UNIVERSITI PUTRA MALAYSIA

MACROECONOMIC VOLATILITY, MACROECONOMIC PERFORMANCE AND INSTITUTIONAL QUALITY IN EMERGING AND DEVELOPING COUNTRIES

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FEP 2017 28

MACROECONOMIC VOLATILITY, MACROECONOMIC PERFORMANCE AND INSTITUTIONAL QUALITY IN EMERGING AND DEVELOPING COUNTRIES

By

SAID ZAMIN SHAH

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirements for the Degree of Doctor of Philosophy

August 2017

DEDICATION

"My Respected Parents"

This work is specifically dedicated to the kind soul of my late father, Haji. Said Ghafoor Shah, all of whose efforts, hopes and prayers have always remained me focused on my growth and success; and to my forever-loving mother whose never ending support, believe, love and patience made all this work possible. Thanks Ammi Abbu.

Whom I Inherited Love for Knowledge, Sticking to Values and Respect for Ideas.

They Taught Me how to Lead and Make Decisions under Crisis,

How to Differentiate between the Right and Wrong,

And how to eradicate the Social and Economic evils.

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the Degree of Doctor of Philosophy

MACROECONOMIC VOLATILITY, MACROECONOMIC PERFORMANCE AND INSTITUTIONAL QUALITY IN EMERGING AND DEVELOPING COUNTRIES

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August 2017

Chairman : Professor Ahmad Zubaidi Baharumshah, PhD
Faculty : Economics and Management

This study investigates the three inter-related but different issues accounting the interactions and volatility transmissions between macroeconomic volatility and macroeconomic performance, and the role of institutional quality on macroeconomic volatility in emerging and developing countries. Specifically, the first objective deals with the dynamic causal links and volatility spillovers between macroeconomic uncertainty and macroeconomic performance, while the second and third theme of this study examine the impact of institutional quality including political and economic institutions on macroeconomic volatility such as output growth volatility and inflation volatility in emerging and developing countries.

Specifically, the policy success to embrace prime targets for inflation and output growth is difficult to imagine without considering their variabilities around their target levels. However, there is no consensus among the existing literature regarding the nexus and volatility spillovers between macroeconomic uncertainty and performance. Thus, keeping a unique and more fascinating region whose recent risks to robust economic growth always include the threat of inflation and particularly, inflation uncertainty and volatile growth in South Asia remain tilted on the upside as compared to other regions. Hence, the first objective seeks to address this situation by examining the dynamic causal links and volatility spillovers of inflation, output growth and their uncertainties in four South Asian countries (Pakistan, India, Bangladesh and Sri Lanka). Through the lens of multivariate GARCH family models, we find that only four of the testable hypotheses have common supports. First, there is an overwhelming support for Friedman-Ball hypothesis that inflationary shocks increase inflation uncertainty in all countries. Second, output growth is reducing real volatility in all countries except Sri Lanka. Third, inflation uncertainty improves output growth in all but one country—India. Fourth, the Black's argument, i.e., output volatility leads to

improve output growth is found to hold in the majority of these countries. For the remaining hypotheses, we observe that the relationships tend to be country-specific, such as the Cukierman-Meltzer's hypothesis is unique in Bangladesh and Sri Lanka while the Holland's arguments hold for India and Pakistan only. Finally, the statistical significance of the spillovers effects in some of the countries implies that innovations to inflation (real activity) significantly influence real (nominal) uncertainty. The estimated results are almost robust with the alternative estimation strategies. Thus policy makers in these countries should pay more attentions to expectations formations and should adopt dynamic stabilization and inflation targeting strategies, coupled with sustainable growth.

Next, while considering macroeconomic volatility as heavily rooted in developing world with a higher welfare cost since the last few decades, the second objective of this study shed light over the relatively new and on-going debate on the effects of institutional infrastructure on output growth volatility in a diverse sample of emerging and developing countries. The precise role of both political and economic institutional measures is investigated here to check whether the various dimensions of these institutions have statistically significant impact on output growth volatility. In doing so, first we open the black-box of political institutions by emphasizing the key aspects of political system such as type and strength of political regime, political stability, institutions and quality of governance, and the competitiveness and accountability of political regime. Second, this study also explores whether underlying market supporting institutions and their various components have any mitigating effect on output growth volatility. While investigating the aggregated and disaggregated effects of both versions of institutions on output volatility through Generalized Method of Moments (GMM) estimators, we find that the concerned institutional details are of crucial importance for stabilizing effect. In general, output growth is less volatile in countries that adopt quality and stable democratic system, have stronger quality of governance and that have higher political constraints. We also find strong evidence that economic institutional development and its various components lead to less macroeconomic volatility. In addition, this study also contributes by identifying the indirect or indexing role of institutional arrangements through their interaction effects with volatility of fundamentals in influencing output growth stability. The estimated results appear to hold intact against a variety of standard robustness checks. This study contributes to the institutional design debate that emphasis merely on macroeconomic policies might not be sufficient to foster a more stable growth path in emerging and developing countries.

Finally, while considering the doctrine of Washington consensus and the recent conjecture that weak institutions are the root cause of volatile macroeconomic outcomes and distortionary policies, the third part of this study examines whether data supports such contentions. Specifically, it focuses why inflation tends to be more volatile in the small, open and emerging market economies. Using a dynamic panel approach, the empirical analysis suggests that politico-economic institutional arrangements including highly democratic regimes, political stability, institutional quality, constraints on political powers and market supporting arrangements play a key role for explaining the cross-country variations in inflation volatility. Other variables,

related to economic growth, financial development, exposure to external shocks and volatility of fundamentals are also significant determinants of inflation volatility. The study also confirms that the various aspects of both political and economic institutions help to reduce the volatility effects of several endogenous and exogenous shocks. Overall, the main conclusions are found robust to a number of sensitivity checks. The empirical findings imply that developing and emerging countries can have higher welfare gains of macroeconomic stability from efforts to improve qualities of political and economic institutional cluster.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

KETIDAKTENTUAN EKONOMI MAKRO, PRESTASI EKONOMI MAKRO DAN KUALITI INSTITUSI DI NEGARA-NEGARA YANG SEDANG PESAT MEMBANGUN DAN NEGARA-NEGARA YANG SEDANG MEMBANGUN

Oleh

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Ogos 2017

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Kajian ini mengkaji mengenai tiga perkara yang saling berkaitan, tetapi berbeza isu dengan mengambilkira interaksi dan transmisi turun naik di antara turun naik makroekonomi dan prestasi makroekonomi, dan juga peranan kualiti institusi keatas turun naik makroekonomi di negara-negara yang sedang pesat membangun dan yang sedang membangun. Secara khususnya, objektif yang pertama berkaitan dengan hubungan pautan-sebab dinamik dan transmisi turun naik kesan limpahan di antara ketidakpastian makroekonomi dan prestasi makroekonomi. Manakala, objektif yang kedua dan ketiga kajian ini mengkaji mengenai kesan kualiti institusi yang merangkumi institusi politik dan ekonomi ke atas turun naik makroekonomi seperti turun naik pertumbuhan output dan turun naik inflasi di negara-negara sedang pesat membangun dan negara-negara yang sedang membangun.

Secara khususnya, kejayaan sesuatu polisi dalam mengekalkan sasaran utama untuk mengawal tahap inflasi dan pertumbuhan output adalah sukar dicapai jika tidak mengambil kira variasi di sekitar tahap sasaran tersebut. Walau bagaimanapun, tidak ada kesimpulan yang konsensus di antara kajian yang sedia ada mengenai hubungan dan turun naik kesan limpahan di antara ketidakpastian dan prestasi makroekonomi. Oleh itu, mengambil kira rantau Asia Selatan yang unik dan menarik serta sebuah rantau berisiko dalam mencapai pertumbuhan ekonomi yang kukuh, menghadapi ancaman inflasi, terutamanya, ketidakpastian inflasi, turun naik dalam pertumbuhan ekonomi adalah tinggi berbanding rantau-rantau lain. Justeru itu, objektif pertama bertujuan meneliti situasi tersebut dengan mengkaji hubungan pautan-sebab dinamik dan turun naik kesan limpahan inflasi, pertumbuhan ekonomi dan ketidaktentuan tersebut di empat negara Asia Selatan iaitu (Pakistan, India, Bangladesh dan Sri Lanka). Melalui penggunaan pelbagai pemboleubah serumpun model GARCH, kami mendapati bahawa hanya empat daripada hipotesis yang diuji mempunyai keputusan

yang selari di antara negara-negara. Pertama, terdapat sokongan yang penuh terhadap hipotesis Friedman-Ball, iaitu hipotesis yang menyatakan bahawa kejutan inflasi meningkatkan ketidaktentuan inflasi di semua negara. Kedua, pertumbuhan output mengurangkan turun naik sebenar di semua negara kecuali Sri Lanka. Ketiga, ketidaktentuan inflasi meningkatkan pertumbuhan output di semua negara kecuali India. Keempat, hujah Black menyatakan bahawa, turun naik output menjurus kepada peningkatan pertumbuhan output dan wujud di kebanyakan negara-negara tersebut. Untuk hipotesis selebihnya, kami mendapati bahawa hubungan adalah berbeza di setiap negara dan lebih bersifat spesifik-negara. Sebagai contoh, hipotesis daripada Cukierman-Meltzer adalah unik untuk Bangladesh dan Sri Lanka manakala hujah Holland sesuai India dan Pakistan sahaja. Akhirnya, keputusan statistik yang signifikan oleh kesan limpahan di beberapa negara membuktikan bahawa perubahan inflasi (aktiviti sebenar) adalah penting dalam mempengaruhi ketidakpastian sebenar (nominal). Keputusan dianggarkan hampir tepat dengan strategi anggaran alternatif. Oleh itu pembuat dasar di negara-negara ini perlu memberikan perhatian yang lebih kepada pembentukan jangkaan, dan perlu mengamalkan penstabilan dinamik, strategi mensasarkan inflasi di samping pertumbuhan ekonomi yang mapan.

