bayraktar et al., 2012). In general, these empirical studies show that public sector spending on infrastructure and education has a positive and significant impact on the growth of the economy. Other relevant studies also conclude that many expenditures are generally straightly beneficial, like various categories of social benefits and justice that could increase the level of EG. The evidence also shows that some of the quantitative studies have analyzed the composition of public expenditures and have used time series data for analysis (Cullison, 1993; Singh & Weber, 1997) which have given mixed evidence in terms of results.

Take, for example, the relationship between government size (measured or based on total levels of public spending or at public consumption spending

levels) and EG. Some of the studies confirm that such a relationship is important and positive (Romer, 1989, 1990a, 1990b; Ram, 1986). But in other cases, the same link has been confirmed as momentous and opposite in some studies. (Barro, 1990, 1991; Grier & Tullock 1989; Landau 1983, 1985, 1986; Alexander, 1990). Yet another group of researchers has concluded this relationship to be unimportant or brittle (Levine & Renelt, 1992; Kormendi & Meguire, 1985). Similarly, differences in the impact of public spending funds are also observed in various works that have explored the effect of increasing public spending at analytical levels.

Yet another study, Foster et al. (2003) have done through a survey of Five African countries and analyzed the extent to which public expenditure management has been associated with the POV reduction goals. The results of the study show that, in spite of a great deal of political rhetoric, the commitment and determination to POV reduction in five African countries is still quite fragile, as is the one to increased inclusiveness and participation in the policy process.

Some other studies highlighted the importance of public spending allocations through direct and indirect ways. For example, Mackinnon & Reinikka (2000) drawled the conclusions based on the empirical study of Dreeze and Stern (1990) and showed that the typical methodology for defining the spending priorities is by relating return rates on various sectors of the economy. Although this type of approach is ignored in practice, it should include a variety of features in his estimations, such as the effect on income INQ, the probability of public spending between the public and private

sectors, and the assessment of external impacts. By considering these magnitudes, one can draw a critical point in the assessment regarding different expenditure priorities of the government for *POV* removal.

Mackinnon & Reinikka (2000) Concluded the impact of higher education by stating that it has little to play a role in reducing direct *POV*, but can have noteworthy indirect results for reducing *POV* if students can help provide improved services, return their incomes to poor families, or help their local societies. Duncan and Pollard (2002) have worked on another extension of the same effect by presenting a broader, more comprehensive framework in which we can meet the relative priorities of governments as part of a planned intervention that can support the alleviation of *POV* strategies. Their work recognized the basic elements aimed at reducing *POV* and the related constraints faced by countries. Duncan and Pollard have suggested that without these building blocks, we cannot increase revenue. For example, various investment projects without political and social order could not bring historical results in economies. The one OECD (1999) study focused on the different roles of different factors in the alleviation of *POV*. It highlighted three major issues that are generally considered: (i) the choice of the suitable level of targeting, (ii) encouraging participation, and (iii) variables having an impact on sustainability. The study also examined the pros and cons of targeted intervention and found that stakeholders had clear and proven benefits capable of affecting the structure and execution of the interference. Moreover, admitting the costs of a substantial chance of the participation of the poor, and lists legislation to improve the sustainability of *POV* by the dedicated projects.

Shfuda and Kumar De (2020) analyzed the impact of government expenditures on human development and growth in the economy of Namibia using time series data. They concluded that a significant long-run relationship exists between government expenditures on healthcare and infant mortality rate and fertility rate. However, no such relationship is confirmed for the adult mortality rate. In addition, they confirmed that government spending on literacy rate and primary school enrollment. The findings also show that government expenditures on health and education significantly affect economic growth by strengthening human capital. A similar result is also confirmed by Ogundari and Awokuse (2018).

Cammeraat (2020) explored the relationship between different social expenditure schemes, poverty, inequality, and economic growth. The study used panel data for 22 European countries for the time 1990-2015. The results of the study concluded that an increase in public spending is significantly negatively related to poverty and inequality. However, the study could not confirm the same relationship for economic growth. In addition, results were different for different social spending schemes. The same result has been presented by Noel (2018).

2.3. Gaps in Literature

In the light of the above discussion on existing literature regarding determinants of government spending allocation and their consequences, the following gaps have been identified, which our study fulfills.

Firstly, most of the studies ignored the role of political and institutional variables, which are important determinants of government spending

allocations (Peacock & Scoot, 2000; Biehl,-1998; Wagner, 1893). Secondly, socioeconomic, political, and institutional determinants of sectoral spending allocations have been ignored in most of the studies. This study identifies health, education, infrastructure, and defense spending as important sectors and investigates the role of political, institutional, and economic factors in determining their spending allocations. Thirdly, none of the studies have made a comparison between low -middle- and HIC regarding the different $DPSA$ which needs attention that different factors might behave differently for LIC, MIC, and HIC. This study attempts to fulfill this gap as well.

Fourthly, the consequences of sectoral government spending allocation have also been ignored in many studies. So, this study bridges these gaps in the literature as well by considering not only determinants of sectoral spending allocations but also focusing on the impact of sectoral spending on POV, INQ, and per capita income for a pool of countries as well as for different income group countries.

2.4. Hypotheses of the Study

Based on the reviewed literature, the study has framed the following hypotheses to investigate the impacts of socioeconomic, political, and institutional factors on public spending allocation. In addition, hypotheses are also designed to observe the impact of spending allocation on POV and INQ. Therefore, the following hypotheses will be tested to achieve the objectives of the study at hand.

2.4.1 Determinants of Public Spending Allocation

H_{01}: Socioeconomic, political, and institutional factors do not affect public spending allocation at the aggregate level.

H_{02}: Socioeconomic, political, and institutional factors do not affect public spending allocation at a disaggregated level for health, education, infrastructure, and defense spending level.

H_{03}: Socioeconomic, political, and institutional determinants do not behave differently at aggregate at the disaggregated level in aggregate of countries as well as across different income group countries.

2.4.2 Consequences of Public Spending Allocation

H_{04}: Sectoral spending allocation has no impact on income distribution across different income groups of countries.

H_{05}: Sectoral spending allocation has no impact on POV across different income groups of countries.

H_{06}: Sectoral spending allocation has no impact on per capita income across different income groups of countries.

Chapter 3

METHODOLOGY AND DATA

This chapter presents methodology and data and describes the theoretical background and empirical model specifications regarding *DPSA* and their consequences.

3.1 Theoretical Background and Framework for the Determinants of Public Spending Allocation

This study uses the positivist approach of research. Its targeted population is the developed and developing countries of the world, whereas the sample frame contains 104 countries. In this section, first, we present a brief description of the theoretical background and framework used for the *DPSA*, then the model is specified, which is used for the analysis of *DPSA*, based on existing literature.

3.1.1 Theoretical Background and Framework

Historically, there are two approaches regarding studying the public expenditure allocations. Firstly, economists approached the study of public expenditures from a prescriptive point of view. The focus of these earlier studies was to set up criteria for the size and nature of government expenditures and income. These studies utilized similar techniques as generally used in the study of market economics[2]. The development of Keynesian theories of economic stability has encouraged the consideration of

[2] For detail, see Musgrave and Peacock (1958) and Samuelson *et al.*, (1954).

government expenditures as an important factor in a macro static economic model was part of these studies. Since WW-II, the growing interest of economists to address the problems associated with economic dynamic and growth, public spending has become the focal point of the studies in the same context (Harrod, 1948; Domer, 1957). A number of studies introduced various approaches and models to analyze the long-run effects of public expenditures explicitly as well as implicitly on growth (Gurley, 1953; Smith, 1957; Kurihara, 1956).

The second school of thought (Hewitt 1992, 93) about public spending is explanatory rather than descriptive in character. This school of thought mainly focused on explaining the phenomenon of growing military and national debt commitments. They have hypothesized that an increase in military expenditures different other sectors of the economy like health, education and, infrastructure, etc. For instance, Hewitt (1992, 93) used public choice framework to explore the determinants of military spending by government dividing public spending into two categories,

a) Military spending

b) Non-military spending

This model was extended by Nyamongo (2007), who attempted to explore the factors that determine the composition of government expenditures for Africa. This study adopted the model which was initially introduced by Hewitt (1993), extended by Nyamongo (2007) to analyze the DPSA by considering socio-economic, political, and institutional factors for a different set of countries.

3.1.2 Analytical Framework

This study adopted an altered and sectoral expanded model of the Hewitt (1992, 93) and Nyamongo (2007) models. Already existing baseline of Hewitt's (1992, 93) empirical analysis was based on a model that was developed to examine the determinants of public spending by considering the military spending by dividing total public spending (TPS) into two main categories as military and non-military expenditures. To achieve this objective, Hewitt (1992, 93) developed a public choice framework (PCF) for analyzing the association between military expenditures and total government spending.

This existing empirical analysis modifies and extend the public choice framework (PCF) model by applying the Hewitt (1992, 93) and Nyamongo (2007) methodology by dividing public spending into various functional sectoral categories like $HEAEXP, EDUEXP, INFEXP$ and $DEFEXP$. The relationship between different determinants (socio-economic, political and, institutional factors) and functional sectoral spending categories is developed as follows. Suppose that the TPS be a composite of the functional spending category, g_i, such as military spending, $HEAEX$P or $EDUEXP$ and 'other' spending categories g_j[3]. Hence, the TPS be written as,

$$TPS = g_i + g_j \tag{3.1}$$

Sanjeev et al. (2001) expanded the Hewitt (1992, 93) model by recognizing

[3] In this case, g_j is the total spending outlay less the spending on the g_i^{th} category.

the empirical evidence that public sector spending is primarily financed by imposing taxes and getting loans. For ease of explanation, no difference has been developed amid local and international debt. Hence, it implies that the public budget constraint in period t $(t = 0,1)$ is written (Beetsma & Bovenberg 1999, 2002) as follows.

$$TPS_1 = T_1 + D_1 + k\pi \tag{3.2}$$

where, $D_1 = d_1 + (1 + r)d_0$

$$TPS_1 = T_1 + d_1 + (1 + r)d_0 + k\pi \tag{3.3}$$

Where, TPS_1 is the total public expenditures in period 1, and kπ is the seigniorage revenue. The Debt at time $t = 1$ is defined as $D_1 = d_1 + (1 + r)d_0$. Where, D represents the accumulated debt, which consists of a total of the loans taken in the current existing period (d_1) plus the loans of the previous period along with interest on it. Moreover, if we remove seigniorage, $k\pi$, the public budget expenditure constraint can be written as,

$$TPS_1 = T_1 + d_1 \tag{3.4}$$

Let the tax function, T_1, written as:

$$T_1 = \tau Y_1 \qquad 0 \leq \tau \leq 1$$

In order to maximize the below-given welfare function (3.5) we assume that it follows a utility function which is expressed in Cobb-Douglas specification:

$$U(C, g_i\, g_j) = C^{\beta}, g_i^{\gamma}\, g_j^{\delta} \tag{3.5}$$

Where, $\beta + \gamma + \delta = 1$

This utility function is supposed to be twice-continuously differentiable on the level of private consumption (C) and total public spending (TPS) with $U_f > 0$ and $U_{ff} < 0$ for $f = C, G$, where $\delta = 1 - \beta - \gamma$. Finally, for ease of analysis, we considered no private investment and omitted time indices. The $CORR$ free model is developed, which is based on the conventional utility maximization problem, which is stated as:

$$Max\, u \quad C(C, g_i\, g_j) = C^{\beta}, g_i^{\gamma}\, g_j^{\delta} \tag{3.6}$$

Subject to $Y = C + TPS$ *and* $TPS = g_i + g_J$

The optimum values of the above-defined utility function 3.6, which in this case is considered as a $CORR$ free optimal solution, require

$$\frac{g_i}{Y} = \frac{\gamma}{\beta}(1-\tau) - \frac{\gamma}{\beta}\left[\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}\right], \text{ and } \frac{g_i}{TPS} = \frac{\gamma}{\beta}(1-\tau)\frac{Y}{TPS} - \frac{\gamma}{\beta}\left[\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}\right] \tag{3.7}$$

$$\frac{g_J}{Y} = \frac{\gamma}{\beta}(1-\tau) - \frac{\gamma}{\beta}\left[\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}\right], \text{ and } \frac{g_j}{TPS} = \frac{\gamma}{\beta}(1-\tau)\frac{Y}{TPS} - \frac{\gamma}{\beta}\left[\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}\right] \tag{3.8}$$

Equation 3.7 suggests that within a given tax rate τ, the proportionate share of spending category (g_i), is based on the cobb Douglas utility function parameters γ and β. Furthermore, equation 3.8 implies that for a given level of tax rate τ the proportional share of the 'other' spending category (g_j), to income and total government expenditure is a function of the parameters of the utility functions δ and β. Hence, it indicates that a lower value of

γ relative to β leads to a reduction in the value of g_i, comparative to private consumption. The same argument is correct for a lower value of δ relative to the value of β, which also leads to a reduction in the value of g_j, in relation to private consumption.

As highlighted by Sanjeev et al. (2001), the impact of $CORR$ on the structure and composition of the public expenditures can be discussed through the impact on the parameters of equations 3.7 and 3.8. In this scenario, the link between $CORR$ and a specific sectoral functional spending category is described as follows: Suppose the parameters of the given utility function, β and δ affected by any factor such as CORR Z such that equations 3.7 and 3.8 can be written as:

$$\frac{g_i}{Y} = \frac{\gamma(Z)}{\beta(Z)}(1-\tau) - \frac{\gamma(Z)}{\beta(Z)}\left[\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}\right] \tag{3.9}$$

and

$$\frac{g_i}{TPS} = \frac{\gamma(Z)}{\beta(Z)}(1-\tau)\frac{Y}{TPS} - \frac{\gamma(Z)}{\beta(Z)}\left[\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}\right] \tag{3.10}$$

$$\frac{g_j}{Y} = \frac{\gamma(Z)}{\beta(Z)}(1-\tau) - \frac{\gamma(Z)}{\beta(Z)}\left[\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}\right] \tag{3.11}$$

and

$$\frac{g_j}{TPS} = \frac{\gamma(Z)}{\beta(Z)}(1-\tau)\frac{Y}{TPS}(\gamma - \frac{\gamma(Z)}{\beta(Z)}\left[\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}\right] \tag{3.12}$$

Differentiating equations 3.9 and 3.10, with respect to $CORR$, Z, yields:

$$\frac{\partial(\frac{g_i}{Y})}{\partial z} = (1-\tau)\frac{1}{\beta^2}(\gamma_z\beta - \beta_z\gamma) - \left[\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}\right]\frac{1}{\beta^2}(\gamma_z\beta - \beta_z\gamma) \tag{3.13}$$

$$\frac{\partial(\frac{g_i}{G})}{\partial z} = (1-\tau)\frac{Y}{TPS}[\frac{1}{\beta^2}(\gamma_z\beta - \beta_z\gamma)] - [\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}]\frac{1}{\beta^2}(\gamma_z\beta - \beta_z\gamma)$$

(3.14)

and differentiating equations 3.12 and 3.13, yield:

$$\frac{\partial(\frac{g_j}{Y})}{\partial z} = (1-\tau)\frac{1}{\beta^2}(\delta_z\beta - \beta_z\delta) - [\frac{d_1}{Y} + (1+r)\frac{d_0}{Y}]\frac{1}{\beta^2}(\gamma_z\beta - \beta_z\delta) \quad (3.15)$$

$$\frac{\partial(\frac{g_j}{TPS})}{\partial z} = (1-\tau)\frac{Y}{TPS}[\frac{1}{\beta^2}(\delta_z\beta - \beta_z\delta)] - [\frac{d_1}{TPS} + (1+r)\frac{d_0}{TPS}]\frac{1}{\beta^2}(\delta_z\beta - \beta_z\delta)$$

(3.16)

Where $\gamma_z = \frac{d\gamma}{dz}, \beta_z = \frac{d\beta}{dz}, \delta_z = \frac{d\gamma}{dz}$, in this case $\frac{\partial(\frac{g_i}{TPS})}{\partial z} > 0$ *and* $\frac{\partial(\frac{g_i}{Y})}{\partial z} > 0$ *if* $\frac{\gamma_z}{\gamma_z} > \frac{\beta_z}{\beta}$

By considering the above-discussed equations, it can be observed that any institutional or political variable like $CORR$ as in this case affects the parameters in the utility function, which results in an increase in the value of g_i sectoral spending category as long as the utility maximizer agent observes an increase in the public expenditure category outlay as a chance to use public expenditures for personal and private benefit[4]. In the light of the above:

$$\frac{g_i}{Y} = f_1(\beta, \gamma, \tau, Z, \frac{D}{Y}) \quad \text{and} \quad \frac{g_i}{TPS} = f_2(\beta, \gamma, \tau, Z, \frac{D}{TPS}) \quad (3.17)$$

Because $\beta\gamma$, τ and Z cannot be observed directly, the influence of CORR on the sectoral spending category g_i can be estimated as follows:

[4] As noted by Tanzi (1998), the simplest and most popular definition of CORR is that "It is the abuse of public power for private benefit

$$\left(\frac{g_i}{Y}\right)_{jt} = \gamma_0 + \gamma_1 Z_{jt} + \gamma_2 \left(\frac{D}{Y}\right)_{jt} + \gamma_3 K_{jt} + \varepsilon_{jt} \quad (3.18)$$

$$\left(\frac{g_i}{TPS}\right)_{jt} = \varpi_0 + \varpi_1 Z_{jt} + \varpi_2 \left(\frac{TPS}{Y}\right)_{jt} + \varpi_3 K_{jt} + \varepsilon_{jt} \quad (3.19)$$

$\left(\frac{g_i}{Y}\right)_{jt}$ is the percentage of the g_i sectoral spending category to the GDP, $\left(\frac{g_i}{TPS}\right)_{jt}$ is the proportion of the g_i spending sectoral category to overall total government spending, $\left(\frac{TPS}{Y}\right)_{jt}$ is the percentage of TPS to $the\ GDP$, Zjt indicates $CORR$, $\left(\frac{D}{TPS}\right)_{jt}$ and $\left(\frac{D}{Y}\right)_{jt}$ are, respectively, the ratios of the public debt to the total public budget and the GDP, k_{jt} is a vector of the state variables ε is the error term. To analyze the connection between different sectoral components of the public spending and their ratio to total spending of the government and to total GDP equations 3.18 and 3.19 are estimated. Here, Equation 3.20 allows us to recognize the impact of $CORR$ in the volume of the public spending.

$$\frac{TPS}{GDP} = \frac{g_i/GDP}{g_i/TPS} \quad (3.20)$$

where g_i/GDP is the percentage of the output, which is allotted to each public expenditure category, gi/TPS is the share of the ith economic category in the total public budget and $\frac{TPS}{GDP}$ is the total government spending's share of the GDP.

Equation 3.20 describes the association between the total public budget to the GDP. It can be studied by focusing on the shares of the sectoral segments of the budget as shares to the total public budget and of the GDP. In this

situation, an increase in any component of the public budget as a share of the GDP accompanied by an increase of the same component as a share of the total public budget will unambiguously increase the amount of the public budget (Delavallade, 2006).

The effect $CORR$ or any other indicator can be studied in two ways. Firstly, the impact on the size and volume of the TPS is stated as the quantity effect of $CORR$ or any other political, institutional, or economic factors. Secondly, the effect of $CORR$ on the distribution allocations of public spending is considered as the distributional allocation effect. It tells us that how any determinant of public spending allocation at the aggregate level or at disaggregated level affects public spending allocations. By Using equation 3.20, we are able to infer about the effect of $CORR$ or any other socioeconomic, institutional, or political factor on overall government expenditure as a percentage of GDP or TPS plus its implications for different sectoral spending categories like health, education, and infrastructure. The Information regarding sectoral spending allocations and their determinants is very useful in making decisions and forecasts about the overall effect of different factors on the spending decisions of the government as a share of the GDP.

We can interpret the above-discussed framework as if the calculated coefficients of $CORR$ or other factors have positive signs, then the explained variable, which can be TPS or sectoral spending expressed as a share of the total expenditure or the share of GDP increases. Moreover, if the estimated coefficients of the parameters have mixed signs, we can conclude that

different socioeconomic, political, and institutional variables may have an insignificant impact. (Delavallade, 2006).

3.2 Model Specification

Based on the above framework, this study uses the public choice approach to augment the model initially developed by Hewitt (1993) and Nyamongo (2007). Hence, to explore the impact of socioeconomic, political, and institutional factors on public spending allocation, the following baseline model is estimated. The estimated model considers economic, political, and institutional determines of public spending allocations.

$$TPS = f(BQ\ CORR, EC, GS, IC, DA, MP, PG, INF, CGD, TR, EG) \qquad (3.21)$$

The same general model describes in equation 3.21 is repeated at a disaggregated level for health, education, defense, and infrastructure expenditures. The general form is described as follows. The same models are estimated for LIC, MIC, and HIC separately as well.

3.3 Consequences of Public Spending Allocation

This portion of the study discusses the theoretical background and model development to predict the effects of public spending allocation on POV and INQ.

3.3.1 Theoretical Framework and Model Specification

The measurement of the impact of public spending on income and POV is complex and investigated by various studies. Impact of government spending on basic health and education services and infrastructure (e.g.,

rural roads, water, and sanitation, housing) is considered to reduce POV, by increasing the productivity and earnings potential of poor households (McKay, 2004; Mosley *et al.,* 2004; Paternostro, Rajaram, & Tiongson, 2007). Theoretically, this effect is known as ''pro-poor". This followed the framework used by Anderson et al. (2018) and used the following functional form of the relationship between POV, INQ and public spending allocation.

$$POV = f(HEAEXP, EDUEXP, UR, DEFEXP, INF, CORR, UNE, EG, INFEXP, ADR) \quad (3.22)$$

$$INQ = f(HEAEXP, EDUEXP, UR, DEFEXP, INF, CORR, UNE, EG, INFEXP, ADR) \quad (3.23)$$

$$EG = f(HEAEXP, EDUEXP, UR, DEFEXP, INF, CORR, UNE, EG, INFEXP, ADR) \quad (3.24)$$

3.4 Empirical Models for Determinants of Public Spending Allocation

Based on the above theoretical and analytical framework, in order to meet the objectives of the study, the following empirical models are estimated for exploring political, socioeconomic, and institutional DPSA at the aggregate level as well as at disaggregated level. All above mentioned functional forms of the determinants of public spending allocation are written in econometric versions to estimate the effects of explanatory variables on dependent ones in the following way.

$$LnTPS_{it} = \alpha_0 + \alpha_1 LnBQ_{it} + \alpha_2 LnCORR_{it} + \alpha_3 LnEC_{it} + \alpha_4 LnIC_{it} + \alpha_5 LnGS_{it} + \alpha_6 PG_{it} + \alpha_7 LnMP_{it} + \alpha_8 LnDA_{it} + \alpha_9 LnCGD_{it} + \alpha_{10} LnTR_{it} + \alpha_{11} INF_{it} + \alpha_{12} LnPC_{it} + \eta_i + u_{it} \quad (3.25)$$

$$DEFEXP_{it} = \alpha_0 + \alpha_1 LnBQ_{it} + \alpha_2 LnCORR_{it} + \alpha_3 LnEC_{it} + \alpha_4 LnIC_{it} + \alpha_5 LnGS_{it} + \alpha_6 PG_{it} + \alpha_7 LnMP_{it} + \alpha_8 LnDA_{it} + \alpha_9 LnCGD_{it} + \alpha_{10} LnTR_{it} + \alpha_{11} INF_{it} + \alpha_{12} LnPC_{it} + \eta_i + u_{it} \quad (3.26)$$

$$HEAEXP_{it} = \alpha_0 + \alpha_1 LnBQ_{it} + \alpha_2 LnCORR_{it} + \alpha_3 LnEC_{it} + \alpha_4 LnIC_{it} + \alpha_5 LnGS_{it} + \alpha_6 PG_{it} + \alpha_7 LnMP_{it} + \alpha_8 LnDA_{it} + \alpha_9 LnCGD_{it} + \alpha_{10} LnTR_{it} + \alpha_{11} INF_{it} + \alpha_{12} LnPC_{it} + \eta_i + u_{it} \quad (3.27)$$

$$EDUEXP_{it} = \alpha_0 + \alpha_1 LnBQ_{it} + \alpha_2 LnCORR_{it} + \alpha_3 LnEC_{it} + \alpha_4 LnIC_{it} + \alpha_5 LnGS_{it} + \alpha_6 PG_{it} + \alpha_7 LnMP_{it} + \alpha_8 LnDA_{it} + \alpha_9 LnCGD_{it} + \alpha_{10} LnTR_{it} + \alpha_{11} INF_{it} + \alpha_{12} LnPC_{it} + \eta_i + u_{it} \quad (3.28)$$

$$INFEXP_{it} = \alpha_0 + \alpha_1 LnBQ_{it} + \alpha_2 LnCORR_{it} + \alpha_3 LnEC_{it} + \alpha_4 LnIC_{it} + \alpha_5 LnGS_{it} + \alpha_6 PG_{it} + \alpha_7 LnMP_{it} + \alpha_8 LnDA_{it} + \alpha_9 LnCGD_{it} + \alpha_{10} LnTR_{it} + \alpha_{11} INF_{it} + \alpha_{12} LnPC_{it} + \eta_i + u_{it} \quad (3.29)$$

The above all models are estimated for LIC, MIC, and HIC separately as well as for aggregate countries in order to determine that various socioeconomic, political, and institutional variables behaved differently in different income groups or not.

3.5 Empirical Models for Consequences of Public Spending Allocations

In the light of the previously discussed theoretical framework, the below given empirical models are estimated to find out the impact of public

spending allocations on POV, INQ, and EG.

$$POV_{it} = \alpha_0 + \alpha_1 POV(-1)_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_4 DEFEXP_{it} + +\alpha_7 UNE_{it} + \alpha_8 EG_{it} + \alpha_9 INFEXP_{it} + \alpha_{10} AGD_{it} + \alpha_{11} HEAEXP_{it} + \eta_i + u_{it} \quad (3.30)$$

$$INQ_{it} = \alpha_0 + \alpha_1 POV(-1)_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_4 DEFEXP_{it} + +\alpha_7 UNE_{it} + \alpha_8 EG_{it} + \alpha_9 INFEXP_{it} + \alpha_{10} AGD_{it} + \alpha_{11} HEAEXP_{it} + \eta_i + u_{it} \quad (3.31)$$

$$EG_{it} = \alpha_0 + \alpha_1 POV(-1)_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_4 DEFEXP_{it} + +\alpha_7 UNE_{it} + \alpha_8 EG_{it} + \alpha_9 INFEXP_{it} + \alpha_{10} AGD_{it} + \alpha_{11} HEAEXP_{it} + \eta_i + u_{it} \quad (3.32)$$

The above three equation shows how POV, INQ, and EG is affected by various sectoral spending allocations and other variables. The subscript i show the number of cross-section and t time period, μ is the error term.

3.6 Panel Data Estimation

This study has used panel data to explore the impact of socioeconomic, political, and institutional factors on public spending allocation and its consequences. Panel data analysis is preferred, as it combines the data for N cross-sections and T time periods. This combined panel data matrix set includes time series for each cross-sectional member in the sample data set[5]. Literature mentioned three main factors that have mainly contributed to the geometric growth of panel data studies. These factors include the availability of data, greater capacity for modeling the complexity of human behavior than a single cross-section or time-series data, and challenging methodology

[5] If the panel has the same number of time observations for every cross-sectional member, it is said be balanced panel, otherwise unbalanced panel.

(Hsiao, 2007). The random effect and fixed effect are the two standard methods that are used to estimate panel data models.

Panel data models examine fixed and/or random effects across individuals or time. The main difference between fixed and random effects models lies in the role of dummy variables. In the fixed effects model, the parameter estimate of a dummy variable becomes a part of the intercept, whereas, in the random effects model, it is a part of the error component. On the other hand, slope parameters remain the same across individuals or time periods in both models. Therefore, the fixed effects model is called Least Square Dummy Variable ($LSDV$) model. In this method of estimation, the constant is treated as cross-section specific. This implies that the model permits for a separate intercept for each cross-section unit.

In addition, the fixed effects model captures all effects, which are specific to a particular section and do not change over time. Therefore, fixed effects consider all the things like geographical factors, natural endowments, and any other basic factor that varies among countries but remain constant over time. This implies that there is no need to add any variable that does not vary over time, such as country size, as it will be perfectly co-linear with the fixed effects. The fixed effects model can be extended by including a set of time dummies. This extended form is called the 'two-way fixed effects model' and captures any effects, which vary over time but are the same across the whole panel. The fixed effects model is very useful but, in some cases, the simplifying assumption does not hold and gives rise to the random effects model.

The core assumption of the random effects model is the individual effect (heterogeneity) is not correlated with any regressor and estimates error variance specific to cross-section units (or times). Hence, μ_i becomes an individual-specific random heterogeneity component (part of the composite error term). Therefore, a random effects model is also naming as 'Error Component Model.' In the random effects model, intercept and slope parameters of regressors are the same across individuals, and their individual specific errors capture the difference among individuals (or time periods) and are not part of their intercepts. In random effects model, intercept for each section is not fixed; rather, a random parameter

The major disadvantage of the random effects model is that we need to make a specific assumption regarding the distribution of the random component. In addition, random effects estimates become biased and inconsistent if unobserved individual-specific effects are correlated with the explanatory variables. However, the main advantages of the random effects model are as below: Random effects model has fewer parameters to estimate as compared to the fixed effects model. It permits for additional explanatory variables, which have the same value for all observations within a section/group.

3.6.1 Estimation of Fixed Effects-IV Model

The fixed effects model examines individual differences in intercepts, assuming the same slope parameters and constant variance across the individual cross-sectional unit. So, an individual specific effect is time-invariant and becomes a part of the intercept and μ_i is permitted to correlate with other regressors. Therefore, the exogeneity assumption of OLS is not

violated, and fixed effects model can be estimated through least squares dummy variable ($LSDV$) regression.

LSDV estimation method is widely used because it is relatively easy to estimate and interpret substantively. But it becomes problematic when the number of cross-sections increases in panel data. In this study, the Fixed Effect-Instrument Variable ($FE - IV$) method has been used for estimating various models as per the objectives of the study. In this method, we used endogenous instruments. This method is helpful in tackling the endogeneity problem. It is based on Fixed effect and 2SLS estimations.

3.6.2 The Hausman Test

Hausman (1978) formulated a test to help in making a choice between the fixed effects model and the random effects model. This test is based on the notion that under the hypothesis of no correlation, both OLS and GLS estimators are consistent, but the OLS estimator is inefficient. On the other hand, under the alternative hypothesis OLS estimator is consistent, but GLS is not. Therefore, the appropriate selection between the fixed effects model and random effects model involves the investigation of whether the regressors are correlated with the individual effects, which are unobserved in most cases. The fixed effects estimators remain consistent even when the estimators are correlated with the individual effects. Hence, for a given panel data set where fixed effects would be appropriate, the Hausman test explores whether random effects estimation be almost as good. Therefore, we can view the Hausman statistic as a distance measure between the fixed effects

and the random effects estimators. Thus, the null hypothesis of the Hausman test is as follows:

$$H_0 = Random\ effects\ are\ consistent\ and\ efficient$$

$$H1 = Random\ effects\ are\ inconsistent$$

The Hausman test statistic can be calculated as follow:

$$H = (\hat{\theta}_{FE} - \hat{\theta}_{RE})'\left[Var(\hat{\theta}_{FE}) - Var(\hat{\theta}_{RE})\right]^{-1}(\hat{\theta}_{FE} - \hat{\theta}_{RE}) \sim \chi^{2(k)} \quad (3.33)$$

A larger value of H-statistic indicates that the difference between the estimates is significant, which implies reject the null hypothesis that the random effects model is consistent and uses the fixed effects model for estimation. In contrast, a smaller value of the H-statistic implies that the random effects model's estimation is more appropriate.

3.7 Generalized Method of Moments Estimation (*GMM*)

Generalized Method of Moment (*GMM*) is the estimation method, which was developed in econometrics in the decade of 80. This estimation method was formalized by Hansen (1982), and since that is most widely used in economics for models' estimation. This estimation method uses internal (lagged) variables as the instruments to deal with this difficulty regarding appropriate instruments. It does not require complete knowledge of the distribution of the data as in the case of maximum likelihood estimation (*MLE*). The most important feature of *GMM* is that it gives a straightforward way to test the specification of the proposed model that has more moment conditions than estimated parameters. Besides, the GMM method specified a

set of population moment conditions on the regression errors. These moment conditions set the expected value of the errors and the expected values of the products of errors with exogenous instrumental variables equal to zero. After this process, these population moments are replaced by the sample moments to derive the parameter estimates. The one-step system GMM method is used to check the robustness of results in this study where the models are dynamic in nature.

3.8 Diagnostics

In *GMM* and *FE-IV* estimation method, Hansen J-statistic is used to test the over-identifying restrictions in the model. It is numerically identical to the Sargan test statistic (proposed by John Denis Sargan in 1958). This statistic is simply the value of the GMM objective function, evaluated at the efficient GMM estimator($\hat{\theta}_{EGMM}$), under the Null hypothesis:

$$J(\theta_{EGMM}) = N\bar{g}(\theta_{EGMM})'S^{-1}\bar{g}(\theta_{EGMM}) \sim \chi^2_{l-k} \qquad (3.34)$$

Where the matrix $\hat{S}$ is estimated using the two-step methods. The J statistic is asymptotically distributed as chi-square with degrees of freedom equal to the number of over-identifying restrictions $(l - k)$ rather than the total number of moment conditions (l). Hansen's J statistic is the most common diagnostic test used in GMM estimation to evaluate the suitability of the model. A rejection of the null hypothesis implies that the instruments do not satisfy the required orthogonality conditions-either because they are not truly exogenous

or because they are incorrectly excluded from the regression[6]. In order to avoid heteroskedasticity and autocorrelation problems we use hetro-auto consistent standard errors as suggested by Newey and West (1987).

3.9 Data: Description of variables and Sources

This section of the study presents sample and sample selection criteria, a description of the variables under consideration, and their data sources. The list sources include World Development Indicators (*WDI*), International Financial Statistic (IFS), International Labor Organization (*ILO*), International Country Risk Guide (*ICRG*), and speed data set developed by International Food Policy Research Institute (*IFPRI*).

3.9.1 Sample Size and Sample Selection Criteria

This study consists of 104 countries of the world whose data was available.[7] Furthermore, countries are divided into high-income, middle-income, and low-income countries based on the World Bank classification definition. There are two reasons which may justify this sample division. First, to avoid the potential heterogeneity, hence the sample countries are divided into different income countries. Second, as discussed in the opening section of the chapter that we want to analyze that how different political and institutional factors may behave differently in determining public spending allocations across a different group of countries. The list of *HIC* includes 49 countries,

[6] For further detail, see Hayashi (2000) and Ruud (2000). This test statistic is also known as distance difference statistic (Ruud, 2000) and C-statistic (Hayashi, 2000).

[7] List of the selected countries is attached in the Appendix A6

MIC includes 37 countries, and 18 countries are included in the low-income country list.

3.9.2 Dependent Variables

Total Public Spending (*TPS*)

Government expenditure refers to the public sector's expenditure on the purchase of goods and the provision of services such as education, health, social security, and defense. The data for the total government spending is obtained from the world bank database.

Education Spending (*EDUEXP*)

EDUEXP cover the public spending on schools, universities, and other public and private educational institutions by the government. The data set is taken from the Speed data set developed by *IFPRI* which is derived from World Development Indicator (*WDI*).

Health Spending (*HEAEXP*)

The spending on health measures the final use of goods and services for health. This includes expenditure on medical care and goods, public health, and preventive programmers and administration from both public and private sources but excludes spending on the capital formation (investments). Data is obtained from the World Bank and *IFPRI*.

Defense Spending (*DEFEXP*)

The spending on the military is the amount allocated by a country to raising and maintaining an armed force. The data is obtained from *IFPRI* database.

