

**The Determinants of Discretionary Public Spending Volatility:
A Panel Analysis**



Faiz ur Rahman

Reg: 33/M.Phil-EAF/PIDE/2013

Supervisor: Dr. Karim Khan

Assistant Professor

A dissertation submitted to department of Economics & Finance, Pakistan Institute of Development Economics Islamabad in the partial fulfillment of the requirement for the degree of Master of Philosophy in Economics and Finance.

Department of Economics & Finance

**Pakistan Institute of Development Economics (PIDE)
Islamabad, Pakistan**

2016



PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS, ISLAMABAD

CERTIFICATE

This is to certify that this thesis entitled “**The Determinants of Discretionary Public Spending Volatility: A Panel Analysis**” on submitted by **Faiz ur Rahman** is accepted in its present form by the Department of Economics and Finance, Pakistan Institute of Development Economics (PIDE) Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics and Finance.

External Examiner:

Dr. Javid Iqbal
Assistant Professor,
School of Economics,
QAU, Islamabad.

Internal Examiner:

Dr. Mahmood Khalid
Head,
Department of Health Economics
PIDE, Islamabad.

Supervisor:

Dr. Karim Khan
Assistant Professor,
Department of Economics,
PIDE, Islamabad.

Head of Department of Economics and Finance:

Dr. Hassan Muhammad Mohsin
PIDE
Islamabad

*Dedicated To
My Beloved Parents*

DECLARATION

I Faiz ur Rahman, solemnly declare that this is an original piece of my work. I am the sole author of this thesis and that during the period of registered study. This work has not been submitted for an award of a degree in any other University.

Faiz ur Rahman

TABLE Of CONTENTS

INTRODUCTION	1
1.1 Motivation of the Study.....	3
1.2 Objectives of the Study.....	4
1.3 Significance of the Study.....	5
1.4 Hypothesis of the Study.....	5
LITERATURE REVIEW	6
2.1 Theoretical Review.....	6
2.1.1 Government's use of Discretion in Fiscal Policy	6
2.1.2 The Need for Restraining Discretion in Fiscal Policy	8
2.2 Empirical Review	11
2.3 Conclusion.....	13
METHODOLOGY	15
3.1 Model Specification.....	15
3.2 Sample Selection	16
3.3 Data Sources	17
Table 3.1: DEFINITION OF VARIABLES.....	18
3.4 Estimation Technique.....	19
3.5 Descriptive Statistics	20
3.5.1 Full Sample.....	20
3.5.2 Sub Samples	21
3.6 Conclusion.....	23
Model Estimation and Results	24
4.1 Aggregated Sample Analysis.....	24
4.2 Disaggregated Analysis	28
4.2.1. Developing Countries	29
4.2.2 Developed Countries	32
CONCLUSION.....	36
5.1 Policy Recommendations	37
5.2 The Way Forward.....	37
Appendix.....	39
References.....	43

LIST OF TABLES

Table No:	Description	Page No:
Table 3.1:	Definition of Variables.....	18
Table 3.2:	Descriptive Summary of the Variables for Full Sample.....	20
Table 3.3:	Descriptive Summary of the Variables for Developed Economies.....	21
Table 3.4:	Descriptive Summary of the Variables for Developing economies.....	22
Table 4.1:	Fiscal Rule Model Result: Dependent Variable is Current Government Expenditure (Full Sample).....	25
Table 4.2:	The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending (Full Sample).....	26
Table 4.3:	Fiscal Rule's Model Result: Dependent Variable is Current Government Expenditure (Developing Economies).....	30
Table 4.4:	The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending(Developing Economies).....	31
Table 4.5:	FiscalRule Model Result: Dependent Variable is Current Government Expenditure (Developed Economies).....	33
Table 4.6:	The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending(Developed Economies).....	34

LIST OF FIGURE

Figure No:	Description.....	Page No:
Figure 4.1:	Discretionary Fiscal Volatility (country wise	29

ACKNOWLEDGEMENT

First and foremost I would like to express my gratitude to Almighty Allah for providing me the boundaries and blessings to complete this work. I want to express my sincere gratitude to my thesis supervisor Dr. Karim Khan for his marvelous encouragement and support on one hand and for critically evaluating and supervising my work on the other hand.

I want to say special thanks to my parents who always support and pray for me, and my all family members, especially to my sweet Mother for encouraging me with their best wishes and to my elder brother Maqsood Ali Khan for supporting me throughout. Without the co-operation of all of my family members I was not able to continue my study so I am grateful to all of them. I want to say thanks to all of my fellows and friends for their help and moral support. My sincere thanks also go to my cousins Dr. Haroon Khan, Afzal Khan and Fazal Subhan for encouraging me and giving me moral support. I would like to express appreciation to my best friends Muhsin Ali, Haseen Shah and Ashfaq Ahmad Khan who spent sleepless nights with me and was always my support in the moments when there were difficulties. At the end Thanks to Pakistan Institute of Development Economics.

Faiz ur Rahman

ABSTRACT

This study is an attempt to examine the determinants of volatile discretionary public spending. Using a panel of 55 countries over the period of 1985-2012, first, we do the aggregate level analysis for the representative sample of the world. Onwards, we do the disaggregated analysis by decomposing the sample into developed and developing countries. By employing the Generalized Method of Moment (GMM), the results of the aggregate level show that political constraints on the executives, government stability, population and GDP growth significantly reduce discretionarily public spending volatility. However, the presidential system has a significant positive effect on it. In contrast, the results on the disaggregate level show that, in developing countries, the political constraints become insignificant while corruption becomes positively significant. Likewise, in developed economies, the presidential system and corruption becomes insignificant in affecting volatility.

CHAPTER 1

INTRODUCTION

A universal increase in public budget deficits besides with high levels of government debt have been observed in both under-developed and developed economies over the last few decades. The existing literature in fiscal area has focused only on the main determinants which lead to this deterioration of fiscal framework. Although, the attention to the problems which are associated to the hostile use of fiscal policy (which leads to the problems of budget deficit and government debt) have not been properly focused. Government authorities use fiscal discretion¹ for a variety of reasons which boost the volatility of fiscal policy. Public spending volatility could negatively affect economic growth, because high uncertainty about fiscal parameters might adversely affect the decision behavior of investors and economic agents (Albuquerque, 2010). Therefore, question arises that whether government should be constrained whenever they make fiscal decisions, as it has both positive and negative effects. On the one hand, restrictions on fiscal policy would reduce government ability to smooth out business cycle fluctuations (Lane 2003 and Levinson 1998), the other authors as (Alt and Lowry 1994; Roubini and Sachs 1989; Poterba 1995; Levinson 1998 and Lane 2003) depict that putting restriction on public spending reduce government spending volatility but leads to slower the adjustment of the economy to unobserved shocks. On the other side, imposing fiscal restriction on government could help to reduce the negative growth effect of large volatility caused by unrestricted fiscal policy (Fatas and Mihov 2003, 2006; Alesina and Bayoumi 1996). This discussion in the existing literature has lead to the development of budgetary process and rules in many countries of the world towards strengthening fiscal institution for the sake of favorable public finance.

¹Non-mandatory changes in government spending or other fiscal activities that are not associated with economic conditions rather for political purposes; see Fatas and Mihov (2003) for detail discussion.

The substantial increase in the willingness of the public authorities to use fiscal discretion has been extensively reported in the political economy literature². The existing literature seems to have consensus that the aggressive use of discretion in fiscal policy³ could harm economic growth. Dixit (2001) and Dixit and Lambertini (2001) observe that fiscal discretion obliterate monetary commitment. (Blanchard 1993; Alesina and Perotti 1996) note that every percent point rise in fiscal discretion could reduce economic growth by 0.8 percent point. While Badinger (2008) note a strong destabilizing effect of high volatile discretionary fiscal policy on economic growth. The output volatility is high in the presence of discretionary fiscal policy.

Acemoglu et al, (2003) argue that countries practicing discretionary economic policies, along with large budget deficits, high inflation, and unstable exchange rates suffer more from macroeconomic instability and also grow more slowly. But this does not reflect causal relationship between economic policies and economic outcome because policies are itself the outcome of institutions. Weak economic and political institutions allow politicians and elite class to use economic policies according to their free will. Politicians do not perform fiscal policy of their free motivation, as they would run high deficit and produce too much volatility in the economy. As a result, fiscal policy can be a source of macroeconomic volatility, even though it can also be an influential tool to inflate the rate of economic growth in the short period. So by putting tight limits on governments (either implicitly or explicitly) it is doable to eliminate or reduce the possibility of fiscal policy volatility (Fatas and Mihov, 2003, 2006)

The above discussed literature produced that discretionary fiscal policy measures ills economic speed. Now what can be done? The answer to this question lies in a rising body of

²For details discussion see Nordhaus (1975), Rogoff and Sibert (1988), Stokey (2002) Alisena (1987) that how government uses discretion in fiscal policy for political purposes.