Seterusnya, setelah mengambil kira turun naik makroekonomi yang telah berakar umbi di negara-negara yang sedang membangun yang memerlukan kos kebajikan yang tinggi beberapa dekad lalu. Oleh itu, objektif kedua, kajian ini memberi penerangan tentang perbahasan semasa tentang kesan kualiti institusi ke atas turun naik pertumbuhan output di dalam pelbagai sampel negara-negara yang sedang pesat membangun dan yang sedang membangun. Peranan yang tepat oleh kedua-dua institusi politik dan ekonomi dikaji di sini untuk meneliti sama ada kepelbagaian dimensi institusi-institusi ini memberi kesan yang signifikan secara statistik kepada turun naik makroekonomi. Jadi, kami menekankan aspek-aspek utama sistem politik seperti jenis dan kekuatan rejim politik, kestabilan politik, institusi dan kualiti tadbir urus serta daya saing dan akauntabiliti rejim politik. Kedua, kajian ini juga meneroka samaada institusi-institusi yang menyokong pasaran dan samaada pelbagai komponen tersebut memberikan kesan dalam mengurangkan turun naik pertumbuhan output. Semasa mengkaji kesan agregat dan kesan mengikut pecahan jenis untuk kedua-dua versi institusi keatas turun naik makroekonomi menggunakan penganggar Kaedah Moments Umum (GMM), kami mendapati bahawa butiran institusi berkenaan adalah amat penting untuk kesan penstabilan. Secara umumnya, pertumbuhan output adalah stabil di negara-negara yang mengamalkan kualiti dan sistem demokrasi yang stabil, dan mempunyai tadbir urus yang berkualiti berbanding negara yang mempunyai kekangan politik yang lebih tinggi. Kami juga mendapat bukti yang kukuh bahawa pembangunan institusi ekonomi dan pelbagai komponennya menjurus kepada pengurangan turun naik makroekonomi. Tambahan lagi, kajian ini menyumbang dengan mengenalpasti peranan tidak lansung atau pengindeksan peranan institusi pengurusan melalui kesan interaksi mereka dengan turun naik dalam dasar-dasar mempengaruhi kestabilan pertumbuhan output. Keputusan kajian adalah kukuh setelah diuji menggunakan pelbagai jenis ujian keteguhan yang asas. Kajian ini menyumbang kepada perbahasan reka bentuk institusi yang menekankan kepada polisi makroekonomi semata-mata mungkin tidak mencukupi untuk memacu pertumbuhan yang lebih stabil di negara-negara yang sedang pesat membangun dan negara-negara yang sedang membangun.

Akhir sekali, dengan mengambil kira doktrin konsensus Washington dan andaian kini bahawa institusi yang lemah adalah punca terjadinya ketidakstabilan makroekonomi dan polisi yang terpesong, maka bahagian ketiga kajian ini mengkaji sama ada data menyokong perbahasan tersebut. Secara khususnya, ia memberi tumpuan mengapa inflasi cenderung untuk menjadi lebih tidak stabil dalam pasaran ekonomi yang kecil, terbuka dan pesat membangun. Dengan menggunakan pendekatan panel dinamik, analisis empirikal menunjukkan bahawa peranan institusi politik-ekonomi meliputi rejim demokrasi yang tinggi, kestabilan politik, kualiti institusi, kekangan ke atas kuasa politik dan susunan sokongan pasaran memainkan peranan penting dalam menerangkan kepelbagaian variasi merentasi-negara dalam turun naik inflasi. Pembolehubah yang lain, yang berkaitan dengan pertumbuhan ekonomi, pembangunan kewangan, pendedahan kepada kejutan luaran dan turun naik asas makroekonomi juga merupakan penentu yang signifikan kepada turun naik inflasi. Kajian ini juga mengesahkan bahawa pelbagai aspek kedua-dua institusi politik dan ekonomi dalam mengurangkan kesan turun naik beberapa kejutan iaitu kejutan dalaman dan luaran. Secara keseluruhan, kesimpulan utama didapati teguh terhadap beberapa ujian sensitiviti. Hasil kajian empirikal menunjukkan bahawa negara-negara sedang membangun dan sedang pesat membangun boleh mencapai tahap kebajikan yang tinggi dari segi kestabilan makroekonomi dengan usaha untuk meningkatkan kualiti institusi politik dan kelompok institusi ekonomi.

ACKNOWLEDGEMENTS

I bestow my humblest praise for **Almighty Allah**, the Most Merciful and Beneficent, Who blessed me with knowledge and courage, strength and resilience to complete this task and enabled me to pursue endeavours of my life and all my respects for His last prophet Hazrat Muhammad (صلی‌اللہ‌علیہ وسلم), who gave my conscience the essence of faith in Allah.

At the very outset, I would like to express deepest gratitude that I am very grateful to my supervisor **Professor Dr. Ahmad Zubaidi Baharumshah** for his dedicated interest and consistent encouragement during this research. I truly appreciate his mentoring throughout the PhD program, especially for his worthy counsel, concrete suggestions, careful reasoned criticism, constant attention and highly exceptional guidance and bright discussions. I found him matchless and one of the best people ever came in my life. I learned a lot under his kind and cooperative supervision. Especially his critical face always has been a source of encouragement. Thank you very much Sir.

I also feel pleasure to express my thanks and appreciate the timely response of the members of my dissertation committee, Professor Dr. Muzafar Shah Habibullah, Associate Professor Dr. Law Siong Hook and Associate Professor Dr. Wan Azman Saini Wan Ngah for their inspiring attitude and great support during my studies. I am very thankful for their guidance, kind assistance and helpful comments and suggestions. I also wish to extend my thanks to all faculty members, from whom I learnt valuable courses relevant to my study. I am very thankful to my class fellows for their memorable and matchless companionship. I am grateful to Higher Education Commission of Pakistan and Islamia College University Peshawar, Khyber Pakhtunkhwa, Pakistan for their financial support to persuade my PhD studies.

Finally, my profound appreciation and thanks go to my family members. I offer tribute to my affectionate parents, loving sisters and caring brothers whose constant praise, love, encouragement, prayers and assistance invariably buoyed me up. Especially, my late father—the person behind my success—his prayers bless peace to my heart, enrich my soul, enlighten my mind, raise my willpower, brighten my thoughts, strengthen my resilience and give new meanings to my life. I dedicate this effort to the soul of my father, the first to teach me the lesson of life. I must not forget my sweet daughter, Shahzadi Andaleeb who left us at the early start of my PhD journey. Last but not least, I express my heart-felt gratitude to my lovely wife whose perseverance, sacrifices, cooperation and backing was crucial in the completion of this thesis.

I certify that a Thesis Examination Committee has met on 28 August 2017 to conduct the final examination of Said Zamin Shah on his thesis entitled "Macroeconomic Volatility, Macroeconomic Performance and Institutional Quality in Emerging and Developing Countries" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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Declaration by graduate student

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Declaration by Members of Supervisory Committee

This is to confirm that:

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Economists have a long history of interest in the empirical investigation of the causal links between inflation, output growth and macroeconomic uncertainty with the primary focus to get robust evidence on the sign and stability of this relationship over time. Hence, output and inflation dynamics as the two key elements of macroeconomic performance and stability, [1] are largely observed and tested theoretically and empirically as their causes, impacts and costs to other macroeconomic variables are well known and understood, yet controversial. In addition, the persistent macroeconomic volatility, particularly in developing countries remains a major concern for policy makers and development practitioners in general. The previous empirical literature postulates that developing countries are more volatile compared to their developed counterparts (Pritchett, 2000; Hnatkovska & Loayza, 2004; Durlauf et al., 2005). These sad prospects warrant that prompt actions must be taken to restore macroeconomic stability. And indeed, over the last few decades, sense of urgency seems to have inhabited researchers, policy makers and central bankers to investigate the source causes of macroeconomic turmoil in developing countries. This study is an attempt in this regard to identify the causal nexus and volatility spillovers between macroeconomic uncertainty and performance and to investigate the source causes of macroeconomic volatility through the multidimensional institutional view. This chapter presents a brief introduction and an overview of the above mentioned issues. It also highlights the research issues, identifies research objectives and contribution.