Infrastructure Spending ($INFEXP$)

Infrastructure spending ($INFEXP$) includes public spending on the telecommunication sector and roads and railway network. The data set is taken from the data set of $IFPRI$.

Poverty (POV)

POV is about not having enough money to meet basic needs, including food, clothing, and shelter. POV is measured through headcount ratio at $1.90 a day 2011 PPP. Data on the headcount ratio is obtained from the world bank.

Inequality (INQ)

INQ is defined as "how unevenly income is distributed throughout the population." The unequal the distribution, the higher will be the value of income INQ.

Economic Growth (EG)

EG is the percentage change in real gross domestic product per capita. The data set is taken from the World Development Indicators (WDI).

3.9.3 Independent Variables: Government Stability (GS)

$ICRG$ defines GS as "an assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office." A score of 4 points equates to Very Low Risk (highly stable government) and a score of 0 points to Very High Risk (unstable).

Military in Politics (*MP*)

It is defined as "a measure of the military's involvement in politics." The less involvement of the military in government is assigned lower index value by ICRG, and higher value of index shows more military involvement.

Internal Conflict (*IC*)

ICRG defines *IC* as "an assessment of political violence in the country" and its actual or potential impact on governance. The highest score represented fewer conflicts and vice versa.

External Conflict (*EC*)

ICRG defines *EC* as "a measure of an assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure to violent external pressure." A high score represents Very Low Risk and a score of 0 points to Very High Risk.

Corruption (*CORR*)

ICRG defines *CORR* as "an assessment of *CORR* within the political system." The lower value of the *CORR* index shows more *CORR* and a higher value is given for less *CORR*.

Democratic Accountability (*DA*)

This is a defined by *ICRG as* "a measure of how responsive government is to its people. In general, the highest number of risk points (lowest risk) is

assigned to Alternating Democracies, while the lowest number of risk points (highest risk) is assigned to Autarchies.

Inflation Rate (*INF*)

Inflation (INF) is the percentage change in the Consumer Price Index (CPI). We used the data from the period of 1990 to 2016 from WDI.

Population Growth (*PG*)

The average annual percentage change in the population is called population growth. Data of the population growth obtained from the WDI.

Tax Revenue (*TR*)

Tax revenue is the revenue that governments receive from taxation. The primary source of government revenue is taxation. Fiscal performance is also measured through tax collection. Data on the tax revenue is obtained from the World Bank.

Age Dependency Ratio (*ADR*)

The dependency ratio is an age-population ratio of those typically not in the labor force and those typically in the labor force. It is used to measure the pressure on the productive population. Data on the age dependency ratio is obtained from the World Bank.

Urbanization (*URB*)

Urbanization (URB) refers to the population shift from rural to urban areas, the decrease in the proportion of people living in rural areas, and the ways in

which societies adapt to this change. The data set is taken from the World Development indicator (WDI).

Unemployment (UNE)

Unemployment (UNE) is a term referring to individuals who are employable and seeking a job but are unable to find a job. The data set is taken from the World Development Indicator (WDI).

Investment (INV)

Gross fixed capital formation as a percentage of GDP is used as a proxy for investment (INV). The data set is taken from the World Development Indicator (WDI).

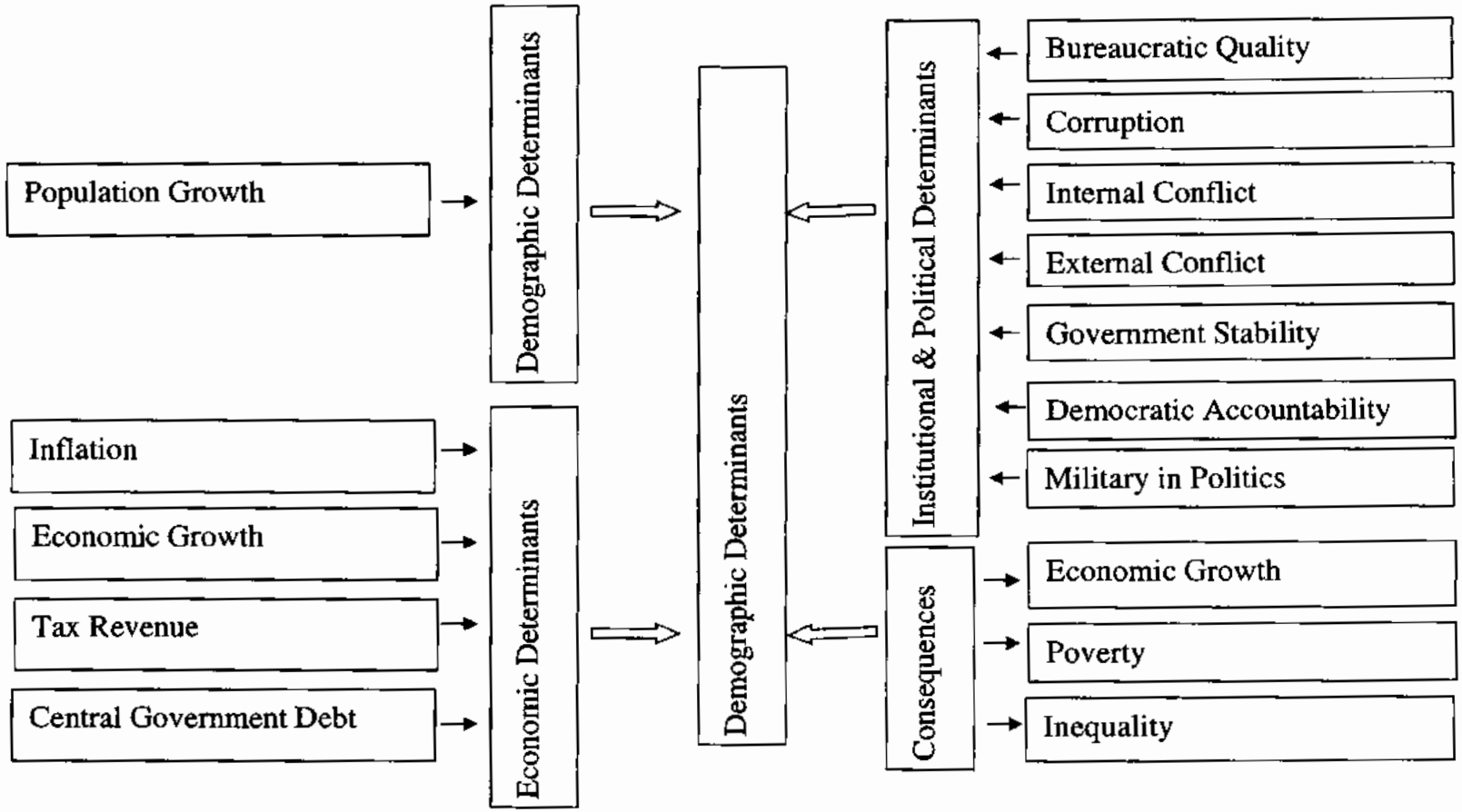
Government Final Consumption Expenditure ($GFCEXP$)

Government final consumption expenditures are government's expenditures on goods and services. The data are taken from the World Development Indicator (WDI).

Human Capital (HC)

Net secondary school enrollment is used as a proxy for human capital (HC). The data set is taken from the World Development Indicator (WDI).

Figure 3.1: Determinants and consequences of Public Spending Allocations



Chapter 4

DESCRIPTIVE AND GRAPHICAL ANALYSIS

The descriptive analysis of the data is usually carried out based upon various statistical measures. The most-reported statistical measures in this regard are the location (central tendency) and variance of the data. The location of the data presents the central value of the series, which is mostly measured by the mean. On the other hand, variability refers to the spread or dispersion of the series around its mean value, which is commonly captured by standard deviation.

Table 4. 1: Descriptive Statistics for Aggregate Data

Variable	N	Mean	Median	Sd	Min	Max
Total Govt. Exp to GDP	2385	30.3034	28.3101	15.4975	0.3507	212.0902
Defense Exp to GDP	1866	2.4392	1.4961	5.7710	0.0194	144.6418
Health Exp to GDP	1986	3.1765	2.4496	2.4147	0.0371	11.4752
Education Exp to GDP	2021	4.0321	4.1127	2.2611	0.0745	24.6975
Population Growth	2803	1.6138	1.4901	1.6733	-9.0806	17.5110
Infrastructure Exp to GDP	1161	1.9259	1.8528	1.3475	0.0008	8.5678
Gini Coefficient	919	36.5758	34.3000	8.6481	20.2000	63.2000
Democratic Accountability	2232	4.2007	4.5000	1.6192	0.0400	6.0000
Per Capita GDP Growth	2721	1.9118	2.2111	4.7920	-47.5033	37.5355
Head Count Ratio	799	12.3320	1.4000	19.7015	0.1000	94.1000
GDP Growth	2720	3.5785	3.8368	4.9469	-50.2481	35.2241
Tax Revenue to GDP	1877	17.5539	16.7932	9.4463	0.0435	149.2834
External Conflict	2262	10.1593	10.5000	1.6028	2.0000	12.0000
Govt Stability	2262	7.9283	8.0000	1.9185	1.0000	11.5833
Internal Conflict	2259	9.2988	9.6700	2.1703	0.1667	12.0000
Military in Politics	2150	4.1958	5.0000	1.6552	0.0833	6.0000
Corruption	2249	3.1532	3.0000	1.3249	0.0800	6.0000
Bureaucratic Quality	2098	2.5867	2.5000	1.0592	0.1667	4.0000

Source: Authors own formulation

Besides these two measures, there are some other frequently reported measures, including correlation, cross-tabulation, etc. In this section, we are going to discuss the descriptive statistic. For this, we have measured the mean, standard deviation and analyze the minimum and maximum values. The following table 4.1 illustrates descriptive statistics under consideration.

Statistics presented in Table 4.1 show that the mean represents the central value of the series. This includes three measures, namely, mean, median, and mode. However, we will be considering the mean. The total government expenditure, which is the public spending on various goods and services, thus, on average, the total government expenditure in the selected countries is 30.3 percent to *GDP* from 1990 till 2016.

In 1991 and 1992, 212 and 100 percent of *GDP* has been documented as the maximum total government expenditure in the case of Kuwait because of an outbreak of war. The minimum total government expenditure has been recorded for Cameroon, which is 0.3 percent to *GDP*. Standard deviation, on the other hand, is the square root of the variance, which shows that how close the data is to the mean. The dispersion of the total government expenditure as a percentage of GDP is 15.49 from its mean. Similarly, defense expenditure to GDP is 2.4392. minimum of the defense expend is 0.01939, and the maximum of the defense expenditure is 144.6418. the difference between the minimum of the defense expenditure to GDP and the maximum of the defense expenditure to *GDP* shows some countries spend more on defense than *GDP*.

The mean value of the health expenditure to *GDP* is more than three (3.1764). The minimum value of the health expenditure is 0.0370, and the maximum

value of the health expenditure to *GDP* is 11.4751. It shows some *LIC* spend a very low percentage of *GDP* on health as compared to the middle- and *HIC*. The situation is the same in expenditure on education. Some LIC spends 0.074 percent to *GDP* on education. The mean population growth of the selected countries is 1.6138. The minimum value of infrastructure expenditure to GDP is very low (0.0008), and the maximum value of the infrastructure to GDP is (8.5678). The mean value of the Gini coefficient and democratic accountability index is 36.5758 and 4.2006, respectively. The minimum value of the democratic accountability index is 0.04, and the maximum value is 6. Similarly, the mean value of the per capita of *GDP* is 1.9118. The minimum value of the head account ratio is 0.1, and the maximum value of the head account ratio is 94.1. The difference between the minimum value and the maximum value shows the intensity of *POV* is very high. Moreover, the mean value of the GDP growth is 3.5784, the median of the *GDP* growth is 3.8367, and the standard deviation of the GDP growth is 4.9468. The maximum value of the tax revenue to GDP is 149.2834, and the minimum value of the tax revenue to GDP is 0.0434. It shows HIC has the high tax revenue to GDP and LIC has low tax revenue to GDP. Similarly, mean value of the EC, GS and the IC are 10.1592, 7.9282 and 9.2987 respectively. Similarly, mean value of the index Military in Politics, *CORR* and Bureaucratic Quality 4.1958, 3.1531, 2.5866 respective.

Table 4. 2: Correlation Matrix for Aggregate Data (a)

	Total Govt. Exp to GDP	Defense Exp to GDP	Health Exp to GDP	Education Exp to GDP	Population Growth	Infra Exp to GDP	Gini Coefficient	Democratic Accountability	Per Capita GDP
Total Govt. Exp to GDP	1								
Defense Exp to GDP	0.0676	1							
Health Exp to GDP	0.8477	0.0147	1						
Education Exp to GDP	0.7674	0.1544	0.6426	1					
Population Growth	-0.398	-0.1376	-0.2894	-0.3898	1				
Infra Exp to GDP	0.3898	0.1373	0.2883	0.3254	-0.3234	1			
Gini Coefficient	-0.699	-0.014	-0.5851	-0.5273	0.2665	0.3297	1		
Democratic Accountability	0.5612	-0.04	0.5783	0.391	-0.1891	0.1982	-0.5016	1	
Per Capita GDP	-0.2752	0.0144	-0.2686	-0.1217	-0.0351	-0.0698	0.0746	-0.2188	1

Table 4. 2: Correlation Matrix for Aggregate Data (b)

	Head Count Ratio	GDP Growth	Tax Revenue to GDP	External Conflict	Govt Stability	Internal Conflict	Military in Politics	Corruption	Bureaucratic Quality
Head Count Ratio	1								
GDP Growth	0.1674	1							
Tax Revenue to GDP	-0.3576	0.1435	1						
External Conflict	-0.1828	0.0499	0.1206	1					
Govt Stability	0.1106	0.1554	-0.0589	-0.0195	1				
Internal Conflict	-0.2953	0.0352	0.2873	0.5655	0.1429	1			
Military in Politics	-0.6599	-0.1996	0.5422	0.305	-0.1327	0.4949	1		
Corruption	-0.2574	-0.0816	0.4474	0.2202	0.0841	0.3276	0.486	1	
Bureaucratic Quality	-0.4895	-0.15	0.5131	0.2429	0.0069	0.339	0.6638	0.7715	1

Correlation refers to a connection or mutual relationship between two variables. It shows how strongly the pairs of variables are related to each other. The correlation is measured by the correlation coefficient, which ranges from -1 to +1. The positive and negative signs indicate the positive and negative connection between two variables, while zero indicates no relationship at all. It is noteworthy that correlation between two variables does not necessarily mean causality or dependency. The correlation value between health expenditure and total government expenditure to *GDP* is 0.8477, and education expenditure to *GDP* is 0.7674, which certainly indicates a positive relationship between health expenditure to total government expenditure to GDP and education expenditure to total government expenditure to GDP. Similarly, the correlation value between poverty and military in politics is -0.69 and -0.65, respectively, indicating a negative correlation between the Gini coefficient, military in politics with total government expenditure to GDP.

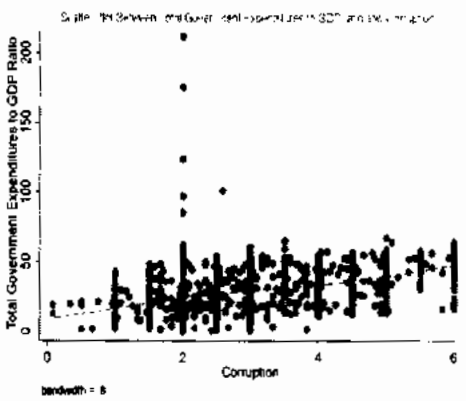
4.1. Total Government Expenditures, Determinants, and Consequences

This subsection consists of the construction of scatter plots for important determinants of public spending allocations and their consequences for our sample countries. The scatter plots are constructed to find the type of relationships among various variables. The nature of the variables in panel (a-d) are indices that show somewhat concentrated data. However, if we calculate the line using least squares regression, we can identify the nature of the relationship. Panel (a) of figure 3.1 illustrates a positive linear

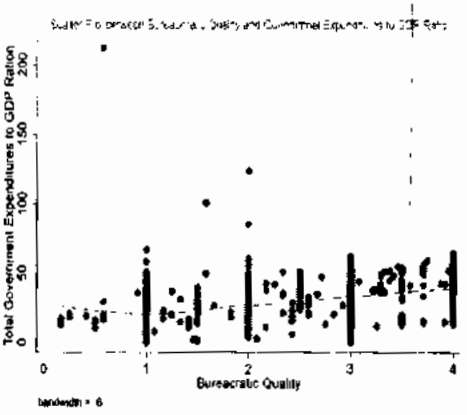
relationship between *CORR* and total government expenditure. This implies that as the total government expenditure increases with an increase in *CORR*. The one possible justification is the existence of *CORR* in the administrative procedures of public spending. Therefore, this relationship is justifiable. The same is the case for bureaucratic quality and military in politics against total government expenditure. However, the relationship of both is non-linear. The closeness of the data points in the illustrated scatter plots indicates a strong correlation between the discussed variables.

Figure 4. 1: Total Government Expenditures, its determinants, and Consequences

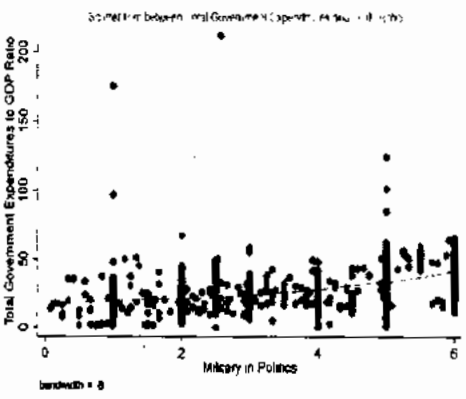
Panel (a)



Panel (b)



Panel (c)



Panel (d)

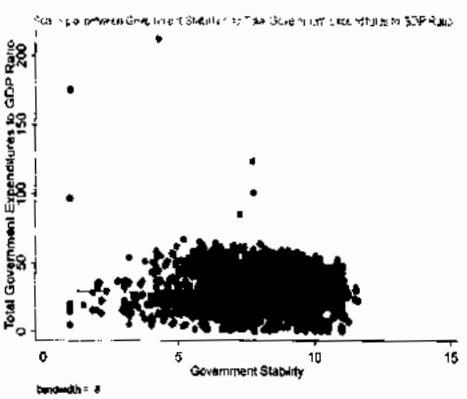
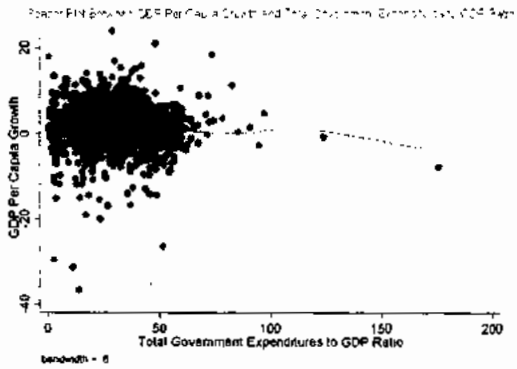
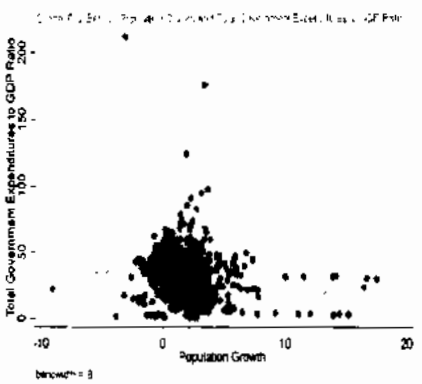


Figure 4.1 (Continued)

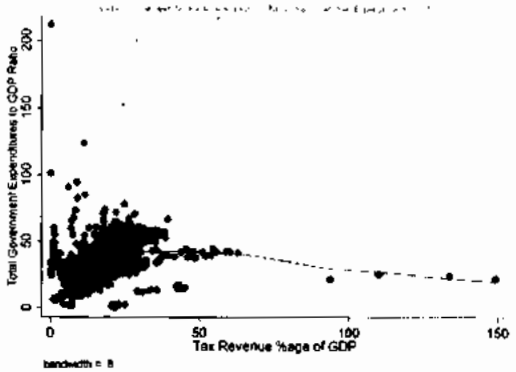
Panel (e)



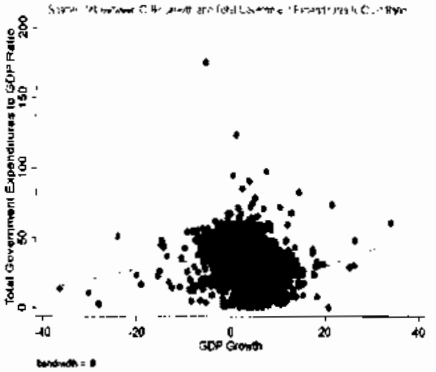
Panel (f)



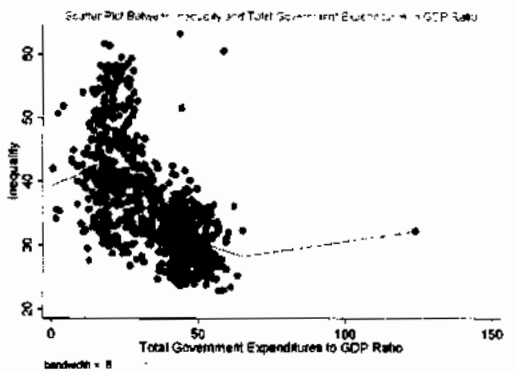
Panel (g)



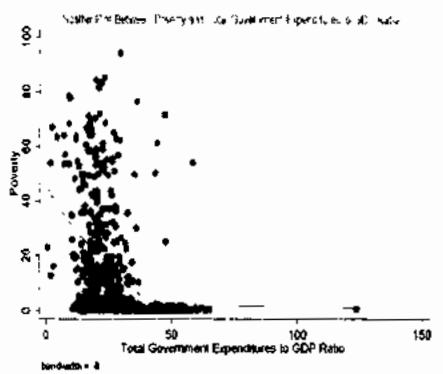
Panel (h)



Panel (i)



Panel (j)



As for GS and population growth, we have observed that up till a certain level of public spending stables the government and is somehow able to entertain the growth in the population. This also shows that an increase in population growth does not drastically increase public spending. The

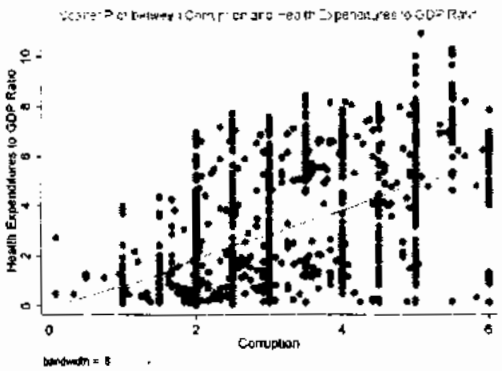
relationship between tax revenue and public spending (panel-i) indicates a positive relationship as the tax collection increases. However, decline if the tax revenue as a percentage of GDP increases from 55 percent. Whereas, in the case of GDP growth, we see a positive trend in public spending. Interesting facts about POV and INQ can be observed in panels (i) and (j), which show that as public spending increases, POV and INQ starts to decline. Therefore, public spending can be concluded as a remedy for POV and INQ. In all of the above relationships, we have observed that the variables are strongly correlated; however, the relationship is non-linear.

4.2. Health Expenditures Determinants, and Consequences

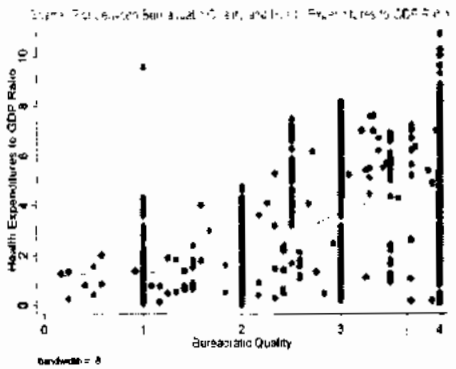
The following figure 4.2 finds the nature of the relationship of health expenditure to GDP ratio with various indicators and illustrates the consequences of it on POV and INQ. Among other government expenditures, health expenditure is considered as the most critical public spending as more poor lives are dependent on it. But surprisingly for the selected country, $CORR$ increases as the health expenditure increases more than any government expenditure. This indicates that there are various leakages of expenditure in the health department.

Figure 4.2: Health Expenditures, Determinants and Consequences

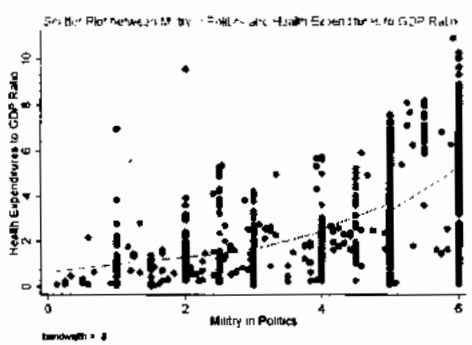
Panel (a)



Panel (b)

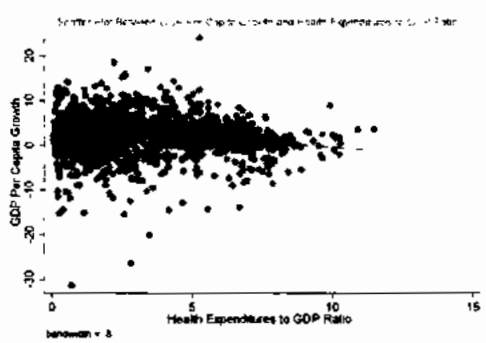


Panel (c)



Panel (d)

Panel (e)



Panel (f)

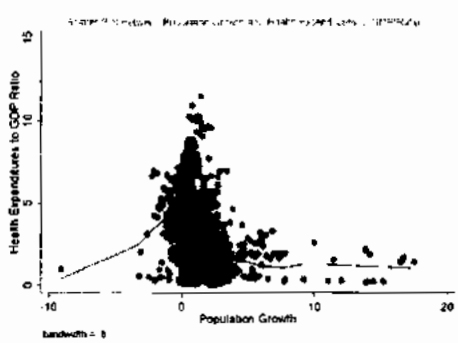
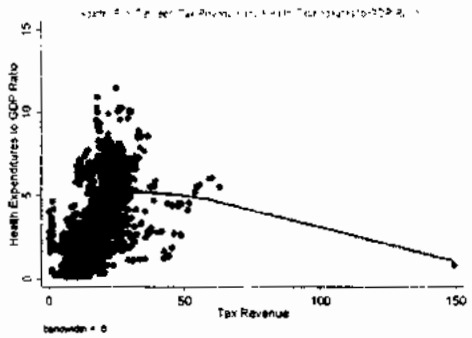
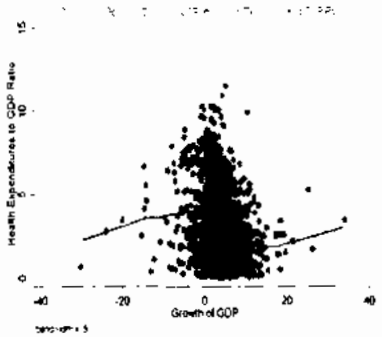


Figure 4.1 (Continued)

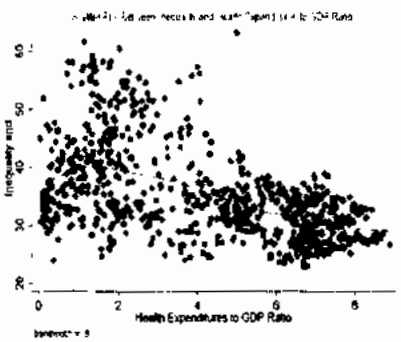
Panel (g)



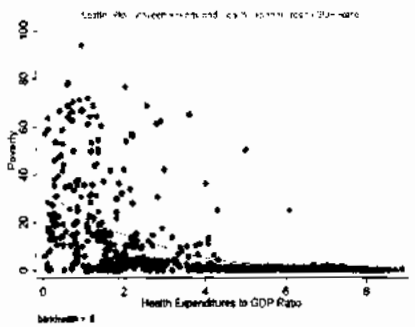
Panel (h)



Panel (i)



Panel (j)



The relationship of CORR with health expenditure is positive and linear in nature. The same is the relationship of Bureaucratic Quality and Military in Politics. There has been a positive non-linear relationship. In case of GS, Population Growth, Tax Revenue and GDP Growth initially, these increase with the increase in the health expenditure. However, then starts to decline. It is justifiable for every indicator. In case of GS, such expenditure increases the credibility of the government which after a passage of time declines.

As far as the population growth is concerned, health expenditure accommodates a certain amount of population. Therefore, it increases with

population then starts to decline as population grows and the expenditure done remains inconclusive. Tax revenue has been observed to increase as creditability of the government increases and society is inclined to pay the taxes initially. The GDP also grows initially as health expenditure require consumption of health-related products which indirectly increases the production of the demanded health products. GDP per capita has been observed to remain constant at a certain level. This shows that, the individuals of the society can only avail the services and do not get any financial benefit from the health expenditure. In all the stated indicators, we have experienced that the relationship has been non-linear.

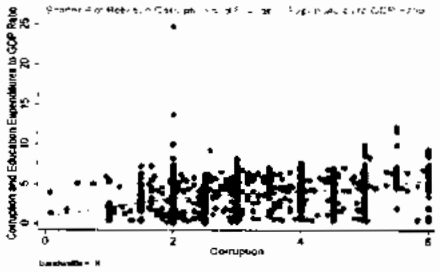
The consequences of health expenditure seem promising as the figures illustrates, that as health expenditure increases INQ and POV both decreases. Which in other words provides purchasing power to the individuals of the society while providing subsidized services to the deserving.

4.3. Education Expenditures, Determinants, and Consequences

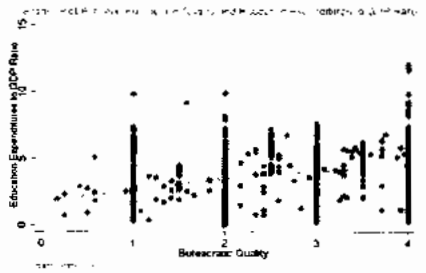
The figure 3.3 presents scatter plot for education expenditures, its main determinants, and consequences. Like health expenditure, education expenditure is also considered critical for the future of nations. Developed nations having the status of HIC have enough human capital to develop their economies and every such contribution comes through education. Developing countries have been observed to spend minimal amount on education which do not show any prominent and marketable effect on the economy. We have analyzed the relationship of key indicators with education expenditure.

Figure 4.3: Education Expenditures, its main determinants, and Consequences

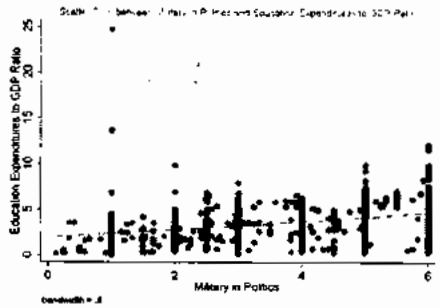
Panel (a)



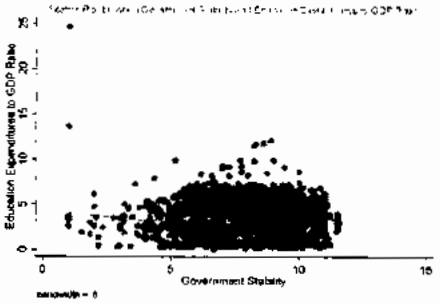
Panel (b)



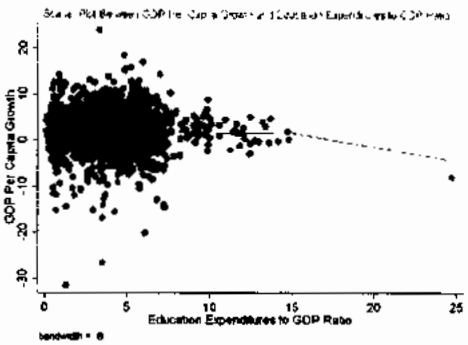
Panel (c)



Panel (d)



Panel (e)



Panel (f)

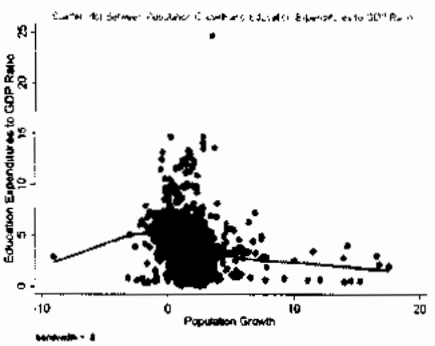
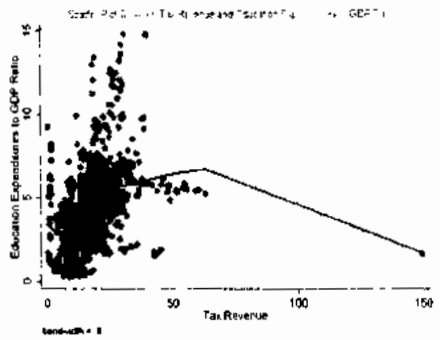
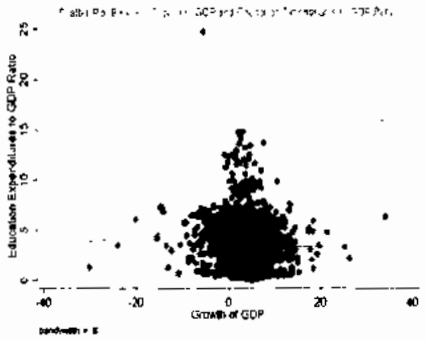


Figure 4.3 (continued)

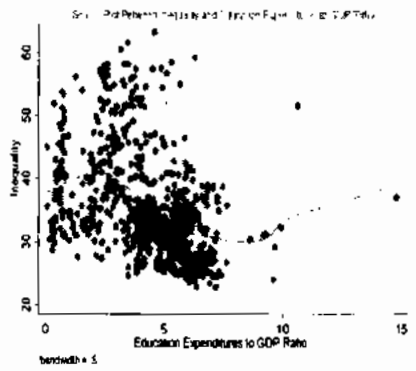
Panel (g)



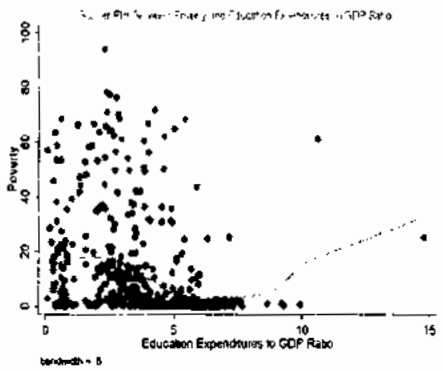
Panel (h)



Panel (i)



Panel (j)



The one key finding that we can draw from the above graphical indication is that *CORR*, bureaucratic quality and military in politics are having a positive relation, however, the intensity of this relationship is not the same as the one with health expenditure. Which in case of military in politics is better and nearly not having any effect at all. Same is the case with *GS* and *GDP* growth per capita. Whereas in case of bureaucratic quality and *CORR* there is a slight increase. The nature of relationship is linear for *CORR*, bureaucratic quality and military in politics. We can examine a positive link of education expenditure with the population growth initially and then a decline for some countries. Same is the case with tax revenue. We can examine that education

expenditure tends to increase as tax revenue increases. As the source of government expenditure is mostly attributed to tax revenue, therefore, this relationship is justifiable. In case of the selected countries, we have observed that GDP growth has been inconclusive and remained constant.

As far as the consequences of education expenditure is concerned, we can examine that irrespective of the outliners we can examine an initial positive and then negative effect on POV and INQ. Therefore, it can be concluded that education expenditure is effective to reduce POV and INQ as it does in case of health expenditure. As a summary, $CORR$, bureaucratic quality, tax revenue and population growth are positively related which is not the case in POV and INQ. The relationship is overall non-linear except for $CORR$, bureaucratic quality and military in politics.