³ See appendix 1 for evidence of the volatile nature of discretionary spending.

literature that justifies the strengthening of budgetary institutions (i.e., strengthening the rules and regulation that checks and balances over government finances). It is also linked to the Fiscal or Political Institutions or generally known as Institutions which considerably design the economic policies (Persson and Tabellini 2001, and Persson 2002). The path to improve and strengthening the institutional qualities varies from plain measures to enlarge government's accountability and its policies transparency, more essentially handing over the authority to determine the volume of the budget deficit to an autonomous fiscal policy committee (Wyplosz, 2005). Fatas and Mihov (2003) have shown explicitly in their pioneer study that higher political constraints reduce the ability of the government to use the aggressive discretionary policy⁴. These constraints reduce the power of the government to use policies for political purposes, so it has an ultimate positive effect on economic growth. Further shows that the quality of institutions and the size of government has significant negative impact on discretionary fiscal volatility, but in contrast to Fatas and Mihov (2003) the political factors have no effect on the volatility of discretionary fiscal policy (Albuquerque, 2010). The other factors such as political instability, higher corruption, low institutional quality and less democracy, are significantly related to budget deficit volatility. (Agnello and Sousa 2009; Attiya et al 2011).

Moving forward, this study examines the determinants of discretionary fiscal volatility, which are not highlighted properly in the literature of fiscal discipline.

1.1 Motivation of the Study

Volatility of the discretionary fiscal policy is an important issue related to fiscal policy, as it has both positive and negative effects on economic stabilization. On the one hand if discretionary changes in fiscal policy are used to smooth out cyclical fluctuations it would have positive effect on macroeconomic stability. On the other hand, if discretionary changes

⁴Fiscal policy which is associated with political motivations rather than economic growth.

are not used prudently then it might itself be a source of economic instability. There are enormous numbers of studies which examine the consequences of volatile fiscal policy (Ismail and Hussain 2012; Ali 2005; Eller et al, 2014 and Badinger 2008). But there are very scarce literatures which investigate the factors behind the exercise of volatile fiscal policy and especially of discretionary fiscal policy, e.g., Agnello and Sousa (2009) examine the effects of institutional, political and Economic factors on government budget volatility while, Mara (2012) and Attiya et al, (2011) examine the determinants of budget balance volatility and budget deficit volatility respectively. Nevertheless, the factors responsible for aggressive discretionary fiscal policy (which cause both budget deficit volatility and budget balance volatility) are not properly highlighted in the literature. To the best of our knowledge there exist only two studies which scrutinize the determinants of the discretionary fiscal policy which are Fatas and Mihov (2003) and Albuquerque (2010) . The pioneer work of Fatas and Mihov (2003) is based on the cross section approach while the study of Albuquerque (2010) is confine to EU countries. Despite the scarce literature on the issue there is also contradiction of results in both studies as the study of Fatas and Mihov (2003) shows that political factors are significant determinants of aggressive discretionary fiscal policy while the study of Albuquerque (2010) indicates that political determinants have no impact on the aggressiveness of discretionary fiscal policy. Therefore it motivates me to check the effects of political and institutional factors in a world representative sample.

1.2 Objectives of the Study

This study is based on the following specific objectives.

1. To estimate the fiscal rule model.
2. To estimate the volatility of the discretionary public spending.
3. To find out the determinants of Aggressive discretionary fiscal policy.
4. To extend the same objective for disaggregated Analysis of developed and developing economies.

1.3 Significance of the Study

This work is valuable addition to existing literature. It enhanced the fiscal literature in several ways which were not done by earlier studies to the best of our knowledge. The contribution which this study makes to the existing literature is:

- a) It utilizes GMM method for the estimation of fiscal rule model.
- b) It includes political and institutional variables in the model to check their impact on discretionary public spending in a world sample.
- c) It also makes disaggregated analysis of developed and underdeveloped economies.
- d) It uses most update data of variables from 1985-2012.

1.4 Hypothesis of the Study

H_0 : Political, Economic and Institutional variables have no impact on discretionary fiscal volatility.

H_1 : Political, Economic and Institutional variables have impact on discretionary fiscal volatility.

H_0 : Political, Economic and Institutional variables have no impact on discretionary fiscal volatility in disaggregated analysis.

H_1 : Political, Economic and Institutional variables have impact on discretionary fiscal volatility in disaggregated analysis.

CHAPTER 2

LITERATURE REVIEW

A number of theoretical and empirical literatures evaluate the response of macroeconomic aggregates to discretionary fiscal volatility. So before proceeding with this study it is essential to have broad idea about the current development in theoretical and empirical literature on discretionary fiscal shocks (volatility) and macroeconomic performance. In this chapter we discuss the theoretical as well as the empirical literature related to our study objectives to identify the research gap and clarify the mechanism to cover the lifted research gap. Section 2.1 of this chapter deals with the theoretical literature while section 2.2 deals with empirical studies.

2.1 Theoretical Review

Theoretical review is structure as follows, first section deals with the links that why governments use of discretionary fiscal policy. Second part analyzes the need to restraining fiscal policy discretion, because of its excessive use which negatively affects the economy.

2.1.1 Government's use of Discretion in Fiscal Policy

In the past many papers on fiscal policy i.e. Afonso and Hauptmeier (2010), Debrun et al. (2008), Hallerberg et al. (2007), Fabrizio and Mody (2006), Annett (2006), Persson (2002), and Persson and Tabellini (2001) have find out the determinants at the back of the systematic running of budget deficits and subsequent accumulation of huge levels of public debt, while others, like Fatas and Mihov (2006,2010), Lane (2003) and Levinson (1998), have concentrated on the cyclicity of fiscal policy, (the capability of governments to respond against the output shocks). Therefore a small number of papers have addressed the issues related to the policy volatility, the literature on the volatility of the discretionary fiscal policy is still scarce, the pioneer work about policy volatility (volatility of discretionary fiscal policy)

is of Fatas and Mihov (2003) and then Afonso et al., (2010) and Albuquerque (2010). Furthermore, studies in this area for European countries and world samples are very scarce. This is a growing literature which brings politics, in economics background and jointly it make it easy to understand policy, and that has also brought the idea to the debate, that fiscal policy doesn't accomplish by benevolent governments, but those who have political inspirations and look for the attainment of individual purposes. This kind of behavior would finally lead to bad macroeconomic policies; mainly it leads to undesired volatility in the economy. We want to highlight the issue of volatility that is caused by the unrestricted use of fiscal policy to attain objectives other than stabilizing the economy, which do not act in response to shocks. This politically motivated discretionary fiscal policy that does not represent the reaction to the macroeconomic condition raises the questions of what encourage the governments to use discretionary fiscal policy. To investigate the incentives for fiscal authorities to intervene in the functioning of the economy, we go to the theoretical literature which deals with the political economy of policy making.⁵ Roubini and Sachs (1989), Alesina and Perotti (1996) and Perotti and Rostagno (2002) have studied the question of how differences in political institutions and electoral rule can explain differences in the level of government spending, in composition of spending or in the size of the budget deficit. There are, however some studies like Roubini and Sachs (1989) and Alesina and Drazen (1991) that have also probed more dynamic issues on how differences in Political institutions affect the response of fiscal policy to economic shocks .

To highlights the insights of this literature we have to address two questions. First, why changes in fiscal policy are observing? Second, we also need to be aware of the characteristics of the institutional environment and political system that validate why some governments are more likely to use discretionary public spending than others .

⁵ For more detail see the Persson (2001) who summarizes that why political institutions matter for economic policy.

Now turning to the factors in the back of the exercise of discretion/aggressiveness in fiscal policy, political stakeholders may be motivated by individual purposes by creating high volatility and aggressiveness compare to, what would be generated if governments only react to cyclical shocks. Therefore, literature related to political economy has advanced various determinants being responsible for the enlarged willingness of public authorities to resort to discretion in the making of fiscal policy.

2.1.2 The Need for Restraining Discretion in Fiscal Policy

The literature suggests some evidence about the harmful effects on economy due to the too much volatility generated by the volatile usage of discretion in fiscal policy. For example, Badinger (2008) and Fatas and Mihov (2003, 2006) have analyzed that output volatility is higher in the presence of large levels of discretionary fiscal policy, which leads to macroeconomic instability. This macroeconomic instability raises the questions about whether public authorities i.e. government's actions should be restrained to make sure higher outcomes instead of leaving government's hands, unrestricted. As the monetary policy was given to independent central bank for the purpose to eliminate the inflationary bias and improve discipline, yet there is no consensus among policy makers to restrain governments and discourage the use of discretion/aggressiveness in fiscal policy.

However, in EU countries the problem of "rules versus discretion", that is the substitution between regulation and flexibility, has been in the head of the public debate, where (due to the same currency) policy makers have only fiscal policy in option to execute and to accomplish their own policies.

Following the same ideas, a rising literature has motivated towards empowering the budgetary institution, i.e. the rules and mechanisms which are leading the budget process and that makes public finances under certain checks and balances. This abrupt interest in improving the

quality of the institutions is toughened by the following aspects. First, there is a persistent thought that institutions directly affect policy preferences, because restrictions enclosed in the legislation condition to perform the fiscal policy. Second, thought is that the proper design of the institutional environment would abolish or reduced the deficit bias. Lastly, economic performance could drive up due to improved quality of institutions, as highlighted by Henisz (2000) who have constructed a measure of political constraints that are found to have positive effects on economic growth.