In modern dynamic world, macroeconomic performance and financial stability appears to contribute significantly towards economic efficiency, strength and development of each economy. The prime objective of macroeconomic policy is to ascertain high and stable economic growth coupled with low and stable inflation (Omay & Kan, 2010). Monetary policy must be responsible for changes in the economy for the outlook of inflation and economic growth in order to promote economic and financial stability and to allow the economy growth at its potential (Bernanke, 2011). But it is difficult to imagine the success of monetary policy for the level inflation and output without considering their variabilities around their target levels (Fuhrer, 1997). Thus, understanding the dynamics of inflation-output growth is a prerequisite for devising effective stabilization policies and the strategy of the policy makers to achieve policy target depends on the structure of such relationship. In particular, examining the real effects of inflation has gained much importance in the past decades following the Friedman's (1977) claim that inflation uncertainty is the part of welfare costs of inflation. Thus, macro economists and policy makers are not only concerned with high

[1] The term macroeconomic performance (uncertainty) is used as a shorthand for inflation (uncertainty) and output growth (uncertainty) while uncertainty and volatility are interchangeably used in the reminder of the text.

inflation but they also emphasize on costs associated with variable inflation where high inflation leads to inflation uncertainty and imposes costs on real output by misallocation of resources and price distortion (Friedman, 1977; Rahman & Serletis, 2009).

In addition, fluctuations in economy output (inflation) around its long run growth (inflation) path are very persistent, particularly in developing countries. Recent trends in market outcomes, globalization and financial liberalization raise questions with regard to whether there is a causative factor between inflation and economy growth, and most importantly whether macroeconomic uncertainties have implications for level inflation and output growth.[2] The economists have consensus on the impacts of volatility of both output growth and inflation along with their causal links through different channels but still there is no agreement among the theoretical and empirical studies on the direction and size of the uncertainty of both variables. Their causal linkages have important implications for macroeconomic policy decisions and their expected outcomes. The inflationary pressure and rising inflations expectations particularly in developing economies may contribute significantly to their status as under-developed nations with impoverished economies and populations, potentially, may hinder their economic growth, stability and economic participation in the global economy and may reduce society's welfare and growth. Specifically, though the pattern of economic growth and inflation in developing countries is characterized by instability and volatilities, the experience of the South Asian countries presents an unprecedented challenge as since the last few decades, they have been plagued by high levels of inflations, low output growth and high macroeconomic volatility. Therefore, reliable knowledge of the properties of inflation and output growth is necessary for countries whose economies are experiencing high inflation along with structural changes and disinflation strategies by their institutional arrangements as observed in these countries. Their recent risks to robust economic growth also include the threat of inflation and while this initially reflected higher commodity prices, pressures have now spilled over into inflation uncertainty and inflation expectations and particularly inflation risks and volatile growth in South Asia remain tilted on the upside as compared to other regions. Therefore, it is highly imperative to explore the dynamic casual links and transmission of volatility spillovers between macroeconomic uncertainty and performance in these countries.

Turning to the next related issues of this study that have not received enough attention in economic literature, it is evident from the growth literature of the last two decades that a volatile macroeconomic environment is detrimental to long run macroeconomic performance (Ramey & Ramey, 1995). The increasing macroeconomic volatility[3] significantly lowers the rates of investment and economic growth, harms the distributions of income and creates welfare loss, temporary disruption in economic

[2] Following Bloom (2012), this study considers macroeconomic uncertainty (both real & nominal) as forward looking and is defined by Jurado et al. (2015) as: "the conditional volatility of a disturbance that is unforecastable from the perspectives of economic agents". This study measures macroeconomic uncertainty as the stochastic volatility in the form of the time-varying uncertainty (that evolves over time with a changing variance) of twin critical variables such as real economic activity and inflation rate.

[3] Macroeconomic volatility (volatility of output growth and inflation) is the realized volatility based on the backward information. For measurement of macroeconomic volatility, see section 3.3.2.

activity, escalating unemployment and even financial crises.[4] Despite the sharp decline in macroeconomic volatility in advanced countries through the *"Great Moderation"*,[5] the volatile macroeconomic structure of most of the developing countries is still an obstacle in their economic development. The recent global economic and financial crisis has led to an unprecedented increase in the occurrence of macroeconomic shocks across the world in general and in developing countries in particular. A large proportion of low and middle income countries are still experiencing excessive fluctuations in their macroeconomic outcomes and the overall macroeconomic volatility is increasing over time. [6] Although, developing countries remain extremely vulnerable to adverse exogenous shocks whose impact in principle can be only smoothened through the credibility and effectiveness of counter-cyclical macroeconomic policies but the business cycle literature has claimed that developing countries are unable to adopt countercyclical macroeconomic policies due to their financial imperfections and unfavourable politico-economic conditions (Calderon et al. 2016). Despite the growing attention of both economists and policy makers on the issue, little effort has been devoted to studying the role of institutions on macroeconomic volatility. Such an omission is unfortunate because the recent global recession has exposed the urge for structural policy reforms through improving institutions.

Unlike the traditional explanations of macroeconomic volatility, the existing scarce empirical evidence of Acemoglu et al. (2003); Klomp & de Haan (2009) and Campbell & Synder (2012) has pointed out the distortionary or discretionary policies as the source of macroeconomic volatility in the form of symptoms of weak institutional quality. At the same time, the North's perception that quantitative methods are useful to examine why equally endowed countries behave and perform differently under different institutions, has been the impetus for many researchers to investigate economic outcomes in the light of institutional quality. Strong institutional quality tends to be closely linked with increased capacity of adjusting to major economic shocks and lower macroeconomic volatility. Hence the interplay between institutions and macroeconomic outcomes exhibits a prominent role in the most active research areas of political and institutional economics. Specifically, hence the conquest of *"Great Moderation"* and *"Washington consensus"* in the form of significant decline in economic volatility of developed countries, the evidence in overview is still compelling to justify further research efforts to understand the increasing volatility and the channels through which it can be mitigated in emerging and developing countries. So in an effort to further understand the source causes of macroeconomic volatility, this study draws from the recent literature that highlighted institutional role in mediating macroeconomic performance. By decomposing institutional bundle into political and economic institutions, this study aims to explain their role on output volatility and inflation volatility in the context of developing countries. Evidently, such a distinction implicates necessarily some judgment and arbitrariness given the encompassing nature and interplay of institutions. It is also based on a number of potential volatility-mitigating features that are associated with the selected political and economic institutions as discussed hereafter.

[4] See for instance, Ramey & Ramey (1995); Aizenman & Marion (1999); Fatas (2000); Kose et al. (2003); Loayza et al. (2007) and Federici & Montalbano (2012).
[5] See for example, McConnell & Perez-Quiros (2000), Stock & Watson (2002) and Summers (2005).
[6] See, Agenor et al. (2000); Kose et al. (2003); Wolf (2004); Loayza et al. (2007), among many others.

The remaining discussion of this chapter will explore these issues in more detail as the next section provides their detailed background, followed by section 1.3 which identifies the research issues. Section 1.4 outlines the major objectives of this study followed by motivation, significance and scope, and the last section presents the organizational structure of this study.

1.2 Background of the study

The last sixty years of macroeconomic performance of the world economy exhibit that to a larger extent, economic growth lies far from steady and every 'growth miracle' has been accompanied by a counter part in the form of a 'miraculous collapse.'[7] Thus, from the early economic history, among the key economic issues, the economic and financial stability has received a great deal of attention both in public and policy circles as well as at regional and international level due to its significant economic and social cost, particularly since the post-war period. Nevertheless, macroeconomic performance and uncertainty remains to be one of the most important themes in economic literature. After the great depression in 1930's, the importance of macroeconomic stability for sustained economic growth became widely accepted such that the situation changed after Second World War and particularly after the oil price shocks of 1970s. Later on, some important developments were made between 1960s and 1980s.[8] Thus, economic history has evinced enormous variation between the macroeconomic performance and stability in developed countries as compared to developing economies.

Theoretically, since the seminal work of Friedman (1977) in support of positive correlation between higher inflation and inflation volatility, there is a huge debate among economists concerning the inflation-output dynamics and their uncertainties. These studies also check the Cukierman & Meltzer (1986) claim of an inverse version of the *Friedman hypothesis* and the Holland (1995) proposition of negative causal link between inflation uncertainty and inflation. Notably, unlike the positive effects of real volatility on growth Black (1987), the influential study by Ramey and Ramey (1995) changed the dimension of growth literature towards volatility-growth nexus. Also, the extent to which there is an interaction between inflation and its direct (indirect) effects on inflation uncertainty (real growth) is an issue that cannot be resolved merely on theoretical underpinnings. While considering the effects of macroeconomic performance on macroeconomic uncertainty, it is remarkable that the above theories are less common than hypotheses or conjectures (Temple, 2000). Along with that, the ambiguous predictions regarding its opposite nature identify the lack of clear empirical framework and reinforce a need for more empirical evidence.

[7] For example, East Asian miracle was interrupted by the Asian financial crises, China's take-off in 1978 was preceded by the decades of disastrous macroeconomic policies, Latin American, African and some Asian countries were frequently rocked by political turmoil and macroeconomic volatility (Bluhm et al., 2014).

[8] See the literature on "*Great Moderation"* by McConnell & Perez-Quiros (2000) and Stock & Watson (2002).