4.4. Defense Expenditures, Determinants, and Consequences

Figure 3.4 presents scatter plot of the defense expenditure, its main determinants, and consequences. In case of defense expenditure, literature suggests that such expenditures do not contribute to the development of economies rather it ensures security of the society. Therefore, we can see that such expenditure remains inconclusive for all the selected variables. It is not meant to reduce POV and INQ, so it remains constant throughout the data set of various countries. It is not meant to increase tax revenue therefore it remains same likewise is the case with $CORR$, GS, military in politics and bureaucratic quality.

Figure 4. 4: Defense Expenditures, its main determinants, and Consequences

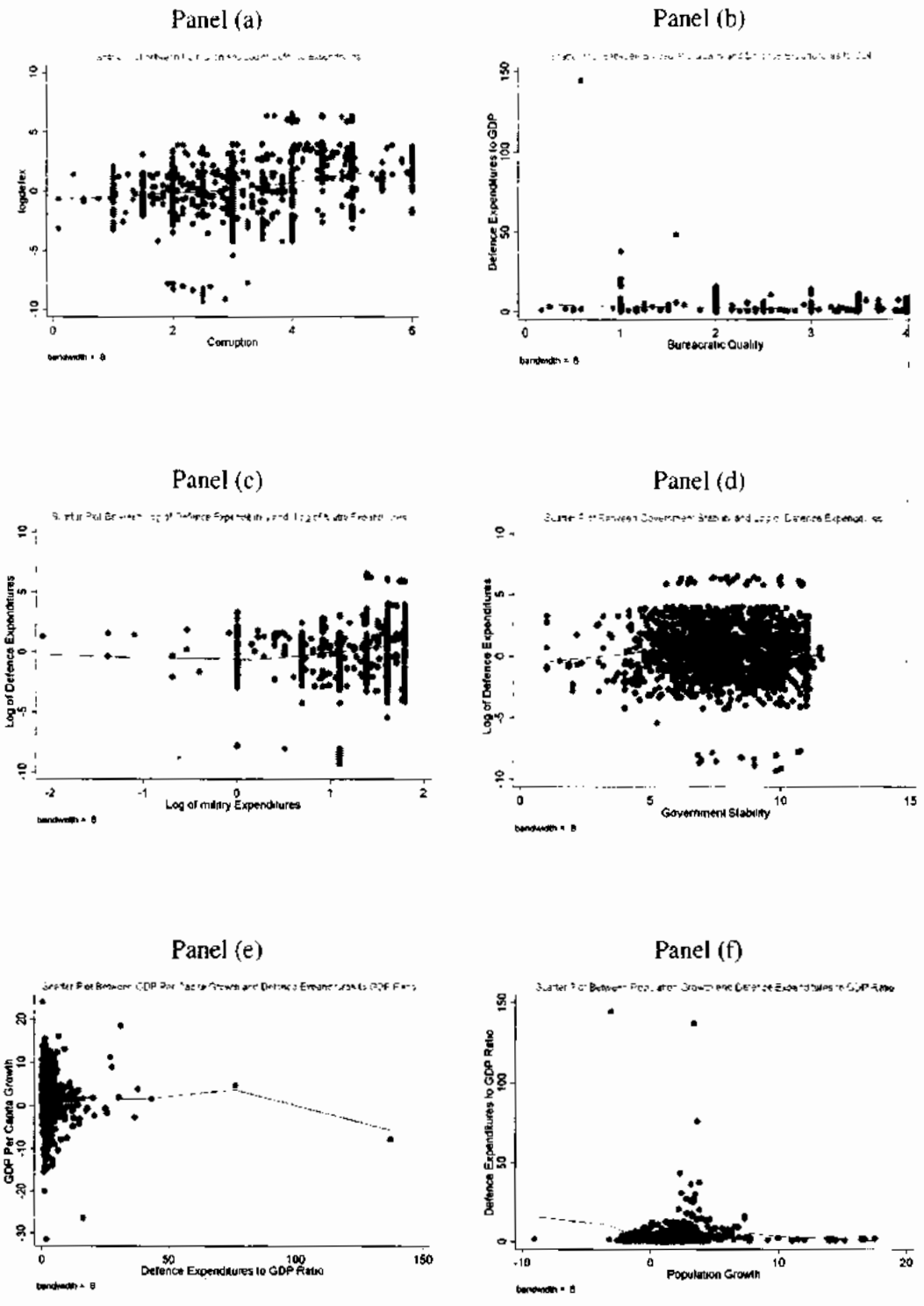
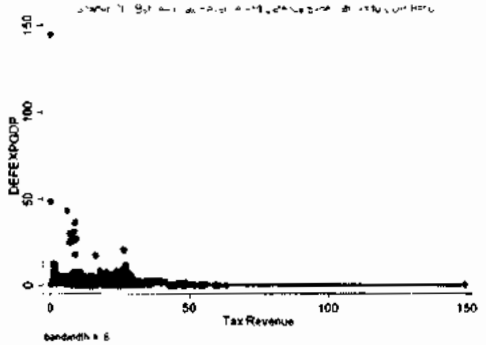
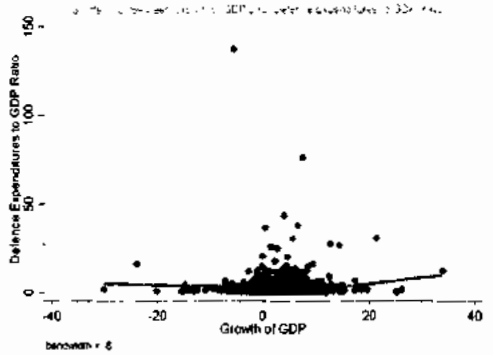


Figure 4.4 (continued)

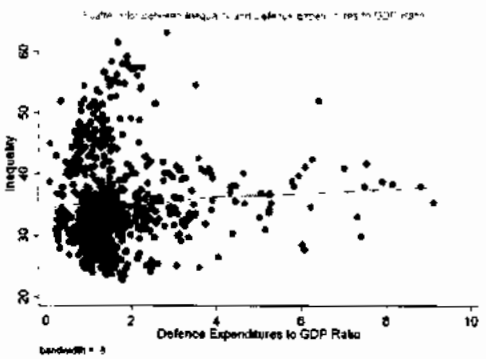
Panel (g)



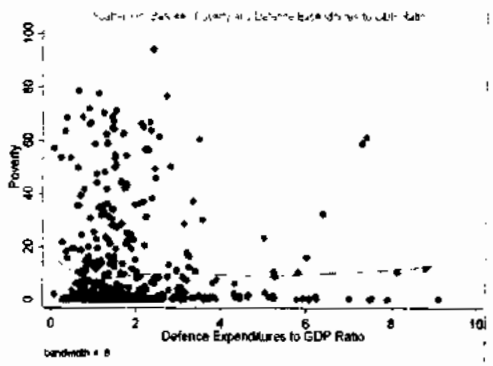
Panel (h)



Panel (i)



Panel (j)



In case of bureaucratic quality and tax revenue the nature of relationship is linear whereas for other key indicators the relationship is non-linear.

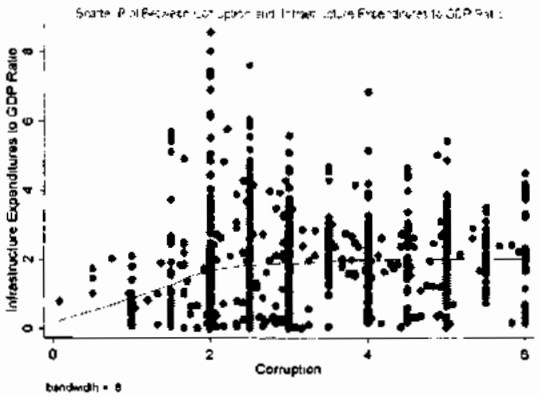
4.5. Infrastructure Expenditures, its Main Determinants, and Consequences

Figure 4.5 presents the scatter plot of infrastructure expenditure, its main determinants, and consequences. Infrastructure expenditure which covers a large part of development expenditure is considered viable for future developments. There is a bulk of studies which emphasizes the positive impacts of infrastructure on the development of the economy. Developing countries usually invest in infrastructure for either linking the cities and to

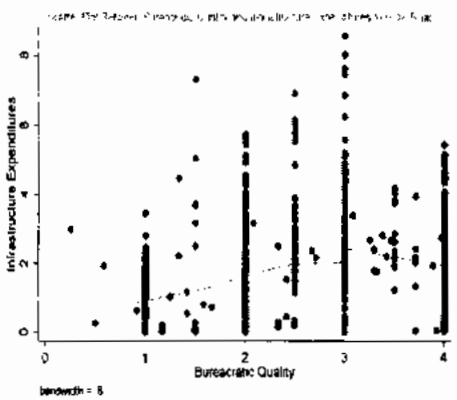
squeeze the distances or these investments and expenditure are done for the purpose to attract FDI.

Figure 4. 5: Infrastructure Expenditures, its main determinants, and Consequences

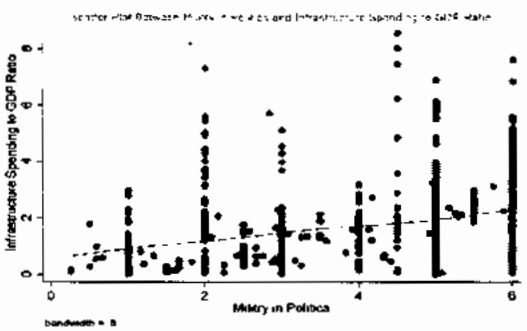
Panel (a)



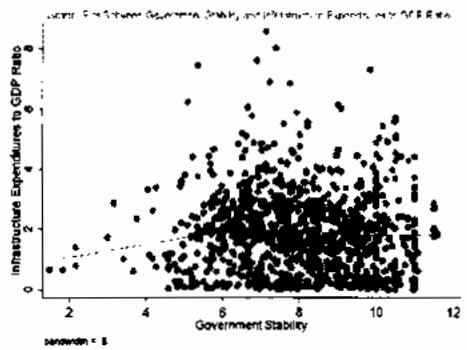
Panel (b)



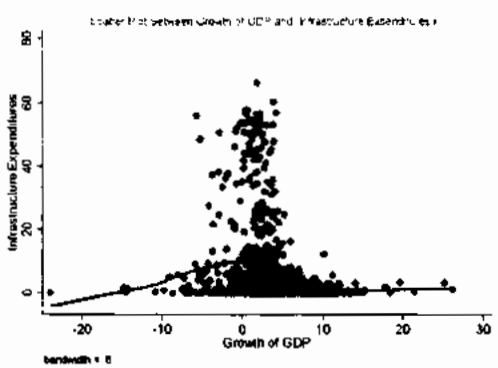
Panel (c)



Panel (d)



Panel (e)



Panel (f)

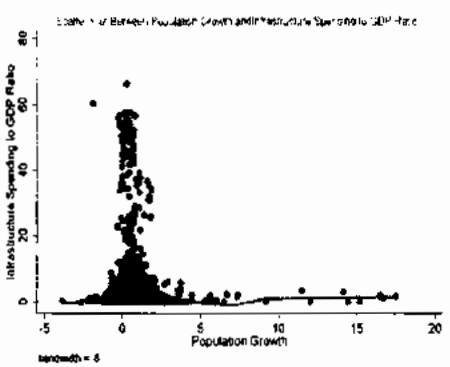
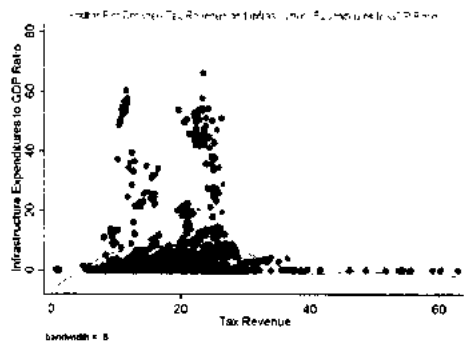
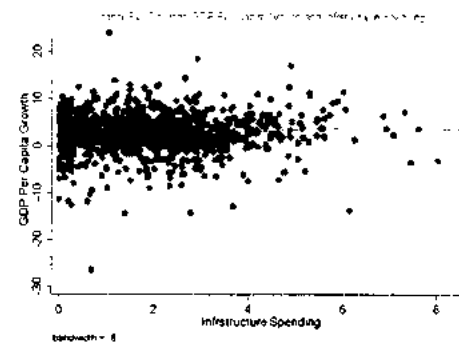


Figure 3.5 (continued)

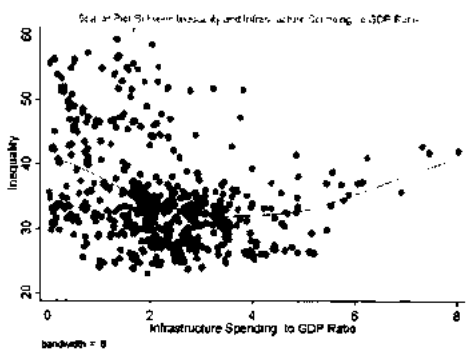
Panel (g)



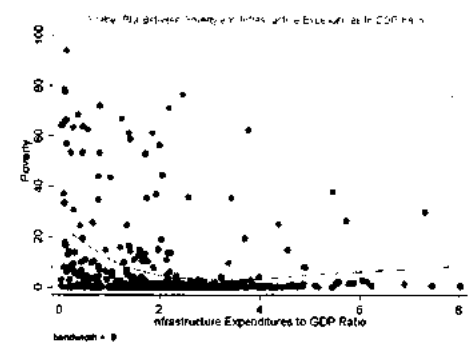
Panel (h)



Panel (i)



Panel (j)



In both cases it is considered as a backbone of development. Among other positive impacts of infrastructure, mobility has been considered as the most effective indicator which connects cities and make industrialization easy to operate. However, there are known loopholes in infrastructure expenditures. Therefore, for any country, infrastructure projects tend to include $CORR$ and for this, there is the aspect of huge $CORR$ and positive relationship of infrastructure expenditure with the $CORR$.

In most areas where infrastructure projects are initiated are remote areas which involve military in politics as well, therefore, the scatter plots for the selected countries show a positive linear relationship of military in politics

with the infrastructure expenditure. It also indicates that the bureaucratic quality and GS increases with the increase in infrastructure expenditure for the selected countries. The relationship with both indicators is non-linear in nature.

As far as the GDP growth and GDP per capita are concerned, we should not expect and consider the effect of infrastructure on these indicators any soon as these effects usually develop the economy after a long period of time. Therefore, we can see the effect of infrastructure expenditure with POV and INQ that initially, the effect is insignificant in some countries and for others which usually invest in infrastructure enjoys the fruits of it. In all of the cases, we find that the nature of the relationship between infrastructure expenditure and other selected indicators is non-linear except for military in politics. It has a positive linear relationship with infrastructure expenditure.

4.6. Summary

In this chapter, we discuss the descriptive and graphical analysis of our data. Our findings of the scatterplot and correlation matrix show that a mixed kind of relationship exists between public spending allocation and its various determinants (socioeconomic, political, and institutional). The variables are linked with each other in a linear and nonlinear way. Some variables have a significant and positive relationship with each other, while others have a negative or insignificant relationship as well. Appendix A3 contains scatterplots for LIC, MIC, and HIC. While Appendix A4 shows the time trend of various important variables which are analyzed in the study.

Chapter 5

EMPIRICAL RESULTS AND DISCUSSION

Public spending allocations and their consequences are considered an important topic for policymakers and hence highly debatable in the existing public finance literature. So, after recognizing the importance of public spending allocations, it is important to investigate the $DPSA$. Moreover, it is also worthwhile to examine how these determinants and their consequences may differ across different income groups. Most of the literature focuses on economic determinants like tax revenue EG, etc., while many institutional variables like democratic accountability, military in politics, $CORR$, bureaucratic quality have not been given due attention. This study elaborates on these factors regarding their effects on public spending allocations and their consequences.

This chapter consists of estimating empirical models regarding $DPSA$ and its consequences for POV, EG and on INQ. It is very complex and difficult to examine that how exactly institutional variables behave in determining public spending allocations, there is a disagreement that either better and strong quality institutions increase, decreases or behave neutrally in determining public spending at aggregate and disaggregate level (Tanzi & Davoodi, 1997; Mauro, 1997; Johnson et al., 1999).

The chapter has been divided into two main parts. The first part of the chapter consists of analyzing $DPSA$ at the aggregate level as well as at disaggregate levels for health, education, infrastructure, and defense spending for the aggregate of 104 countries. The sample countries are further

divided into three subsets of LIC, MIC and HIC by estimating the same model of determinants of $DPSA$ which enables us to differentiate between different political, institutional and economic factors which play a vital role in determining public spending allocations across different income groups and for different sectors like health, education, defense, and infrastructure.

The second main part of the chapter contains empirical estimations of the models regarding the impact of TPS as well as different sectoral spending's on POV, INQ, and EG. The models have been estimated for an aggregate of 104 countries as well as for LIC, MIC- and HIC. These results enable us to show that how total government spending and health, education, infrastructure, and defense spending affects POV, income INQ, and growth across different income group countries as well as for aggregate of these countries.

5.1. Results of *DPSA* for Whole Sample of Countries

The five empirical models (3.25-3.29) have been estimated to determine the socioeconomic, political, and institutional factors which are considered as important based on existing literature in determining aggregated government spending and disaggregated public spending. The determinants for total public spending $HEAEXP$, $EDUEXP$, $INFEXP$ and defense spending for a panel of 104 countries is analyzed. These models have been estimated using Fixed Effect-Instrumental Variable $(FE - IV)$ method, which tackles the endogeneity problem in the model by considering various endogenous Instruments.

Table. 5.1. shows results of the Fixed Effect-Instrumental Variable ($FE-IV$) method. The estimated results are presented in three parts. The first part of the table shows the impact of political and institutional variables on public spending allocations at aggregate and disaggregated levels for a panel of 104 countries. The second part of the Table presents demographic DPSA. Whereas the third part of the table presents results of economic DPSA. All the independent variables have been used as endogenous instruments. The probability values of Hansen J. Statistic show that instruments are valid.

The results presented in Table 5.1 model 1 (Column 2) indicate that bureaucratic quality (BQ) significantly affects TPS at the aggregate level. The estimated results reveal that as bureaucratic quality improves, overall public spending increases. The result may be justified by the fact that as the BQ improves, which indicates commitments of governments to carry on their announced plans, so overall public spending increases. When bureaucratic quality improves, inefficiencies reduce in the system, which leads to an increase in government spending. It shows the strength of institutions. As strong institutions lead towards better outcomes, hence governments spend more. The results are consistent with existing literature, as suggested by Naseer (2019).

Table 5. 1: DPSA for Aggregate Countries

FE – IV Estimation Results

DEP. V / IND. V	Model 1 TPS	Model 2 DEFEX	Model 3 HEAEXP	Model 4 EDUEXP	Model 5 INFEXP
A: Political and Institutional Determinants of Public Spending Allocation					
LnBQ	0.154** (0.008)	-0.034 (0.606)	0.122 (0.120)	0.227*** (0.001)	0.707*** (0.006)
LnCORR	-0.076** (0.020)	0.051 (0.324)	-0.009 (0.884)	-0.041 (0.440)	-0.056 (0.588)
LnEC	0.105 (0.226)	0.308*** (0.000)	-0.498*** (0.000)	-0.290*** (0.000)	-0.166 (0.490)
LnIC	-0.046* (0.078)	-0.019 (0.667)	0.029 (0.634)	0.035 (0.493)	0.742*** (0.000)
LnGS	-0.164*** (0.000)	-0.045 (0.217)	-0.232*** (0.000)	-0.116*** (0.001)	-0.353*** (0.000)
LnDA	0.166*** (0.000)	0.207*** (0.000)	0.346*** (0.000)	0.396*** (0.000)	0.001 (0.998)
LnMP	0.0684* (0.074)	-0.233*** (0.000)	-0.153* (0.079)	-0.082 (0.276)	0.341 (0.116)
B: Demographic Determinants of Public Spending Allocation					
PG	0.001 (0.955)	-0.034** (0.024)	-0.009 (0.703)	-0.011 (0.503)	0.059* (0.069)
C: Economic Determinants of Public Spending Allocation					
LnCGD	0.112*** (0.000)	0.033 (0.145)	-0.016 (0.520)	0.0178 (0.373)	0.091* (0.041)
LnTR	0.194*** (0.000)	-0.173** (0.025)	0.188*** (0.016)	0.153*** (0.008)	0.433** (0.007)
LnEG	0.119*** (0.004)	0.603*** (0.000)	1.700*** (0.000)	1.413*** (0.000)	1.472*** (0.000)
INF	0.005 (0.931)	-0.029 (0.735)	-0.119 (0.261)	-0.211* (0.066)	-0.279 (0.116)
F-Stat. (P-value)	12.98 (0.000)	18.70 (0.000)	72.10 (0.000)	98.78 (0.000)	22.08 (0.000)
No of obs.	1245	1140	1151	1155	729
Hansen J. Statistic (P-value)	0.48	0.75	0.24	0.64	0.16

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are Aggregate and disaggregate public spending. These results are based on the author's own calculations *using FE – IV* method.

The high level of bureaucratic quality is represented through higher index values by *ICRG*, and less bureaucratic quality has been given value zero. In

models 3 and 4 (columns 5 and 6), our estimated results for sample countries indicate that BQ plays an important role in determining education and infrastructure spending. However, results presented in models 2 and 3 (Columns 3 and 4) in sample countries indicate BQ cannot signify its role in the allocation of health and defense expenditures as the variable enters the model with a positive sign but not statistically significant. As defense expenditures are considered independent from the quality of bureaucracy.

The second institutional variable is corruption ($CORR$). The results presented in model 1 (column 2) reveal that $CORR$ holds a positive sign while it is statistically significant. $CORR$. The following reasons may justify our result. When public decision-makers become more corrupt, inefficiencies arise, and there is a wastage of resources.[8] Hence increase in the level of $CORR$ increase TPS. The results are consistent and in line with many other existing studies that show the relationship between $CORR$ and TPS (Mauro, 1997; Mauro, 1998; Liu and Feng, 2011; Jajkowicz & Drobiszova, 2015; D'Agostino et al., 2016; Wu et al., 2017).

However, $CORR$ remained insignificant in affecting health, education, defense, and $INFEXP$ for our sample countries as indicated in models 2, 3, 4, and 5 (columns 3, 4, 5, and 6). The result is consistent with Pritchett (1996), who advocated that the effect of $CORR$ is ambiguous in many countries regarding the impact on overall public spending. Moreover, there is constant disagreement among researchers regarding the exact effects of $CORR$ on

[8] The ICRG CORR index consists of range between 0-6. The index approaches 0 as CORR increases and approaches 6 as CORR reduces. Hence its interpretation will be different from the index of bureaucratic quality where 0 shows minimum level of bureaucratic quality and 04 shows highest level of bureaucratic quality.

various economic variables like growth, public spending, etc. One group of researchers shows a negative relationship between $CORR$ and TPS. They advocated that a higher level of $CORR$ reduces tax revenue which diminishes the number of available funds for public spending (Bayley, 1966; Rose-Ackerman, 1978; Hillman, 2004).

The results of our estimated model 1 (Column 2) are presented in Table 5.1. reveal that variable of EC proves to be statistically insignificant in increasing overall public spending for our sample countries. However, the variable appeared to be highly significant in affecting defense, health, and education spending allocations. Countries with fewer EC even continue to increase their defense spending, although it is at the cost of some other sector's spending like health and $EDUEXP$ as overall spending is not changing significantly due to external conflicts so increasing defense expenditures can crowd out spending in other sectors like health, education, etc.[9]

One Implication of our estimated results for increasing defense and military spending despite having fewer conflicts is that it may have positive externalities, as advocated by Kennedy (1974), Benoit (1978), Whynes (1979, Ram (1995) and Barro and Sala-i-Martin, (2004). The other reason for growing military and defense expenditures despite having less EC is that countries' decision to increase their military and defense power is also based on military and defense spending of their rivals despite having no active EC threat. This argument is advocated by Aizenman and Glick (2006). We cannot always claim the lower level of EC affects defense and military

[9] The ICRG assigns maximum 12 points to EC with three subcomponents each having. The index value zero represents very high risk of EC while index value 12 represents very low risk of EC, hence its interpretation will be done accordingly.

spending affects negatively because this spending can bring peace, infrastructure development, and a good investment climate which are required for growth and development. So due to these factors' countries continue to invest in defense spending. The variable of EC could not signify its role in affecting $INFEXP$. One possible justification can be that $INFEXP$ projects are long-term projects, and they continue even despite having different levels of EC.

Among the institutional variable, IC enters in model 1 (Column 2) with a negative sign that is statistically significant. The estimated results indicate that total public spending increases with an increase in IC. The results are consistent with economic theory and are justified that as conflicts arise in a country, then government expenditures rise due to the increased expenditures on law enforcement agencies, etc., in order to cope with those conflicts.[10] Whereas in models 2, 3, and 4 (Columns 3, 4, and 5), where the dependent variables are defense, health, and education expenditures, IC remains insignificant. However, in model 5 (column 6) IC holds a negative sign that is statistically significant. The results reveal that reduction in IC reduce, $INFEXP$ increases as government gets space for diverting resources from coping conflicts to different $INFEXP$ projects like transport and communication projects. The same argument is highlighted by Gates et al. (2015) that rising internal conflicts may reduce the government's ability to provide certain kinds of services like infrastructure etc. and vice versa.

[10] The ICRG assigns maximum 12 points to IC with three subcomponents each having. The index value zero represents very high risk of EC while index value 12 represents very low risk of EC, hence its interpretation will be done accordingly.

Our next institutional variable *GS* holds a negative sign in all five models. Apart from model 2 (column 3), defense expenditures (*DEFEXP*) in all other specifications are statistically significant. The estimated results reveal that public spending allocation is shrinking as a country's government gains stability. The result may be justified in Darby et al. (2004), which state that political uncertainty reduces investments and public spending may increase because of instability. Moreover, when governments are stable, many non-developmental expenditures reduce which affects overall government expenditures. The estimated results reveal that total government expenditures decrease with an increase in the level of *GS*.

At the disaggregated level of public spending allocations, *GS* holds a negative sign that is statistically significant in models 3, 4, and 5 where dependent variables are *HEAEXP*, *EDUEXP* and *INFEXP* respectively. When governments are stable, with no fear or danger of losing power, they spend less on health, education, and infrastructure than when they are unstable. Moreover, political instability, social upheaval, etc., will increase health, education, and *INFEXP* which seems logical because governments may try to stabilize themselves by spending more on social sectors. In addition, GS enters in model 2 (column 3) with a negative sign that is statistically significant in our sample of countries.

Democratic accountability (*DA*), which is one of the important political and institutional variables, enters in the first four models positively and statistically significantly. The estimated results indicate that country which holds relatively more accountability in their public dealings can rotate more

resources towards social spending. This may be since democratic governments having more accountability and are answerable to the public as compared to autocratic regimes, so they spend more on health and education, which are in the interest of the public. The results are consistent with the findings of Pavlos (2018), who advocated that more accountable and answerable regimes spend more on creating public goods which benefit the public as compared to autocratic regimes where we have less accountability. *INFEXP* is also having a positive sign with democratic accountability, but the variable is insignificant.

Another important institutional variable that may affect public spending allocations is the military in politics (*MP*) which contains the involvement of the military in politics from a peripheral level to complete military take over. *MP* holds mixed results in our estimated models. For instance, model 1 (column 2) holds a positive sign and is statistically significant. Whereas in models 2 and 3 (column 3 and 4) it enters the model with negative sign and is significant. Interestingly, in model 4 and 5 it remains insignificant. The results of our estimated models reveal that as military stays away from politics then TPS increases. The increase in military involvement reduces *TPS*. One possible reason which seems more relevant regarding this is that military regimes are generally more disciplined and follow tight expenditure policies so, more involvement of military in politics reduces total government spending at aggregate level. The similar results have also been highlighted by Plumper and Martin (2003) and Gandhi (2003).

At disaggregated level of public spending allocations, military in politics plays a significant role in affecting defense expenditures. The results indicate that as military stay away from politics, it will increase defense expenditures significantly. So, more involvement of military led towards more defense expenditures. .[11] The results may be justified that as military comes in power, they may spend more on themselves. The results presented in model 3 (column 4) indicate statistically significant role with reference to *HEAEXP*. The results reveal that less involvement of military in politics reduces *HEAEXP* and more involvement of military increases health expenditures.

One possible justification for this is that dictators or more involvement of *MP* may increase *HEAEXP* because dictators may show their performance through this spending for the betterment of public. Our estimated result is consistent with Albalate *et al.* (2012) and Bove and Nistico (2014) that came with same findings and argue that military regime cannot shape resource allocations especially in social sector. Moreover, in model 5 (column 6) impact of involvement of military in politics on INFEXP is proved to be insignificant. Our finding regarding impact of political and institutional variables rejects our hypothesis that these variables do not affect public spending allocations for the whole sample of countries.

The demographic variable (PG) holds mix results in our five estimated models. For instance, in model 1 (column 2) where the dependent variable is total public spending it is insignificant. Similarly, the population growth

[11] The ICRG assigns maximum 06 points to Military in politics (MP). The index value zero represents very high involvement of military in politics while 6 represents lowest level of involvement of military in politics. Hence, its interpretation will be done accordingly and opposite to traditional way of interpreting results.

could not statistically signify its role in the determination of health and education spending for our sample countries as presented in table 5.1 in model 3 and 4. Contrary to that, population growth is having negative sign which is statistically significant in model 2 (column 3) where dependent variable is defense expenditures. The result may be justified o the reason that as population increases so demand for increase in other needs of the society also increases which led to decrease in defense spending. The results are in line with the findings of Solarin (2017) who also highlighted that population growth negatively affects military spending. Moreover, population growth holds positive sign and is statistically significant in determining $INFEXP$ in model 5 (column 6) as presented in table 5.1.

The part c of table 5.1 shows estimated coefficients of economic variables. One main key economic variable is central government debt to GDP Ratio (CGD). The results presented in Table show that increase in government debt increases total government spending as the variable holds positive sign which is statistically significant. This may be justified as governments borrow, pool of available financial resources for government spending also increases which raises over all public spending. Similarly, central government debt has a positive and significant effect on $INFEXP$ expenditures which reveals that countries with higher CGD can allocate more resources to infrastructure spending. The justification is the same as advocated previously that more borrowing may increase available funds for public spending on infrastructure. More specifically borrowing may be done for specific infrastructure spending. Th results are consistent with findings of Obeng and Sakyi (2017), Aregbeyen and Akpan (2013), Mahdavi (2004) etc.

Furthermore, the variable is having insignificant effect on defense, health and EDUEXP as presented in the results of model 2,3 and 4 for our sample countries.

Our second variable is tax revenue (TR), which is one key variable that explain resource allocation. In four out of five models, tax revenue enters positively and statistically significantly. The estimated results of our model 1,3,4 and 5 reveals that overall public spending, health spending, education spending and infrastructure spending increases with the increase in tax revenue. The results may be justifying in the Friedman (1978) Revenue-Spend hypothesis which states that government spending rises with increase in tax revenue. Furthermore, spending on social sector and infrastructure act as incentive for taxpayers which can further enhance tax revenue of the government. The results are consistent with existing literature (Trachanas & Katrakilidis, 2014; Aworinde, 2013; Blckley, 1986; Bolat 2014; Dizaji 2014; Moalusi, 2004; Mutascu,2017; Saunoris, 2015).

Only in model 2 (column 3) where dependent variable is defense expenditures it enters the model negatively but is statistically significant. The estimated results make sense due to the reason that taxpayers will be more interested that their paid taxes should be spent on health, education, and $INFEXP$ rather than on defense spending.

Our third economic variable is economic growth (EG) which is captured through per capita income. In all model's economic growth enters positively and statistically significantly. At large estimated results make sense. Resource allocation to different sectors increases with the expansion of

economy. The result is in line with the findings of other studies as well (Tilak, 1989; McMahon, 1970; Busemeyer, 2007).

One economic variable included in the model is inflation rate. In our four out of five models' inflation remains insignificant. The inflation rate is only statistically significant only in determination of public spending allocations for education expenditures as presented in model 4 (column 5). One possible justification of our result may be through reduction in tax revenue. As inflation rises, purchasing power decreases which lead towards reduction in tax revenue as well so education expenditures by government also decrease. There is no agreement among researchers regarding the influence of inflation on public spending. The results are consistent and in line with the findings of other studies (Eterovic & Eterovic, 2012; Jin & Zou 2002; Okafor & Eiya; 2011; Rodrik, 1998).

5.2. Estimated Results of DPSA for HIC

As discussed in our section 3.9 that the sample countries are divided into three income groups that is high, middle- and low-income countries based on world bank definition. In this association this subsection presents the estimated results of our empirical model 3.25-3.29 for high income groups which consists of 49 countries. The estimated results through Fixed Effect-Instrument Variable $(FE - IV)$ are presented in Table 5.2. The results presented in model 6 (column 2) of table 5.2 indicate that bureaucratic quality (BQ) significantly affects TPS in case of HIC. The findings of high-income countries show that TPS increases with the improvement in BQ. The results are consistent and in line with other studies like Naseer (2019) and

logical that when bureaucratic quality improves, inefficiencies reduce in the system which lead towards increase in productivity of government spending. Thus, governments can achieve their macroeconomic objectives by spending. This leads towards increase in public spending. Moreover, in other three models out of four as indicated in model 7, 8, 9,10 (column 3, 4, 5, 6) BQ plays significant role in determining public spending allocation at disaggregated level for education, health, and infrastructure spending. BQ quality could not signify its role in determining defense expenditures which are generally considered as independent from quality of bureaucracy in our sample countries.

The justification for significant role of BQ in determining $HEAEXP$, $EDUEXP$, $INFEXP$ is same as advocated for increase in overall spending. Our estimated results show that improvement in BQ increases public spending on different sectors ($HEAEXP, EDUEXP, INFEXP$).

Table 5. 2: DPSA for HIC

Fixed Effect – Instrument Variable (FE – IV) Estimation Results

DEP.V / IND.V	Model 6 TPS	Model 7 DEFEXP	Model 8 HEAEXP	Model 9 EDUEXP	Model 10 INFEXP
A: Political and Institutional Determinants of Public Spending Allocation					
LnBQ	0.360*** (0.002)	0.253 (0.143)	0.491*** (0.001)	0.582*** (0.000)	0.304* (0.071)
LnCORR	-0.123* (0.042)	0.016 (0.857)	-0.096 (0.194)	-0.198*** (0.000)	-0.136 (0.228)
LnEC	0.133 (0.182)	0.092 (0.388)	-0.436*** (0.000)	-0.495*** (0.000)	-0.492** (0.031)
LnIC	-0.059 (0.503)	0.244* (0.092)	-0.071 (0.626)	0.187 (0.106)	0.748*** (0.000)
LnGS	-0.198*** (0.000)	-0.062 (0.169)	-0.325*** (0.000)	-0.214*** (0.000)	-0.360*** (0.000)
LnDA	0.243** (0.005)	0.297** (0.003)	0.553*** (0.000)	0.343*** (0.000)	0.291* (0.090)
LnMP	0.163* (0.028)	-0.416*** (0.000)	-0.251 (0.112)	-0.080 (0.465)	0.144 (0.570)
B: Demographic Determinants of Public Spending Allocation					
PG	-0.007 (0.813)	-0.053** (0.002)	-0.006 (0.819)	0.007 (0.697)	0.035 (0.280)
C: Economic Determinants of Public Spending Allocation					
LnCGD	0.138*** (0.000)	0.030 (0.219)	-0.025 (0.384)	0.044* (0.045)	0.101* (0.011)
LnTR	0.0176 (0.689)	-0.440*** (0.000)	0.154 (0.129)	0.00334 (0.964)	0.297* (0.038)
EG	0.0252 (0.652)	0.404*** (0.000)	1.776*** (0.000)	1.185*** (0.000)	1.261*** (0.000)
INF	0.224 (0.268)	1.445 (0.111)	0.038 (0.916)	-0.056 (0.804)	0.437 (0.241)
F-Stat (P-value)	7.98 (0.000)	12.15 (0.000)	62.83 (0.000)	72.54 (0.000)	27.50 (0.000)
No of obs.	875	840	849	853	626
Hansen J. Statistic (P-value)	0.28	0.30	0.62	0.188	0.58

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are Aggregate and disaggregate public spending. These results are based on author's own calculations using $FE - IV$ method.