The arguments on restraining fiscal policy discretion have nonetheless been controversial. Supporters of the use of discretionary actions in fiscal policy restrictions free, are disagree with constraints and argue that any kind of constraints limiting the intervention of the government authorities in the economy and that would affect the business cycles. Lane (2003) and Levinson (1998) suggest that limitations on fiscal policy lead to produce more pro cyclical economic policy. Particularly, Levinson (1998) found confirmation for economic costs in the form of increased business cycle volatility for US states, as a result of restrictions on government's hands, in turns reducing the ability of government to smooth out business cycle fluctuations.

In contrast, most of the economists like Fatas and Mihov (2003, 2006), Alesina and Bayoumi (1996) and Poterba (1995) have suggests that politicians could not carry out fiscal policy according to their motivation because if they make it according to their will, they would generate a very high deficits and would create high volatility in the economy. As a result such policy can be cause for economic instability and also it could be a strong instrument to enlarge the speed of economic growth in short run. This problem of instability which is caused by restriction free fiscal policy can be solved only to impose tight limits/restriction on government and policy makers.

Besides this, the channel through which volatile policy affect the economic development, begins from the political and institutional setups primarily for accomplishing the discretionary fiscal policy, which leads to output volatility and also up to some extent this will determine the growth rate of the economy Fatas and Mihov (2003). If a country had strong institutional constraints, there policy would be more stable, and it would generate the ideal situations for a high stability in private investment, because businesses would be capable to more precisely forecast the way of public spending. As investment is a high volatile mechanism, but the good political and institutional setup would encourage more stability in volatile output, and in turn it would make a very good atmosphere for economic growth. Therefore stronger institutional qualities would be a tool to avoid the violent use of fiscal policy.

The suggestions to make stronger the quality of institutions start from the straight forward measure to increase the transparency in policies and accountability of the government to more drastic measure i.e. changes in policy making by handing over the power to an independent committee to determine the budget deficit size Wyplosz (2005). Many others have studied about the rules that are used during implementation of fiscal controls, i.e. “numerical fiscal rules” which are applied to budget balance and also applied to its aggregates, Debrun et al. (2008), also there are some procedural rules which governs the process of the budget. Hallerberg et al. (2007), Fabrizio and Mody (2006), Ylaoutinen (2004) and Gleich (2003). All the discussed authors agree with the view that, the nature of fiscal policy depends on the institutional settings in which policy is implemented under those settings and thus, the constraints can be valuable while improving fiscal discipline.

If one go to the literature deeply in to the subject of restrictions, it appear with the term fiscal institutions or simply “institutions” which covers the various properties of the political as well as socio-economic set of a country, which is a great source of shaping the policy Persson (2002) and Persson and Tabellini (2001).

Such characteristics involve various types of limitations covering a variety of topics of the institutional and political arrangement. They suppose the form of implicit limits, like procedural rules and explicit limits, like fiscal rules, governing the budget process, political system (presidential or parliamentary), and the nature of the electoral system, ideological preferences and party concentration in parliament among others.

2.2 Empirical Review

Fatas and Mihov (2003) analyzed the Macroeconomic consequences of discretionary fiscal⁶ volatility and the determinants of discretionary fiscal volatility in a large cross section of 91 countries over the period 1960-2000. They used 2SLS to estimate government expenditure equation and calculate the aggressiveness of discretionary fiscal policy through the standard deviation of the residuals. They observed that the discretionary fiscal volatility leads to considerable macroeconomic instability. The output volatility caused by aggressive fiscal measure leads to lower the economic growth by more than 0.8, they also find that political and institutional factors (Presidential, Majoritarian and number of elections) have significant impact on reducing policy volatility and making help in the boosting up growth level.

Agnello and Sousa (2009) examine the effects of institutional, political and Economic factors of government budget volatility in a panel of 125 countries. They used Generalized Method of Moment (GMM) and utilized the annual data over the period of 1980 to 2006, and finds that political instability and less democracy are the main factors of higher public deficit volatility.

Sirimaneetham (2006) find out the determinants of policy volatility in developing countries, from the year 1970-1999. He used Bayesian approach which addresses the model uncertainty problem, and finds that macroeconomic policy is more volatile in countries that

⁶ Discretionary fiscal Policy is one which is not related to the current stat of the economy.

adopt a presidential system, have weaker political constraints, where government stability is lower, and that are former British colonies. Adopting a parliamentary regime helps to stabilize policy.

Mara (2012) analyzed the impact of Macroeconomic variables (economic growth rate, GDP per capita, inflation, investment and unemployment rate), Fiscal variables (expenditures, revenues, public debt, budget deficit, revenue volatility and expenditure volatility), Political variable (Polity 2) and one control variable Population on budget balance volatility. She used panel data of 12 new member states (NMS 12) and 15 old member states (EU 15) of the EU countries for the period of 1996-2011 and applied the panel ordinary least squares (OLS) method. She finds that economic growth rate has a negative and significant determinant of budget balance volatility, while the unemployment rate has a significant impact on the budget volatility and all the remaining variables are having insignificant impacts on budget volatility.

Albuquerque (2010) examines the impact of the quality of fiscal institutions on government spending volatility for a panel of 25 EU countries over the period of 1980-2007. The main variables used in his study are Fiscal Rule Index (FRI), Delegation Index (Delindex), set of Political variables (Nature of the electoral system, Number of parliamentary elections, Index of electoral competitiveness and Herfindahl index), Institutional variables (Government crises and Cabinet changes) and a set of Macroeconomic variables (GDP per capita, Country size and dependency ratio, Government size, Inflation and Openness). He used instrumental variable technique (2SLS) and finds that quality of fiscal institutions has negative and significant impact on public spending volatility.

Afonso and Hauptmeier (2009) assess the determinants of government's fiscal behavior for a panel of 27 European Union countries for the period 1990-2005. They used fiscal rules index, government decentralization, political and institutional variables as

determinants of fiscal behavior and used Generalized Method of Moment (GMM). They found that the existence of effective fiscal rules, the degree of public spending decentralization, and the electoral cycle have a positive and significant impact on the country's fiscal position.

Javid et al. (2011) analyzed the economic, political and institutional determinants of budget deficits for South Asia and ASEAN countries for the period 1984 to 2010. They used Generalized Method of Moments (GMM) and finds that political and institutional variables are significantly related to budget deficit volatility. Also high level of political stability is associated with more budget stability. Higher corruption and low institutional quality (legal and bureaucracy) and conflicts (ethnic, religious, internal and external) lead to more fluctuations in the budget deficit.

Shonchoy (2010) estimates the determinants of government expenditure for 111 developing countries by using a panel data set over the period of 1984-2004. He used random effect model and finds that Political, Institutional and Governance variables significantly influence the government expenditures.

Ismail and Husain (2012) analyzed the impacts of discretionary fiscal measures on Pakistan's economy. They used time series data over the period of 1971-2010 and apply difference based OLS technique. They confirm the existence of fiscal discretion from the residuals of fiscal reaction function, market structure and existing political system and finds that discretionary fiscal measure has no significant impact on inflation, output and employment.

2.3 Conclusion

This chapter has provided an overview of the theoretical and empirical literature on discretionary fiscal volatility . The theoretical literature seems to agree that the discretionary fiscal volatility is harmful for economic growth, but the result of empirical studies is mixed.

The conflicting outcomes are mainly due to sample selection and methodology. Due to mix results about the role of discretionary fiscal volatility and economic growth there is a need to further explore the issue. Such exploration may take care of these shortcomings by detecting the causes or determinants for aggregated and disaggregated analysis and by employing appropriate econometric method (GMM).

CHAPTER 3

METHODOLOGY

This chapter presents an overview of the models specification followed by sample selection, data sources, definitions of variables and estimation technique. The later part of the chapter provides descriptive statistics of the data.

3.1 Model Specification

There are three different components of fiscal policy (I) Automatic Stabilizer, i.e. automatic response of taxes and expenditure to cyclical fluctuations (ii) systematic discretionary part, a deliberate response of government to economic fluctuations (iii) non-systematic discretionary part, a part of government expenditure which is not associated to the current economic position⁷. These three components of fiscal policy could be distinguished by the following fiscal rule proposed by Fatas and Mihov (2003) and also followed by (Albuquerque, 2010; Ismail and Husain, 2010).

$$G_{it} = \alpha_0 + \alpha_1 G_{it-1} + \alpha_2 Y_{it} + \alpha_3 inf_{it} + \alpha_4 ppl_{it} + \varepsilon_{it} \dots\dots\dots (3.1)$$

Where 'i' represents country index and 't' represents time period. G_{it} shows general government expenditure in current period, G_{it-1} is government expenditure in previous period, Y_{it} is GDP per capita, inf_{it} is inflation and ppl_{it} is population level. ε_{it} is the residuals part of the fiscal rule that captures the non systematic discretionary part of government expenditure i.e., the expenditure determined by personal and political motivations. To find the aggressiveness of discretionary (non-systematic component) part of fiscal policy we use standard deviation of the residual term, this method is proposed by Fatas and Mihov (2003), and followed by (Albuquerque 2011 and Ismail and Hussain2012).