Also, one of the most striking economic developments of the last three decades is the macroeconomic sustainability of the developed and emerging countries (Blanchard & Simon, 2001). Many world economies have stabilized their fiscal and monetary sectors by securing macroeconomic performance and reducing macroeconomic shocks through their improved policies and institutions. In contrast, the less developing countries are still facing the chronic wave of high inflation with lower growth and rising macroeconomic volatilities. Thus owing to the aforementioned backup, this study aims to explore the links between macroeconomic uncertainty and macroeconomic performance and to identify the sources of prevailing macroeconomic volatility in developing countries. In the next subsections, we evaluate the existing scenario of macroeconomic performance and macroeconomic volatility and the role of institutional cluster on the macroeconomic volatility in emerging and developing countries.

1.2.1 Macroeconomic performance and macroeconomic volatility: Some stylized facts

Since the decades of 1970s and early 1980s as the period of historically high inflation, macroeconomic performance and stability has been the focus of renewed interest amongst macroeconomists in terms of theory and policy.[9] The continuous inflation and output growth volatility creates great concerns for the governments, producers, consumers and traders as on one hand it has destabilizing impact for the economy as whole, on the other hand, it fails to allocate resources in order to give exact price signal from the market and also create further uncertainties through speculations. The huge literature (e.g. Fischer & Modigliani, 1978; Grier & Perry, 1996; Holland, 1993) shows the channels and impacts of inflation volatility on economic decisions process as hold for output volatility. Despite consensus on the impacts of volatility of both output growth and inflation rate through different channels, still there is no agreement among the empirical studies on the direction and power of their volatility casual links. In addition, empirically, many researchers find a negative, positive and even no effect of inflation level on output growth.[10] Thus, concerns over the degree of macroeconomic volatility have appealed increasing attention in recent economic literature, specifically after the recent global financial crises. The on-going macroeconomic fluctuations in developing countries demand for the accurate empirical framework to measure the impacts and sources of volatility of different economic and financial variables. Thus, the next section evaluates the evolution of macroeconomic performance, followed by macroeconomic volatilities in the next section.

[9] See chapter 2, page 53 for the summary of existing theories on the relationship between macroeconomic uncertainty and macroeconomic performance.

[10] For negative relationship, see Fischer (1993); Judson & Orphanides (1999); for positive link, see Mundell (1963); Tobin, (1965); Mallik & Chowdhury (2001) etc. while some studies (e.g. Levine & Renelt, 1992; Levine & Zervos, 1993; Bruno & Easterly, 1998) found no relationship.

1.2.1.1 Evaluation of inflation and economic growth across regions over time

From the historical trends of macroeconomic performance including inflation and output growth as illustrated by Haslag (1997) and Reid et al. (2012), we come to the conclusion that until a few decades back, inflation was not considered a serious threat for economic growth. Haslag (1997) reported that pre-World War-II history demonstrated bouts of inflation (at the periods of boom), followed by temporary deflation (at the time of recessions). However, this phenomenon was not continued and due to the collapse of Bretton Woods's system, economies steered higher inflation and lower growth as evidenced by the decades of 1970s and 1980s. For illustrative purposes, it is important to analyze the cross-regional inflationary and growth trends worldwide as illustrated in figure 1.1.

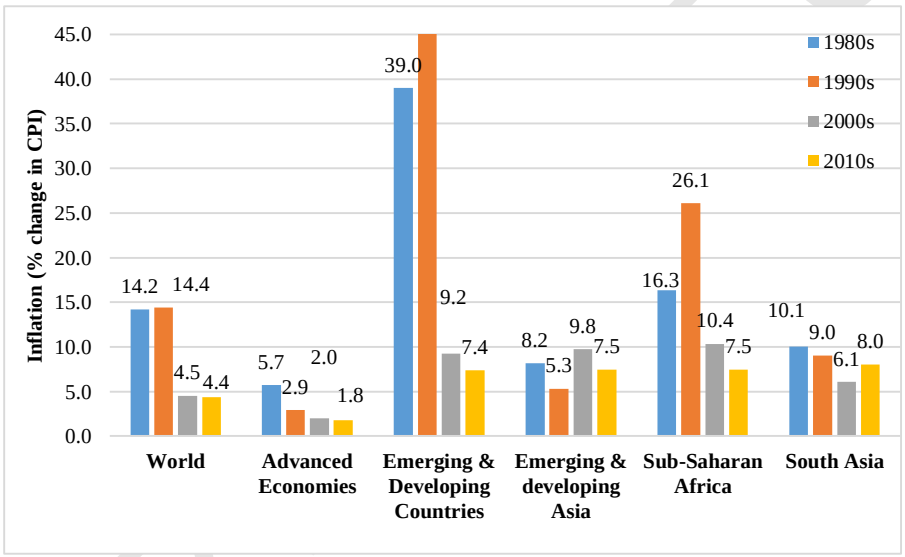

Figure 1.1 : Inflationary trends of different regions of the world over time
(Source: Depicted are the decadal average inflation from IMF-IFS and the country classification is based on International Monetary Fund classification (World Economic Outlook, 2015).)

The high diversity observed at the various decades since 1980s onwards reveals that nearly for all countries, the decades of 1980s and 1990s were striking as the average inflation in these decades is very high as compared to recent inflation. The sharp decrease in the world average inflation (from 14% at 1980s to 4.5% at 2000s) coincides with the dramatic change in macroeconomic policy and political approach to macroeconomic policy formation (Telatar et al., 2010). There is a decline in inflation rate of various regions afterwards but still compared to the other developed regions and even the developing world including Sub-Saharan Africa and Asia, it is only the South Asian region which is still suffering from high inflationary episodes in the recent past until now. Following the recent global financial crises of 2008-09, nearly all South Asian economies have experienced the highest inflation rates, even in double digits as observed in 2010 onwards. The nearly 8% average South Asian inflation for the time

periods 2010-2014 is still unbearable for one of the poorest region of the world economy. This study specifically initiates whether this higher inflation has any implications for future inflation and hence inflation uncertainty. Also, this higher inflation provides motivation to dig out whether the increasing inflation and hence its uncertainty has any influence on the economic growth of these countries. Despite the high benchmark lending rates in the region largest economies such as Pakistan and India, the rising food, energy and manufactured products prices has challenged the central banks and government's policy predictions and deteriorated the region's economic growth. In addition, observing the economic growth trends of different regions of the world in the figure 1.2, it is evident that compared to economic growth trends of developing and emerging regions since the start of 1980s, the less developing countries of Sub-Saharan Africa and South Asia are running at a very low rate. Still, there is significant improvement in their economic growth as compared to real economic activity in South Asia. Importantly, there is very negligible increase in average South Asian economic growth in recent years. It necessitates to find out whether the reduced growth is due to higher inflation or its volatility and to check out whether output fluctuations have implications for real economic activity and inflation (and its volatility).

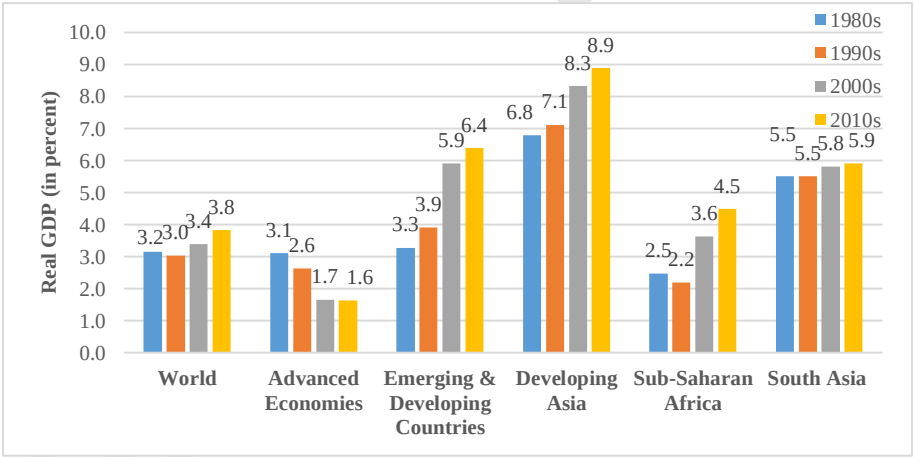

Figure 1.2 : Economic growth trends of different regions of the world over time
(Source: Depicted are the decadal average gross domestic products (%) from IMF-IFS.)

1.2.1.2 Inflation volatility and output volatility across various regions over time

The '*Great Moderation*' has invariably been termed to designate the macroeconomic environment characterized by the huge decline in both inflation and output volatility in advanced countries (Mcconnell & Perez-Quiros, 2000; Stock & Watson, 2002; Blanchard & Simon, 2001; Bowdler & Malik, 2017). However, its benefits could not reap out by their developing counterparts. Specifically, the empirical regularities also underline the fact that macroeconomic volatility in developing countries is

substantially higher than the developed countries as demonstrated in figure 1.3 and 1.4 respectively. A glimpse at the trends of inflation (as measured by GDP deflator) and output growth volatility (as measured by the standard deviation of real GDP growth) in the recent decades advocates that macroeconomic volatility dropped significantly after the Great Moderation as indicated by the first quarter of 1984 (Mcconnell & Perez-Quiros, 2000). According to the these studies, the major drivers behind the fall of economic volatility in advanced countries include structural changes such as technological regulations, regulatory shifts accompanied by good policy. The new institutional economics has established this decline due to existence of strong institutional arrangments which resulted good policies.