The one important institutional variable which enters in our empirical models is $CORR$. The results presented in table 5.2 reveal that $CORR$ enters in our five estimated models with mixed results. $CORR$ holds negative sign which is

statistically significant in two out of five estimated models. The estimated results in model 6 and 9 (column 2 and 5) where dependent variable is total government spending and education spending respectively indicate that reduction in the level of corruption reduces both types of sectoral spending for our sample of high-income countries and vice versa. [12]

These empirical results may be justified that when public decision makers become more corrupt, inefficiencies arise in the system which led towards increase in public spending. The results are consistent and in line with many other existing studies that shows the relationship between *CORR* and total government spending (Mauro, 1998; Jajkowicz & Drobiszova, 2015; D'Agostino et al., 2016; Wu et al., 2017).

However, Corruption could not statistically signify its role in determining *DEFEXP*, *HEAEXP* and *INFEXP* in column 3,4 and 6 of table 5.2. The result is in line with Pritchett (1996) who advocated that the effect of *CORR* is ambiguous in many countries. Moreover, there is constant disagreement among researchers regarding exact effects of *CORR* on public spending allocations.

The next institutional variable which is included as determinant of public spending allocations is *EC* for *HIC* which measures the assessment of risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc) to violent external pressure. The *EC*

[12] The ICRG CORR index consists of range between 0-6. The index approaches 0 as CORR increases and approaches 6 as CORR reduces. Hence its interpretation will be different from the index of bureaucratic quality where 0 shows minimum level of bureaucratic quality and 04 shows highest level of bureaucratic quality.

appears statistically significant while holding negative sign in model 8, 9, 10 (column 4,5,6) of table 5.2 where dependent variables are *HEAEXP*, *EDUEXP* and *INFEXP* respectively. Our estimated results reveal that reduction in external conflicts reduces *HEAEXP*, *EDUEXP,INFEXP*. The results may be justified that conflicts are usually considered as emergency and extra ordinary situations in which generally increase public spending on health, education, and infrastructure spending. However, the variable holds positive sign that is statistically significant in model 6 and 7 (column 2 and 3) in our sample countries. The results verify the findings of the Devkota and Teilingen (2010).

The other one important variable which is part of our analysis as determinant of public spending allocations is *EC*. The results presented in Table 5.2 indicate that *IC* significantly affects public spending allocation in three out of five models. The estimated results reveal that *IC* hold positive sign which is statistically significant in variable (*IC*) as shown in model 7, 9 and 10 (column 3, 5 and 6) where dependent variables are *DEFEXP*, *EDUEXP* and *INFEX* respectively. Our empirically estimated results show that an increase in the level of internal conflicts reduces *INFEXP*, *EDUEXP* and *DEFEXP*. The results may be justified on the grounds that as internal conflicts increase, governments may have to divert resources education and infrastructure spending towards coping conflicts. [13]Moreover, as internal conflicts increase defense spending reduces for our sample countries as internal conflicts are mostly handled by police so spending on police may increase at the expense

[13] The ICRG assigns maximum 12 points to IC with three subcomponents each having. The index value zero represents very high risk of EC while index value 12 represents very low risk of EC, hence its interpretation will be done accordingly.

of defense spending. The results are consistent with the study of Lopez and Wodon (2005). However, IC could not signify its role in determining overall government spending and health spending for our sample countries.

The results presented in column 2 of table 5.2 show that GS signify its role in determining public spending allocations in four out of five models. The GS holds negative signs in all four models which are statistically significant. Our estimated results reveal that public spending allocations decreases with the increase in government stability. Results presented in column 4, column 5 and column 6 of models 8, 9 and 10 also highlight that government expenditures on health, education and infrastructure reduces with increase in GS. The results may justify on the grounds that many types of expenditures reduce when government is having stability and certainty regarding their tenure etc. Moreover, instability and uncertainty increase government expenditures. The results are consistent with findings of Darby *et al.* (2004).

One important variable which is included in our model as determinant of public spending is democratic accountability (DA). The variable is having positive sign which is statistically significant in all five models of table 5.2. As shown in Table 5.1, column 2, 3, 4, 5 and 6, total government expenditures as well as expenditures on health, defense, education, and infrastructure increase with increase in level of democratic accountability. Our presented results can be justified that as democratically elected governments are more accountable and responsible to public as compared to autocratic regimes, so they spend more for the benefit of public on health, education, defense, and infrastructure.

One last institutional and political variable which is part of our analysis is military in politics (MP) which consists of involvement of military in politics from a peripheral level to complete military take over. Our presented results in table 5.2, column 2 and column 3 (model 6 and 7) show that MP play significant role in determining over all government spending and defense spending. The relationship is statistically significant as well. The results of the proposed empirical model confirm that estimated model confirm that less involvement of military in politics increases TPS in HIC. The result can also be interpreted as more involvement of military in politics reduces overall government spending which may be justified on the grounds that more involvement of military in politics may bring more discipline in spending which reduces government spending. [14] Our presented results in column 3 (model 7) of Table.5.2 also show that less involvement of MP reduces defense spending while more involvement of MP increases defense spending. Our findings are consistent with the results of Whitten and Williams (2011), Albalate *et al.* (2011) and Nincic and Cusack (1979). Our finding regarding impact of political and institutional variables rejects our hypothesis that these variables do not affect public spending allocations for HIC.

The second part of Table 5.2 contains empirical results of the impact of demographic variable on public spending allocations. The results presented in column 3 (model 7) shows that population growth enters the model with

[14] The ICRG assigns maximum 06 points to MP. The index value zero represents very high involvement of military in politics while 6 represents lowest level of involvement of military in politics. Hence, its interpretation will be done accordingly and opposite to traditional way of interpreting results.

negative sign which is statically significant. The empirical results indicate that higher population growth reduces defense spending. The results may be due to the reason that higher population growth may divert resources from *DEFEXP* to other sectors or needs of the society. The variable is having mixed sign in determining total government spending, health, education and *INFEXP* but is statistically insignificant in *HIC*.

The third part of Table 5.2 presents empirical results of major economic determinants of public spending allocations. The results presented in columns 2, 5 and 6 of Table 5.2 indicate that central government debt to *GDP* ratio (*CGD*) significantly affects public spending allocations. The results of the estimated model show that as governments debt rises, it increases government's spending at aggregate level as well as at disaggregate level for various sectors of the economy while some sectors of the economy may not be affected by rising debt. The estimated results show that increase in government debt increases total government spending, *EDUEXP* and *INFEXP* significantly. The variable is insignificant in determining health and defense expenditures in *HIC* as they are found independent from the level of debt. The results may justify that as central government borrows more *INFEXP* also increases significantly due to availability of more funds. The results are consistent with findings of other studies (Obeng & Sakyi, 2017; Aregbeyen & Akpan, 2013; Mahdavi, 2004).

Tax revenue is considered as one major variable which affects public spending allocation decisions. The variable signifies its role in affecting *DEFEXP* and *INFEXP* as indicated by our results presented in columns 3

and 6 of Table 5.2. The results are consistent with Revenue-Spend hypothesis which has been presented by Friedman (1978). The hypothesis states that government revenue positively affects government spending allocations. Our empirical results show that *TR* enters the model with positive sign which is statistically significant as well in determining *INFEXP* which shows that as government tax revenue rises, governments spend more on infrastructure expenditures. Moreover, significant negative relationship has been observed between *TR* and *DEFEXP*. The results may justify that sample countries must take care of taxpayer's concerns regarding spending money on defense expenditures in *HIC* in order to increase encourage them to pay more taxes. The results are in line with many studies (Blackley, 1986; Bolat, 2014; Dizaji, 2014; Moalusi, 2004; Mutascu, 2017; Saunoris,(2015).

The results are presented in Table 5.2. columns 3, 4, 5, and 6 show that *EG* positively affects health, education, defense, and *INFEXP* which is statistically significant as well. The results can be justified that a higher level of income growth may increase available funds, which leads towards more allocation of funds for various sectors of the economy. Our presented results are consistent with the findings of other studies as well. (Tilak, 1989; McMahon, 1970; Busemeyer, 2007).

Lastly, inflation affects public spending allocations insignificantly. The variable has a positive sign with total government spending defense, health, and *INFEXP* but appears insignificant. The results are consistent and in line with the findings of other studies such as (Eterovic & Eterovic, 2012; Jin & Zou, 2002; Okafor & Eiya, 2011; Rodrik, 1998). This can happen and is true,

especially for those countries that have a sound macroeconomic environment that promotes price stability.

5.3. Estimated Results of *DPSA* for *MIC*

This section of the chapter presents the results of our proposed empirical models of *DPSA* for 37 *MIC*. The 3.25-.29 equations are estimated to assess the impact of socioeconomic, political, and institutional factors on public spending at the aggregate and disaggregate levels. All the independent variables have been used as endogenous instruments. The probability values of Hansen J. Statistic show that instruments are valid.

Table 5.3 is divided into three subsections based on institutional and political, demographic, and economic factors as determinants of public spending allocations. The estimated results presented in Table 5.3, column 6 (model 15) shows that bureaucratic quality (BQ) positively affects $INFEXP$ in MIC. The relationship is statistically significant as well. However, BQ could not signify its role in allocating $DEFEX, EDUEXP, HEAEXP$ and total government spending in our sample countries.

We can conclude from the results that $INFEXP$ mainly depends on bureaucratic quality in MIC; better and improved bureaucratic quality leads towards more efficient outcomes, so government spends more. The results are also verified by other studies like Naseer (2019). The estimated results presented in columns 2 and 3 of Table 5.3 indicate that $CORR$ significantly affects total government expenditures and $DEFEXP$. The estimated results show that reduction in $CORR$ reduces total government expenditures and it

increases defense expenditures significantly in MIC. However, a higher level of $CORR$ reduces health and $EDUEXP$, but the variable is insignificant for our sample countries. The results may justify that a higher level of $CORR$ can affect the tax revenue of the government, which may affect government spending as advocated by the Revenue-Spending Hypothesis of Friedman (1978). The results also show that a higher level of $CORR$ increases $INFEXP$, but the variable is insignificant. The results are in line with the findings of others (Mauro, 1996; Mauro, 1997; Mauro, 1998; Liu and Feng, 2011).

Table 5. 3: DPSA for MIC
FE-IV Estimation Results

DEP.V / IND.V	Model 11 TPS	Model 12 DEFEXP	Model 13 HEAEXP	Model 14 EDUEXP	Model 15 INFEXP
A: Political and Institutional Determinants of Public Spending Allocation					
lnBQ	0.064 (0.282)	-0.072 (0.363)	-0.042 (0.666)	0.084 (0.319)	1.894*** (0.012)
lnCORR	-0.102*** (0.001)	0.130* (0.038)	0.052 (0.630)	0.110 (0.218)	-0.019 (0.955)
lnEC	-0.083 (0.680)	0.192 (0.175)	-0.506*** (0.015)	-0.326** (0.025)	-0.016 (0.985)
lnIC	-0.082*** (0.007)	-0.166*** (0.000)	0.069 (0.350)	-0.096** (0.026)	0.358 (0.536)
lnGS	-0.055* (0.109)	-0.006 (0.922)	-0.155** (0.040)	0.025 (0.689)	-0.272 (0.401)
lnDA	0.146*** (0.000)	0.033 (0.470)	0.202** (0.008)	0.216*** (0.001)	-1.114*** (0.001)
lnMP	-0.006 (0.935)	0.103 (0.203)	0.0539 (0.564)	0.226*** (0.004)	0.116 (0.597)
B: Demographic Determinants of Public Spending Allocation					
PG	0.129** (0.033)	0.082** (0.030)	-0.045 (0.492)	0.014 (0.783)	1.560** (0.002)
C: Economic Determinants of Public Spending Allocation					
LnCGD	-0.004 (0.918)	0.208*** (0.000)	-0.035 (0.599)	0.022 (0.642)	-0.509*** (0.001)
lnTR	0.333*** (0.000)	0.058 (0.468)	0.271*** (0.015)	0.256*** (0.007)	0.471 (0.415)
EG	0.161* (0.064)	1.069*** (0.000)	1.533*** (0.000)	1.711*** (0.000)	3.295*** (0.000)
INF	-0.008 (0.888)	-0.105* (0.066)	-0.139 (0.239)	-0.150 (0.113)	0.001 (0.987)
F-Stat (P-value)	10.78 (0.000)	57.82 (0.000)	41.22 (0.000)	96.21 (0.000)	19.02 (0.000)
No of obs.	329	281	283	283	92
Hansen J. Statistic (P-value)	0.40	0.41	0.39	0.13	0.21

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are Aggregate and disaggregate public spending. These results are based on the author's own calculations using *FE – IV* method.

Our results presented in Table 5.3, columns 4 and 5, show that EC holds a negative sign that is statistically significant. The results show that increase in EC increases health and $EDUEXP$. The received results may be justified that when countries are involved in conflicts, so expenditures rise in health infrastructure and education infrastructure as armed conflicts destroy countries. Furthermore, demand for medical services may increase during EC, which leads to an increase in government spending in the health sector.

The estimated results show that IC affects total government spending, defense spending and $EDUEXP$ in MIC as indicated by column 2, 3 and 5 of Table 5.3. The results indicate that reduction in IC reduces total government spending. The relationship is statistically significant as well. The estimated result is convincing and logical that government must spend money to cope with conflicts. Moreover, the results also show that IC increases defense and education expenditures significantly in MIC. Our results confirm the findings of studies (Hendrix, 2010; Taydas et al., 2011).

The results presented in Table 5.3, columns 2 and 4 show that GS holds a negative sign that is statistically significant in models 11 and 13. Our estimated results reveal that that GS decreases overall government expenditures. The results may justify that as instability rises, government spending increases. In addition, results also show that health expenditures decrease with an increase in GS. The results are consistent with the findings of Darby *et al.* (2004). Moreover, GS negatively affects defense spending and $INFEXP$, but the variable is insignificant.

Democratic accountability (DA) is another institutional variable which is part of our analysis. Results presented in columns 2, 4, 5, and 6 reveal that DA enters the model with mixed signs that are statistically significant as well in MIC. The results show that as the level of democratic accountability increases, public spending also increases. As shown in Table 5.3, DA positively and significantly increases total government expenditures as well as expenditures on health, defense, and education. While it negatively affects $INFEXP$. The results may justify that as democratic governments having more accountability and they are more answerable to the public as compared to autocratic regimes, so they spend more on defense, health, infrastructure, and education which are in the interest of the public.

The last institutional and political variable which is part of our analysis is military in politics (MP). The estimated results are presented in Table 5.3. The empirical results of column 5 show that variable signifies its role in determining $EDUEXP$ in MIC. The results show that as military involvement in politics increases $EDUEXP$ decreases and vice versa in MIC. One possible reason for this is that the military may have different priorities as compared to $EDUEX$P so it may reduce spending on education. Our finding regarding the impact of political and institutional variables rejects our hypothesis that these variables do not affect public spending allocations in MIC.

The only demographic variable which is part of our analysis is PG. The results are presented in Table 5.3, columns 2, 3, and 6. Our results show that population growth significantly affects total government spending, $DEFEXP$,

and $INFEXP$ in MIC. The results show that population growth positively affects total government spending. In addition, PG increases $DEFEXP$ and $INFEXP$. The results may verify Wagner law and other studies, as mentioned previously.

The estimated results regarding the impact of central government debt to GDP ratio (CGD) show that central government debt affects government spending allocations in MIC. The results presented in Table 5.3, models 3 and 6 show that increase in CGD increases $DEFEXP$ and reduces $INFEXP$. The results may justify that when governments borrow funds, expenditures of some specific sectors increase while it will leave other sectors spending without any change or even can reduce their spending. The same results have been observed here in our model for MIC. All the sectors may not get an equal increase in spending from borrowed amounts. The same results have been shown here. The results are consistent with the findings of existing studies (Obeng & Sakyi, 2017: Aregbeyen & Akpan, 2013; Mahdavi, 2004).

The other important economic variable which is part of our model as a determinant of public spending allocation is tax revenue (TR)which has been verified by many studies and economic theories. The estimated results presented in Table 5.3, columns 2, 4, and 5 show that TR holds a positive sign that is statistically significant as well. Our estimated results reveal that that tax revenue positively and significantly affects total government spending in our sample countries. This is confirmation of the Revenue-Spend hypothesis (Friedman, 1978), which states that government spending rises with an increase in tax revenue. Similarly, at the disaggregated level, tax

revenue has a significant positive effect on *HEAEXP* and *EDUEXP*. The results show that government spending on health and education increases as tax revenue increases. Our findings are also verified by Moalusi (2004) and Mutascu (2017).

The estimated results show that *EG* significantly affects public spending allocations. The results presented in Table 5.3, columns 2, 3, 4, 5, and 6 show that *EG* holds a positive sign that is statistically significant. The results show that *EG* positively affects total government spending. Moreover, estimated results show that *EG* positively and significantly affects defense, health, education, and *INFEXP*. The results are consistent with the existing studies that *EG* positively affect public spending allocations as discussed in previous interpretations. Our results are in line with other studies (Tilak, 1989; McMahon, 1970; Busemeyer, 2007).

Our estimated results presented in Table 5.3, column 3 show that *INF* signifies its role in determining *DEFEX*. The relationship is statistically significant as well. The results show that inflation negatively and significantly affects defense spending. Our findings verify the results of Starr et al. (1984), who also observed a similar relationship. The variable is insignificant in determining health education and *INFEXP*.

5.4. Results of DPSA for LIC

The proposed empirical models 3.25-3.29 are estimated to determine the impact of socioeconomic, political, demographic, and institutional variables on public spending allocations at aggregate and disaggregate levels in 18

LIC. In the case of *LIC* some variables have been dropped in adopting a general to a specific approach.

Table A5.1 (Appendix A5) presents the results of the above-given model 16-20 using the Fixed Effect Instrument Variable ($FE - IV$) method. The table has been divided into three subcomponents.

Part A of Table A5.1 presents estimated results of institutional and political variables on public spending allocations at an aggregate level as well as a disaggregate level of public spending that is on defense, health, education, and *INFEXP* in *LIC*.

Part B shows the impact of the demographic variable on public spending allocation at an aggregate level for different sectors of the economy.

Part C of the Table shows the effect of various economic variables on public spending allocations in *LIC*. Due to the lack of data for various *LIC* there are econometric issues due to the degree of freedom problem. But we have estimated the model and results, and their interpretation is presented in Appendix table A5.1 (Appendix A5). All the independent variables have been used as endogenous instruments. The probability values of Hansen J. Statistics show that instruments are valid.

The results are presented in Table A5.1 (Appendix A5) show that *CORR* significantly affects public spending allocations at aggregate as well as at disaggregate level. The results presented in column 2 show that reduction in *CORR* increases total government spending in *LIC*. The relationship is statistically significant. The result can be justified that when *CORR* reduces,

tax revenue also increases, which increases overall government spending. Moreover, results also indicate that a higher level of *CORR* increases defense spending in our sample countries. The results may justify that mostly high kickbacks are involved in defense spending in *LIC* where institutions are already weak, so *CORR* increases defense spending. In addition to this *CORR* holds a positive sign that is statistically significant with *HEAEXP*. The estimated results show that as *CORR* reduces health expenditures increases in *LIC*. Furthermore, a lower level of *CORR* significantly reduces *INFEXP*. However, *CORR* is having an insignificant effect on *EDUEXP* in *LIC*. The role of *CORR* in determining public spending allocations is mixed in literature. The results are consistent with the findings of other studies (Mauro, 1998; Liu & Feng, 2011; Jajkowicz & Drobiszova, 2015).

Results presented in Table A5.1 (columns 2, 3, 4, 5,6) show that *EC* significantly affects public spending allocations in *LIC*. The estimated results show that a lower level of *EC* upsurges government spending at an aggregate level as fewer conflicts make sure availability of funds which government can spend on various sectors in *LIC*. The relationship is statically significant. In addition, the variable plays a significant role in determining defense, *EDUEXP*, *HEAEXP*, and *INFEXP*. The results show that reduction in EC increases *HEAEXP* and *EDUEXP*. Moreover, *EC* increase *INFEXP* in *LIC*. As *EC* increase, countries must develop infrastructure as well, so *INFEXP* increase.

The IC variable has been dropped from health, education, defense, and aggregate spending equation following general to a specific methodology.

The estimated results presented in column 6 model 20 of Table A5.1 show that *IC* significantly affects *INFEXP*. The results show that a lower level of *EC* substantially increases *INFEXP* as coping conflicts may divert resources from *INFEXP* to others like on police etc., to cope conflicts.

The impact of *GS* is also statistically significant in determining *HEAEXP* and *EDUEXP* as presented in columns 4 and 5 of Table A5.1. The results confirm that the stability of government significantly and negatively affects *HEAEXP* and *EDUEXP*. The estimated results may justify that if f the government has certainty and stability, then expenditures decrease while the unstable government makes more spending. Our results are in line with Darby *et al.* (2004), who also found a similar association.

The other institutional and political variable which is part of our analysis is democratic accountability. The estimated results presented in columns 3, 4, and 6 of Table A5.1 reveal that *DA* holds a negative sign which is statistically significant as well. The estimated results show that as democratic accountability increases in *LIC*, expenditures on defense, health, and *INFEXP* significantly reduces. The result is a clear indication that if the government is more accountable and answerable, then they think before spending as people ask questions about spending.

The last Institutional variable which is included in our models is military in politics. The *MP* enter the models with mixed signs as presented in columns 2, 3,4, and 5 of Table A5.1 that is statistically significant as well. The estimated results show that when the military involves in politics, overall government spending decreases in *LIC*. Furthermore, results also show that

involvement of the military in politics increases defense, health, and *EDUEXP*. As the military has its own priorities, so some sectors of the economy get more spending as compared to others. Our findings are in line with Bove and Nistico (2014).

The results of the demographic variables show that population growth significantly affects *DEFEXP*, *HEAEXP* and *INFEXP*. The results of columns 3,4 and 6 indicate that with the increase in population, defense spending decrease as demand for other sectors' expenditures increases. Moreover, high population growth enters the model in quadratic form for health and *EDUEXP* as scatter plots predicted quadratic relationships. The results indicate that in *LIC*, up to some extent when population grows *HEAEXP* also increases after that public spending on health starts declining in *LIC*. *LIC* are resource-scarce, so they do not have enough financial resources that they cannot keep spending rising with the level of population growth. The population growth variable has a positive sign, while the square of the population growth variable has a negative sign that is statistically significant, as well as shown in the results table.

The same behavior has been observed in the case of *INFEX*P, where an increase in population growth initially increases *INFEXP*, and after a certain stage, *INFEXP* starts decreasing in *LIC*. The relationship is statistically significant. The results are consistent with many existing studies (Obeng & Sakyi, 2017; Wagner, 1883, Jibir & Aluthge, 2019).

Part C of Table A5.1 presents the estimated results regarding the effects of economic variables on public spending allocations. The estimated results

(column 2) show that central government debt significantly affects total government spending in *LIC*. The result may justify that as in *LIC* mostly governments borrow to pay their previous loans, so it may not substantially increase different government spending. But an alternative view is also valid that an increase in government spending increases spending of certain sectors while leaving other sectors without any increase in spending. The same result has been received here that an increase in debt increases *INFEXP*. The variable is statistically significant. While government debt is having an insignificant impact on health, education, and defense spending for *LIC*.

The tax revenue variable has been found significant and positive in determining total government expenditures and education expenditures in *LIC*. The estimated results are presented in columns 5 and 6 of Table A5.1. However, the variable is insignificant in determining defense expenditures with a negative sign. In addition, increases in tax revenue significantly reduce *INFEXP*. One possible justification is that governments in *LIC* may spend more on health, education, etc. which will be an incentive to attract more tax revenue. Similar results are found by Mutascu (2017).

The last economic determinant of public spending allocation in our models is *EG*. The *EG* holds a positive sign which is statistically significant as well in columns 5 and 6 of Table A5.1. The estimated results indicate that *EG* contributes positively towards education and *INFEXP* in *LIC*. The variable is insignificant for *LIC* for the rest of the spending allocations. Our findings are consistent with other studies (McMahon, 1970; Busemeyer, 2007). Our finding regarding the impact of political and institutional variables rejects our

hypothesis that these variables do not affect public spending allocations in LIC.

5.5. Consequences of Public Spending Allocations

As discussed in the introductory chapter that one of the key objectives of the study is to analyze the consequences of public spending allocation. More specifically, we want to examine that to what extent the sectoral allocation pattern affects poverty, growth, and inequality. In this context, this section presents the estimated results of our empirical models 3.30-3.32.

5.5.1. Consequences of Public Spending Allocations on POV

POV is considered one of the major economic challenges which most of the world's economies are facing. At large, poverty reduction is considered as s key objective of public spending allocation in most developing countries. The composition of public spending allocation decisions is also mostly aimed at reduction in POV. There has been much debate in the literature about the factors that affect the amount of POV reduction associated with EG (Datt & Ravallion, 1992; Son & Kakwani, 2008). Within this debate, the level and composition of the allocation of government among other spending is often argued to be one key factor. However, the practical indication in favor of this view is not always straightforward, as advocated by different studies (Wagle, 2012; Kraay, 2006; Stanely & Doucouliagos, 2012). So, keeping in view existing literature, First, we have developed a general model which contains main determinants of POV along with some institutional variables and sectoral spending as per our objectives. The following model have been estimated using Fixed Effect -Instrument Variable method $(FE - IV)$.

$$POV_{it} = \alpha_0 + \alpha_1 L.POV_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_4 DEFEXP_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_7 UNE_{it} + \alpha_8 EG_{it} + \alpha_9 INFEXP_{it} + \alpha_{10} AGD_{it} + \alpha_{11} HEAEXP_{it} + \eta_i + u_{it} \quad (3.30)$$

Having followed the general to the specific approach, we specified the best-fitted model by dropping insignificant variables one by one.

$$POV_{it} = \alpha_0 = \alpha_0 + \alpha_1 L.POV_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_4 HEAEXP_{it} + AGD_{it} + \alpha_8 EG_{it} + \eta_i + u_{it} \quad (3.30a)$$

We also included the income group dummies in the above regression and got the same results. Those dummies were proved to be insignificant in the estimation, which implies that we don't have to run separate regressions for different income group countries. The lag value of the dependent variable is included in the model as our model is dynamic in nature as the current level of POV depends on its lag values. The following table 5.4 presents estimated results. In this study, we started with the generalized model and followed the general to the specific approach used by Hendry (1995). In the second step of our estimation, we started excluding insignificant variables one by one and ultimately reached the final model with the most significant variables affecting POV in our analysis of 104 countries.

Table 5. 4: Consequences of Public Spending Allocations for *POV*

DEP.V / IND.V	General Model (FE-IV Method)	Final Model (FE-IV Method)	Final Model One-Step System GMM
	POV	POV	POV
L.POV	0.499*** (0.006)	0.561*** (0.000)	0.697*** (0.000)
HEAEXP	0.180*** (0.011)	0.331*** (0.010)	1.470* (0.072)
EDUEXP	-0.094 (0.387)	-0.732** (0.020)	-0.9 (0.310)
EG	0.506 (0.333)	-3.123*** (0.001)	-4.064*** (0.000)
AGD	0.240** (0.043)	0.173*** (0.001)	-0.116 (0.225)
URB	-0.035 (0.561)	-0.295*** (0.008)	0.196* (0.087)
INFEXP	-0.002 (0.868)		
DEFEXP	0.099 (0.556)		
INF	-6.530 (0.117)		
CORR	-0.222 (0.128)		
UNE	0.008 (0.610)		
Constant			35.90*** (0.002)
F-Stat (P-value)	9.38 (0.000)	80.63 (0.000)	75.36 (0.000)
No of obs.	190	300	306
Hansen J. test (P-value)	0.44	0.18	0.49

Notes: The p -values are in parenthesis. ***, **,* indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variable is POV. These results are based on the author's own calculations using the FE-IV method and the One-Step system GMM.

The final model is again estimated with one step system GMM to check robustness. Lag values of all the independent variables have been used as an

instrument to tackle the endogeneity issue. The p-values of Hansen J. Statistics confirm that the underlying instruments are valid. Column 2 of our estimated table 5.4 presents results of the baseline regression model, whereas column 3 presents the estimated results of our best-fitted model. In addition, column 4 illustrates the robustness of our specified model using a one-step system GMM.

The results of the baseline empirical model show that only lag of the POV ($L.POV$), health expenditures, and age dependency ratio signify its role in the determination of poverty (POV). The lag of the dependent variable enters the model with a positive sign that is statistically significant. Results indicate that the current profile of poverty depends on its past values. The results are consistent with the findings of Tuba and Sevinc (2021), who have shown that the previous level of poverty positively affects current poverty. The presented results of column 2 show that poverty increases with the increase in health expenditures and increase in dependency ratio. The estimated results regarding the role of health expenditures may be justified in the potential utilization of resources allocated to the health sector in the sample countries. In sample countries, even with the passage of time, expenditures on health are increasing; however, the available finance is not properly used. Moreover, the availability of funds to other sectors may decrease due to this. The presented results also indicate that an increase in dependency ratio also increases the level of POV. The results are consistent with the findings of existing literature (Cruz & Ahmad, 2018; Ndanshau, 1998).

After estimating the baseline model, column 3 of Table 5.4 presents the results of our best-estimated model using $FE - IV$ method. The results reveal that lag of poverty, health expenditures, education spending, economic growth, dependency ratio, and urbanization significantly affect poverty. The estimated results show that the previous profile of poverty, health expenditures, and dependency ratio positively affects poverty that is statistically significant as well. Whereas education expenditures, economic growth, and urbanization negatively affect poverty. The results indicate that poverty reduces with economic growth, more spending on education, and a higher level of urbanization. The results confirm the findings with existing literature (Hidalgo & Ormaetxe, 2014; Meghir & Palme 2005; Mayer & Lopoo, 2008; Cruz & Ahmad, 2018, Ndanshau, 1998; Lin, 2003; Ravallion, 2001).

The fourth column of Table 5.4 shows robustness checks to our final model by applying the one-step system GMM method as the model is dynamic in nature. The estimated results of the GMM are almost similar to the estimated results of our best-fitted model of $FE - IV$ method (column 3). Moreover, our findings also confirm that our actual final model is robust, which we have confirmed through the application of different estimation methodologies. The conclusion that one can draw from the above findings is that health expenditures, education expenditures, and economic growth are key determinants that affect poverty in the sample countries. The results may justify that a higher level of education spending may increase the level of human capital in the economy, which makes people more productive, and their income rises; hence poverty reduces. Whereas the negative and

statistically significant association between health expenditures and poverty can be justified on the potential utilization of resources in the health sector, as explained previously. Our empirical results enable us to reject our hypothesis that sectoral spending does not affect poverty for a whole sample of countries.

5.5.2. Consequences of *PSA* for *INQ*

This subsection presents estimated results of the baseline model regarding the impact of public spending allocations on inequality. After estimating the baseline model, General to Specific Methodology has been applied as indicated by Hendry (1995).

$$INQ_{it} = \alpha_0 + \alpha_1 L.INQ_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 URB_{it} + \alpha_4 DEFEXP_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_7 UNE_{it} + \alpha_8 EG_{it} + \alpha_9 TPS_{it} + \alpha_{10} AGD_{it} + \alpha_{11} HEAEXP_{it} + \eta_i + u_{it} \quad (3.31)$$

The model has been estimated with Fixed Effect-Instrument Variable ($FE - IV$) Method. Table 5.5 presents the estimated results of empirical model 3.31, where the dependent variable is income inequality.

$$INQ_{it} = \alpha_0 + \alpha_1 L.INQ_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 CORR_{it} + \alpha_4 UNE_{it} + \alpha_5 TPS_{it} + \alpha_6 AGD_{it} + \eta_i + u_{it} \quad (3.31a)$$

$$INQ_{it} = \alpha_0 + \alpha_1 L.INQ_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 CORR_{it} + \alpha_4 UNE_{it} + \alpha_5 TPS_{it} + \alpha_6 AGD_{it} + \alpha_7 EG1_{it} + \eta_i + u_{it} \quad (3.31b)$$

$$INQ_{it} = \alpha_0 + \alpha_1 L.INQ_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 CORR_{it} + \alpha_4 UNE_{it} + \alpha_5 TPS_{it} + \alpha_6 AGD_{it} + \alpha_7 EG_{it} + \eta_i + u_{it} \quad (3.31c)$$

The above presented three models are various versions of the 3.31 model. Model 3.31a is without an economic growth variable. Whereases, the model 3.31b includes the growth of real GDP per capita as $EG1$ variable while 3.31c includes a log of real GDP per capita as an indicator of economic growth.

Table 5.5 presents results of the dynamic general model, which have been estimated using the Fixed Effect-Instrument Variable $(FE - IV)$ method to explore the impact of public spending allocations on income INQ.

Table 5. 5: Consequences of Public Spending Allocations for *INQ*

***FE – IV* Method Results (Dependent Variable Inequality)**

DEP.V / IND.V	4.35 Gini General Model	4.35a Gini Final Model	4.35b Gini Final with *EG*1	4.35c Gini Final with EG
L.INQ	0.645*** (0.000)	0.681*** (0.000)	0.686*** (0.000)	0.680*** (0.000)
HEAEXP	0.207 (0.273)			
EDUEXP	0.344 (0.125)	0.281* (0.074)	0.241 (0.146)	0.282* (0.074)
DEFEXP	0.495 (0.182)			
INF	-0.279 (0.915)			
CORR	0.358* (0.090)	0.354** (0.041)	0.364** (0.035)	0.368** (0.051)
EG	0.055 (0.959)			-0.245 (0.766)
AGD	0.130*** (0.005)	0.127*** (0.000)	0.123*** (0.000)	0.120*** (0.002)
UNE	0.071*** (0.006)	0.083*** (0.001)	0.079*** (0.001)	0.080*** (0.001)
URB	0.183 (0.211)			
TPS	-0.081** (0.020)	-0.049*** (0.018)	-0.060*** (0.006)	-0.050* (0.019)
*EG*1			-0.030* (0.089)	
F-Stat (P-value)	47.68 (0.000)	101.54 (0.000)	88.36 (0.000)	86.53 (0.000)
No of obs.	306	456	456	456
Hansen J. Statistic (P-value)	0.04	0.255	0.60	0.31

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are INQ. These results are based on the author's own calculations using *FE – IV* method. *EG*1 shows GDP Per capita growth.

Column 2 of Table 5.5 shows the results of model 3.31 general regression model. Results show that the lag of the dependent variable holds a positive sign that is statistically significant, which indicates that the current state of

inequality is positively associated with its past value. Similarly, among the independent variables $CORR$, age dependency ratio, unemployment rate, and total government expenditures are also significant in determining INQ. The results confirm that decease in $CORR$ increases INQ of income. The result is consistent with the empirical findings of Dobson and Andres (2011), Chong and Caldron (2000), whereas contrary to many other studies like Fisman and Svensson (2000) and Mauro (1997) that came with the argument that a positive relationship between $CORR$ and INQ. The following reasons may justify our results. Firstly, in most of the developing countries, the informal sector holds almost half of the economy, and the livelihood of poor people is strictly linked with the informal sector. When $CORR$ start reducing, the economy becomes more formal, so it costs an informal economy due to which many people lose their jobs which increases INQ.

Secondly, the result may be justified in the well-known hypothesis regarding corruption as "grease the wheels," which states that $CORR$ may eliminate inefficiencies in the system and can promote EG. This point is highlighted by many studies (Leff, 1964; Huntington, 1968; Friedrich, 1972). Moreover, in the beginning, stages of the development INQ can increase as advocated by Kuznet (1955). So higher $CORR$ leads towards higher growth which causes more INQ in the early stages of development.