⁷Such expenditures are based on political motives.

$$\text{Discretionary volatility} = \sigma_{it} = \sqrt{\frac{\sum(\varepsilon_{it} - \bar{\varepsilon})^2}{n}} \dots\dots\dots (3.2)$$

Now to examine the determinants of aggressive discretionary spending volatility (which is obtained through standard deviation of the residual (ε_{it}) of the equation 3.1) we regressed that aggressive discretionary part of fiscal policy on different political, institutional and macroeconomic variables which are important to explain differences in policy volatility.

$$\sigma_{it} = \alpha_0 + \beta^\varphi \sum IT_{it} + \beta^\pi \sum M_{it} + \varepsilon_{it} \dots\dots\dots (3.2)$$

Where σ_{it} is the dependent variable which is the volatility/aggressiveness of discretionary public spending. IT_{it} is the set of variables which incorporate political constraints, government Stability, dummy variable for Political system (presidential system 1 or parliamentary system 0) and Corruption. Where, M_{it} consist of macroeconomic variables like GDP growth, population and openness.

3.2 Sample Selection

This study uses a panel of 55 countries which include both developed and developing countries of the world. This selection is purely based on the availability of the data set. The sample period is from 1985-2012. The use of panel data has many advantages over traditional time-series and cross-section data (Hsiao, 2003). Panel data consist of a large number of data points so it provides sufficient number of degree of freedom and reduce the possibility of multicollinearity among the explanatory variables. Thus it offers efficient parameter estimates (Hsiao, 2003). Further, the effect of unobservable and immeasurable factors could be control, each individual heterogeneity could be captured and the problem of omitted variable could be tackle.

3.3 Data Sources

The data employed in this study is a panel of 55 countries consist of developed and less developed countries over the period of 1985-2012 which is purely based on the availability of data. The variables are, government expenditure, total population, trade openness, GDP per capita, GDP growth, consumer price index, political constraints, government stability, political system, corruption and discretionary fiscal policy. The data of the government expenditure, total population, GDP growth, GDP per capita, total population, trade openness and consumer price index are taken from World Development Indicator (WDI).The data of political constraints is taken from Henisz index. “The data of government stability and corruption is taken from International Country Risk Guide” (ICRG)⁸ and the data of Political system is taken from Database of Political Institutions(DPI).

⁸ The variable corruption and government stability have normalized, as it was scored between 0-4 and 0-6 respectively. So we convert both into same index i-e 0-1.

Table 3.1: DEFINITION OF VARIABLES

<i>Variables</i>	<i>Definitions</i>
Discretionary spending	The discretionary spending is the spending which is not associated with the cyclical fluctuations of the economy. The data for this is not readily available, so we have constructed it through the standard deviations of the residuals of the fiscal rule model.
Government expenditure	General government final expenditure (constant 2005 US dollar) includes government all current expenditures, including the compensation of employees. It also contains most expenditure on national security and defense, (WDI).
Population	It is the total number of population in period 't' in country 'i'. It includes all the residents irrespective of the legal status or citizenship except those who are not permanently settled like refugee. (WDI)
Trade Openness	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product.(WDI)
Inflation	Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at Specified intervals, such as yearly. (WDI)
GDP per capita	GDP per capita is gross domestic product divided by mid-year population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2005 U.S. dollars. (WDI)
Political constraints	The index can be used to determine the constraints faced by politicians desiring to change a status quo policy in a country in a given year. Scale 0 (most hazardous - no checks and balances) to 1 (most constrained – extensive checks and balances).Measure the feasibility of change in policy given the structure of a nation's political institutions and the preference of the actors that inhabit them. (Henisz index)
Government stability	This is an assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponents i.e. (Government Unity, Legislative Strength and Popular Support) each with a maximum score of 1point which equates to Very Low Risk and a minimum score of 0 points which shows Very High Risk. (ICRG)
Corruption	This is an assessment of corruption within the political system which is a threat to foreign investment for several reasons: it distorts the economic and financial environment; introduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process. (ICRG)
Political system	In order to capture the Political system of the country we are using Dummy variable which assigns 1 for presidential system and 0 for parliamentary system. (DPI)

3.4 Estimation Technique

Since we are working on panel data so our estimation technique will also be in accordance with the data form. There are two conventional models in panel data analysis (a) Fixed Effect Model (FEM) and (b) Random Effect model (REM) . In FEM the unobserved heterogeneity can be preserve in intercept, while in random effect model the unobserved heterogeneity is allow to the ignorance zone. The selection between the two models is made on Hausman test. But we do not apply these models because the earlier studies (Fatas and Mihov 2003; Albuquerque 2011) has mention the problem of endogeneity in fiscal rule equation, moreover the fiscal rule estimation is based on dynamic panel analysis (i.e. the lag of dependent variable is included as independent variable) in such a case the parameters estimates become biased if we apply the FEM and REM⁹. So the possible way to apply fixed effect instrumental variable technique (IVFE). However fiscal rule model has also the issue of reverse causality because Keynesian theory suggest that government expenditure effect GDP per capita while Wagner law propose that GDP per capita effect government expenditure so there is the problem of simultaneity in fiscal rule model thus to handle the problem of endogeneity and reverse causality we will apply generalized method of moment (GMM).

After estimating the fiscal rule model our next step is to find out the determinants of the aggressive discretionary fiscal policy. Here we could also apply the fixed effect (FE) and random effect (RE) model. But here again we are facing the problem of endogeneity . As GDP per capita (which significantly affect discretionary fiscal volatility) is correlated to the error term of the model. So ordinary FE and RE models are no more valid, thus to handle the problem of endogeneity and other we use GMM model.

⁹ For detail discussion see (Asteriou,2007)

3.5 Descriptive Statistics

Table 3.2: Descriptive Summary of the Variables for Full Sample

<i>Variable</i>	<i>Observation</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Government expenditure (constant 2005 US\$ in Millions)	1540	104000	267000	133	2160000
GDP Per capita (constant 2005 US\$)	1540	14885.74	16412.72	255.699	67804.55
Population (In millions)	1540	79	212	.241405	1350
Inflation CPI	1540	64.44847	30.32553	4.2308	124.7149
GDP growth	1540	3.502731	3.504671	-17.14604	19.44997
Trade openness	1540	70.38752	49.98605	.8333333	439.6567
Political system	1540	.4486201	.4974432	0	1
Political constraints	1540	.5226708	.2916961	0	.89432
Government stability	1540	.6400214	.1635681	0.0833333	1
Corruption	1540	.5774396	.2444017	0	1

Source: Author's own calculation. Data range is from 1985-2012. Total number of observation is 1540 (55X28=1540).

3.5.1 Full Sample

In the table the 3.2 descriptive summaries of the variables for full sample are shown. The mean value of government expenditure is 104000 having standard deviation is 267000 with a minimum value of 133 and a maximum value of 2160000 respectively. Similarly the average value of GDP Per capita is 14885.74 while its maximum and minimum values are 67804.55 and 255.699 with a standard deviation of 16412.72. Population is having a mean value of 79 with a standard deviation of 212 while its maximum and minimum values are 1350 and 0.241405 respectively. Where the variable inflation CPI has an average value 64.44847 and its standard deviation is 30.32553 with maximum and minimum values 4.2308 and 124.7149 respectively. The average values of the remaining variables that is of GDP growth, trade openness, Political system, Political constraints, Government stability and Corruption are 3.502731, 70.38752, 0.4486201, 0.5226708, 0.6400214 and 0.5774396, while there standard deviations and maximum and minimum values are given in the proceeding columns 4, 5 and 6 of the table 3.2 respectively.

3.5.2 Sub Samples

In table 3.3 and 3.4 the descriptive statistics of the variables for developed and developing economies are shown. In the sample of developed economies the mean value of government expenditure is 220000 having standard deviation is 387000 with a minimum value of 2030 and a maximum value of 2160000 respectively. Similarly the average value of GDP Per capita is 32896.61 while its minimum and maximum values are 10406.7 and 67804.55 with a standard

Table 3.3: Descriptive Summary of the Variables for Developed Economies

<i>Variable</i>	<i>Observation</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Government expenditure (constant 2005 US\$ in Millions)	616	220000	387000	2030	2160000
GDP Per capita	616	32896.61	10903.67	10406.7	67804.55
Population (In millions)	616	34.9	60.5	.241405	314
Inflation CPI	616	78.47078	18.40014	13.38377	110.0195
GDP growth	616	2.506154	2.741784	-8.538612	15.24038
Trade openness	616	82.9261	68.34592	15.92399	439.6567
Political system	616	.0454545	.2084682	0	1
Political constraints	616	.7467448	.1740873	.013334	.89432
Government stability	616	.6810629	.133262	.2638889	.9236111
Corruption	616	.8057134	.1648081	.3333333	1

Source: Author own calculations. Data range is from 1985-2012 and total number of observation is 616 (22X28=616).

deviation of 67804.55. Population is having a mean value of 34.9 with a standard deviation of 60.5 while its maximum and minimum values are 314 and 0.241405 respectively.