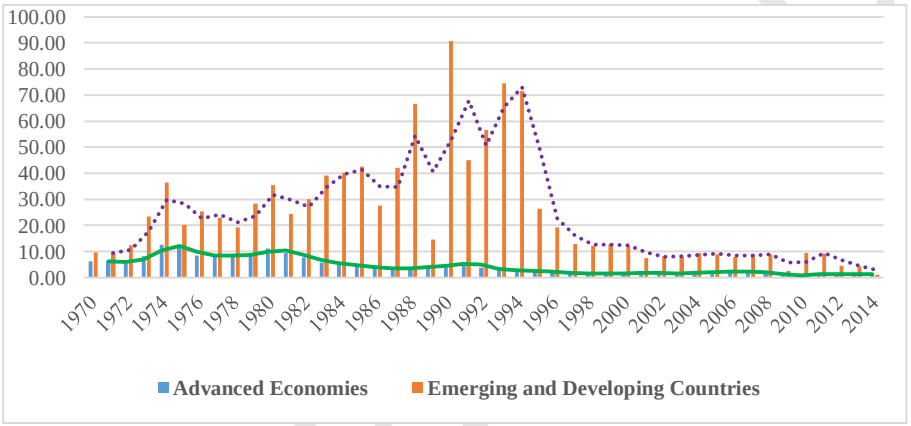

Figure 1.3 : Annual GDP deflator in advanced and developing countries
(Source: IMF-IFS with its analytical country group classification and solid/dashed lines show smoothed trend.)

In contrast, observing the fluctuations of twin critical variables such as inflation and output growth in the developing countries, it is evident that though inflation fluctuations has been reduced in these countries but not enough. Similarly, in all growth regimes, their growth performance is not steady as characterized by crises, recoveries, slowdowns, accelerations and stagnations. Thus, volatility has been since long a trademark of most of the developing countries' macroeconomic performance (Easterly et al. 2001) and consistent with Gavin et al. (1996) and Goyal & Sahay (2007) that macroeconomic volatility by whatever measure, is higher in developing countries compared to developed countries.

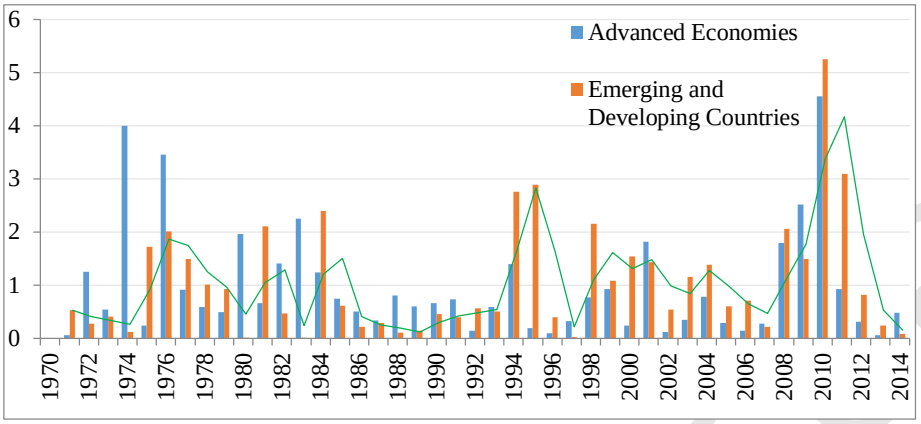

Figure 1.4 : Annual real GDP growth volatility in advanced and developing countries

(Source: IMF-IFS with its analytical country group classification and solid/dashed lines show smoothed trend.)

More precisely, as shown in figure 1.5 and 1.6 that overall macroeconomic volatilities, shown by the decadal episodic values has been declined in all regions of the world which is consistent with Bowdler & Malik (2017) that inflation volatility in US and OECD countries has fallen by two thirds since the mid 1980's. Importantly, most OECD countries carried out a robust countercyclical response to the recent global financial crises and economic recessions through reducing interest rates and exercising unorthodox macroeconomic policies. In contrast, though, inflation volatility in emerging and developing countries decreased after 1990s, but still remains significantly high in the last few years compared to advanced economies. Despite the noteworthy achievement of macroeconomic policy (reduced inflation and macroeconomic uncertainties) in industrialized countries (Coibion & Gorodnichenko, 2011) and also in some of fast growing countries of East Asia and even in some franc-zone African countries, the emerging economies in general and the developing countries in particular, are experiencing the fear of detrimental inflation and persistent macroeconomic volatilities as evidenced for emerging and developing countries and developing Asia with magnitudes of inflation volatility as 4.1 and 8.1 respectively. A look at figure 1.6 provides evidence on the historical trends of output growth volatility in different groups of countries. Considerably, it is observed that macroeconomic fluctuations in developed countries have been significantly reduced while their developing counterparts are still experiencing increasing economic volatility. The higher output growth volatility in emerging and developing countries as well as in developing Asia (2.5 and 4.1 respectively) indicates that the economic growth of these countries is still characterized by large fluctuations. Unlike to their developed counterparts, the given cyclical stance of macroeconomic fundamentals in developing countries is characterized by their predominant pro-cyclical behavior, perhaps due to institutional failure to responds and adjusts to volatile economic outcomes and macroeconomic shocks (Acemoglu et al., 2003; Calderon et al. 2016).

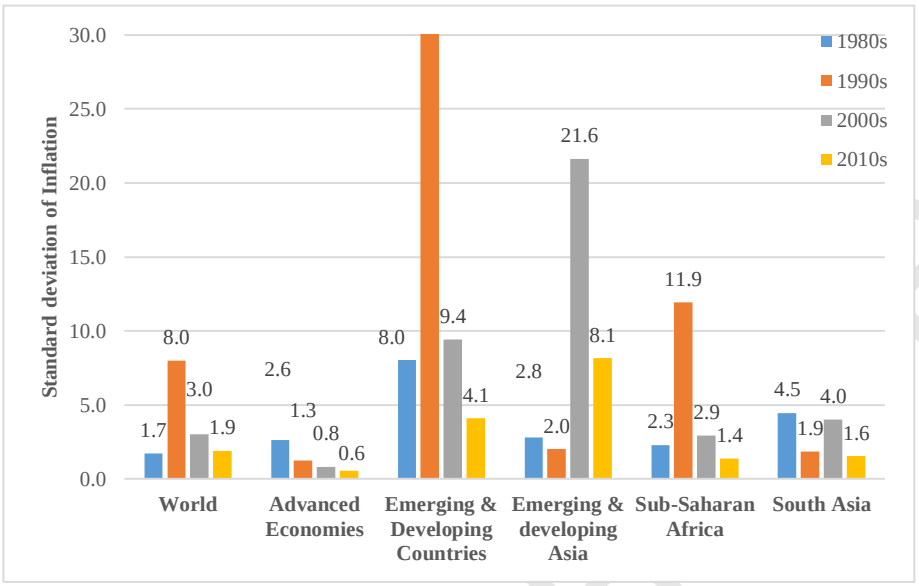

Figure 1.5 : Decadal Inflation Volatility by region, 1980-2014
(Source: The decadal episodic values are the standard deviation of inflation from IMF-IFS in the given periods.)

In line to persistent inflation and low economic growth, the high inflation in the region (e.g. South Asia) has also accelerated the inflation volatility which in turns proceeded towards decline in output growth and hence to output volatility. The changing economic structure of South Asian economies and the nature of inflation dynamics in these countries make it little surprise that the historical inflationary and output growth trends fail to expose any apparent relationship. The region overall macroeconomic environment with prevailing uncertainty has further worsened the situation. Therefore, there is a need to investigate such dynamics to frame policies that can be sustained for economic growth in the region and to address the channels and factors responsible for the macroeconomic volatility in the developing and emerging countries which are recently caught up by relatively more nominal and real volatilities. The next section reports an overview of the prevailing macroeconomic performance and volatility in South Asian countries with special focus.