The estimated results of our baseline model also show that age dependency ratio (AGD) and unemployment rate also significantly affect INQ. The estimated results indicate a direct relationship between unemployment rate, dependency ratio, and INQ. Our findings are in line with the findings of

Huang and Lee (2019), Kukaj (2018). These studies argue that a higher level of unemployment means that economy is working below full capacity, which means a lower level of output and more inequality.

Total public spending (TPS) enters the model negatively, which is statistically significant. The results presented in column 2 of table 5.5 show that inequality increases with an increase in total public spending. Our results are in line with some other studies like Breuer (2019), who advocated that an increase in public spending is not fruitful in bringing INQ down. The increase in public spending might be counterproductive if countries are having fiscal constraints plus a lack of good quality institutions.

Following a general to specific approach and dropping insignificant variables one by one, we developed a final model, which is estimated using Fixed Effect- Instrument Variable Method ($FE - IV$). The final model consists of lag of the INQ, $EDUEXP$, $CORR$, AGD, UNE and public spending as important determinants that affect the INQ as for our whole sample is considered. Results presented in column 3 of Table 5.5 reveal that the past profile of the model plays a significant role in determining the current level of inequality for our sample countries. The lag value of the dependent variable holds a positive sign. Similarly, results show that a higher level of education expenditures increases inequality. The variable enters the model in column 3 with a positive sign which is statistically significant. Many studies exist in support of and against these results (O'Neil, 1995, Ram, 1984, Park 1996, Lee 2002). The nature of the relationship between education and level of INQ is

complex in nature. A higher level of education may bring growth which can increase INQ initially, as indicated in literature (Kuznet,1955).

The results presented in column 3 show that our final model is robust and consistent with the general baseline model. Most of the variables which appeared statistically significant in the general model are also significant in the final model, which indicates the robustness of the model. One most important determinant of which we have not included in our final model in column 3 and in the general model is EG. EG is considered a vital and conventional factor in determining public spending allocation. In column 4 of Table 5.5, results of the final model have been presented by including the growth of real GDP per capita as EG. The variable holds a negative sign which is statistically significant as well. The estimated results imply economic growth reduces inequality. The results are supported by many studies which argue that EG reduces income INQ. Higher EG can have more investment and industrialization, which leads towards more job opportunities which reduce income INQ. Our results are consistent with the findings of Adams (2003), who has also advocated the same point that growth reduces inequality by raising the income level of the poor in the country.

The fifth column of Table 5.5 presents the results of the final model by including the log of real GDP Per Capita as EG by using the Fixed Effect-Instrument Variable method. The results presented in column 5 show that EG holds a negative sign, but that is statistically insignificant. Hence, the variable could not signify its role in determining inequality. The rest of the variables have the same signs and significance, including education expenditures with

reference to INQ in column 5 as are in column 4. The above explanation indicates that the estimated result is not changed very much by adding or removing a variable. Hence, our model is robust.

5.6. Application of GMM to Check Robustness

To check for the robustness of our estimated results and models, we applied the one-step System *GMM* method as well. The results are presented in Table 5.6. First, the final model is estimated with the One-Step System *GMM*. Then the same model is r estimated by Including growth of *GDP* per capita as a measure of *EG*. Lastly, the final model is again estimated by adding Real *GDP* Per Capita, and results have been compared.

5.6.1. Consequences of Public Spending Allocations for INQ

The results presented in Table 5.6 are the re-estimation of the models whose results have been presented and discussed in table 5.5 by using One-Step System *GMM* for robustness.

As indicated by Table 5.6, the final model is strongly robust. All variables are significant in system one step *GMM*, which are significant in the final model as well. The interpretation and justification of results are already given. All independent variables have been used as Endogenous Instruments. We verified through the values of Hansen J. Statistics that instruments are valid. The p-value for Hansen J. statistics is greater than .10 for all models. Our empirical results enable us to reject our hypothesis that sectoral spending does not affect *INQ* for the whole sample of countries.

Table 5. 6: System One Step GMM Method Results

	Final Model One step	Final Model Including EG One Step Sys GMM	Final Including EGI One Step GMM
Model	(1)	(3)	(5)
Variables	Gini	Gini	Gini
L.INQ	0.523*** (0.001)	0.520*** (0.001)	0.503*** (0.002)
EDUEXP	0.821* (0.077)	0.859** (0.035)	0.816* (0.075)
CORR	-0.157 (0.711)	-0.149 (0.704)	-0.123 (0.747)
AGD	0.211** (0.057)	0.218** (0.051)	0.229*** (0.015)
UNE	0.179** (0.004)	0.188*** (0.002)	0.179*** (0.008)
TPS	-0.137** (0.051)	-0.147** (0.039)	-0.131* (0.074)
EG		0.0948 (0.929)	
EGI			0.006 (0.929)
CON	10.79** (0.045)	9.899 (0.489)	10.60** (0.051)
F-Stat (P-Value)	23.85 (0.000)	23.58 (0.000)	18.94 (0.000)
No. of obs.	459	459	459
Hansen J. Statistic (P-Value)	0.60	0.56	0.60

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are INQ. These results are based on author's own calculations using One Step GMM method.

5.6.2. Consequences of Public Spending allocations for *EG*

As indicated in the introductory chapter that one key objective of this study is to analyze the impact of public spending allocations on economic growth. Hence, this subsection of the chapter shows estimated results of model 3.32, which fulfills our objective. The following baseline model is estimated in order to study the effect of different sectoral spending allocations on economic growth.

$$EG_{it} = \alpha_0 + \alpha_1 L.EG_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 HC_{it} + \alpha_4 DEFEXP_{it} + \alpha_5 INF_{it} + \alpha_6 CORR_{it} + \alpha_7 TRO_{it} + \alpha_8 INV_{it} + \alpha_9 INFEXP_{it} + \alpha_{10} AGD_{it} + \alpha_{11} GFCEXP_{it} + \alpha_{12} PG_{it} + \alpha_{13} HEAEXP_{it} + + \eta_i + u_{it} \quad (3.32)$$

The final model is estimated by using Fixed Effect-Instrument Variable (FE-IV) Method developed by following a general to a specific approach. The results are presented in Table. 5.7.

$$EG_{it} = \alpha_0 + \alpha_1 L.EG_{it} + \alpha_2 EDUEXP_{it} + \alpha_3 HC_{it} + \alpha_4 INF_{it} + \alpha_5 TRO_{it} + \alpha_6 INV_{it} + \alpha_7 INFEXP_{it} + \alpha_8 AGD_{it} + \alpha_{11} GFCEXP_{it} + \alpha_{12} PG_{it} + \eta_i + u_{it} \quad (3.32a)$$

Table 5.7. presents the results of the baseline and final model using the Fixed Effect-Instrument Variable Method $(FE - IV)$. Moreover, column 4 of Table 5.7 shows empirical results of the final model using a one-step system GMM to confirm the robustness of results. The second column shows the results of the general model, which has been estimated using the Fixed Effect-Instrument Variable Method $(FE - IV)$. It is a model which contains most of the important indicators of EG including Investment (INV), Human Capital (HC), Trade Openness (TRO) and Government Final Consumption Expenditures (GFC) along with different sectoral spending allocations. The general model has been reduced to the final model following the general to specific approach and dropping insignificant variables one by one. Three lags of the dependent variable have been regressed to remove the autocorrelation problem, but one lag has been reported in the results table.

The lag value of the dependent variable enters in all three results columns with a negative sign that is statistically significant as well. It indicates that past values of growth affect the current level of growth.

Table 5.7: Consequences of Public Spending for *EG*

	General Model	Final Model	Final Model with One Step System GMM
Model	4.36	4.36a	4.36a
Variables	*EG*	*EG*	*EG*
L.EG	-0.294*** (0.000)	-0.292*** (0.000)	0-0.730*** (0.008)
INV	12.991*** (0.000)	12.156*** (0.000)	32.505*** (0.002)
GFCEXP	-19.720*** (0.012)	-24.004*** (0.000)	-31.825 (0.214)
HC	15.504 (0.171)	15.329 (0.187)	-26.488*** (0.008)
TRO	20.464*** (0.000)	18.554*** (0.000)	5.203 (0.630)
INF	-7.796 (0.547)	-0.147** (0.039)	
PG	-1.935*** (0.000)	-2.132 (0.000)	-8.824*** (0.017)
EDUEXP	-2.843** (0.020)	-2.164** (0.037)	0.658 (0.814)
HEAEXP	-0.323 (0.406)		
INFEXP	0.176*** (0.017)	0.185*** (0.010)	0.643** (0.059)
DEFEXP	-0.056 (.941)		
CORR	-4.140 (.162)		
F-Stat (P-value)	10.84 (0.000)	14.05 (0.000)	5.72 (0.000)
No of obs.	167	177	624
Hansen J. Stat. (P-value)	0.339	0.10	0.18

Notes: The p -values are in parenthesis. ***, **, * indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are EG. These results are based on author's own calculations using One Step GMM method.

This confirms the existence of the convergence hypothesis, which has been advocated by Solow (1956). The variable gross fixed capital formation as a percentage of *GDP* has been used as a proxy for Investment (*INV*). The

variable is significant at a 1% level of significance. Results suggest that a higher level of Investment increases EG substantially. The result is consistent with standard economic theory and existing literature like Anderson (1990) that a higher level of investment lead towards industrialization, which increases the output of the economy.

Results presented in Table 5.7 of the baseline model indicate that government final consumption expenditures (GFC), population growth, and education expenditures hold a negative sign which is statistically significant as well. The result is confirmed by existing studies as well (Ehrlich & Holden, 1971; Coale & Hoover, 1958). Higher population growth poses serious pressure on the nation's resources which hinders the process of EG. Similarly, Hajamini and Falahi (2014) also confirmed the negative and significant results of final government consumption expenditures on EG. A higher level of government expenditures may increase the budget deficit of the government, which can lessen EG of the country. The results also indicate that $CORR$, Inflation (INF), and human capital remained insignificant in determining EG in the sample of our countries.

Furthermore, estimated results of the baseline model explain that $INFEXP$ and trade openness (TRO) have a significant and positive impact on EG. Many studies (Tekin, 2012; Simuţ & Meşter, 2014; Palei, 2015) also suggested that these factors contribute positively to increasing the pace of EG and development. Higher $INFEXP$ investments generate job opportunities and increase the level of production in the economy, so EG promotes.

Moreover, $INFEXP$ investments also have positive externalities for other sectors of the economy.

The third column of the table consists of the results of the final model by adopting a general to a specific approach. The insignificant variables have been dropped one by one. The result is consistent and in line with the general model. Lag of the dependent variable, investment, government final consumption expenditures, trade openness, population growth, $EDUEXP$, $INFEXP$, all are significant in affecting EG. All independent variables have been used as an endogenous instrument which is valid as per the probability value of Hansen J. Statistic.

The fourth column presents the results of One Step System GMM to check the robustness of the Fixed Effect-Instrument Variable method. One-step system GMM results indicate that results are robust and there are no substantial changes in the results. Hence, our final model is robust. Our empirical results enable us to reject our hypothesis that sectoral spending does not affect EG for the whole sample of countries.

5.7. Summary of the results

In this chapter, we have explained the results of socioeconomic, political, and institutional $DPSA$ and their consequences for 104 countries. The determinants have been discussed at the aggregate level as well as at disaggregated levels by focusing on health, education, infrastructure, and defense spending. Moreover, results for LIC, MIC and HIC have also been explained separately. The results indicate that bureaucratic quality (BQ),

democratic accountability (DA), government stability (GS) and military in politics (MP) are highly significant institutional and political variables which significantly determine public spending allocations at aggregate and disaggregate level at aggregate data of countries as well as for HIC. Besides these traditional economic variables, tax revenue (TR), central government debt (CGD), and EG have also been observed significantly in determining public spending allocations at aggregate and disaggregated levels.

The results for MIC indicate that democratic accountability (DA), $CORR$ and IC are the main $DPSA$. While population growth (PG), tax revenue (TR), and the level of central government debt (CGD) are also significant in explaining public spending allocation at aggregate as well as at disaggregated levels. While for LIC, EC, $CORR$, and MP are emerged as significant factors affecting public spending allocations. While PG and tax revenue (TR) also have a significant impact on public spending allocations at aggregated and disaggregated levels.

With reference to consequences of public spending allocations, we included the income group dummies in our regressions and got the same results. Those dummies were proved to be insignificant here. So, we have not gone for separate regressions for LIC, MIC- and HIC. Three models have been estimated to meet the objectives of consequences of public spending allocations in terms of POV, INQ, and per capita income. The results indicate that health and $EDUEXP$ were emerged as important in determining the level of POV for aggregate data along with other variables like age dependency ratio, unemployment rate and EG, etc.

Similarly, education expenditures, $CORR$, age dependency ratio, unemployment rate, and total government expenditures EG (Growth of per-capita income) have emerged as important determinants of INQ. Different estimation methods have also yielded robust results with the same significant variables.

Lastly, we have estimated the impact of different sectoral spending allocations along with other main variables on EG. The results show that $INFEXP$ and $EDUEXP$ along with investment (INV), final government consumption expenditures ($FGCEXP$) trade Openness (TRO) and population growth (PG) significantly affects the growth of per capita income. The model also shows the convergence element as the lag of growth of per capita income is highly significant. The model proved to be robust when estimated through a one-step system GMM as well.

Chapter 6

CONCLUSION AND POLICY IMPLICATIONS

Public spending and state intervention have got a central place in economic literature after the great depression (1929). As discussed in the opening chapter that the study is devoted to investigating the factors that determine public spending allocation. In addition, the study also analyzed the consequences of public spending allocation. In this context, this chapter is approached with two main sections. The first section (6.1) presents a summary of the key findings and policy implications about determinants of public spending allocation, whereas the second section (6.2) presents conclusions and policy recommendations about the consequences of public spending allocations and policy recommendations.

6.1. Conclusions and Policy Recommendations about DPSA

As discussed in the earlier chapters that the sample countries are divided into three subgroups, namely high-, middle- and low-income countries. In this context, this chapter is further subdivided into four subgroups. In this context section, 6.1.1 presents conclusions and policy recommendations about *DPSA* for the whole sample of countries.

6.1.1. Conclusions about *DPSA* for the Whole Sample of Countries

As one of the key objectives of the study is to investigate that what determines public spending allocation with a focus on institutional and political factors. In this context, this sub-section provides a summary of the key findings of determinants of public spending allocations. As discussed in the methodology

chapter, the underline determinants are broadly divided into three categories, namely, political, and institutional, demographic, and economic. As for as the political and institutional variables are concerned, at large, our results indicate that its role in the determination of resource allocation is significant. In the case of the whole sample, the conclusions that can be drawn from our empirical findings are as follows.

Our findings indicate that bureaucratic quality has a positive effect on public spending allocations at the aggregate level as well for education and infrastructure spending. Interestingly our findings reveal that those countries which hold relatively better bureaucratic quality allocate more resources to their education and infostructure sectors. Our findings also reveal that overall public spending increases with an increase in the level of corruption. The estimated results also indicate that external conflict plays an important role in the determination of defense, health, and education spending. Our findings reveal that a higher level of external conflict increases health and education spending allocations while countries allocate more for defense spending even with fewer external conflicts. In addition, our findings reveal that overall public spending and internal conflicts move parallel, whereas spending on infrastructures increases as internal conflicts decrease.

Our findings indicate that government stability plays an important and significant role in determining all forms of public spending aggregated as well as disaggregated for the whole sample of countries. Our estimated results show that government stability reduces all forms of public spending allocations. Moreover, democratic accountability has a positive and significant

effect on total public spending, defense, health, and education spending (social spending). A higher level of democratic accountability increases public spending for the whole sample of countries. We also come with the findings that the military in politics signifies its role in the determination of public spending. For instance, our estimated results show that lesser the involvement of the military in politics, lower would-be defense and health expenditures.

The demographic variable population growth significantly affects defense spending and infrastructure spending. The defense expenditure and infrastructure expenditure reduce with an increase in population. Our findings indicate that economic indicators signify their role in the determination of public spending allocations. For instance, our findings reveal that central government debt positively affects overall government spending and infrastructure spending that both increases with the increase in central government debt. Similarly, tax revenue and economic growth also signify their role in determining public spending allocations. An increase in tax revenue increases all types of expenditures categories except defense. Moreover, a higher level of economic growth increases overall government spending and disaggregated government spending. In addition, our empirical results also show that inflation negatively affects education expenditures.

6.1.2. Policy Implications for Determinants of Public Spending Allocations for the whole sample of countries

Based on our findings are some recommendations that may direct government policies of the sample countries about public spending allocations. Our findings show that along with economic factors, intuitional and political

factors are important in determining public spending allocations. For instance, our findings indicate that public spending increases with an increase in conflict and political instability; hence the government of the sample countries may structure its public policies to preserve stability in its political process and sidestep conflict. Similarly, our institutional factors, bureaucratic quality, and democratic accountability pose a positive impact on education, health, and infrastructure expenditure; hence sample countries can improve their bureaucratic quality and democratic accountability to moderate infrastructure and social sectors (education and health) spending allocations. About demographic variables, our findings direct public policy for the control of population as public spending increases with the increase in population. As far as the economic determinants of public spending are concerned, sample countries have to increase tax collection, increase economic growth, and control inflation to increase public spending allocations.

6.1.3. Determinants of Public Spending Allocations Across Different Income Groups

As one of the key objectives of this study is to explore the role of various determinants of public spending allocations across different income groups of countries. Following conclusions have been drawn based on our analysis regarding determinants of public spending allocations across different income groups. In the case of high-income countries, our estimated results are almost the same as the whole sample of countries that variables appear with the same sign and level of significance. In the case of high-income countries, the following are some noteworthy findings.

The political factors, bureaucratic quality, and government stability emerged as significant determinants of overall government spending as well as for health, education, and infrastructure spending. The improvement in bureaucratic quality increases government spending, while the increase in the level of government stability decreases government spending for these sectors. In the same way, total government spending and education spending increases with an increase in corruption. Our findings indicate that in the case of *HIC* all developmental expenditures namely health, education, and infrastructure, increase with the increase in external conflict, whereas defense expenditure decreases with a decrease in internal conflict. Remarkably finding of the study reveal that all types of government spending overall, health, education, and defense spending moving parallel with democratic accountability of *HIC*. In the case of *HIC*, the one noteworthy finding is a higher level of the military in politics reduces public spending allocation at an overall level. However, it increases defense spending.

Our findings expose that economic variable total spending, education, and infrastructure spending increases with an increase in the provision of public debt. Similarly, infrastructure spending is also increasing with an increase in tax revenue. Besides, in the case of high-income countries, economic growth signifies its role in the determination of health expenditure, education expenditure, defense expenditure, and infrastructure expenditure spending.

6.1.4. Conclusions regarding Determinants of Public Spending Allocations in Middle-Income Countries

In the case of middle-income countries, the response of some determinants in the allocation of public spending is different from the previous two cases. Like previous cases, bureaucratic quality and infrastructure expenditure have a positive association, and overall government spending increase with the increase in corruption. Amazingly, developmental expenditure (health, education) increases with an increase in external conflicts, whereas internal conflicts are also posing a positive effect on education expenditure. Among political factors, democratic accountability is proved one of the strongest determinants in spending allocation in *MIC*, with the increase in democratic accountability, health expenditure, education expenditure, and total public spending increase. Our findings indicate that in the case of MIC, more involvement of the military reduces health expenditure.

The demographic variable population growth has almost the same response to public spending allocation as in the previous two cases. Our findings indicate that total public spending, defense expenditure, and infrastructure expenditure increase with the increase in population growth. A higher level of central government debt increases defense expenditure while reduces infrastructure expenditure. Like previous cases, total public spending allocation increases with an increase in tax revenue, economic growth.

6.1.5. Conclusions regarding DPSA for LIC

Despite having some limitations of the data, the following conclusions have been derived from our results presented in the previous chapter for *LIC*. The

border conclusion that can be drawn from the findings is that in the case of LIC, institutional and political variables are more effective in the determination of public spending allocations.

Our findings show that corruption, external conflict increases total public spending in low-income countries, whereas internal conflicts reduce the allocation of resources towards infrastructure development. Amazingly, in the case of lower-income countries, allocation of resources towards health and infrastructure decreases with democratic accountability. Findings reveal that health, education, and defense spending increase with the involvement of the military in government. In the case of *LIC*, a higher level of Central Government Debt increases public spending allocation towards infrastructure expenditure. Similarly, health and education expenditure increase with tax revenue and economic growth, respectively.

6.1.6. Policy Implication across Different Income Groups

Based on the above conclusion, which is derived from our empirical analysis, the following policy recommendations are suggested for *HIC*, *MIC*, and *LIC*.

Governments of *HIC* have to improve bureaucratic quality and government stability as both variables signify their role in the determination of public spending allocation, especially recourse allocation towards social sectors (health, education). In the same way, the governments should try to control external and internal conflict in order to switch resource allocation from controlling and managing conflicts to other sectors of the economy. HIC should try to increase their tax revenue, achieve a higher level of economic

border conclusion that can be drawn from the findings is that in the case of LIC, institutional and political variables are more effective in the determination of public spending allocations.

Our findings show that corruption, external conflict increases total public spending in low-income countries, whereas internal conflicts reduce the allocation of resources towards infrastructure development. Amazingly, in the case of lower-income countries, allocation of resources towards health and infrastructure decreases with democratic accountability. Findings reveal that health, education, and defense spending increase with the involvement of the military in government. In the case of *LIC*, a higher level of Central Government Debt increases public spending allocation towards infrastructure expenditure. Similarly, health and education expenditure increase with tax revenue and economic growth, respectively.

6.1.6. Policy Implication across Different Income Groups

Based on the above conclusion, which is derived from our empirical analysis, the following policy recommendations are suggested for *HIC*, *MIC*, and *LIC*.

Governments of *HIC* have to improve bureaucratic quality and government stability as both variables signify their role in the determination of public spending allocation, especially recourse allocation towards social sectors (health, education). In the same way, the governments should try to control external and internal conflict in order to switch resource allocation from controlling and managing conflicts to other sectors of the economy. HIC should try to increase their tax revenue, achieve a higher level of economic

growth, as both economic variables signify their role in the determination of public spending allocation.

The policy recommendations for *MIC* are the same as suggested for *HIC* as most of the institutional, political, and demographic variables behave in the same way in our conclusions for them.

In the case of *LIC*, policy recommendations are different from *HIC*, and *MIC* as the impact of Institutional and political variables are stronger in *LIC*. The following policy recommendations are suggested for *LIC*. In order to increase defense and infrastructure expenditure, *LIC* has to control corruption. Similarly, *LIC* should control external and internal conflicts so that resources can be saved as most of the developing countries already face a shortage of financial resources problem. There must be democratic accountability and government stability if countries want to reduce government spending at aggregate and disaggregated level in *LIC* which can improve their fiscal deficit problem in *LIC*. *LIC* focuses on reforms that may bring a higher level of tax collection and more economic growth so that more funds can be available for spending health, education, and infrastructure; otherwise, they have to borrow funds for spending on these sectors.

6.2. Conclusions and Policy Implications about Consequences of Public Spending Allocations

As discussed in the introductory chapter that one of the key objectives of the study is to investigate the consequences of public spending allocations. In this

context, this section of the chapter presents a summary of the key findings and policy recommendations.

6.2.1. Summary of the Key Findings

The following are some key findings regarding the consequences of public spending allocations for poverty, inequality, and economic growth.

The one key finding that the study came with is that in the sample countries, expenditures in education are negatively associated with poverty. Countries that allocate more resources to education have a lower level of poverty. Age dependency ratio and unemployment rate are positively associated with inequality, which indicates that higher the level of dependency ratio and higher would-be inequality. The estimated results show that trade openness, investment, government final consumption expenditures, inflation, population growth, and infrastructure expenditure play an important role in determining economic growth. Similarly, our results reveal that trade openness and investment positively affect economic growth, whereas it shrinks with an increase in population growth, government final consumption expenditures, and infrastructure expenditure.

6.2.2. Policy Implications for Consequences of Public Spending Allocations

Even though our study has some limitations, however, we believe that our findings should prove beneficial to direct government about public spending allocation. In this study, we tried to find out the impact of disaggregated public spending allocations at poverty, inequality, and per capita income growth. We

have included income group dummies to find income-specific effects in this analysis. The dummies were proved insignificant, so no separate analysis has been done for *LIC*, *MIC*- and *HIC*.

Based on our findings following policy recommendations are suggested for policymakers regarding the impact of public spending allocations for poverty, inequality, and economic growth

Our findings reveal that poverty increases with an increase in health expenditure. The result can pose an interesting consequence which indicates that in sample countries, a large segment of the population cannot get the potential benefit of health services. Our findings suggest that the sample countries need to improve the quality of health institutions that transfer the potential benefits of health services to a large segment of the population. Countries should increase education expenditure to reduce poverty as our findings indicate a negative association between education expenditure and poverty. Countries should formulate policies that can increase economic growth to reduce poverty as poverty reduces with an increase in economic growth in our sample countries.

The impact of public spending allocations on inequality shows that a higher level of education expenditures increases inequality. This conclusion is based on the same idea as for health expenditure because it is not only the increase in education expenditure rather efficient targeting of the people, which is important to reduce inequality. Hence, governments should try to target poor people for increasing education expenditure so that inequality may reduce. Countries should try to control unemployment to reduce inequality. Based on

our findings, we suggest that countries should spend more on infrastructure so that a higher level of economic growth can be achieved. Moreover, countries should try to control inflation and population growth which negatively affects economic growth.

6.3. Limitations of the Study

As the study is devoted to investigating the response of different types of indicators (socioeconomic, political, and institutional) on public spending allocations. However, to carry out this research exercise, two key limitations have been observed. Firstly, less availability of data on political and institutional variables limits the scope of few fewer income countries. In addition, the smaller number of observations also posed econometric issues, especially in the case of LIC analysis. Secondly, the unavailability of data set limits the scope to only four sectors that are, health, education, infrastructure, and defense.

Future Avenues for Research

Public spending and allocation of budget are considered important in the literature of public finance. Hence, in the future, more sectors should be added to expand its scope. Moreover, research should be carried out on how one sector's spending may affect another sector's spending allocation. Hence, substitutivity or complementarity between different sectors should be analyzed.

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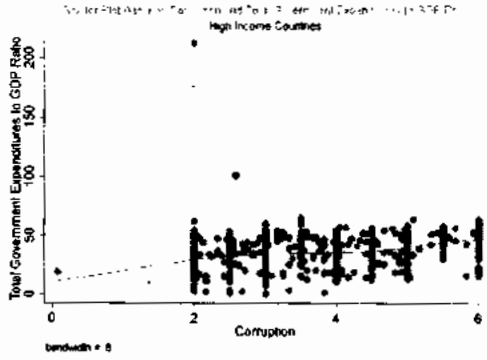
Appendix A3

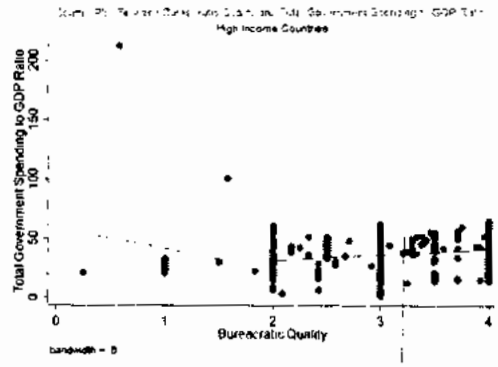
Scatter plot for HIC

Figure A3. 1: Total Expenditures, its main Determinants, and Consequence

Panel (a)



Panel (b)



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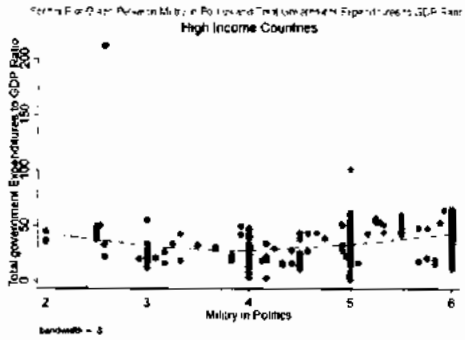

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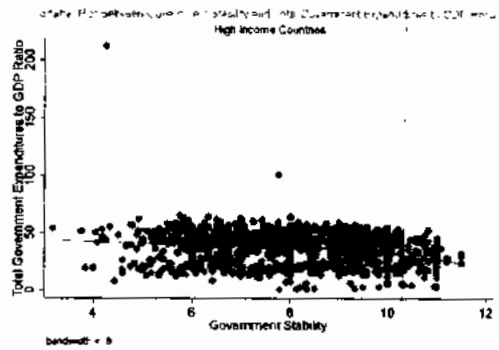

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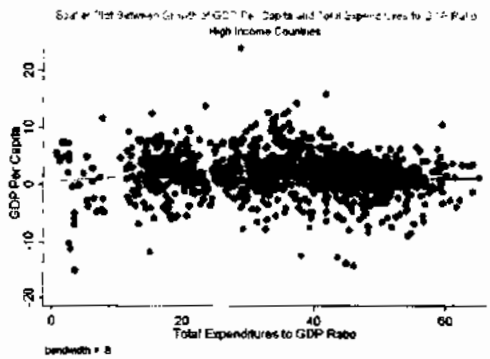

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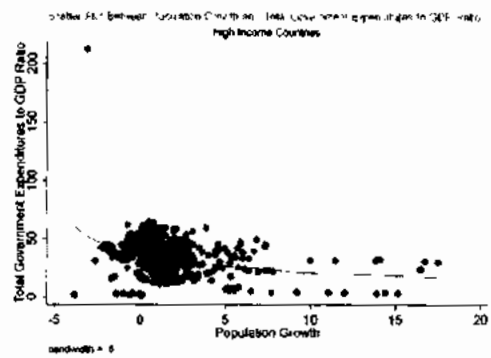

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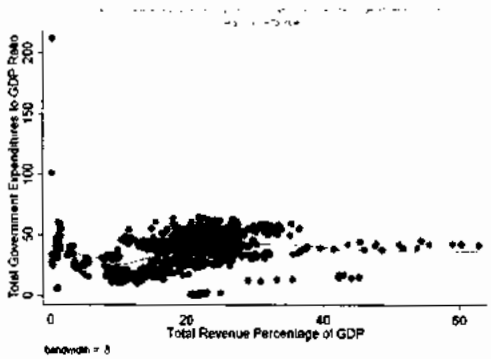

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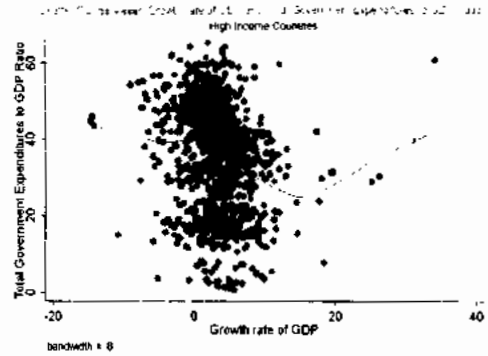
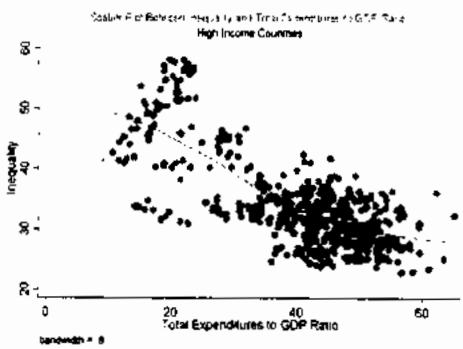


Panel (i)



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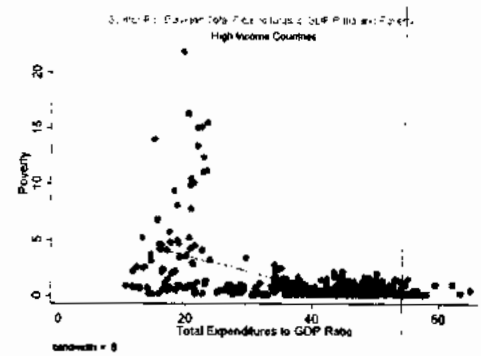
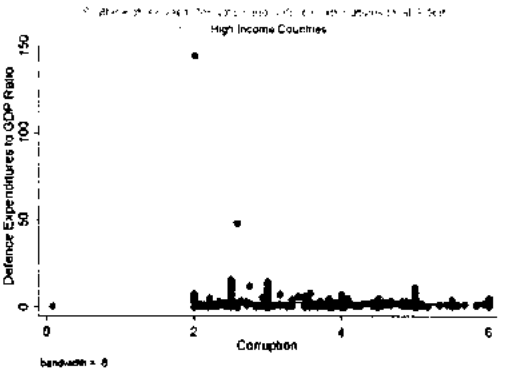


Figure A3. 2: Defense Expenditures, its main determinants, and Consequences

Panel (a)



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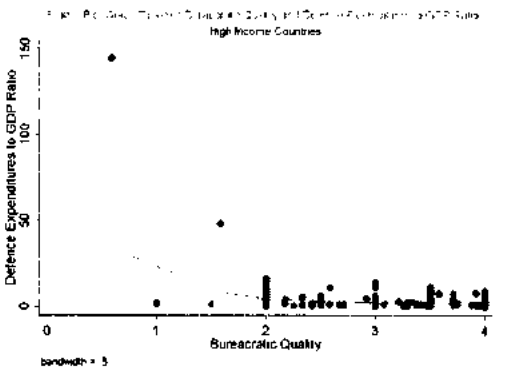

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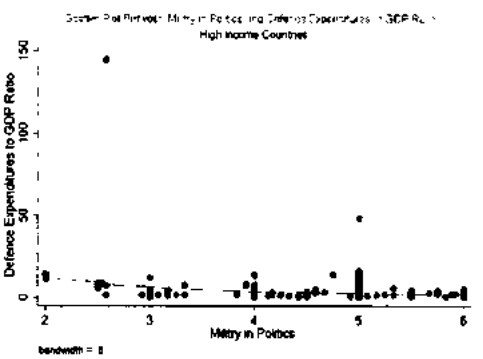
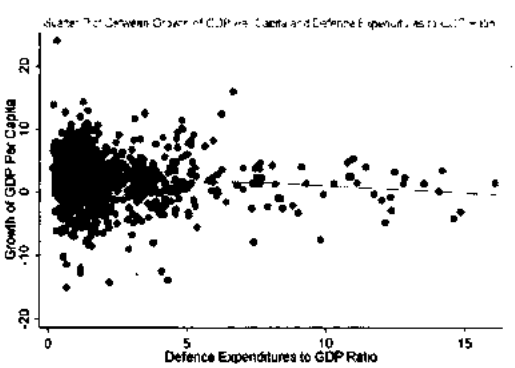


Panel (d)

Panel (e)



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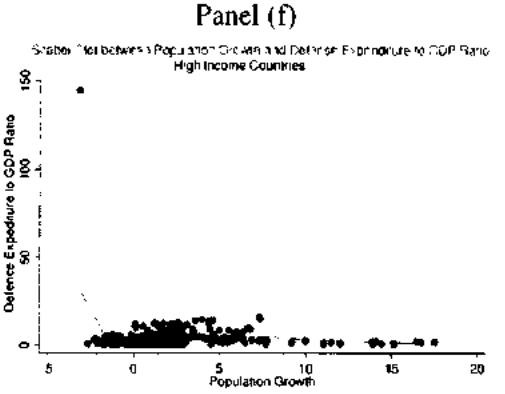
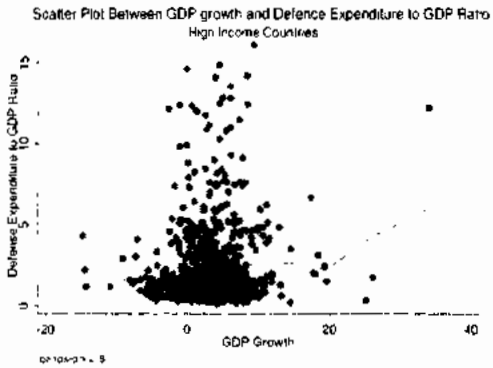