Where the variable inflation CPI has an average value 78.47078 and its standard deviation is 18.40014 with maximum and minimum values 110.0195 and 13.38377 respectively. The average values of the series GDP growth, trade openness, political system, political constraints, government stability and corruption in developed economies are 2.506154, 82.9261, 0.0454545, 0.7467448, 0.6810629 and 0.8057134 respectively, and while there

standard deviations are 2.741784, 68.34592, 0.2084682, 0.1740873, 0.133262 and 0.1648081.

The maximum and minimum values are given in columns 5 and 6 in the table.

Turning to the summary statistics of the variables of developing economies the average value of government expenditure is 40900 having standard deviation is 92500 with a minimum value of 133 and a maximum value of 618000 respectively. Similarly the average value of GDP Per capita is 6501.93 while its minimum and maximum values are 0.8333333 and 58009.82 with a standard deviation of 10838.23. Population is having a mean value of 101 with a standard deviation of 255 while its maximum and minimum values are 1350 and 0.241405 respectively.

Table 3.4: Descriptive Summary of the Variables for Developing Economies

<i>Variable</i>	<i>Observation</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
Government expenditure (constant 2005 US\$ in Millions)	924	40900	92500	133	618000
GDP Per capita	924	6501.93	10838.23	.8333333	58009.82
Population (In Millions)	924	101	255	.241405	1350
Inflation CPI	924	57.62438	32.41972	3.23108	124.7149
GDP growth	924	3.91525	3.77367	-17.14604	19.44997
Trade openness	924	64.19895	31.62446	.8333333	198.7668
Political system	924	.6298363	.4829756	0	1
Political constraints	924	.424303	.2825976	0	.89432
Government stability	924	.6233578	.1706906	.0833333	1
Corruption	924	.4709408	.2070085	0	1

Source: Author's own calculations. Data range is from 1990-2012 and total number of observation is 924 (33X28=924).

Where the variable inflation CPI has an average value 57.62438 and its standard deviation is 32.41972 with maximum and minimum values 124.7149 and 3.23108 respectively. The average values of the series GDP growth, trade openness, political system, political constraints, government stability and corruption in developing economies are 3.91525, 64.19895, 0.6298363, 0.424303, 0.6233578 and 0.4709408 respectively, and while there

standard deviations are 3.77367, 31.62446, 0.4829756, 0.2825976, 0.1706906 and 0.2070085.

The maximum and minimum values are given in columns 5 and 6 in the table.

3.6 Conclusion

After setting of the econometric model and explaining the methodology, we come to the conclusion that System GMM is to be used for full and sub samples to avoid endogeneity, reverse causation and autocorrelation.

Chapter 4

Model Estimation and Results

After selecting the suitable specification of the model and explaining the methodology in detail in previous chapter, we now estimate the factors that influence the volatile nature of discretionary fiscal volatility by using system GMM. The first section 4.1 deals with the aggregated analysis while the section 4.2 and 4.3 deals with disaggregated analysis.

4.1 Aggregated Sample Analysis

Before analyzing the factors of discretionary fiscal volatility, the fiscal rule model is interpreted for aggregate sample. For testing the accuracy and appropriateness of the given model and estimation method, Hansen test of over-identifying restrictions is calculated for the aggregate sample which suggests that the instruments are valid. The probability value of Hanson test is (0.977) which is larger than (0.1) therefore we cannot reject the null hypothesis and conclude that instruments used in estimations are exogenous as a group .

The estimated coefficient of lagged government expenditure (G_{it-1}) shows positive and significant impact on current government expenditure, which is consistent with the studies of (Fatas and Mihov, 2003; Ali, 2014). Likewise, the estimated coefficient associated to GDP per capita (Y_{it}) has also a positive effect on government expenditure at 1% significance level, this result is supported by the finding of (Fatas and Mihov, 2003). The coefficient of Population (ppl_{it}) appears with positive and statistical significance, this result is compatible with the study of (Taiwo, 1989) who also reached to the same conclusion. The coefficient of inflation (inf_{it}) is negative and insignificant on government expenditure unlike (Taiwo, 1989).

Table 4.1: Fiscal Rule Model Result (Aggregate Sample): Dependent Variable is Current Government Expenditure

<i>VARIABLES</i>	(1) <i>OLS</i>	(2) <i>FE</i>	(3) <i>RE</i>	(4) <i>GMM</i>
G_{it-1}				0.130*** (0.0230)
Y_{it}	1.134*** (0.00934)	0.845*** (0.0163)	0.928*** (0.0134)	1.040*** (0.0294)
ppl_{it}	0.979*** (0.0121)	0.971*** (0.00999)	0.935*** (0.00861)	0.867*** (0.0209)
inf_{it}	-0.0205*** (0.00468)	-0.00307 (0.00210)	-0.00496** (0.00215)	-0.0741*** (0.0265)
Constant	-1.135*** (0.119)	-0.0183 (0.0509)	-0.0623 (0.0541)	-1.206*** (0.166)
Observations	1,540	1,540	1,540	1,205
R-squared	0.979	0.966		
Number of cross-section	55	55	55	55
Hansen test of Overid restriction				0.977

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

However, the result is enforced by the theory which suggests that as inflation rises government expenditure falls.

After discussion on fiscal rule model we now interpret results of the second model for aggregate model, where the impact of institutional, political and macroeconomic variables has been observed. For model accuracy and estimation method, Hansen test of over-identifying restrictions are calculated. The p-values of Hansen test is (0.999) higher than (0.1) which suggest that instruments used in regression are valid and exogenous as a whole. Turning to the coefficients of the model the lag discretionary public spending volatility has a positive and significant impact on current year discretionary public spending volatility.

Table 4.2: The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending (Aggregate Sample): Dependent Variable is Discretionary Public Spending

<i>VARIABLES</i>	<i>(1)</i> <i>OLS</i>	<i>(2)</i> <i>FE</i>	<i>(3)</i> <i>RE</i>	<i>(4)</i> <i>GMM</i>
Lag of (σ)				0.271*** (0.0812)
Presidential system	0.129 (0.103)	0.295 (0.218)	0.263 (0.171)	0.430** (0.207)
Political constraints	-0.816*** (0.217)	0.181 (0.379)	-0.520* (0.296)	-0.735* (0.430)
GDP growth	-0.0290** (0.0129)	-0.0432*** (0.0151)	-0.0345** (0.0149)	-0.0476*** (0.0174)
Population	-0.00864 (0.140)	-0.386* (0.223)	-0.215** (0.101)	-0.218*** (0.0715)
Openness	0.0113 (0.245)	0.127 (0.659)	-0.00131 (0.290)	0.593** (0.260)
Government stability	-0.799*** (0.283)	-0.792** (0.310)	-0.799*** (0.290)	-0.853** (0.382)
Corruption	-0.580** (0.248)	0.253 (0.475)	-0.351 (0.349)	-0.0454 (0.424)
Constant	-3.089*** (0.850)	-3.106*** (0.999)	-3.417*** (1.095)	-4.421*** (1.485)
Observations	1,429	1,429	1,429	1,317
R-squared	0.064	0.018		
Number of cross-section	55	55	55	55
Hansen test of overid_ restriction				0.999

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The coefficient associated with Presidential system has positive and significant impact, this result is consistent with (Fatas and Mihov 2003), who also reached to the same conclusion.

The reason for this positive effect is that under presidential system the power is concentrated