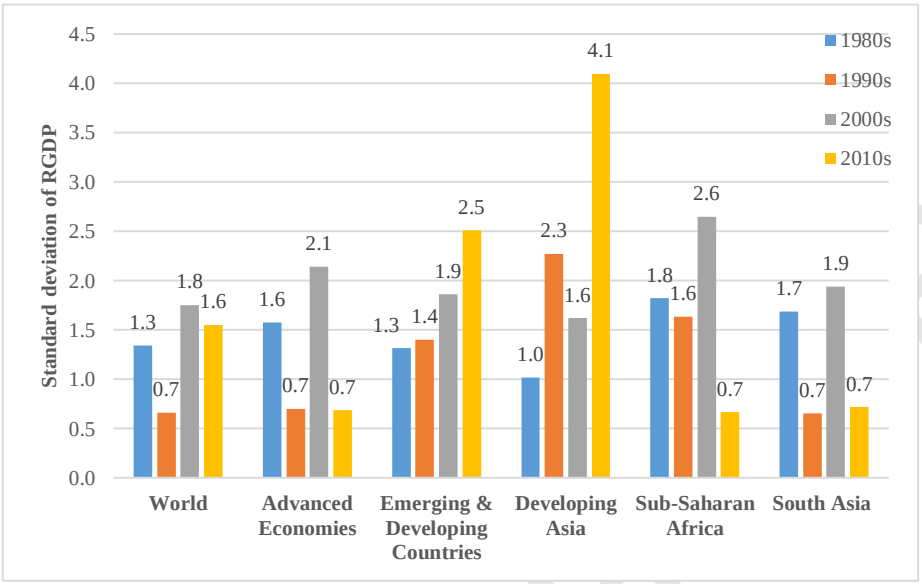

Figure 1.6 : Volatility of Real Gross Domestic Product (Per cent), 1980-2014
(Source: The decadal episodic values are the standard deviation of Gross domestic product in the given period.)

1.2.1.3 Macroeconomic volatility and performance in South Asia

Compared to the other emerging and developing countries of the world, South Asia is having a little dynamic and complex nature of macroeconomic management. Besides the uneven global recovery across major advanced and emerging countries, South Asian countries are still facing the common challenges of reducing fiscal risks, increasing higher levels of investment, sustaining export growth and importantly, the price and output growth stability (World Bank, 2017). If we observe the economic history of South Asian countries, we come to the conclusion that for all periods, the supply side factors such as food and energy prices became a significant and persistent factor of inflation. Also the global and domestic imbalances between demand and supply have put pressure on accelerating inflation and deterring economic growth. The increasing production costs of manufactured items along with the structural shocks in domestic demand and supply forces have put a momentum on rising inflation. The monetization of fiscal deficits in most of these countries and continuous inflation expectations has further worsened the situation. Graphical analysis[11] of both series (inflation and output growth) for all countries depicts the volatility clustering such that the period of low volatility mingles with the period of high volatility. The increasing macroeconomic uncertainty as exhibited by nominal and real uncertainties illustrates that both inflation and output growth have significant implications for their uncertainties which necessitates further exploration to identify whether there is some

[11] See appendix A (A1), showing inflation, output growth and their uncertainties for four South Asian countries.

time-varying correlations and volatility transmissions between inflation and output growth and their related uncertainties.

For all countries, inflation has been a chronic problem for long time as inflation became more severe in India in the 1970's and 1980's due to the excessive practice of deficit financing and regime shifts of 1990-91. Further, in the second half of 1990's and early years of 21st century, the inflation appears to have remained more or less subdued as a result of monetary autonomy and the end of fiscal-monetary nexus with the discontinuous of deficit financing in 1997. Despite the fact that price stability is one of the major objectives of monetary policy in Pakistan, inflation is still the major problem of the economy. Historically, inflation rose from 3.3 percent in 1960's to 11.9 percent on average at 1970's and then fell down to 7.5 percent at 1980's but after 1990s; the inflation has become the major concern. Due to double digits inflation in 1970s, the average growth rate remained below 5 percent and again same was observed at 1990s that high inflation was accompanied with poor growth, suggesting that high and volatile inflation is one of the causative factors for low growth. The same increasing trends for inflation and fluctuating output growth also hold for other countries of the region. Recently, the growth prospects are expected to accelerate in the region due to strong expansion of India coupled with favourable oil prices in recent years. Regional growth is expected to increase from 7.0% in 2015 to 7.6 % by 2017 with India and Sri Lanka leading that pack. The recent global economic prospects report of World Bank predicts the economic growth for Bangladesh and Sri Lanka as 6.8% and 4.8% respectively which is indeed subject to macroeconomic stability. In such circumstances, the empirical evidence concerning the role of macroeconomic uncertainty in determining macroeconomic outcomes in developing economies is still scant and the focus has always been for UK, US and Japan. This study therefore examines the behaviour, dynamic causal links and volatility spillovers between macroeconomic uncertainty and performance in selected South Asian countries.

In addition, managers of national economies including emerging and developing economies are faced with the dilemma of reducing high inflation and its volatility and to keep the momentum of high economic growth through reducing their real volatility. Moreover, given the importance of global commodity prices and the region's integration with the world economy, it is essential to consider also the external and financial channels and spillovers in the transmission of different shocks for a pragmatic and careful approach to model the various channels of macroeconomic turmoil in developing countries. The core focus of the recent studies such as Acemoglu et al. (2003, 2005) emphasize on the *institutional view* of macroeconomic volatility as illustrated in the next section.[12]

[12] The detailed discussion on institutional view of macroeconomic volatility is presented in chapter 2, section 2.4.1 and its sub-sections.

1.2.2 Institutional infrastructure and macroeconomic volatilities: Some stylized facts

As demonstrated from the existing theoretical literature (e.g., Acemoglu et al., 2003; Loayza et al., 2007) and evidenced by the aforementioned historical trends of macroeconomic volatility, it is confirmed that developing countries are well known for their high macroeconomic volatility and low growth performance relative to their developed counterparts. The concern arises that what contributes to their enormous macroeconomic volatility as less well-known are the linkages among different kinds of macroeconomic volatility and their structural and institutional determinants. Conventional growth literature has presented different macroeconomic explanations for the increasing volatility of macroeconomic outcomes. What seems to one group to be simply the effect of monetary mismanagement, another appears to the other group as the real and real structural factors while, one school of thought accentuates the role of macroeconomic policies such as excessive government expenditures, high inflation and misaligned exchange rates as major culprits of macroeconomic volatility and crises (Tang et al., 2003; Corsetti et al., 1999). Another school accounts the technological innovation as a driving force for macroeconomic fluctuations (Kydland & Prescott, 1982). Of course, macroeconomic volatility of developing countries may be supposed to be due to vulnerability to external shocks but these countries are also vulnerable to self-inflicted shocks arising from domestic policy mistakes and institutional weakness. Recently, the institutional school provides a more fundamental explanation of macroeconomic volatility and crises by accounting weak institutions for distortionary macroeconomic policies (e.g. see Acemoglu et al., 2003, 2005; Emara, 2012; Fatás & Mihov, 2012). Following the path of institutional school, the present study is inspired by a strand of studies in economic literature which emphasizes on the fundamental factors of macroeconomic volatility especially in emerging and developing countries in the form of institutional factors.[13] Hence, there is a great deal of difficulty in sorting out and investigating the dynamics of the rival claims of different competing school of thoughts about the structure, sources and decomposition of macroeconomic volatility and its institutional linkages.

Compared to developed countries, the welfare cost of macroeconomic volatilities in developing countries is especially large. They disturb their smooth path of consumption through consumption volatility and reduce overall welfare gains (Loayza et al., 2007). Unlike the positive relationship between risk and capital, most of the empirical research provides the negative impact of macroeconomic volatility on overall growth and welfare (Ramey & Ramey, 1995) and it also increases policy volatility and deterioration of institutional infrastructure (Aizenman & Pinto, 2004; Loayza et al. 2007). To layout the stylized facts, the volatility-growth nexus and the link between inflation volatility and inflation is illustrated at figure 1.7, illustrating the statistically significant nexus between the levels macroeconomic volatility and macroeconomic performance.

[13] While classifying institutions into political institutions and economic institutions, this study attempts to examine their impact on the volatility of key macroeconomic variables such as inflation and output growth.

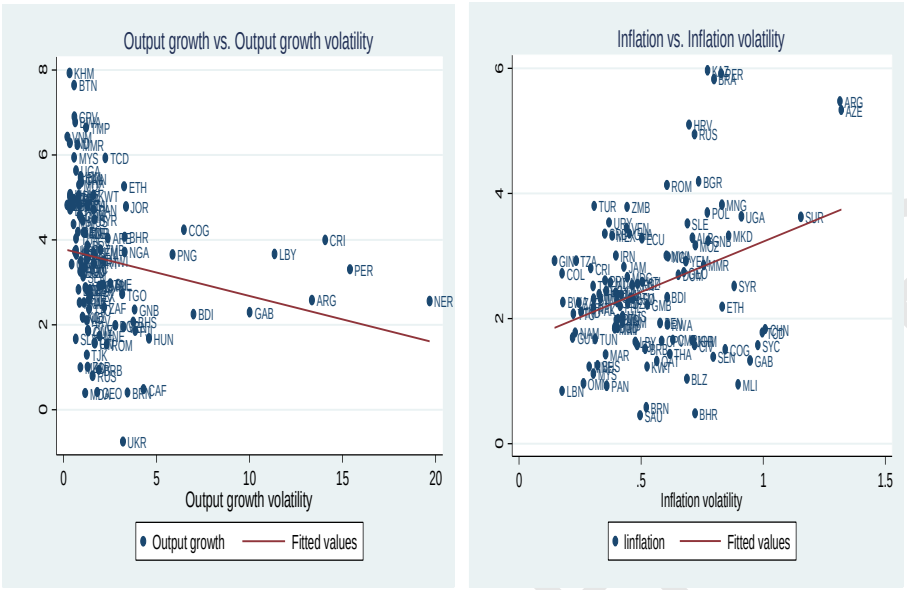

Figure 1.7 : Output volatility (inflation volatility) & output growth (inflation)
(Source: Depicted are the average output growth volatility (inflation volatility) and average output growth (inflation) for the time 1980-2014, taken from World Development Indicators (WDI), World Bank.)