Panel (g)

Panel (h)



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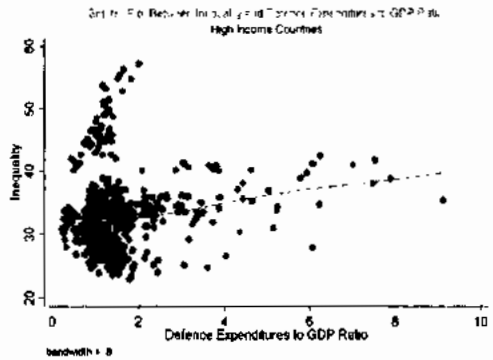

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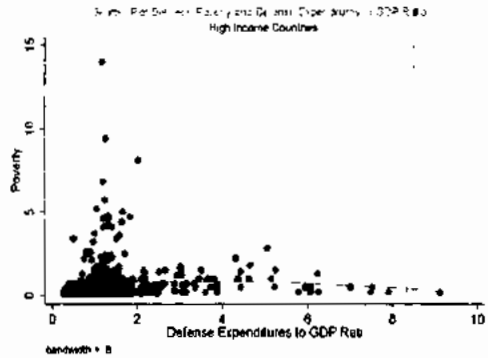
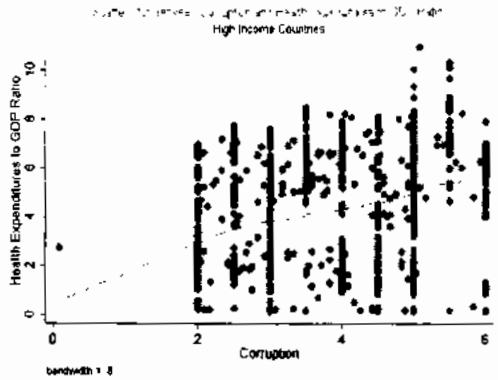


Figure A3. 3: Health Expenditures, its Determinants, and Consequences

Panel (a)



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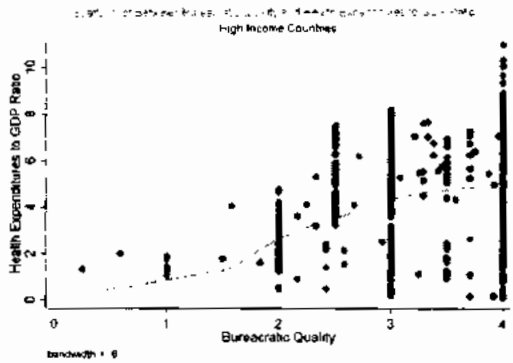

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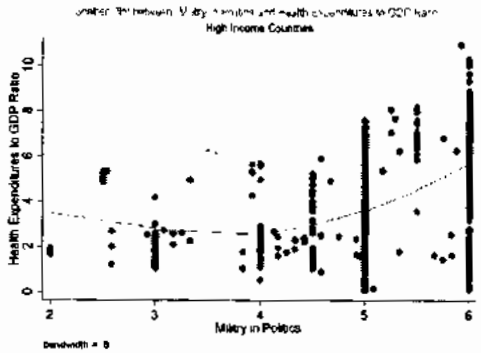

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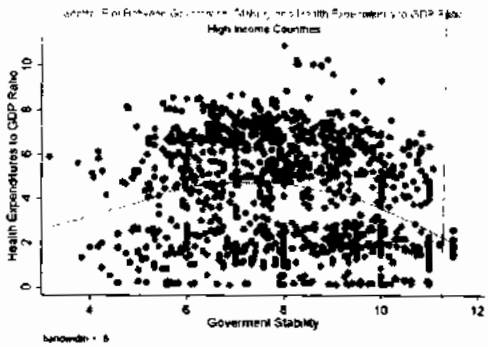
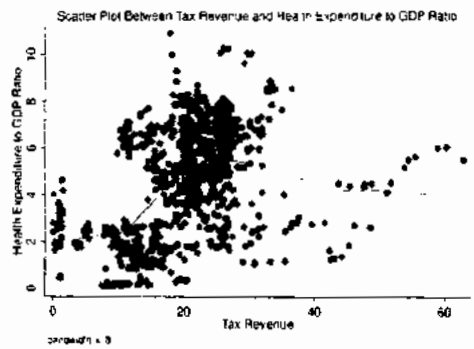


Panel (e)

Panel (f)

Panel (g)



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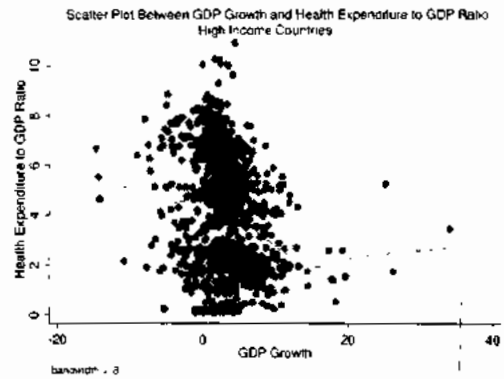

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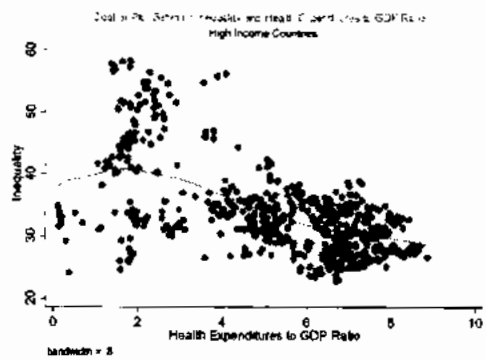

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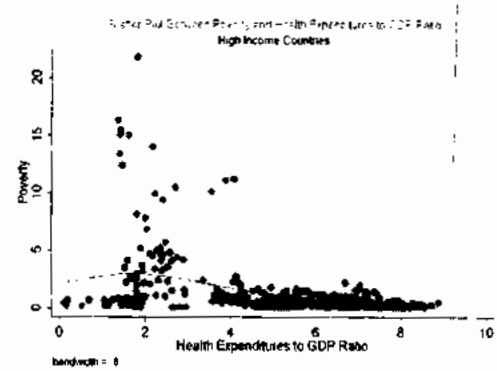
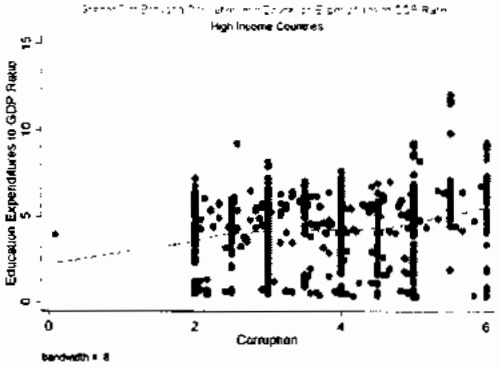


Figure A3. 4: Expenditures, its main determinants, and Consequences

Panel (a)



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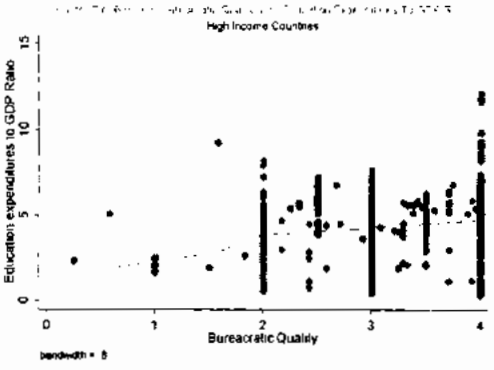

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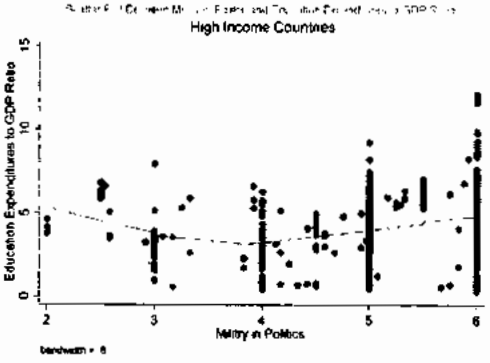
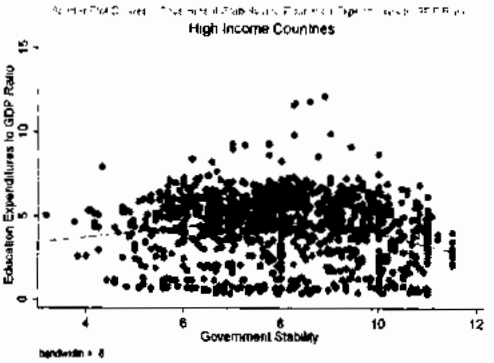
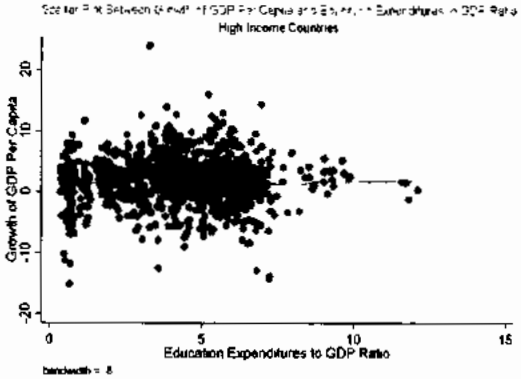


Panel (d)



Panel (e)



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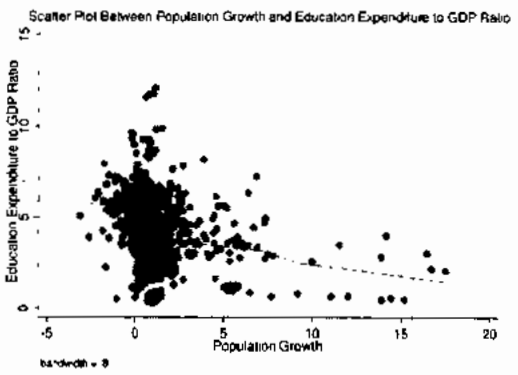

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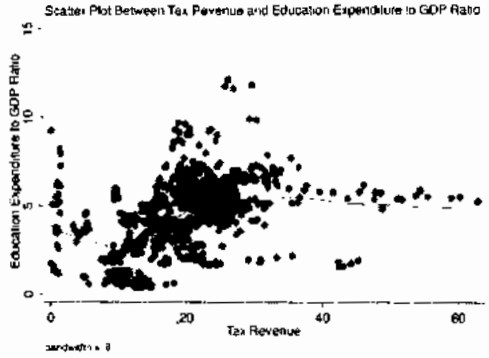
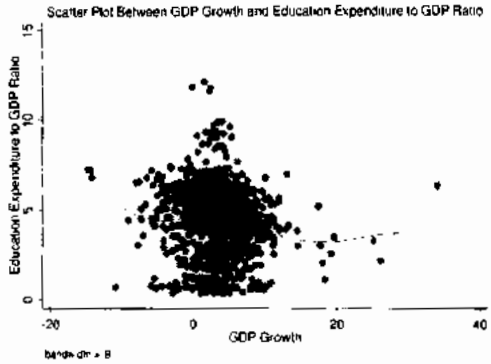
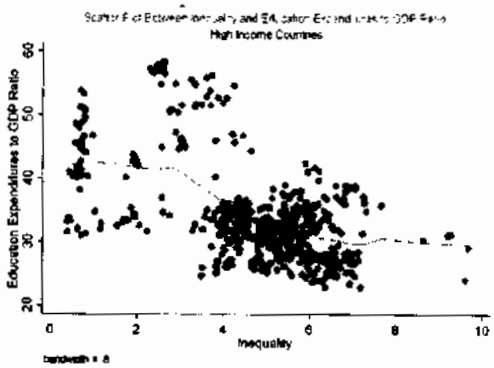


Panel (h)



Panel (i)



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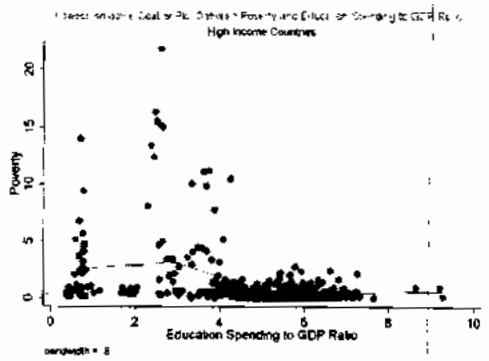
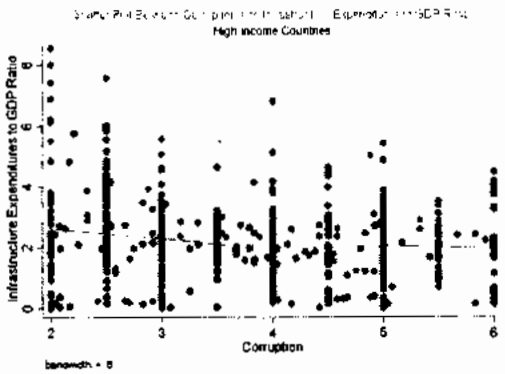
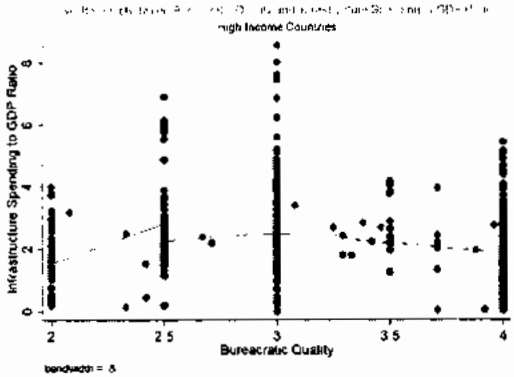


Figure A3. 5: Expenditures, its main determinants, and Consequences

Panel (a)



Panel (b)



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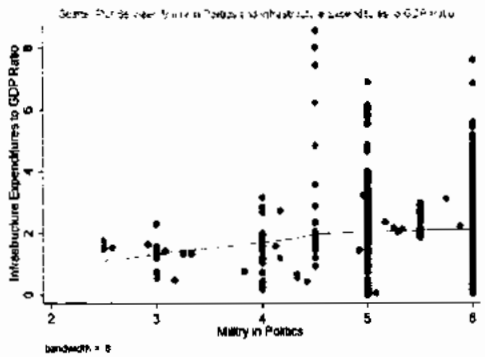
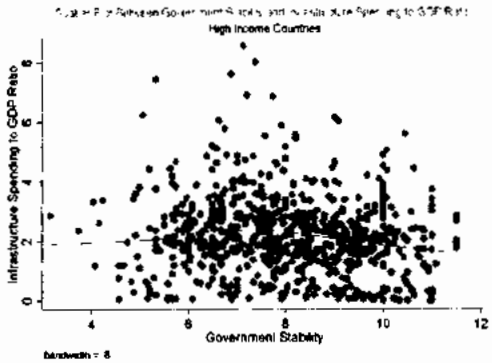
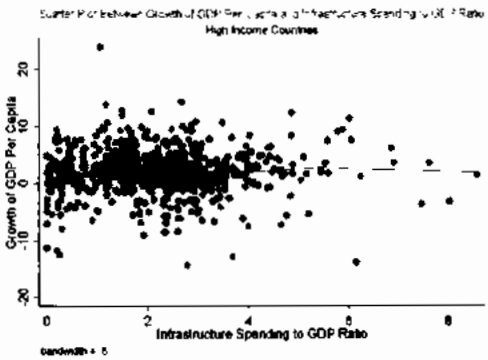


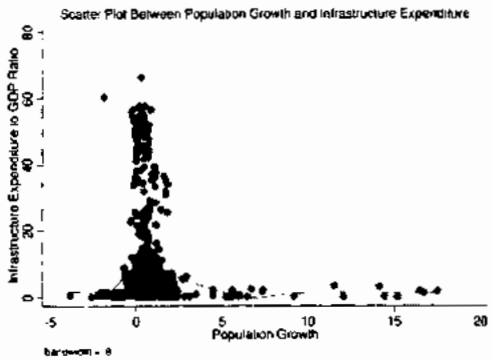
Panel (d)



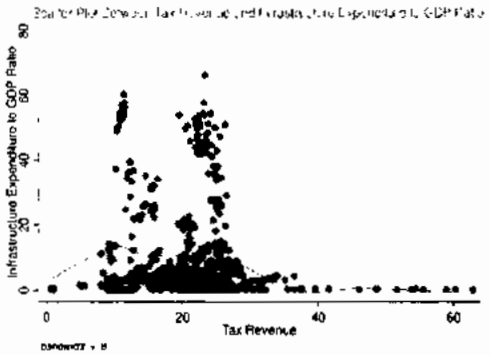
Panel (e)



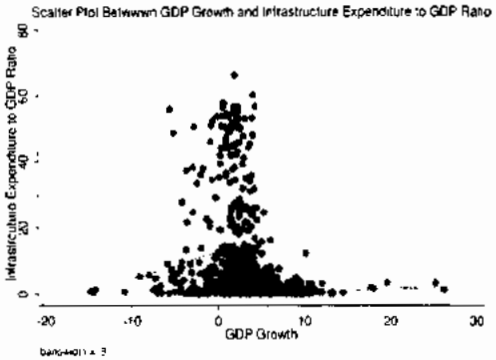
Panel (f)



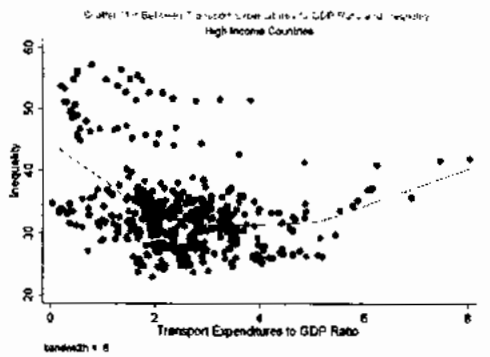
Panel (g)



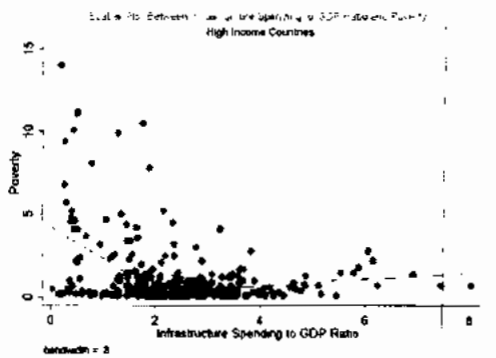
Panel (h)



Panel (i)



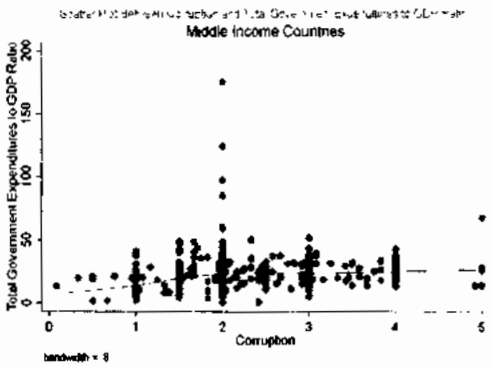
Panel (j)



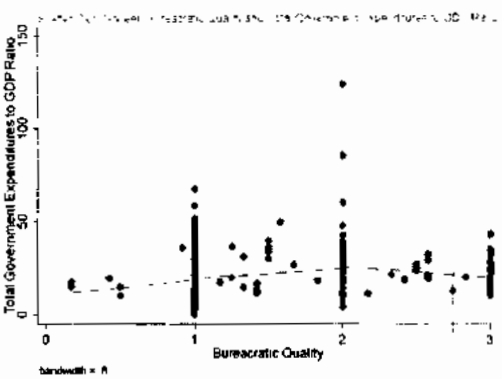
Scatter plot for MIC

Figure A3. 6: Total Expenditures, its main determinants, and Consequences

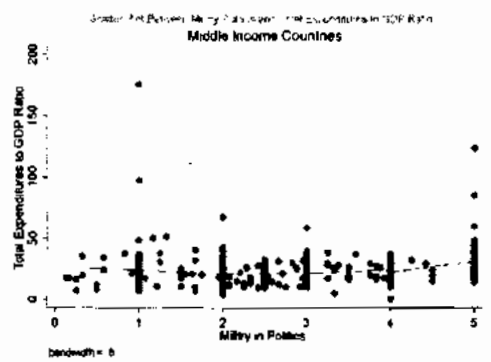
Panel (a)



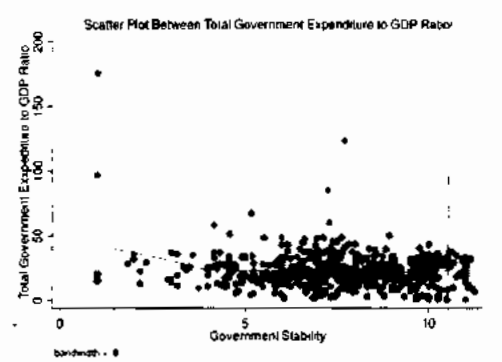
Panel (b)



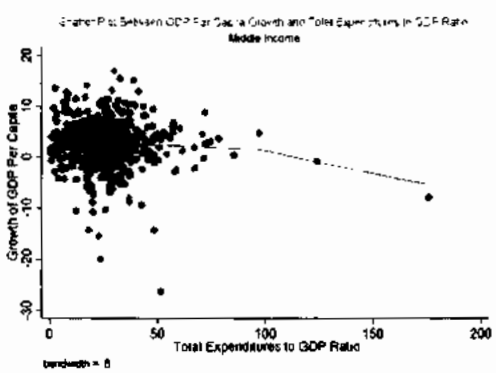
Panel (c)



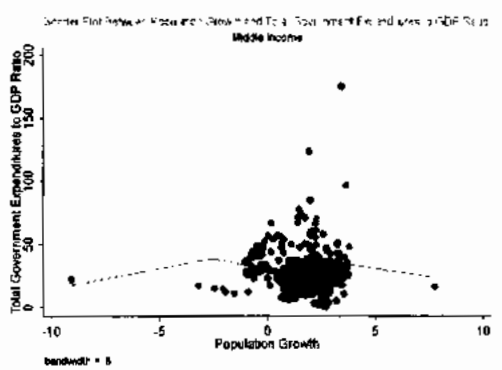
Panel (d)



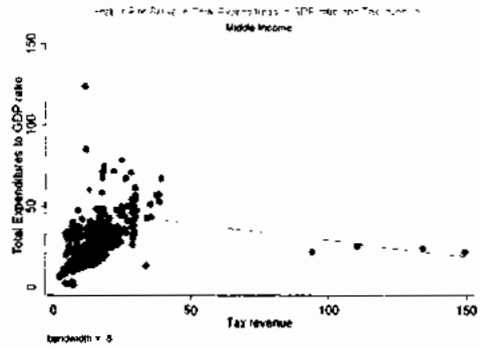
Panel (e)



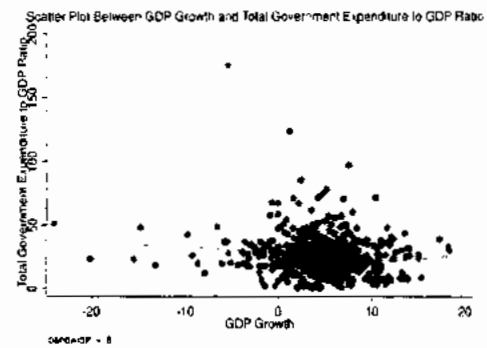
Panel (f)



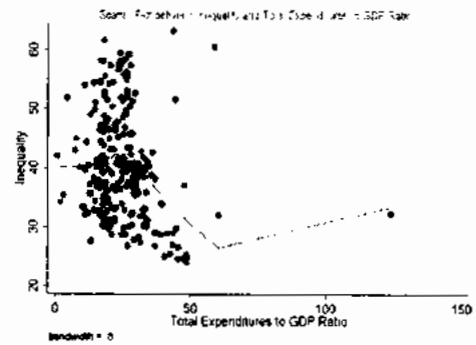
Panel (g)



Panel (h)



Panel (i)



Panel (j)

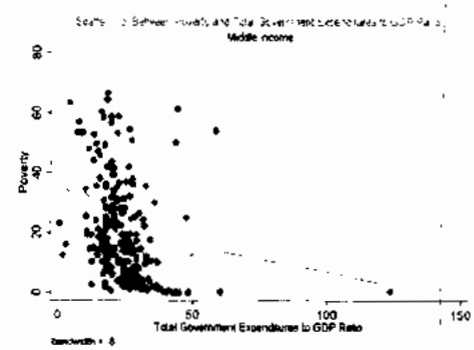
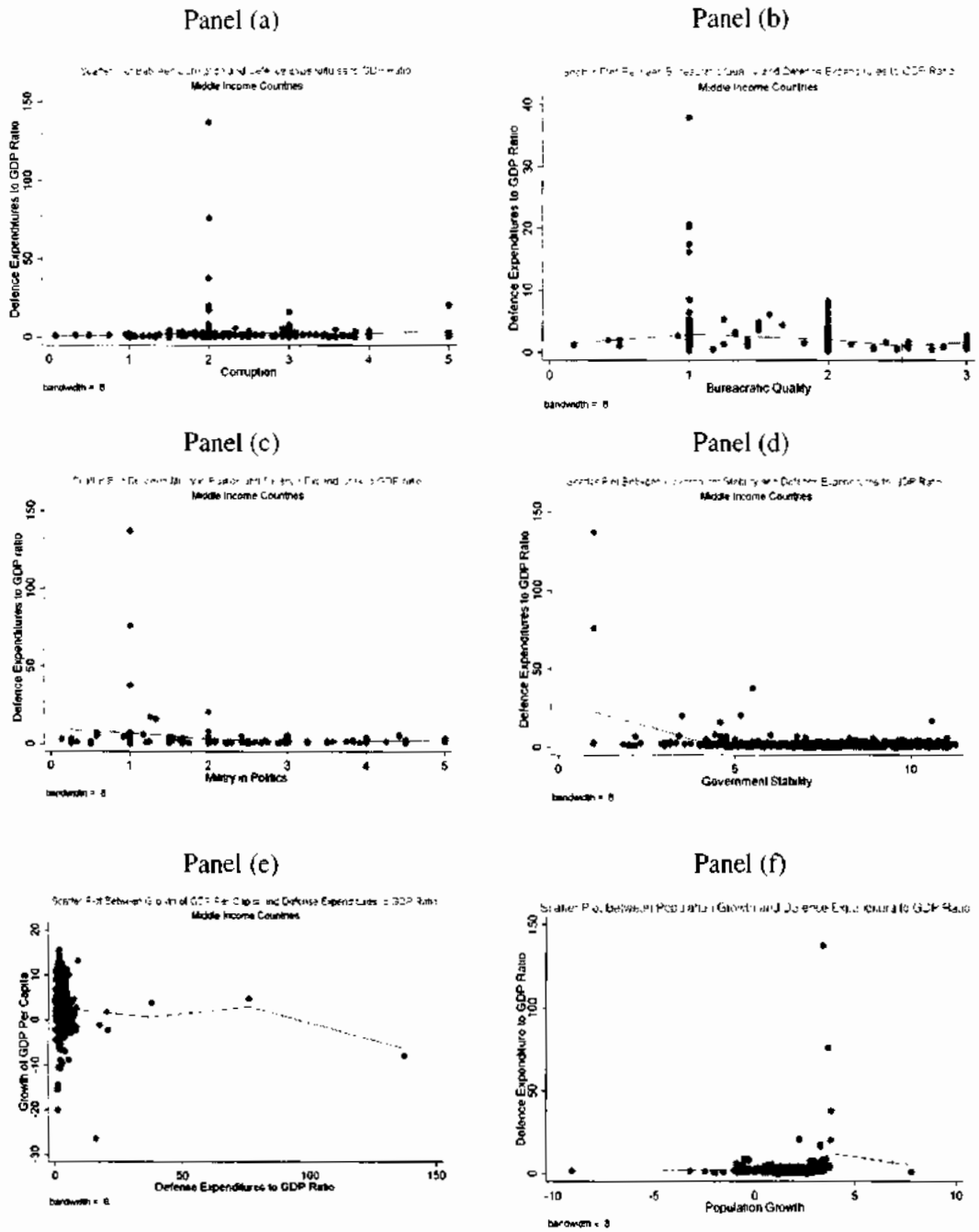
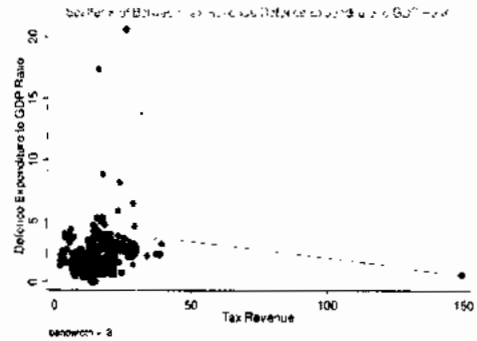


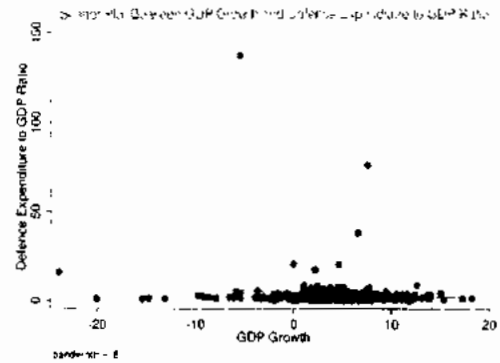
Figure A3. 7: Defense Expenditures, its main determinants, and Consequences



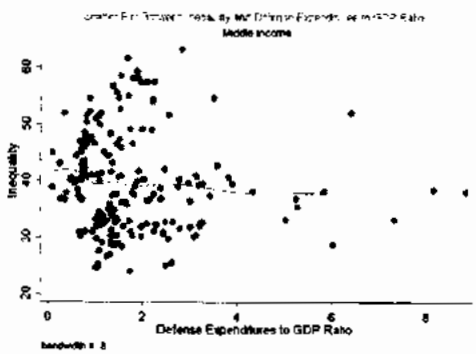
Panel (g)



Panel (h)



Panel (i)



Panel (j)

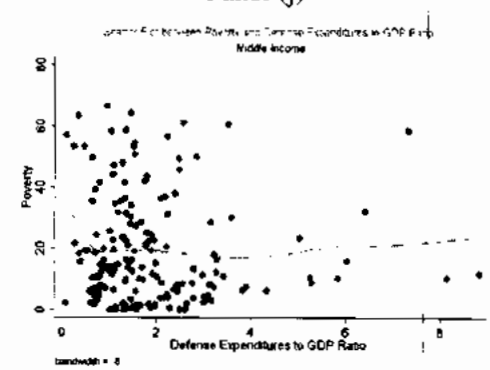
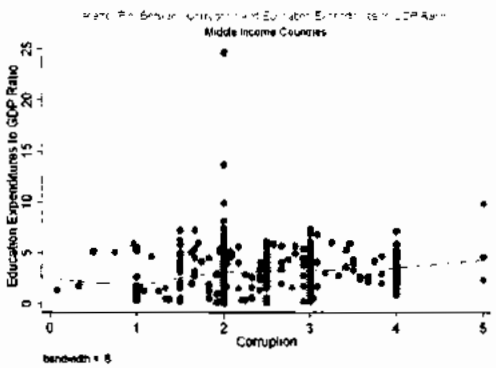
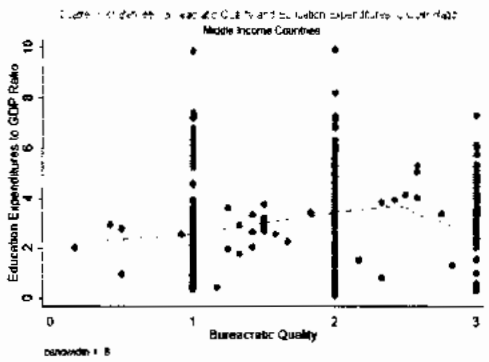


Figure A3. 8: Education Expenditures, its main determinants, and Consequences

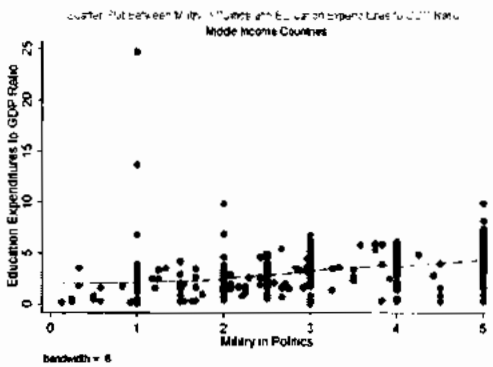
Panel (a)



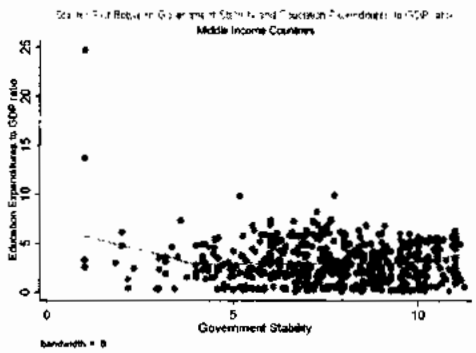
Panel (b)



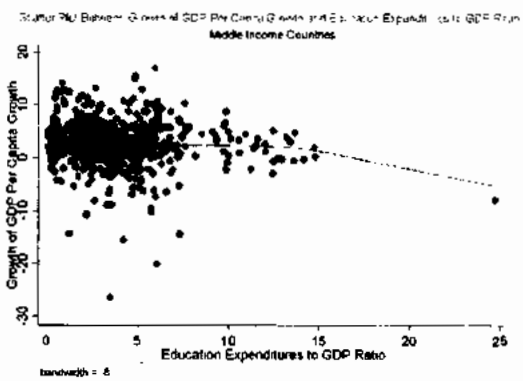
Panel (c)



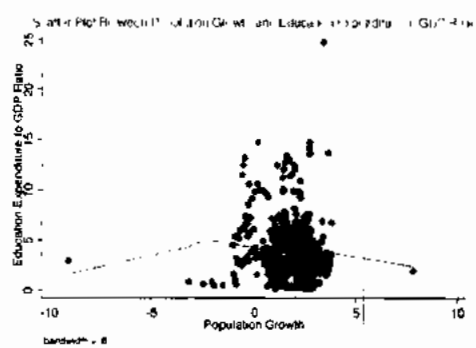
Panel (d)



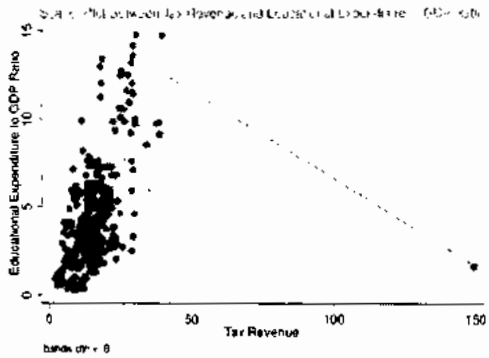
Panel (e)



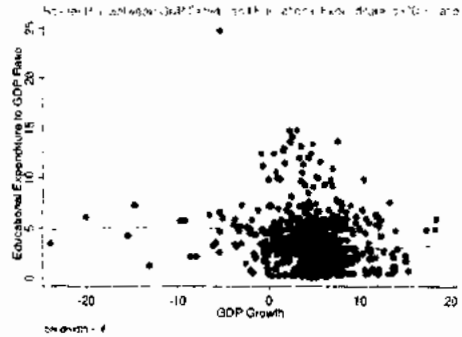
Panel (f)



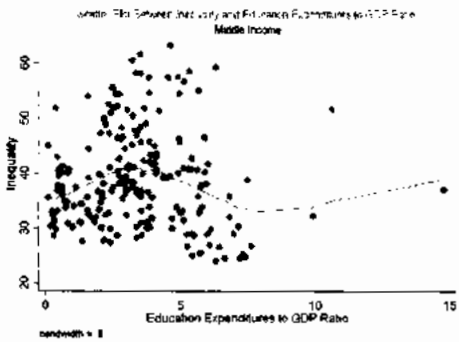
Panel (g)