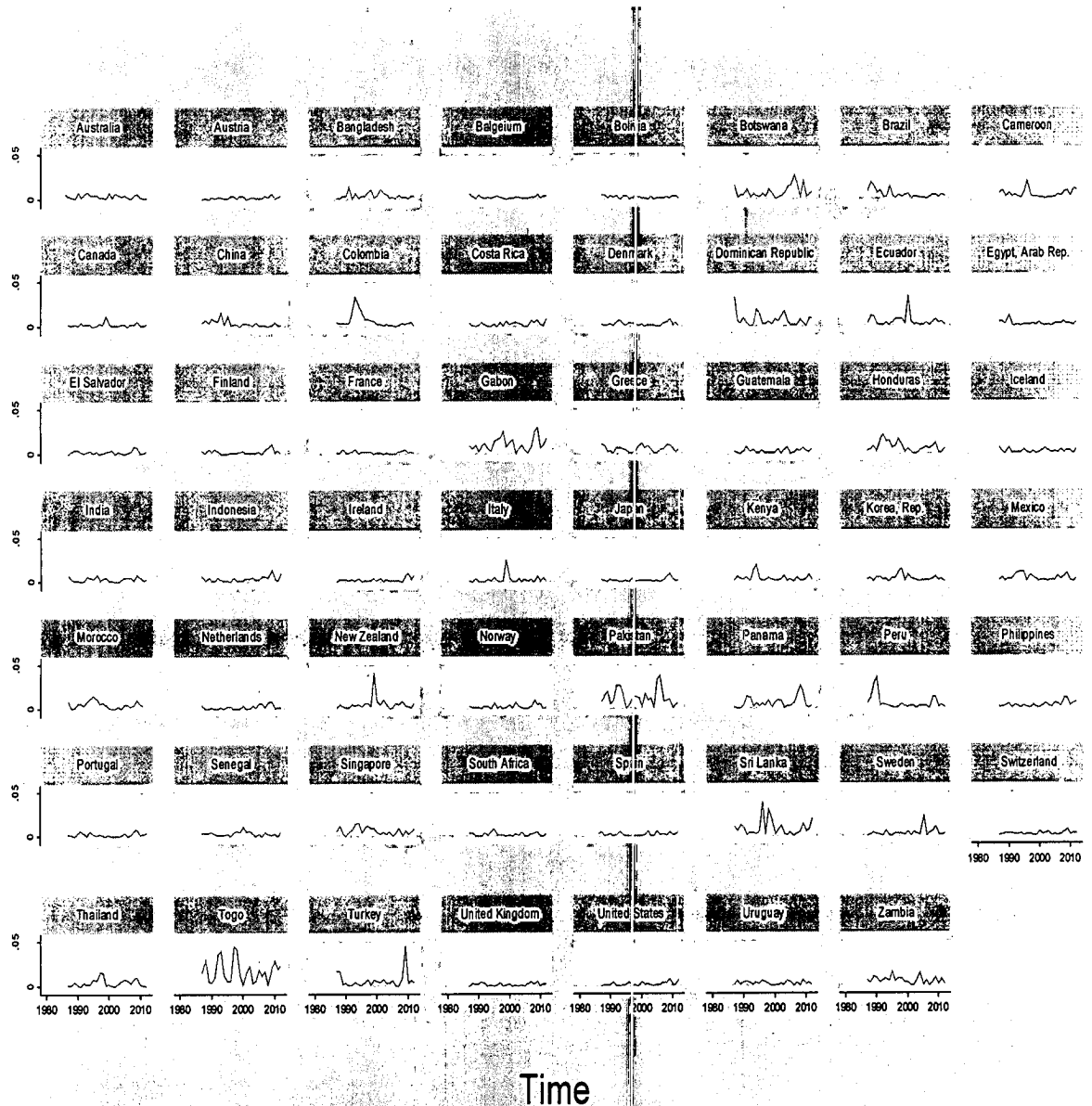
in one hand, which aggressively uses the political motivated expenditure. Also the nature of restrictions depends on the type of government, and the presidential system face low restrictions on the budgetary process. The estimated coefficients of Political constraints have a negative impact on the volatility of discretionary public spending with 5% significance level, this result is in line with (Fatas and Mihov 2003;2006). This is due to the fact that higher are the political constraints, lower is the discretionary public spending volatility, because high political constraints restrain the government authorities to use aggressive discretion in the budgetary process. Similarly GDP growth has a negative and significant impact on discretionary public spending volatility, this result is also supported by (Fatas and Mihov 2006). As a matter of fact high GDP growth indicates a higher development process, and when economic development happens the basic structure of the economy changes. Thus, this process leads to lower the government incentives to aggressively use the politically motivated expenditures. The associated coefficient of the Population has a negative and significant impact on discretionary public spending volatility, this finding is similar to (Furceri and Ribeiro 2008) which suggest that smaller is the size of the nation high will be the policy volatility, because they are more exposed to idiosyncratic shocks. Openness has a positive and significant impact on discretionary public spending volatility, this result is supported by Albuquerque(2010) who also found that openness has a positive impact on policy volatility, and it is due to the fact that higher degree of openness makes the economy more exposed to external shocks, which ultimately affect the policy volatility. Government stability has negative and significant impact on discretionary public spending volatility, this result is supported by economic theory which suggests that higher government stability is associated with more policy stability which in turns lowers the aggressive political expenditures. Corruption has although positive but insignificant impact on discretionary public spending

volatility means that the corrupt politicians and bureaucracy use the aggressiveness in such spending to fulfill their desires.

4.2 Disaggregated Analysis

After discussing aggregate sample results, we now proceed to interpret the results of sub samples. The reason behind making disaggregated analysis is that full sample results might be bias due to the diversified nature of developed and under developed economies in a panel set. In the figure 4.1 discretionary spending volatility of each country has been shown. It is quite clear from the panel graph that countries such as Bangladesh, Botswana, Cameroon, China, Dominican, El Salvador, Gabon, Pakistan, Panama, Peru and Zambia etc., which are under-developed economies, are exercising more volatile discretionary policy, while the advance countries like Australia, Austria, Japan, Belgium, France, Norway, United Kingdom and United State etc. are following persistence discretionary policy. The reason behind this diversified nature of the developed and under-developed economies is that developed economies operate under certain fiscal rules, so they might not be able to practice aggressive fiscal policy. On the other hand, developing economies having minimum constraints could use the discretionary part of fiscal policy more aggressively. So it is necessary to separately analyze the effect of discretionary fiscal volatility for developed and under-developed countries.

Figure 4.1: Discretionary Fiscal Volatility (country wise).



Graphs by c_no

Note: Author's own creation which is based on the standard deviation of discretionary spending.

4.2.1. Developing Countries

First we interpret the fiscal rule model. For accuracy of model and estimation method, the Hansen test of over identification restriction of has been calculated. The p-value of Hansen over identification test is high i.e. (1.00) showing instruments are valid and exogenous as a group. Likewise full sample, here in sub sample the lag of government expenditure (G_{it-1})

has positive effect on current period government expenditure. The estimated coefficient is significant at 1%. Similarly coefficient associated with GDP per capita (Y_{it}) has also positive and significant effect on government expenditure. Population (ppl_{it}) coefficient shows positive association with

Table 4.3: Fiscal Rule's Model Result (Developing Economies): Dependent Variable is Current Government Expenditure

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) GMM
G_{it-1}				0.148*** (0.0275)
Y_{it}	1.134*** (0.0179)	0.834*** (0.0214)	0.901*** (0.0181)	1.022*** (0.0259)
ppl_{it}	0.972*** (0.0154)	0.974*** (0.0121)	0.944*** (0.0104)	0.872*** (0.0211)
inf_{it}	-0.0191*** (0.00482)	-0.00366 (0.00238)	-0.00495** (0.00242)	-0.0609** (0.0249)
Constant	-1.089*** (0.172)	-0.102* (0.0577)	-0.111* (0.0622)	-1.370*** (0.183)
Observations	924	924	924	924
R-squared	0.972	0.970		
Number of cross-section	33	33	33	33
Hansen test of overid restriction				1.000

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

government expenditure at 1% significance level, while inflation (inf_{it}) has negative but significant on government expenditure.

After interpreting the fiscal rule model we now move forward to interpret the second model where the impact of institutional, political and macroeconomic variables has been observed.

Table 4.4: The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending (Developing Economies): Dependent Variable is Discretionary Public Spending.

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) GMM
Lag of (σ)				0.271*** (0.0893)
Presidential system	0.114 (0.119)	0.219 (0.243)	0.219 (0.197)	0.0442** (0.187)
Political constraints	-0.738*** (0.270)	0.0867 (0.416)	1.640*** (0.585)	-0.447 (0.345)
GDP growth	-0.0263* (0.0145)	-0.0277 (0.0179)	-0.0251 (0.0177)	-0.0483** (0.0190)
Population	-0.148* (0.0828)	-0.176 (0.232)	-0.144 (0.107)	0.380 (0.281)
Openness	-0.174 (0.340)	-0.607 (0.697)	-0.392 (0.305)	1.666** (0.660)
Government stability	-0.891*** (0.327)	-0.742** (0.320)	-0.802*** (0.307)	-1.258** (0.553)
Corruption	-0.344 (0.330)	0.872 (0.581)	0.184 (0.455)	0.396** (0.0192)
Constant	-3.354*** (1.092)	-3.469*** (0.994)	-3.500*** (1.116)	-8.815** (3.450)
Observations	934	934	934	862
R-squared	0.044	0.024		
Number of cross-section	33	33	33	33
Hansen test of overid_ restriction				1.000

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

For the accuracy and efficiency of the estimation method Hansen test of over identification restriction of instruments exogeneity have been calculated. The P-values of

Hansen Test are enough high i.e. (1.00), which suggest that instruments are valid and exogenous as a group. Turning to the coefficients of the model the lag discretionary public spending volatility has a positive and significant impact on current year discretionary public spending volatility. The coefficient associated with Presidential system has positive significant impact, this result is consistent with (Fatas and Mihov 2003), who also reached to the same conclusion. The estimated coefficients of Political constraints have negative but insignificant impact on the volatility of discretionary public spending unlike (Fatas and Mihov 2003; 2006). Further, GDP growth has a negative and significant impact on discretionary public spending volatility, this result is supported by (Fatas and Mihov 2006). Population has negative and insignificant impact on discretionary public spending volatility, this finding is almost similar to earlier mentioned study, which suggest that bigger is the nation lesser is the volatility. Openness has a positive and significant impact on discretionary public spending volatility, this result is supported by (Albuquerque, 2010). Government stability has negative and significant impact on discretionary public spending volatility, this result is supported by economic theory which suggest that higher is the Government stability lower is aggressive political expenditures. Corruption has although positive and significant impact on discretionary public spending volatility.