Whereas, output volatility (inflation volatility) is negatively (positively) affecting the aggregate output growth (inflation) and consistent with Hnatkovska & Loayza (2004) that a one standard deviation increase in macroeconomic volatility leads to a 1.28% loss in growth. The so far pointed out two ways to interpret the negative effect of real volatility on growth include sector-specific shocks and composition effects such that the high volatility in developing countries is attributed to their specialization in few (& highly volatile) sectors and the greater macroeconomic risk due to their lack of sound institutional infrastructure (Kraay & Ventura, 2007). It has also links with various forms of macroeconomic uncertainty like political, economic and policy related and negatively affecting the overall economic growth (Aizenman & Pinto, 2004; Wolf, 2004). It is therefore amenable to illustrate the extent to which institutional arrangements act in a comprehensive macroeconomic risk management framework to affect macroeconomic volatility in emerging and developing countries.

1.2.2.1 Institutional quality (political institutions) and macroeconomic volatility

It is widely acknowledged that the basic interest of economics research is devoted in tracking economic growth. What is more interesting and important, is the link between economic growth and the social attitudes through the established institutional arrangements. Since the doctrine of *laissez faire*, researchers started to debate about the significance of institutions as a society's stabilizer which would enhance economic activities and stabilization. Traditionally, the scholarly concern comprises into three

main groups. One that supported the need for government security and control over the economy, in contrast to another one (e.g. mercantilists, liberals and economic nationalists) who argued that any type of such control will result disastrous and fluctuating economic activities, while the third group postulated no influence of the political regimes for economic outcomes. Unlike to this, there is consensus among empirical researchers that desirable political and institutional structure such as democracy can promote macroeconomic stability (Mobarak, 2005). The attainment of economic growth in recent emerging and transition economies is attributed to the growth priorities of their governments and improvements in institutional arrangements which identify not only the path for the better understanding of economic growth process but also for investigating the persistent macroeconomic volatility in developing countries.

The idea that political factors and institutions might be part of the reason some countries' macroeconomic volatility is higher is not new. Arguably, Acemoglu et al. (2005) have claimed the supremacy of political institutions on economic institutions and the resultant economic inefficiencies due to political structure.[14] Acemoglu et al. (2003) confirmed macroeconomic volatility as the outcome of weak institutions instead of poor macroeconomic policies. While controlling institutions, the role of economic stabilization strategies including fiscal, monetary and exchange rate policies have a minor effect on macroeconomic volatility. Thus, distortionary polices reflect the institutional environment which is the main and ultimate cause of economic volatility. This debate prompts the role of institutional framework in influencing macroeconomic volatility. North (1997) established the sustained and stable economic growth due to rule of law and protection of civil and political liberties. As evidenced in figure 1.8 that better institutions is significantly decreasing output volatility and inflation volatility in sample countries which predicts that stronger institutions can augment the developing economies towards macroeconomic stability and performance. The negative link between political institutions and macroeconomic volatility also indicates that institutional improvements makes the ability and willingness of the sample countries to adjust and respond to volatile outcomes through countercyclical macroeconomic policies. It is also due to the fact that institutions contain a particular set of economic and political incentives which coordinate and solve economic failures and define a set of viable policies. Thus, sustained economic outcomes are endowed to the presence of strong politico-economic institutions and proper functioning of economic policies. The political economy models are based on the characteristics of political systems and institutional framework to explain the diversity in economic policies for macroeconomic volatility, whereas, suboptimal policies lead to higher inflation volatility, while real uncertainty result from political instability, or weak institutions. The multiplicity of ways in which it affects economic outcomes, its dynamic causes and measurement make the macroeconomic volatility as a multidimensional phenomenon.

[14] Political institutions consist on formal and informal rules, conventions and norms that govern and constrain the operations of the government as well as the operations of political organizations and the distribution of political power, while economic institutions consist on the set of property rights and the devices for its protection such as reducing transaction costs, instruments allowing stable anticipations, incentivise economic activities by channelizing resources, easing exchange and transactions and responding to uncertainty.

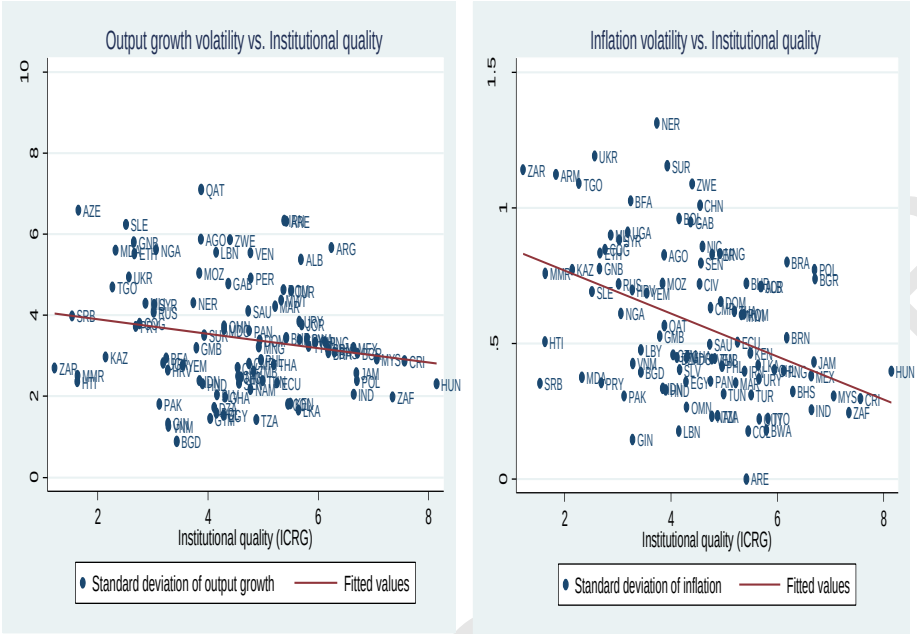

Figure 1.8 : Scatter plot of macroeconomic volatility and Institutional quality
(Source: Institutional quality is illustrated through the political risk measures of (ICRG) and output (inflation) volatility is calculated as the standard deviation of GDP growth (inflation).)

1.2.2.2 Economic institutions vs. output growth volatility and inflation volatility

Since 1980s and early 1990s, economists emphasized on the growth-enhancing price reforms in the form of *"Washington Consensus"*.[15] Despite the significant changes wrought by these reforms, the elusive growth in developing and transition countries forced the demand for markets' institutional underpinnings. Hence, market supporting institutions such as protection of property rights, rule of law and freedom of voluntary transactions and enforcement of contracts have played significant role in the efficient market allocation of resources and to a larger extent have affected the macroeconomic laps and volatilities.

[15] Such as eliminating price controls, liberalizing exchange and interest rates and opening the economy.

Figure 1.9 : Economic institutions and macroeconomic volatility
(Source: World Development Indicators (WDI) and Economic Freedom Index. Depicted are the average output (inflation) volatility and average Economic Freedom Index score for the period 1980-2014.)

The incentives by the government to entrepreneurship and productivity realize the gains for their productive efforts by contributing to overall economic growth through new ideas, innovations and free markets mechanism. Economic institutions consistent with the components of economic freedom are traditionally linked with economic growth and overall human flourishing (Hall and Jones, 2014). As evidenced by Fraser's institute and hence as shown at figure 1.7 that countries with higher economic freedom also enjoy higher growth with less macroeconomic volatility. In addition, the existing economic literature has to larger extent consensus on the supports of economic freedom for stabilizing macroeconomic performance of the economy (De Haan et al., 2006). Observing the various components of economic freedom index, one can reach the conclusion that legal structure, protection of property rights and regulation are all positively and significantly associated to economic growth and hence any lax on the part of these measures will distort macroeconomic performance. The effect of incentives and safeguard structures through economic freedom on macroeconomic volatility is analyzed in many ways such as freedom to adjust wages, contracts and market prices corrects the market forces and removes the shocks by absorbing the mass layoffs and loss of output. Similarly, trade freedom and investment supporting structure removes the risk of domestic shocks and more precisely, the freedom to own property rights and access to sound money can reduce macroeconomic uncertainty and promote stable and secure environment. Although, numerous studies have explored the role of market supporting institutions for economic growth but the literature on its effects on macroeconomic volatility is scarce. Thus is it imperative to evaluate the effects of market supporting arrangements for determining macroeconomic volatility in developing countries.