Panel (h)



Panel (i)



Panel (j)

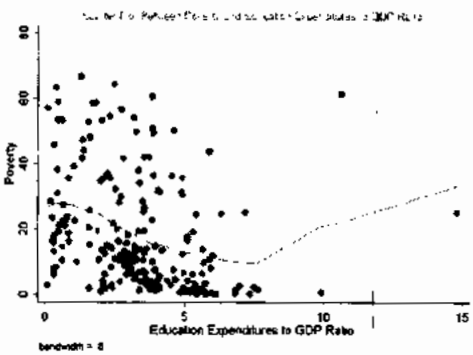
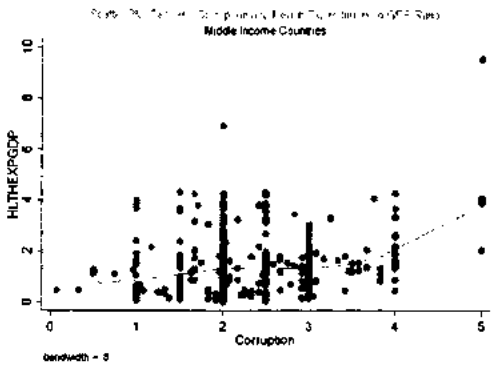
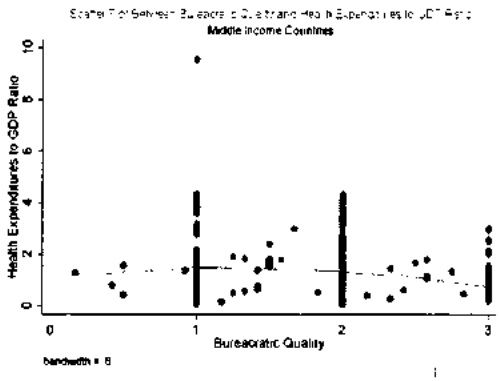


Figure A3. 9: Health Expenditures, its main determinants, and Consequences

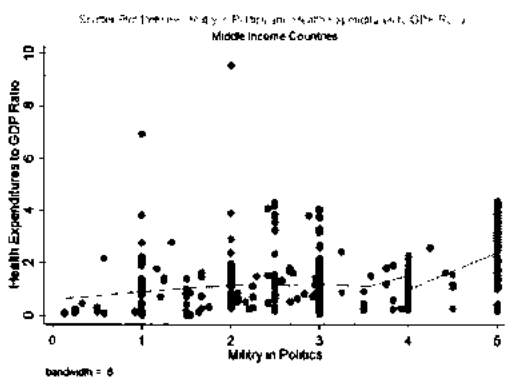
Panel (a)



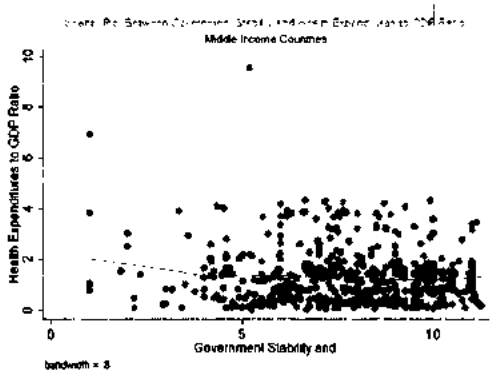
Panel (b)



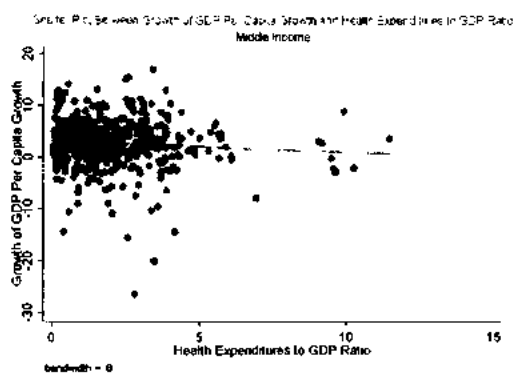
Panel (c)



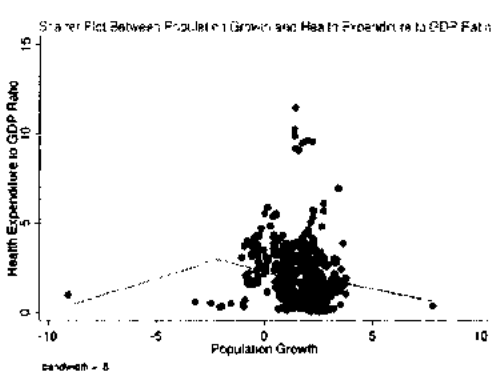
Panel (d)



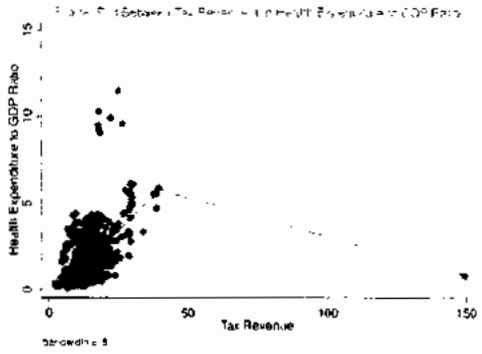
Panel (e)



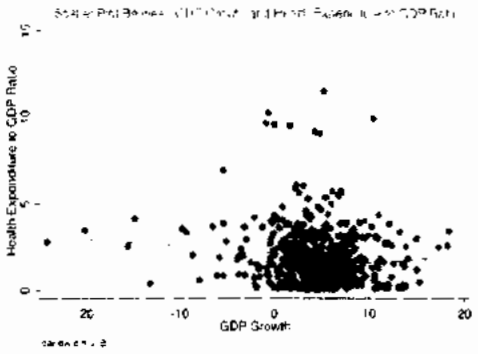
Panel (f)



Panel (g)



Panel (h)



Panel (i)

Panel (j)

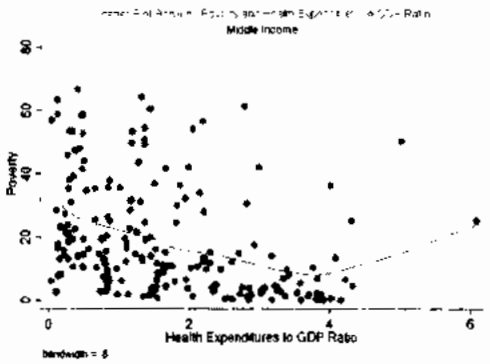
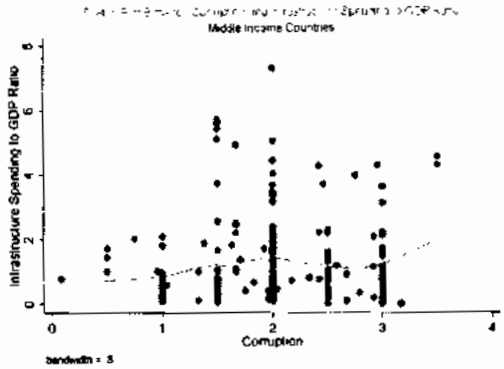
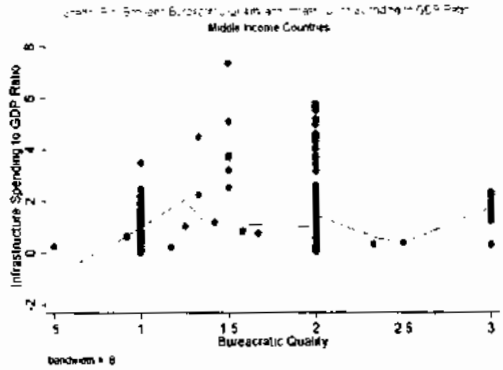


Figure A3. 10: Infrastructure Expenditures, its main determinants, and Consequences

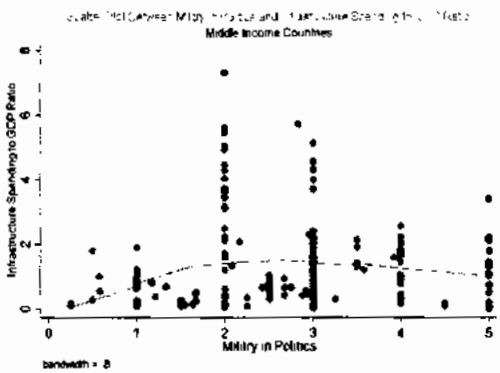
Panel (a)



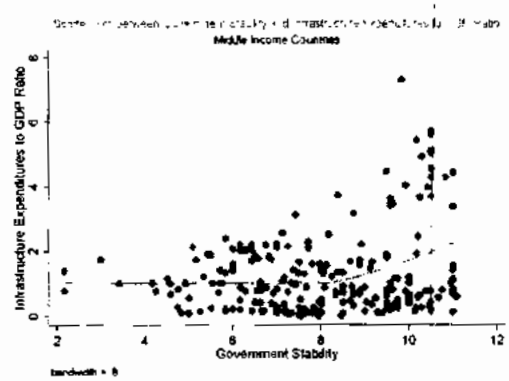
Panel (b)



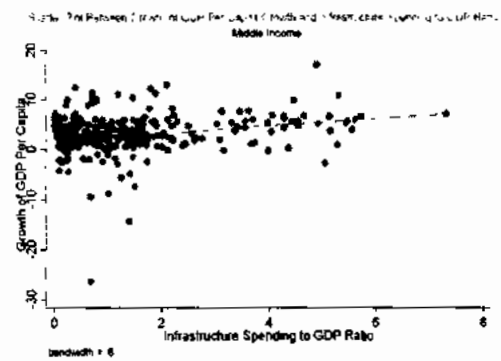
Panel (c)



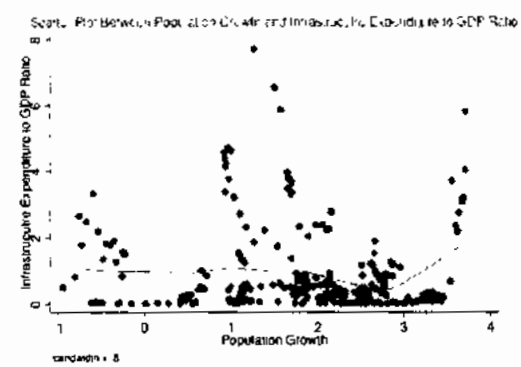
Panel (d)



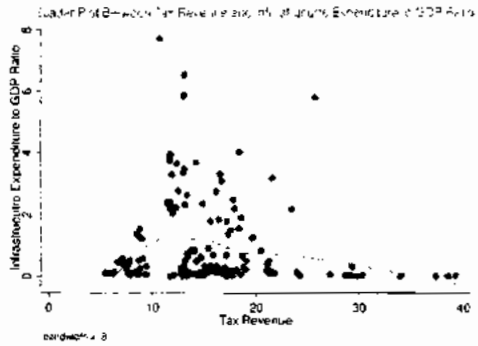
Panel (e)



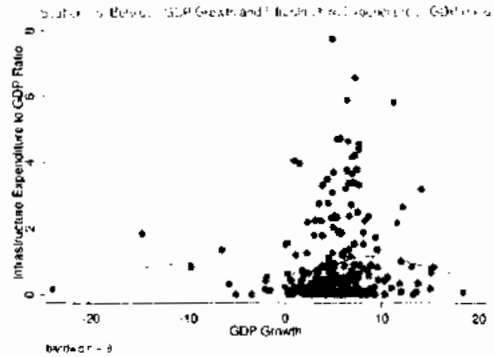
Panel (f)



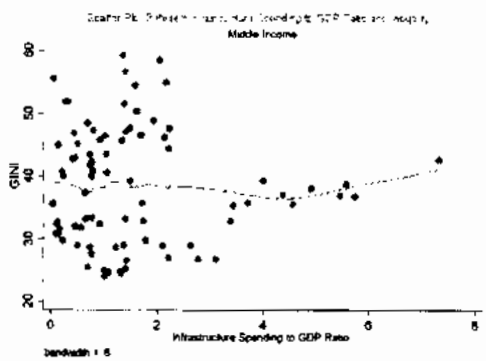
Panel (g)



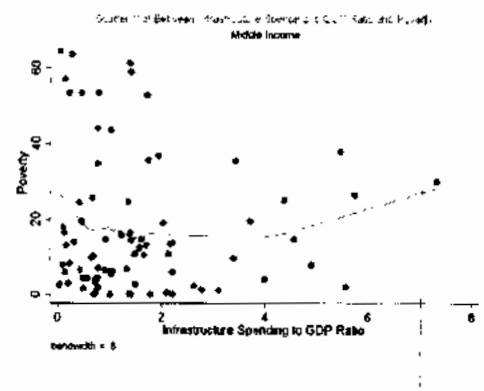
Panel (h)



Panel (i)



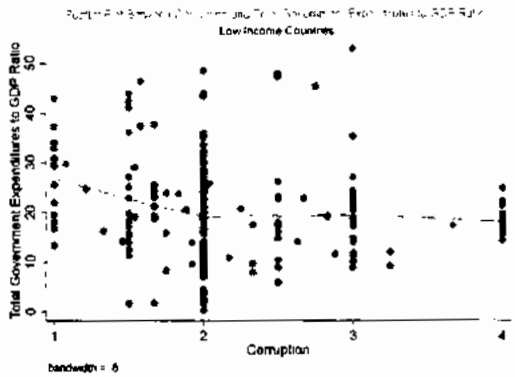
Panel (j)



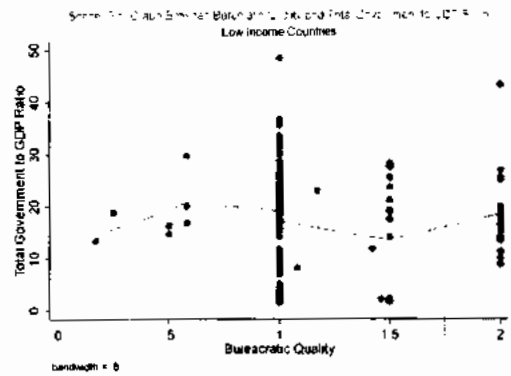
Scatter plot for LIC

Figure A3. 11: Total Government Expenditures, its main determinants, and Consequences

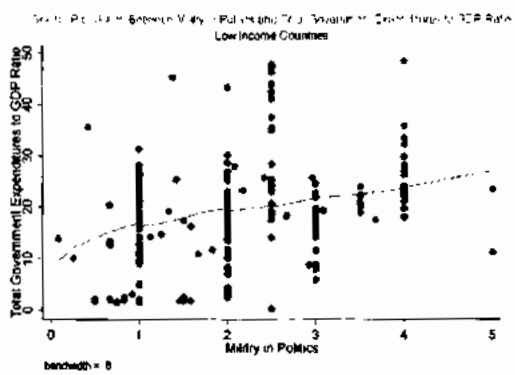
Panel (a)



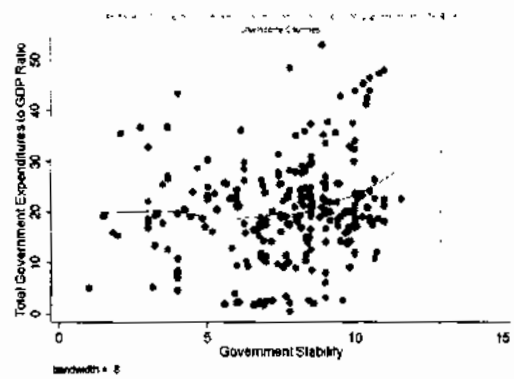
Panel (b)



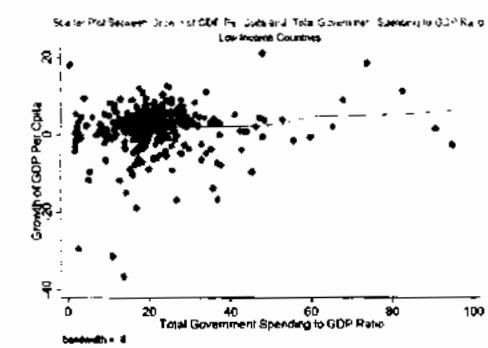
Panel (c)



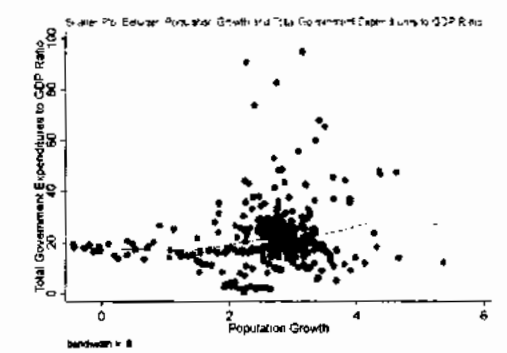
Panel (d)



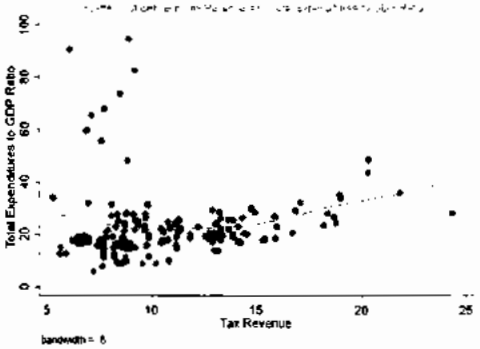
Panel (e)



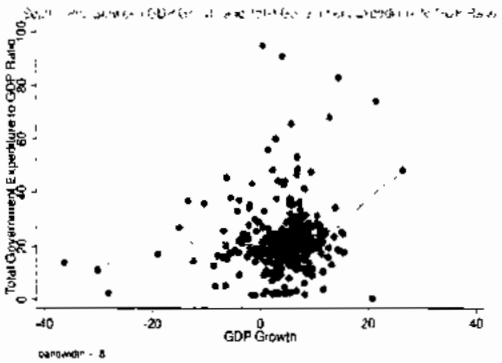
Panel (f)



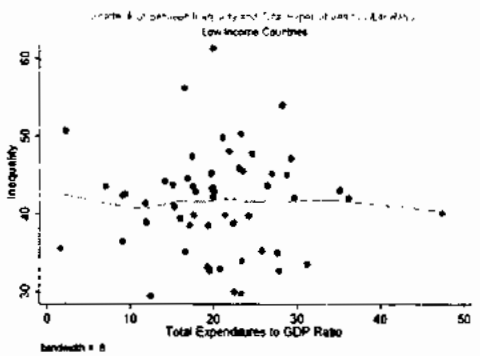
Panel (g)



Panel (h)



Panel (i)



Panel (j)

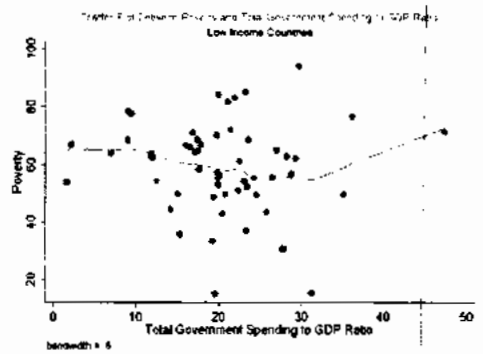
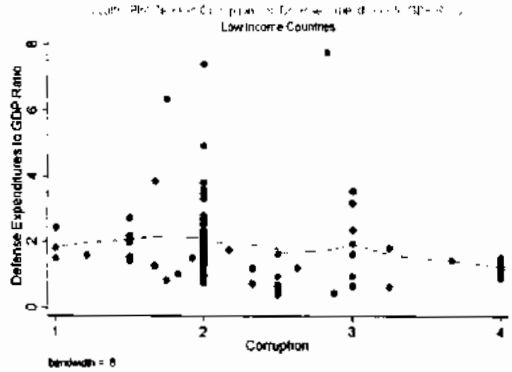
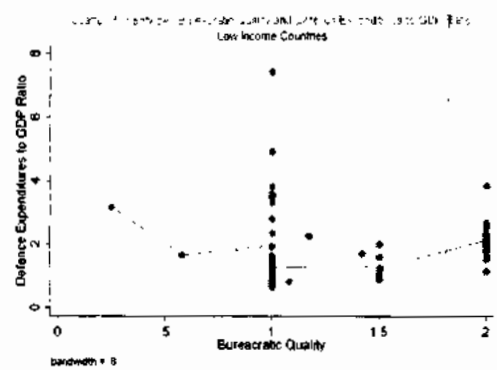


Figure A3. 12: Defense Expenditures, its main determinants, and Consequences

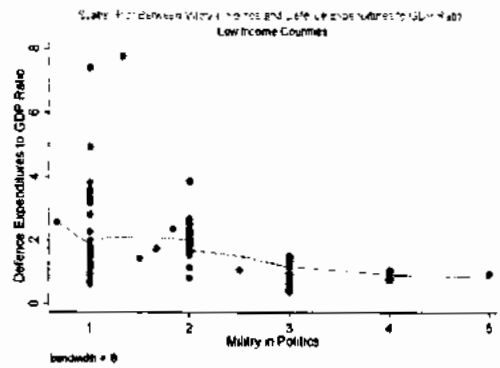
Panel (a)



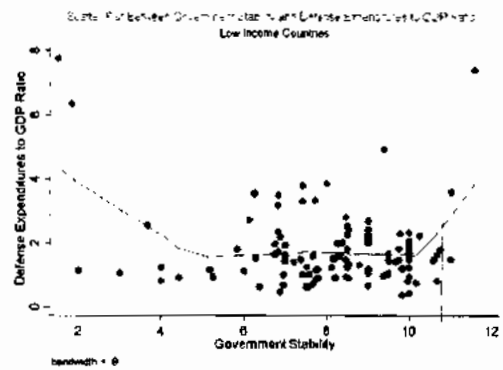
Panel (b)



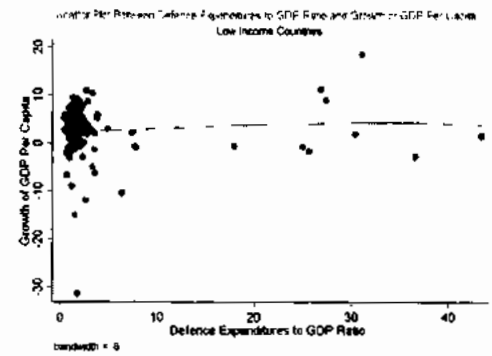
Panel (c)



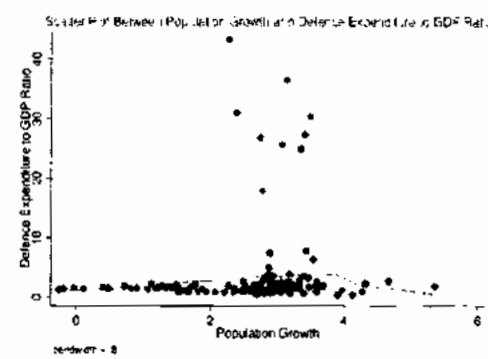
Panel (d)



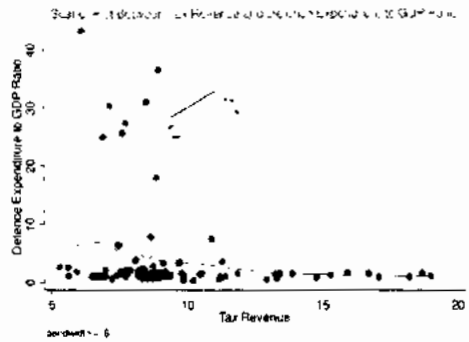
Panel (e)



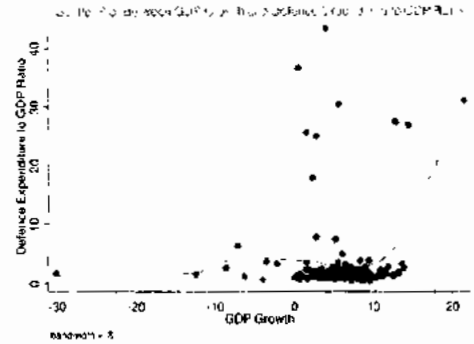
Panel (f)



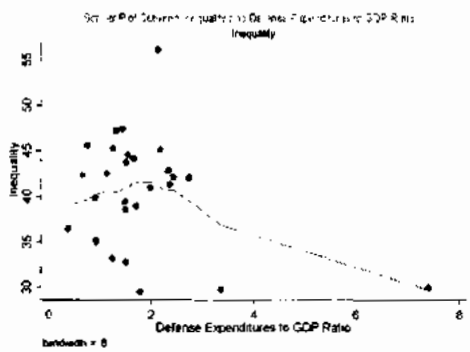
Panel (g)



Panel (h)



Panel (i)



Panel (j)

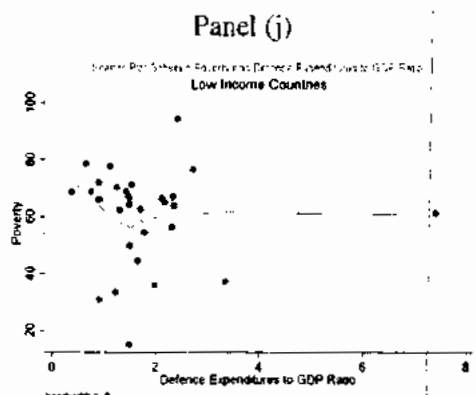
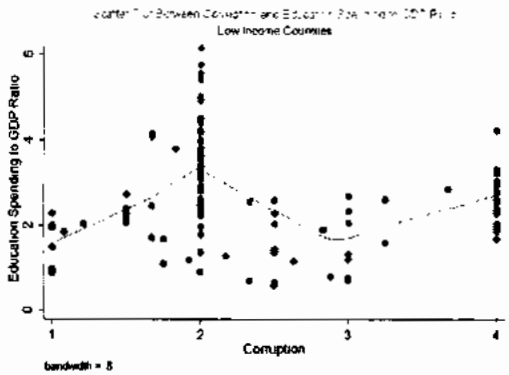


Figure A3. 13: Education Expenditures, its main determinants, and Consequences

Panel (a)



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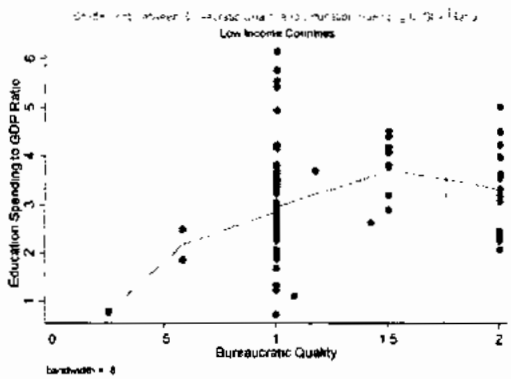

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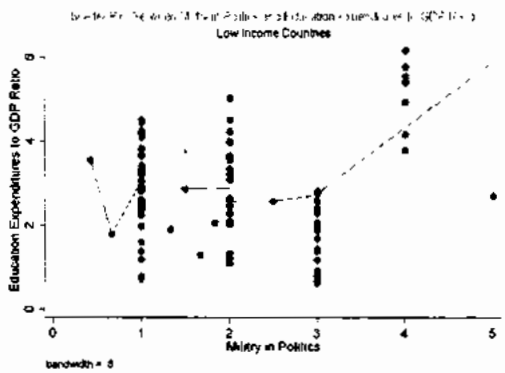

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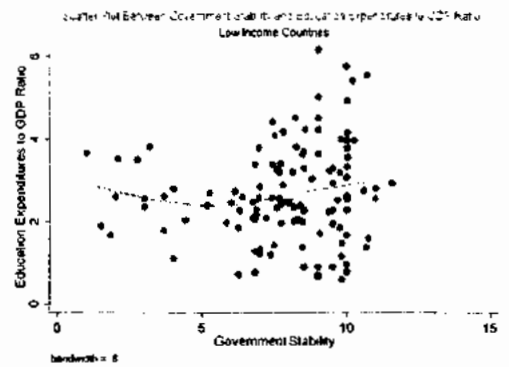

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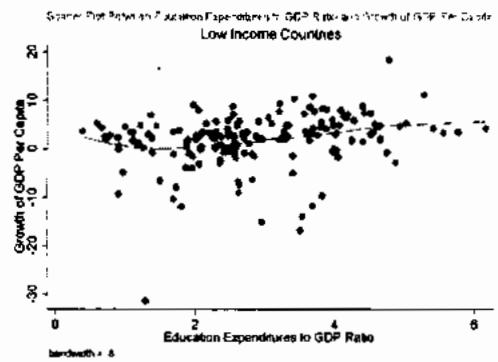

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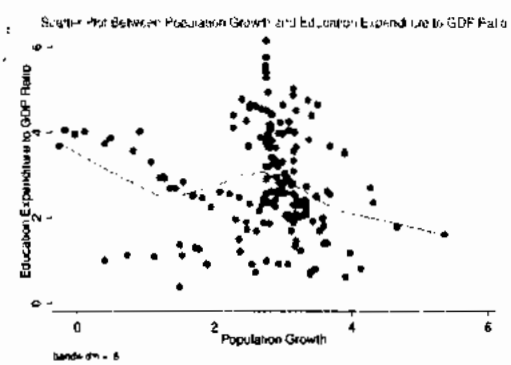

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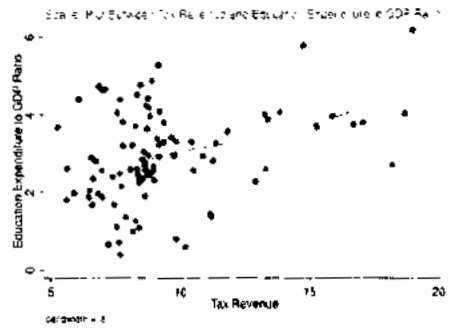

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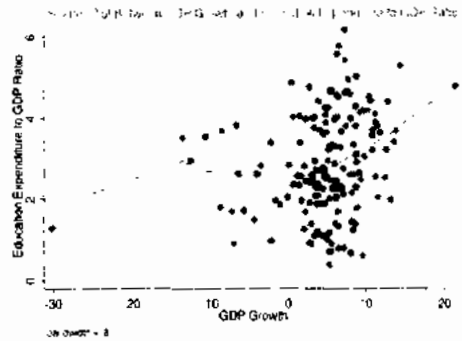
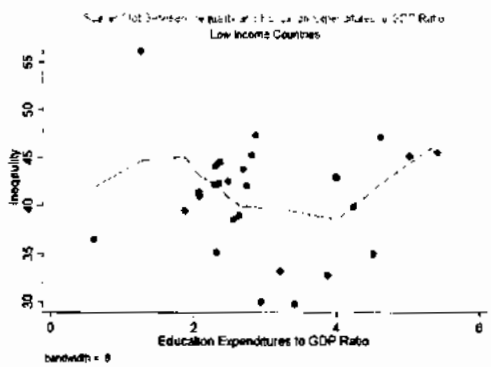


Panel (i)



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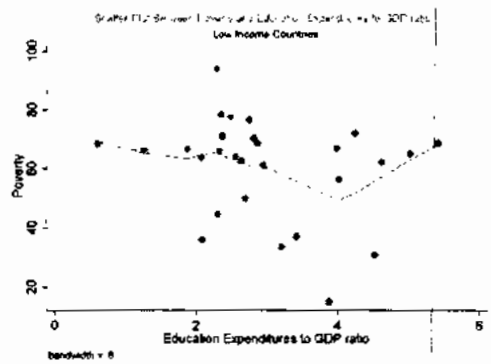
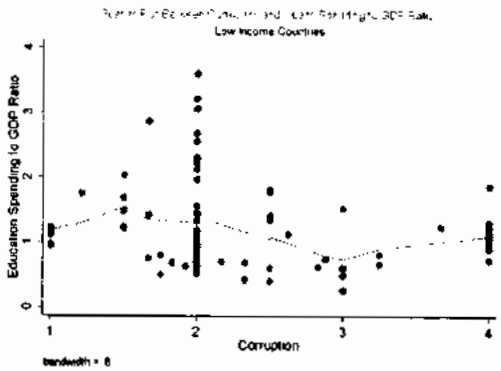


Figure A3. 14: Health Expenditures, its main determinants, and Consequences

Panel (a)



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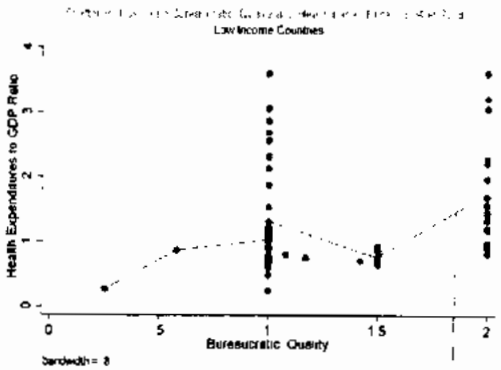

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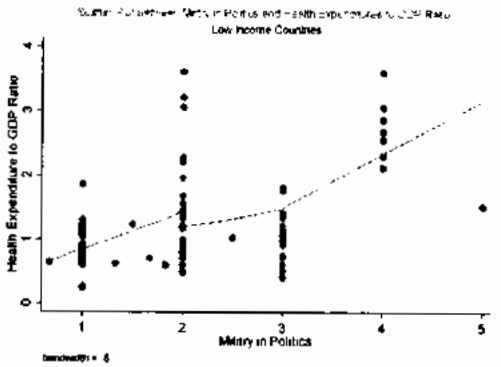

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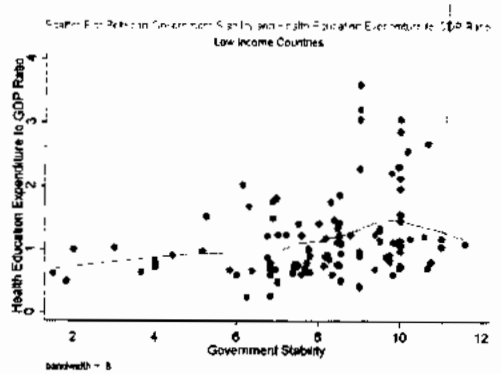

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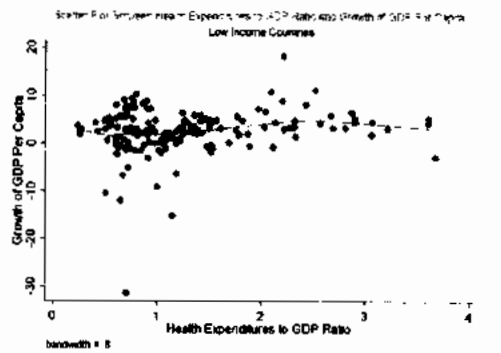

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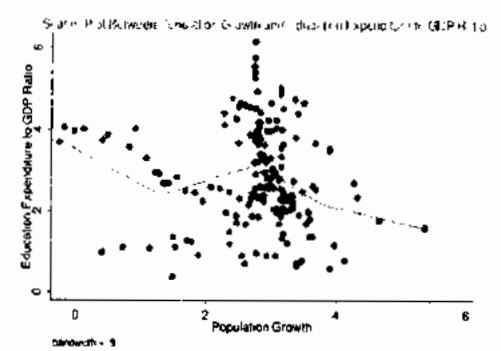

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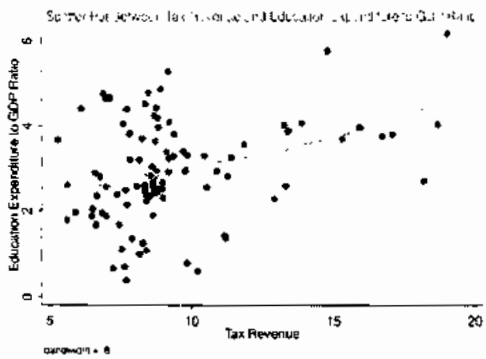