4.2.2 Developed Countries

Using the same pattern for developed economies as well, we first explain the results of fiscal rule model and then we interpret determinants model result. For model and estimation method validity, the Hansen test of over identification restriction has been considered. The p-value of Hansen test is enough so the model is appropriate. All the variables in GMM approach are statistically significant. The coefficient of the lag government expenditure (G_{it-1}) appears with positive sign. Which indicate that lagged government expenditure has positive effect on current government expenditure. The coefficient of the lag government expend has positive

Table 4.5: Fiscal Rule's Model Result (Developed Economies): Dependent Variable is Current Government Expenditure

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) GMM
G_{it-1}				0.912*** (0.0148)
Y_{it}	1.137*** (0.0416)	0.590*** (0.0315)	0.694*** (0.0267)	0.129*** (0.0264)
ppl_{it}	0.998*** (0.00751)	1.392*** (0.0663)	1.075*** (0.0343)	0.0888*** (0.0168)
inf_{it}	-0.205*** (0.0392)	0.0647*** (0.0167)	0.0732*** (0.0170)	-0.0743*** (0.0161)
Constant	-0.919*** (0.181)	-1.767*** (0.387)	0.00185 (0.219)	-0.104 (0.0737)
Observations	616	616	616	479
R-squared	0.969	0.908		
Number of cross-section	22	22	22	22
Hansen test of <u>overid</u> restriction				1.000

Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
 All the variables in the table are in log form; there definitions are in chapter 3.

effect on current government expenditure. The estimated coefficient is significant at 1%. Likewise lag government expenditure, the coefficient associated with GDP per capita (Y_{it}) also show a positive and significant effect on government expenditure. Further, population (ppl_{it}) coefficient shows a positive association with government expenditure at 1% significance level, while inflation (inf_{it}) coefficient shows negative and significant association with government expenditure; it means higher the level of inflation lower is the government expenditure. After checking the accuracy of the fiscal rule model and

interpreting the coefficient, we now proceed to interpret the second model where the impact of institutional, political and macroeconomic variables has been observed.

Table 4.6: The Impact of Political, Institutional and Macroeconomic Variables on the Volatility of Discretionary Public Spending (Developed Economies): Dependent Variable is Discretionary Public Spending.

VARIABLES	(1) OLS	(2) FE	(3) RE	(4) GMM
Lag of (σ)				-0.430*** (0.129)
Presidential system	0.170 (0.284)		1.959* (1.165)	0.237 (0.264)
Political constraints	-1.130*** (0.437)	-0.583 (0.995)	-0.958* (0.493)	-1.994* (1.085)
GDP growth	-0.0724*** (0.0237)	-0.0866*** (0.0246)	-0.0826*** (0.0232)	-0.168*** (0.0540)
Population	-0.396*** (0.135)	0.156 (2.031)	-0.341 (0.224)	-0.658 (0.461)
Openness	0.0314 (0.390)	1.531 (1.137)	0.341 (0.489)	1.301 (0.819)
Government stability	-0.300 (0.571)	-0.660 (0.764)	-0.494 (0.675)	-1.683* (0.968)
Corruption	-0.834* (0.505)	-0.409 (0.825)	0.780 (0.667)	0.911 (0.940)
Constant	-1.720 (1.570)	-8.862 (13.16)	-2.697 (2.596)	3.136 (4.605)
Observations	573	573	573	549
R-squared	0.053	0.037		
Number of cross-section	22	22	22	22
Hansen test of overid_ restriction				1.000

Robust standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For the accuracy and efficiency of the estimation method Hansen test of over identification

restriction of instruments exogeneity have been calculated. The P-values of Hansen Test are enough high i.e. (1.00), which suggest that instruments are valid and exogenous as a group. Turning to the coefficients of the model the lag discretionary public spending volatility has a positive and significant impact on current year discretionary public spending volatility. The coefficient associated with Presidential system has positive but insignificant effect on policy volatility unlike Fatas and Mihov (2003). The estimated coefficients of Political constraints has negative impact on the volatility of discretionary public spending with 10% significance level, this result is in line with (Fatas and Mihov 2003; 2006). Similarly GDP growth has a negative and significant impact on discretionary public spending volatility, this result is also supported by (Fatas and Mihov 2006). The population has negative, but insignificant impact on discretionary public spending volatility, this finding is almost similar to (Fatas and Mihov 2003) which suggest that bigger is the nation less will be the volatility. Openness has a positive, but an insignificant impact on discretionary public spending volatility, this result is supported by (Albuquerque, 2010). Government stability has negative and significant impact on discretionary public spending volatility, this result is supported by economic theory which suggest that the higher is the government stability lower is aggressive political expenditures. Corruption has although positive but has an insignificant impact on discretionary public spending volatility in case of developed economies because of the relatively strong and good institutional set up which are discouraging corruption.

CHAPTER 5

CONCLUSION

The basic objective of this study was to analyze the determinants of discretionary public spending volatility for a sample of 55 countries (which includes both developed and developing economies) as well as for the sample of developed and developing economies separately. For this purpose the pioneer work of Fatas and Mihov (2003) “the case for restricting fiscal policy restriction” has been followed. We employed GMM (Generalized Method of Moments) technique and found that Presidential system, Political constraints, government stability, corruption and somewhat economic variables like GDP growth, openness are the determinants of discretionary public spending volatility. In the aggregate sample presidential system promotes discretionary public spending volatility, while political constraints restrain the aggressive use of discretion in public spending. Similarly, government stability, GDP growth and population have also a negative and significant impact on policy volatility, while corruption and openness have positive insignificant and significant impact respectively.

Turning to the disaggregated analysis, in developing economies presidential system has an encouraging role in determining the policy volatility just like aggregate analysis. However, political constraints have a negative, but insignificant impact on discretionary public spending volatility. Likewise GDP growth, government stability has negative and significant impact on policy volatility as in aggregate sample, while openness has a positive and significant impact unlike the aggregate analysis. In developed economies, presidential system has a positive, but insignificant impact which is against as in the developing economies. However, political constraints have negative significant impact on policy volatility. In a similar way GDP growth and government stability have also negative and significant impact on policy volatility.

Corruption and openness have a positive but insignificant impact on discretionary public spending volatility.

5.1 Policy Recommendations

On the basis of the above findings, this study suggests the following recommendations.

1. As stated in the above discussion, parliamentary form of government is more suitable for stabilized public spending, i.e. they are more accountable to public opinion. Thus, in order to bring stabilization in discretionary public spending, parliamentary form of government should be encouraged.
2. Second, the constraints on chief executives helps in controlling the use of discretion in public spending. Therefore, there should be effective formal political constraints on the executives in order to make them more accountable to the society. For instance, in this regard, formal accountability cell, the extension of electorate, stabilized publically elected governments, the empowerment of media, public awareness might play supporting role.
3. Finally, our analysis shows that corruption is encouraging the use of discretion in public spending. Again, role should be given to both the formal and informal structure in order to halt corruption. For instance, formal corruption control authorities, informal shame or guilt associated with corrupt activities might be the controlling factors of corruption in societies.

5.2 The Way Forward

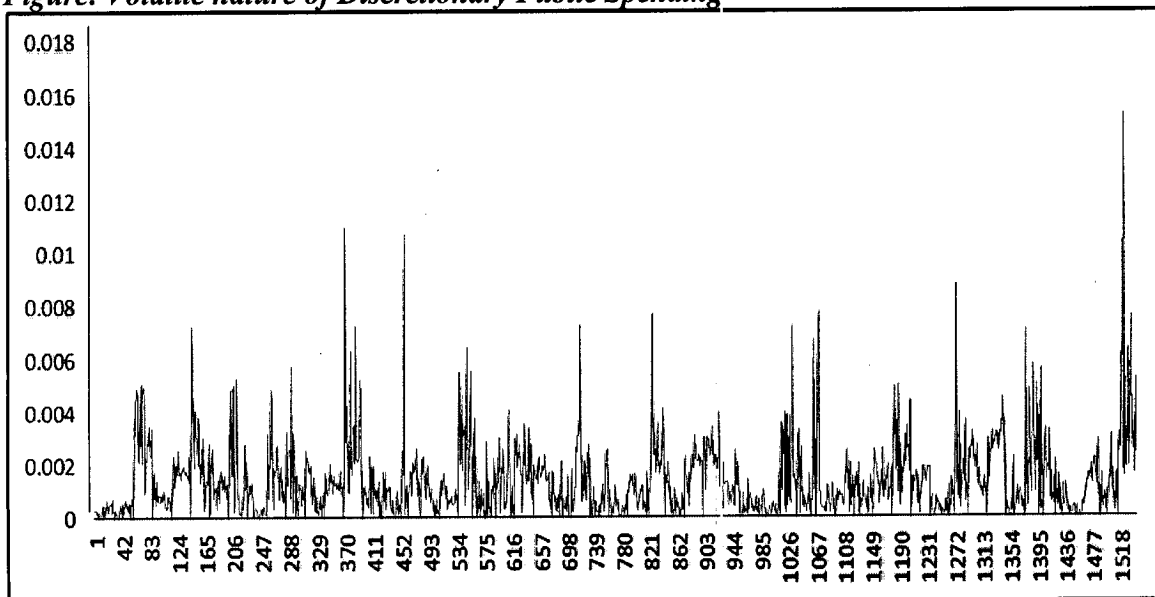
There are various aspects and avenues on which future research can be conducted to further explore the issue. Some possible areas are:

- a. This research can be extended by detecting the channel through which volatile discretionary spending adversely affects economic growth.
- b. This study can also be linked with the independence of central bank.

c. At last, on the same grounds one can also find out the optimal level of discretion which is necessary for exercising the fiscal policy.