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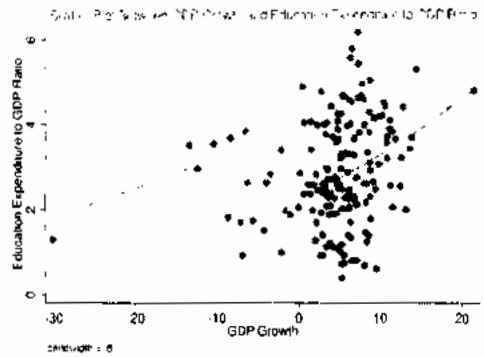

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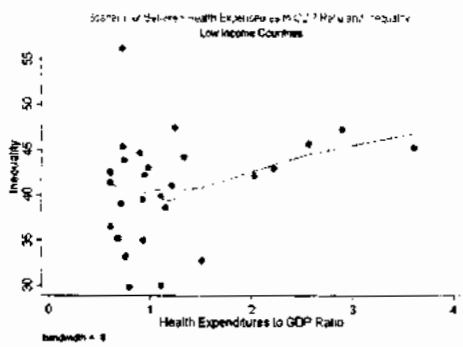

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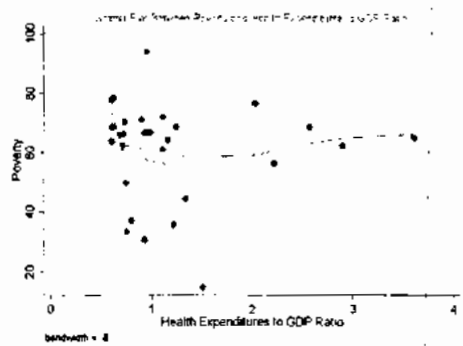
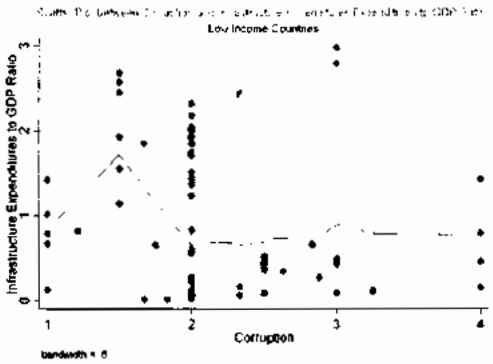
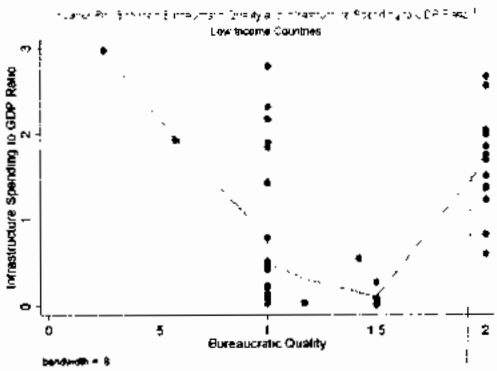


Figure A3. 15: Infrastructure Expenditures, its main determinants, and Consequences

Panel (a)



Panel (b)



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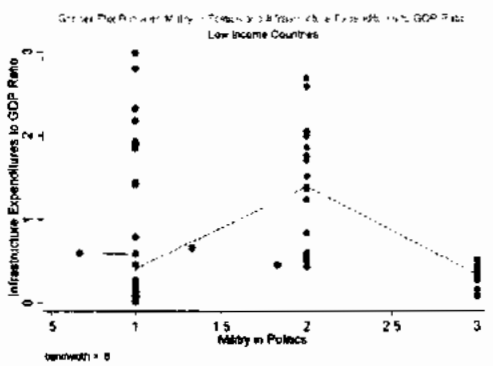

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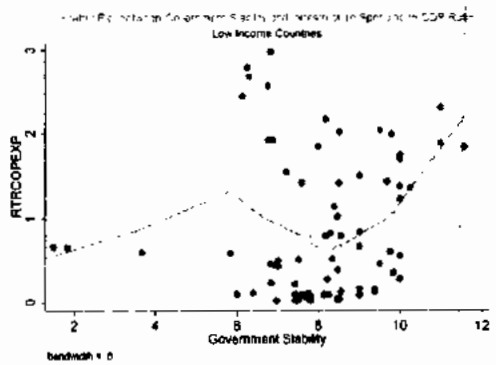

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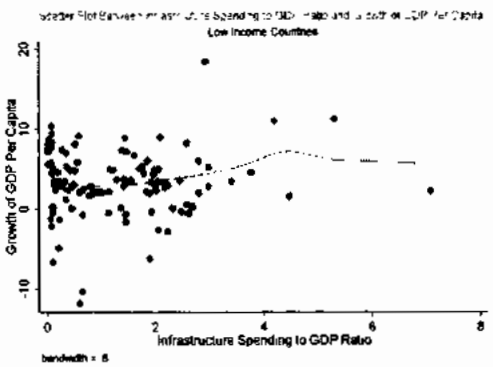

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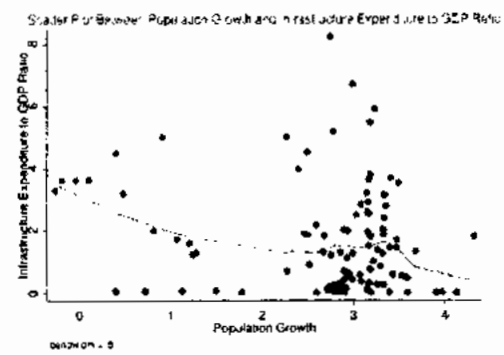

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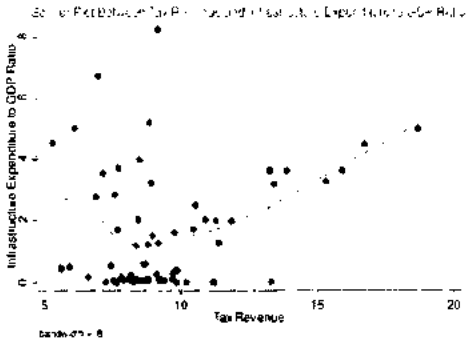

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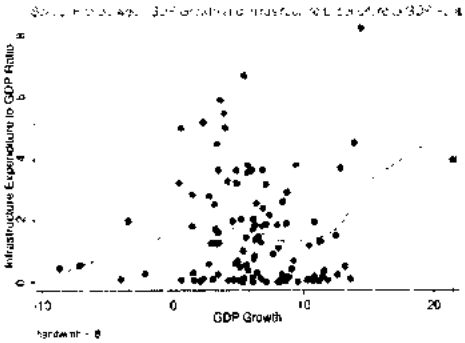
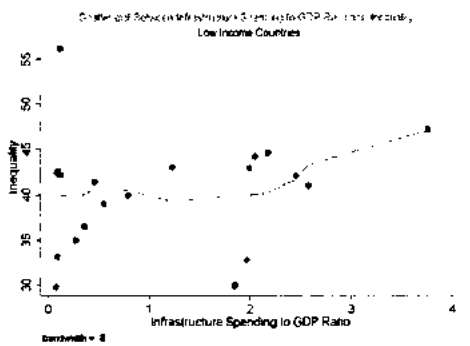


Panel (i)



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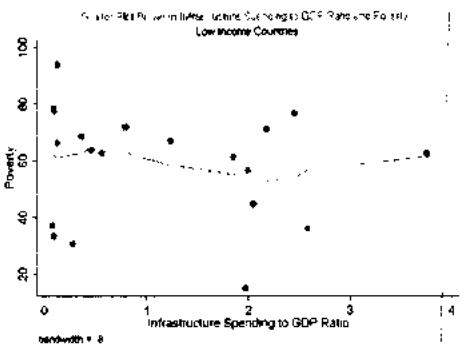


Appendix A4

Figure A4. 1: Total Public Spending (Mean % of GDP)

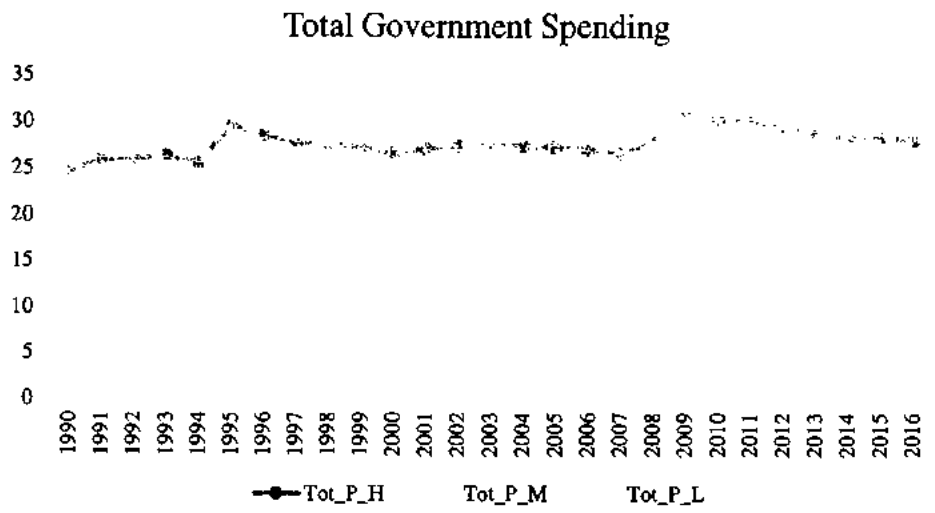


Figure A4. 2: Defense Spending (Mean % of GDP)

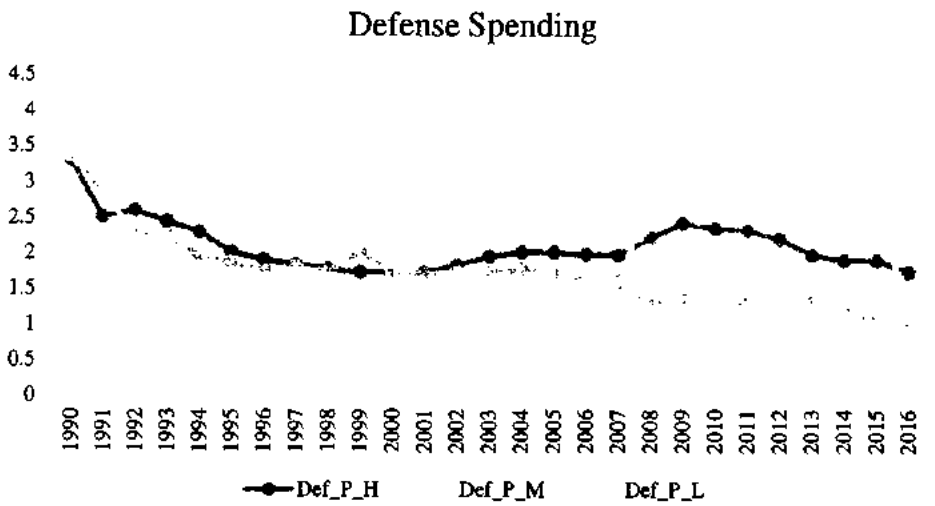


Figure A4. 3: Education Spending (Mean % of GDP)

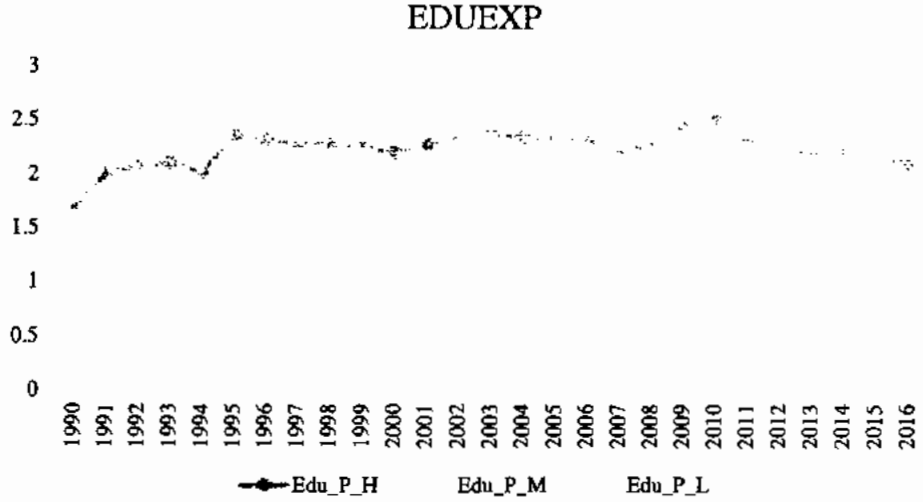


Figure A4. 4: Health Spending (Mean % of GDP)

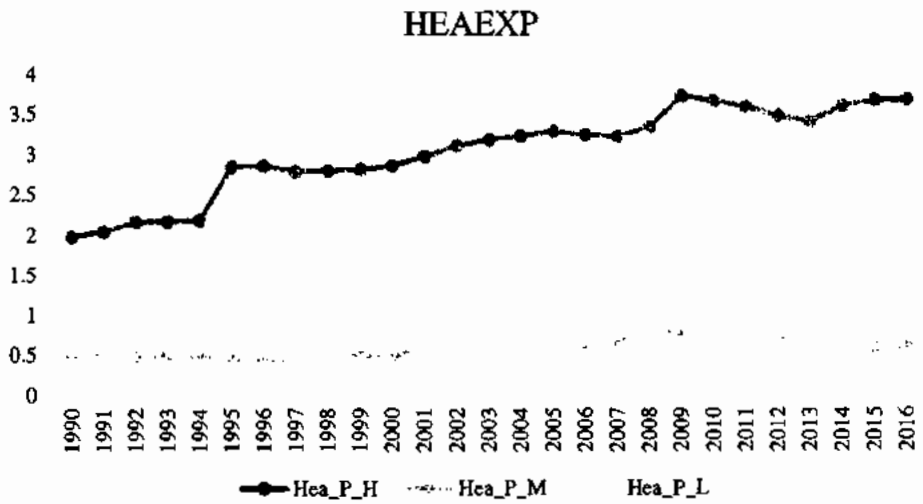


Figure A4. 5: Poverty Headcount Ratio

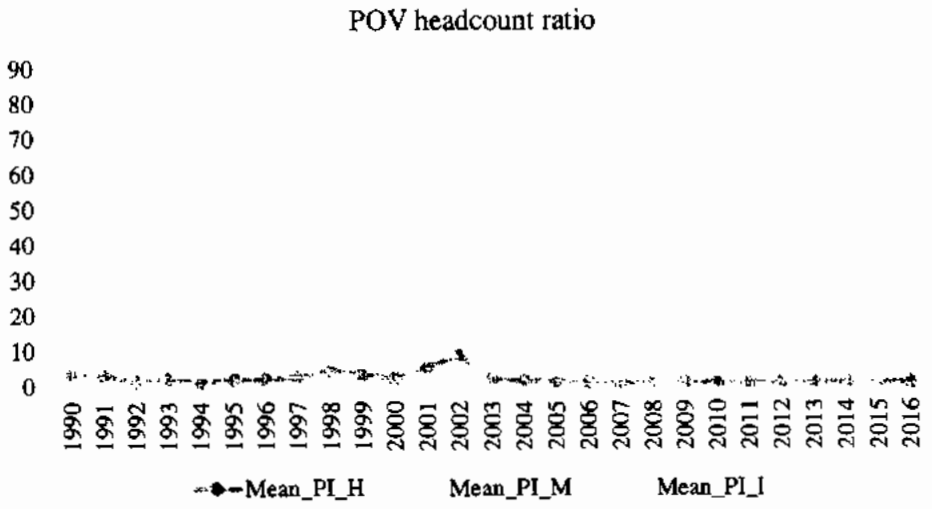


Figure A4. 6: Gini Index

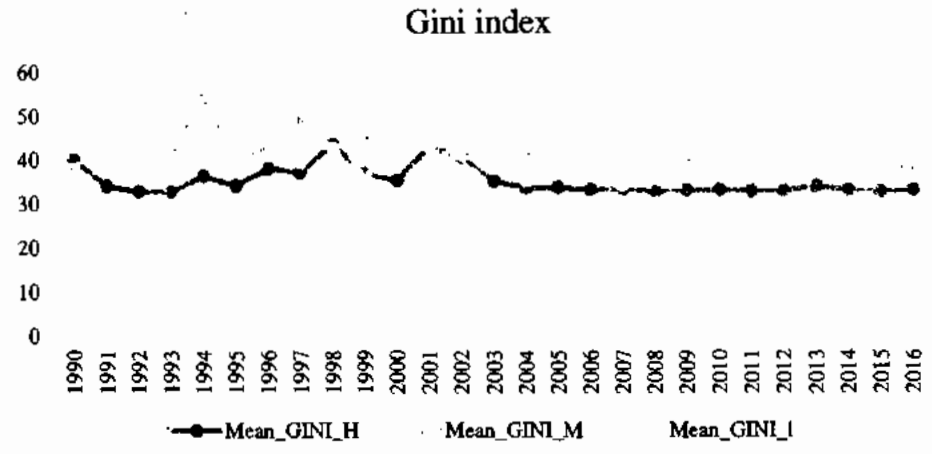


Figure A4. 7: Corruption

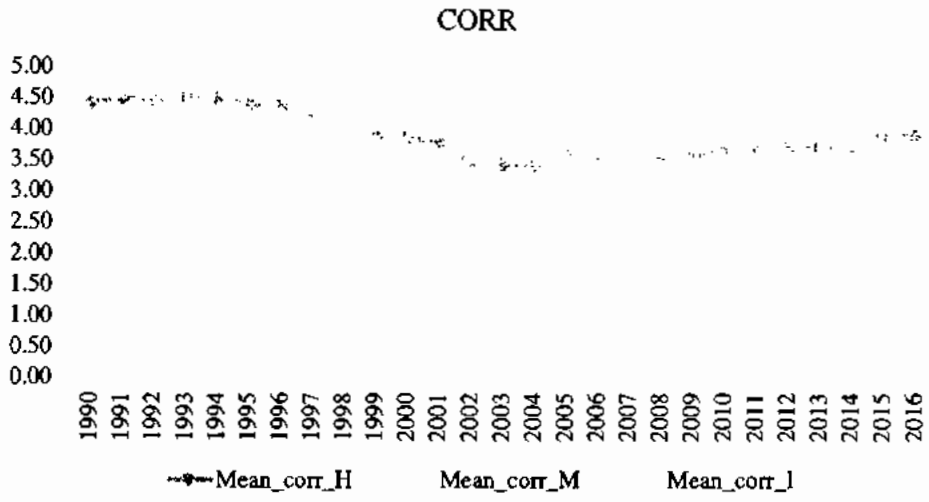


Figure A4. 8: Bureaucracy Quality

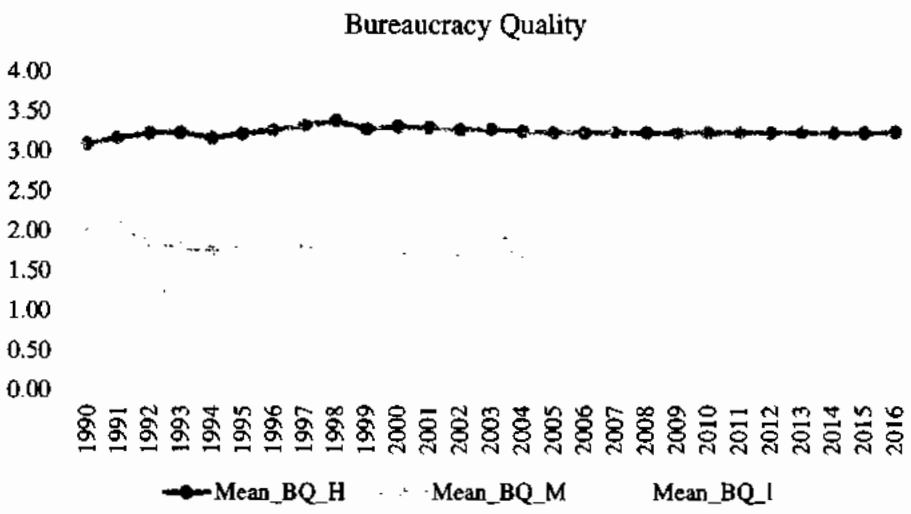


Figure A4. 9: Democratic Accountability

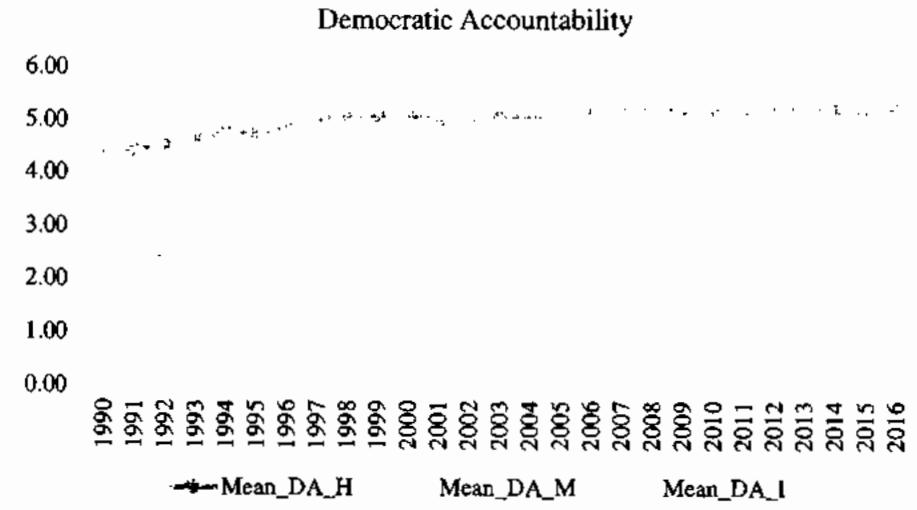


Figure A4. 10: Government Stability

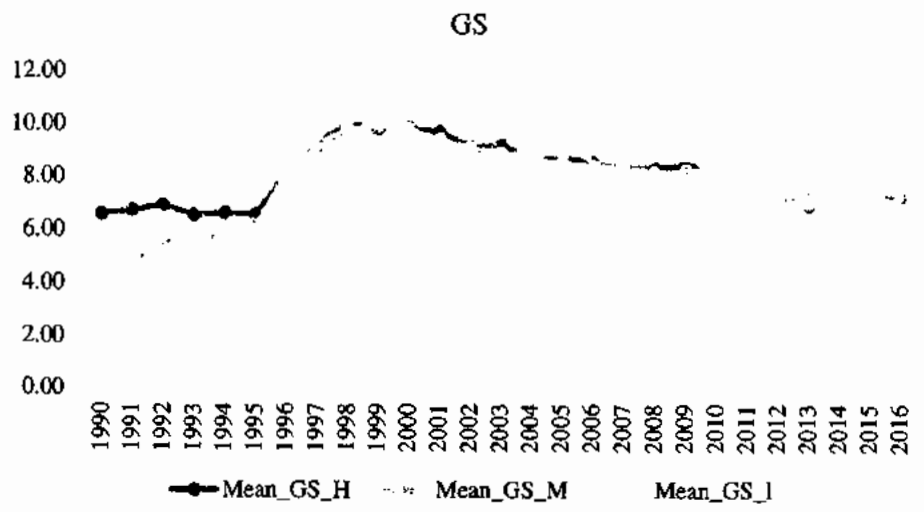


Figure A4. 11: Military in Politics

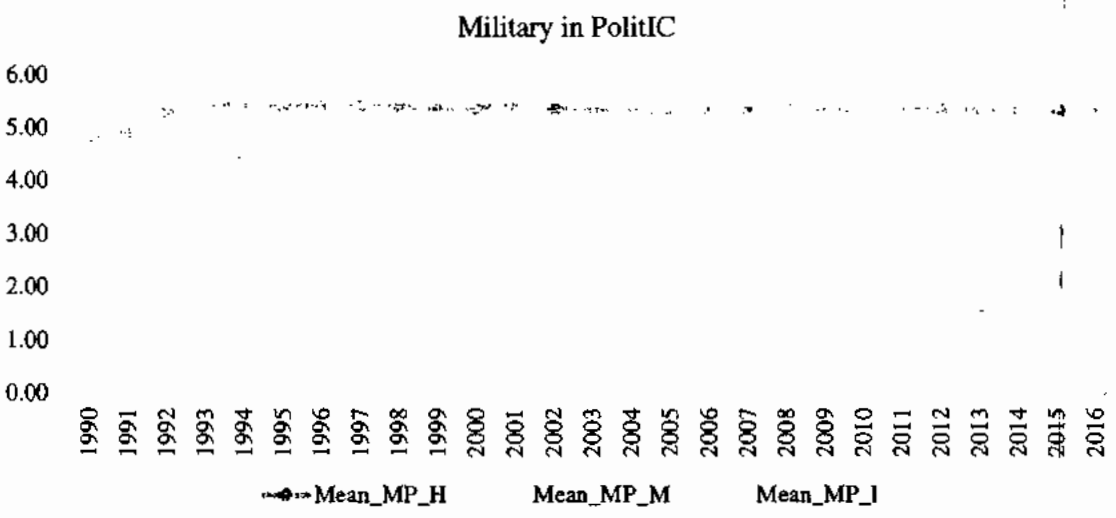


Figure A4. 12: Population growth (annual %)

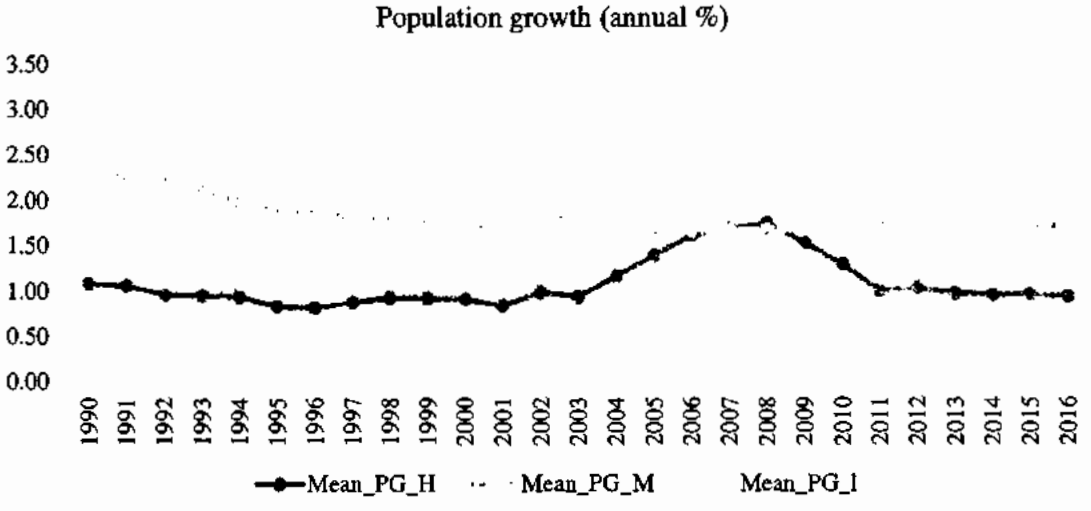


Figure A4. 13: GDP per capita (Constant 2010 US$)

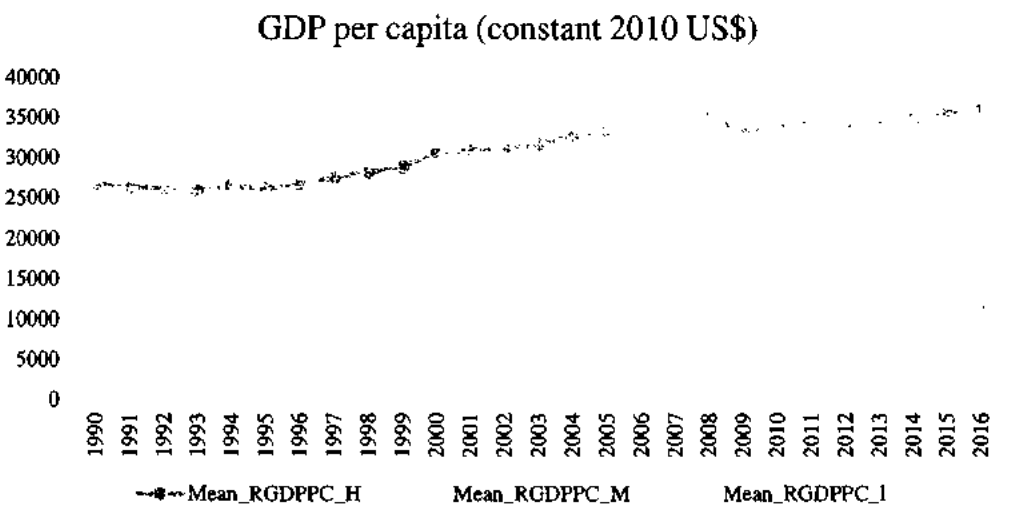


Figure A4. 14: Central government debt, total (% of GDP

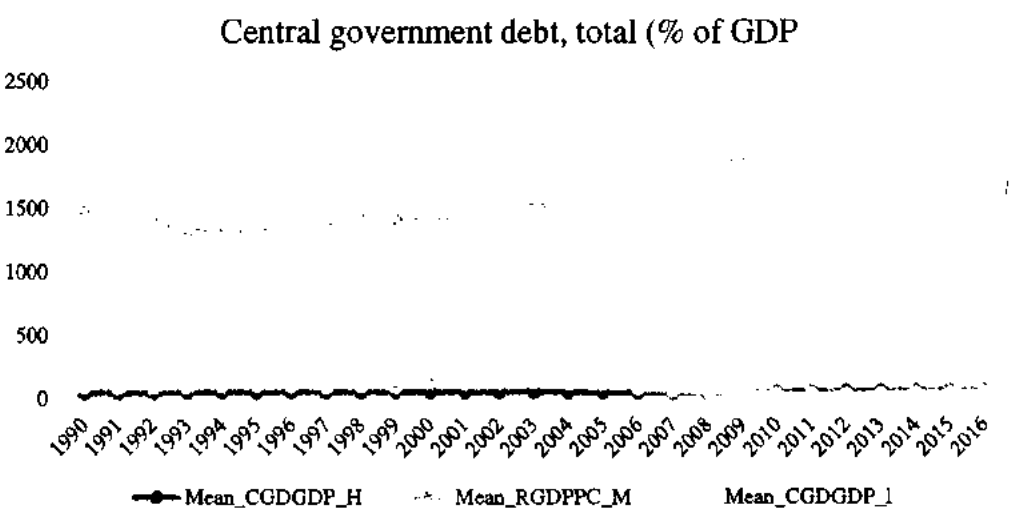
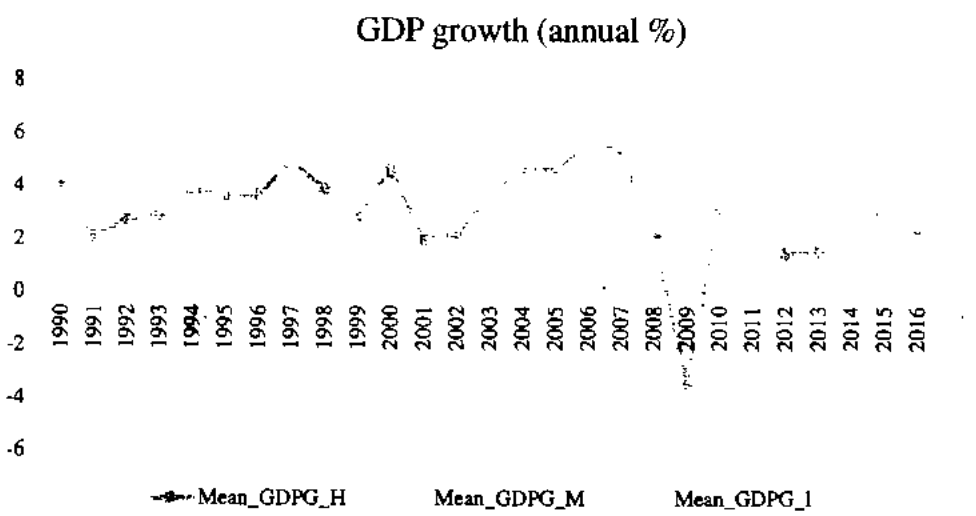


Figure A4. 15: GDP growth (annual %)



Appendix A5

Table A5. 1: DPSA for LIC

IV – Fixed Effects Estimation Results

	Model 16	Model 17	Model 18	Model 19	Model 20
Variables	TPS	Defense Spending	HEAEXP	EDUEXP	INFEXP
A: Political and Institutional Determinants of Public Spending Allocation					
lnCORR	0.741*** (0.000)	-1.271* (0.075)	0.533** (0.053)	-0.299 (0.247)	-1.004*** (0.000)
lnEC	0.887*** (0.000)	5.882*** (0.000)	3.730** (0.005)	3.298** (0.003)	-15.54*** (0.000)
lnIC					23.03*** (0.000)
lnGS	-0.127 (0.245)	0.0126 (0.966)	-0.571*** (0.017)	-0.330** (0.058)	
lnDA	-0.302 (0.133)	-2.122* (0.022)	-1.229*** (0.000)	0.157 (0.689)	-15.92*** (0.000)
lnMP	0.0920*** (0.005)	-2.551** (0.002)	-1.057*** (0.001)	-0.962*** (0.003)	
B: Demographic Determinants of Public Spending Allocation					
PG	0.0593 (0.410)	-3.792*** (0.012)	2.220** (0.025)	0.551 (0.616)	47.55*** (0.000)
PG2			-0.349** (0.020)	-0.131 (0.431)	-6.865*** (0.000)
C: Economic Determinants of Public Spending Allocation					
CGD	-0.0565 (0.206)	0.124 (0.307)	0.0755 (0.488)	0.0383 (0.701)	0.137*** (0.006)
lnTR	0.784*** (0.002)	-0.103 (0.886)	2.090*** (0.001)	0.462 (0.229)	-1.107*** (0.000)
INF	0.173 (0.702)	-2.464* (0.040)	0.789 (0.237)	0.312 (0.696)	37.76*** (0.000)
EG	-0.242 (0.632)	3.402 (0.142)	0.537 (0.732)	3.585** (0.001)	38.87*** (0.000)
P. Value Hansen J. Statististic	.51	.74	.43	.12	.82
N	70	22	27	27	14

Notes: The p -values are in parenthesis. ***, **,* indicates significance at 1%, 5% and 10% respectively. All models employ robust standard errors. The dependent variables are Aggregate and disaggregate public spending. These results are based on author's own calculations using $FE - IV$ method.

Appendix A6

List of Selected Countries				
A. High Income Country				
Argentina	Cyprus	Israel	Norway	Slovenia
Australia	Czech Republic	Italy	Oman	Spain
Austria	Denmark	Japan	Panama	Sweden
Bahamas, The	Estonia	Kuwait	Poland	Switzerland
Bahrain	Finland	Latvia	Portugal	Trinidad and Tobago
Barbados	France	Lithuania	Qatar	United Arab Emirates
Belgium	Germany	Luxembourg	Saudi Arabia	United Kingdom
Canada	Greece	Malta	Seychelles	United States
Chile	Hungary	Netherlands	Singapore	Uruguay
Croatia	Ireland	New Zealand	Slovak Republic	
B. Middle Income Country				
Angola	Egypt, Arab Rep.	Kiribati	Pakistan	Ukraine
Bangladesh	El Salvador	Kyrgyz Republic	Papua New Guinea	Uzbekistan
Bhutan	Georgia	Lesotho	Philippines	Vanuatu
Bolivia	Ghana	Mongolia	Solomon Islands	Vietnam
Cambodia	Honduras	Morocco	Sri Lanka	Zambia
Cameroon	India	Myanmar	Sudan	
Congo, Rep.	Indonesia	Nicaragua	Timor-Leste	
Cote d'Ivoire	Kenya	Nigeria	Tunisia	
C. Low Income Country				
Afghanistan	Congo, Dem. Rep.	Liberia	Nepal	Togo
Benin	Ethiopia	Madagascar	Rwanda	Uganda
Burkina Faso	Gambia, The	Mali	Sierra Leone	
Central African Republic	Guinea-Bissau	Mozambique	Tajikistan	