Appendix

Figure: Volatile nature of Discretionary Public Spending



Note: author's own calculation, based on the standard deviation of the discretionary public spending

Appendix A: Countries Included in Full Sample

1	Australia	29	Japan
2	Austria	30	Kenya
3	Bangladesh	31	Korea
4	Belgium	32	Mexico
5	Bolivia	33	Morocco
6	Botswana	34	Netherland
7	Brazil	35	New Zealand
8	Cameroon	36	Norway
9	Canada	37	Pakistan
10	China	38	Panama
11	Colombia	39	Peru
12	Costa Rica	40	Philippines
13	Denmark	41	Portugal
14	Dominican Republic	42	Senegal
15	Ecuador	43	Singapore
16	Egypt	44	South Africa
17	El Salvador	45	Spain
18	Finland	46	Sri Lanka
19	France	47	Sweden
20	Gabon	48	Switzerland
21	Greece	49	Thailand
22	Guatemala	50	Togo
23	Honduras	51	Turkey
24	Iceland	52	United Kingdom
25	India	53	United States
26	Indonesia	54	Uruguay
27	Ireland	55	Zambia
28	Italy		

Appendix B: Developed Countries Included in Full Sample

1	Australia	12	Japan
2	Austria	13	Netherland
3	Belgium	14	New Zealand
4	Canada	15	Norway
5	Denmark	16	Portugal
6	Finland	17	Singapore
7	France	18	Spain
8	Greece	19	Sweden
9	Iceland	20	Switzerland
10	Ireland	21	United Kingdom
11	Italy	22	United States

Appendix C: Developing Countries Included in Full Sample

1	Bangladesh	18	Kenya
2	Bolivia	19	Korea
3	Botswana	20	Mexico
4	Brazil	21	Morocco
5	Cameroon	22	Pakistan
6	China	23	Panama
7	Colombia	24	Peru
8	Costa Rica	25	Philippines
9	Dominican Republic	26	Senegal
10	Ecuador	27	South Africa
11	Egypt	28	Sri Lanka
12	El Salvador	29	South Africa
13	Gabon	30	Thailand
14	Guatemala	31	Togo
15	Honduras	32	Turkey
16	India	33	Zambia
17	Indonesia		

References

- Acemoglu, D., Johnson, S., Robinson, J. and Thaicharoen, Y. (2003). Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth. *Journal of Monetary Economics*, 50, pp.49-123.
- Afonso, A., Agnello, L. and Furceri, D. (2010), Fiscal Policy Responsiveness, Persistence and Discretion. *Public Choice*, 145(3-4), 503–530.
- Afonso, A. and Hauptmeier, S. (2010). Fiscal Behavior in the EU: Rules, Fiscal Decentralization and Government Indebtedness. *ECB Working Paper Series*, 1054.
- Agnello, L., Sousa, R. M. (2009). The Determinants of Public Deficit Volatility. *ECB WORKING PAPER SERIES N. 1042*.
- Albuquerque, B. (2010). Fiscal institutions and public spending volatility in Europe. *Economic Modeling*, 28(6), 2544-2559.
- Alesina, A. (1987). Macroeconomic Policy in a Two-Party System as a Repeated Game. *Quarterly Journal of Economics* 102 (3), 651-678.
- Alesina, A. and Bayoumi, T. (1996). The Costs and Benefits of Fiscal Rules: Evidence from U.S. states. *NBER Working Paper*, 5614.
- Alesina, A. and Perotti, R. (1996). Fiscal Expansions and Adjustment in OECD Economies. *Economic Policy*, 21, 205-240.
- James, A. and Lowry, R. (1994). Divided Governments, Fiscal Institutions and Budget Deficits: Evidence for the States. *American Political Science Review*, 88.
- Annett, A. (2006). Enforcement and the Stability and Growth Pact: How Fiscal Policy Did and Did Not Change Under Europe's Fiscal Framework. *IMF Working Paper*, 116.

- Badinger, H. (2008). Fiscal Rules, Discretionary Fiscal Policy and Macroeconomic Stability: An Empirical Assessment for OECD Countries. *Applied Economics*, 41, 829-847.
- Debrun, X., Moulin, L., Turrini, A., Ayuso-i-Casals, J. and Kumar, M. (2008). Tied to the Mast? National Fiscal Rules in the European Union. *Economic Policy*, 54, 297-362.
- Dixit, A. and Lambertini, L. (2001). Monetary–fiscal policy interactions and commitment versus discretion in a monetary union. *European Economic Review*, 45(4), 977-987.
- Eller, M., Fidrmuc, J. and Fungáčová, Z. (2014). Fiscal policy and regional output volatility: Evidence from Russia. *The 6th Australasian Public Choice Conferenc*, Singapore.
- Fabrizio, S. and Mody, A. (2006). Can Budget Institutions Counteract Political Indiscipline? *Economic Policy*, 21 (48), 690-739.
- Fatas, A. and Mihov, I. (2003). The Case for Restricting Fiscal Policy Discretion. *Quarterly Journal of Economics*, 118 (4), 1419- 1447.
- Fatas, A. and Mihov, I. (2006). The Macroeconomic Effects of Fiscal Rules in the US States. *Journal of Public Economics*, 90, 101-17.
- Gleich, H. (2003). Budget Institutions and Fiscal Performance in Central and Eastern European Countries. *ECB Working Paper Series*, 215.
- Hallerberg, M., Strauch, R. and von Hagen, J. (2007). The Design of Fiscal Rules and Forms of Governance in European Union Countries. *European Journal of Political Economy*, 23, 338-359.
- Ismail, M. and Husain, F. (2012). Fiscal Discretion and Its Impact on Pakistan Economy. *The Pakistan Development Review*, 51(4), 339-364.
- Javid, A. Y., Arif, U. and Arif, A. (2011). Economic, Political and Institutional Determinants of Budget Deficits Volatility in Selected Asian Countries. *The Pakistan Development Review*, 649-662.

- Lane, P. (2003). The Cyclical Behavior of Fiscal Policy: Evidence from the OECD. *Journal of Public Economics* 87 (12), 2661- 2675.
- Levinson, A. (1998). Balanced Budgets and Business Cycles: Evidence from the States. *National Tax Journal* 51.
- Mara, E.-R. (2012). Determinants of fiscal budget volatility in old versus new EU member states. *ISSNN, 0874-4548*.
- Nordhaus, W. (1975).The Political Business Cycle.*Review of Economic Studies*, 42 (2), 169-190.
- Perotti, R. and Rostagno, M. (2002).Electoral Systems and Public Spending. *Quarterly Journal of Economics*,118 (2), 609-657.
- Persson, T. (2002). Do Political Institutions Shape Economic Policy? *Econometrica*,70 (3), 883-905.
- Persson, T. and Tabellini, G. (2001). Political Institutions and Policy Outcomes: What Are the Stylized Facts? *CEPR Discussion Paper*, 2872.
- Poterba, J. (1995). State Responses to Fiscal Crises: The Effects of Budgetary Institutions.*Journal of Political Economy*, 102.
- Rogoff, K. and Sibert, A. (1988).Elections and Macroeconomic Policy Cycles.*Review of Economic Studies*,55 (1), 1-16.
- Roubini, N. and Sachs, J. D. (1989).Political and economic determinants of budget deficits in the industrial democracies. *European Economic Review*,33(5), 903-933.
- Sirimaneetham, V. (2006).Explaining policy volatility in developing countries. *Bristol Economics Discussion Papers*, (06/583).
- Shonchoy, A. S. (2010). Determinants of Government Consumption expenditure in developing countries: a panel data analysis. *IDE DISCUSSION PAPER NO*, 266.

Stokey, N. (2002). "Rules versus Discretion" after Twenty-Five Years. In: Gertler, M. and Rogo, K., (Ed) *NBER Macroeconomics Annual 2002*, pp.9-45.

Wyplosz, C. (2005). Fiscal Policy: Institutions versus Rules. *National Institute Economic Review* 191, 70-84.

Ylaoutinen, S. (2004). Fiscal Frameworks in the Central and Eastern European Countries. *Finnish Ministry of Finance Discussion Paper 72*.