1.3 Statement of the problem

The behavior of macroeconomic variables has received considerable attention in the growing macroeconomics literature and inflation and output growth are no exception of this trend. In line to this, the attainment of persistently low but positive inflation as price stability along with high and sustained economic growth is considered the primary objective of monetary policy and high inflation would thus be a clear signal of policy failure, causing the cost of living to rise and the value of economic activities to fall. The crucial role of this goal cannot be underestimated since it has significant macroeconomic benefits with economic wide ramifications. The high inflation has its implications towards inflation volatility and in turn to output growth and real uncertainty (Friedman, 1977). For the long term performance of the economy, the monetary policy has to ensure low and stable inflation to promote macroeconomic stability. Recent empirical research acknowledges the importance of uncertainty in determining macroeconomic outcomes but little is known about the transmission and volatility spillovers of uncertainty across such outcomes. Thus, in first stance, this study examines the links between inflation, output growth and nominal and real uncertainty and to measure the response of uncertainty about inflation and output growth to shocks with accounting the statistical significant asymmetries and spillovers.

In addition, due to the empirical connection of macroeconomic volatility and lack of development and its significant welfare costs (Acemoglu et al.,2003; Hnatkovska & Loayza, 2004), it is imperative to explore the source causes of prevailing macroeconomic volatility, especially in developing countries. To augment the traditional economic factors of macroeconomic fluctuations, it is recently paramount to have some evidence of the effects of institutional arrangements such as political and economic institutions on macroeconomic volatility. In line to this, the next twin related issues which are relatively more important in the sense that economic volatility has significant consequences and thus it is utmost important to shift focus towards the dynamic influence of institutions on macroeconomic volatility. Thus, we extend our analysis to answer the questions: Is it just the macroeconomic factors which create output volatility or it is due to any specific characteristics of a country? Is there something else that countries should focus on as being driving force behind inflation volatility besides the traditional economic factors? This study investigates the effects of institutional cluster on macroeconomic volatility. All the three issues are discussed in depth below.

1.3.1 Macroeconomic uncertainty and macroeconomic performance

The achievement of sustained economic growth along with low and stable inflation is one of the most fundamental objectives of macroeconomic policies of not only the industrialized world but it is also the prime target of emerging and developing economies. The policy success to embrace targets for the level inflation and output growth is difficult to imagine without considering their variabilities around their target levels (Fuhrer, 1997). Hence, managing sustainable macroeconomic outcomes and macroeconomic uncertainty is traditionally one of the macroeconomic challenges, developing economies have been facing, mostly in recent years and it has re-emerged

as a global challenge with serious socio-economic implications. Among both, the official and the public opinions circles, there are worries and questions brought about by the persistence of high inflation and a desire to healthy and stabilized economy. High non-predictable inflation not only distorts relative prices and international competitiveness of the country but also perverts the inter- and intra-temporal decisions of economic agents, leading towards an inefficient allocation of resources and decline in output growth (Friedman, 1977; Dotsey & Ireland, 1996; Lucas, 2000). In addition to the adverse effects of higher inflation on a variety of marginal decisions,[16] the continuous inflation and output growth volatility creates great concerns for all economic agents due to its destabilizing impact for the economy as whole and the failure to give exact price signal from the market. It also creates further uncertainties in the economy through speculations. In developing countries, the challenges of macroeconomic uncertainties significantly destabilize the other key macroeconomic variables and increasing price volatilities pose socio-political hazards. Due to the interrelationship of higher inflation in the form of inflation volatility and output uncertainty, the related nexus between macroeconomic uncertainties and performance is considered vital in theoretical and empirical economic literature. The extent to which there is an interaction between them is an issue that cannot be elucidated merely on theoretical basis. The related empirical studies are often ambiguous in their predictions. Not only that, it is astonishing that the existing relevant ideas make the theoretical models as less common than hypotheses or conjectures (Temple, 2000). Thus, these considerations strengthen a widespread awareness for the need of more empirical evidence to re-examine the interactions between inflation, output growth and their uncertainties from good empirical specifications.

Theoretically, since the seminal work by Friedman (1977) on the real effects of inflation such as inflation uncertainty and higher welfare loss, the debate on the casual links between inflation, inflation uncertainty and output growth started.[17] The growing deal of attention to inflation is because of its impact on other macroeconomic activities and particularly, the increasing cost in the form of its uncertainty as formalized by Ball (1992). According to Rother (2004), price instability exerts harmful effects on macro-economic performance not only through changes in price levels but also through increased price level volatility which makes future price expectations as more uncertain. In contrast, Cukierman & Meltzer (1986) and Holland (1995) suggest the possibility of reverse causality. Contrary to Friedman hypothesis, Dotsey and Sarte (2000) using "cash-in-advance" type of model, proved that high levels of inflation uncertainty stimulate economic growth. Apart from the above mentioned competing hypotheses, there is also ambiguity among the several theories concerned with volatility-growth correlation and trade-off between nominal and real uncertainty.[18]

[16] For example, higher inflation diverts resources from productive to speculative investments, reduces holdings of real cash balances and substitutes leisure for work.

[17] As summarized in Fountas and Karanasos (2007) there are as much as 12 causality relationships exist among nominal uncertainty, real uncertainty, the rate of inflation, and output growth.

[18] For example, Black (1987), Blackburn (1999) and Blackburn & Pelloni (2004a, 2004b) predict the positive impact of real volatility on output growth due to improvement in productivity through risky investment. By contrast, Bernanke (1983) and Ramey and Ramey (1995) believe on negative impact while Fuhrer (1997) argues for the negative bi-directional causality between nominal uncertainty and real uncertainty in contrast to positive impact by Logue & Sweeney (1981) and positive effect by Devereux (1989) from the latter to the former.

Despite the outpouring of empirical work during the last decade, there is still controversy over the robustness of these relationships. Empirically, some studies concentrate on inflation-growth link while few studies look at the inflation-volatility-growth link and there are only few studies which examine these issues together but still with controversial findings. In addition, some empirical studies not only ignore the collinearity between inflation and inflation volatility but also lose much information through averaging data for panel specifications. Furthermore, the existing empirical literature is limited to developed economies and very few studies have analyzed this relationship in developing countries where economic processes are highly unstable and volatile. Consequently, the rising inflation and its uncertainty and the related trade-off between macroeconomic uncertainty and performance is an acknowledged topic of concern for the global economy in general and for developing world in particular. Specifically, the understanding of key macroeconomic movements and their volatilities in developing countries are extremely important as when their causal nexus and behavior are correctly specified, appropriate policy change can be easily identified and effectively implemented for domestic stabilization.

Thus, the above considerations along with the mentioned controversies and complexities have led to a protracted chicken-or-egg debate regarding the causal links between inflation, output growth and their related uncertainties. Moreover, the accumulated evidence points towards the sensitivity of the results to the chosen methodology (test-dependent), time period of examination, country-specific and the measure of inflation (Fountas & Karanasos, 2007). Hence, there is a clear need for further empirical investigation to determine whether macroeconomic uncertainty and macroeconomic performance are related in context of developing countries to fill the gap in the literature. There is also considerable controversy regarding the links between macroeconomic uncertainty and performance that has occurred recently in Asian developing countries with special concern to South Asia as compared to other developing countries. Although progress has also been made in the quantitative investigation of the contribution of various factors to high inflation and low growth in most of the Asian economies, the dynamics and spillovers of inflation, output growth and their uncertainties still remains the muddy water in these countries. There is a scope for fresh research in the light of latest econometric techniques and recent trends in data around the region. As most of the economies in this region are relatively stagnant, caught in a low level economic growth trap and stifled by enormous economic growth obstructions which make their case study as really more unique and fascinating. Therefore, a need arises to explore the nature and causal interactions among all the four variables by using appropriate empirical approach through utilizing the different specifications of multivariate GARCH family models. This further necessitates investigating the effects of various macroeconomic and institutional factors on macroeconomic volatility as addressed in the next sections.

1.3.2 Institutional infrastructure of politico-economic institutions and output growth volatility

In addition to understanding the dynamic links and volatility transmissions between macroeconomic uncertainty and performance for designing appropriate policy decisions, it is also a challenge for the empirical research to dig out what drives these and how the various global, regional and domestic factors affect macroeconomic volatility. Importantly, since the last few decades, macroeconomic volatility is one of the characteristics which is heavily rooted in developing world with a high welfare cost (Loayza et al., 2007). Thus, macroeconomic volatility, both as a cause and a reflection of underdevelopment is a major concern for developing countries due to their large exogenous shocks, volatile macroeconomic policies, microeconomic rigidities and weak institutional and political framework (Loayza & Ventura, 2007). It potentially affects their macroeconomic performance by reducing growth and affects future consumption.[19] Since the negative volatility-growth nexus by Ramey & Ramey (1995) and its pernicious consequences, there is a thirst of recent research to determine what is behind this macroeconomic turbulence and what mechanisms do affect the macroeconomic volatility in developing countries.

Due to the change in domestic economic structure and more importantly, the strength of institutional infrastructure of these economies in the context of global modifications, the forces of macroeconomic volatility goes beyond the traditional structural and macroeconomic factors. Despite considerable conventional economic growth literature on macroeconomic volatility, it is rather astonishing that the significance of institutional quality and other relevant policies have received relatively little attention. The recent advancements of the political economy of institutions scholarship emphasizes on the effects of democratic institutionalization, market supporting institutions and economic and political developments on macroeconomic volatility. Assessing the impact and contribution of various institutional sources on macroeconomic volatility in developing countries is of paramount importance. Therefore, the second goal of this study is to investigate the effects of institutional cluster on output growth volatility in a large sample of emerging and developing countries.

The existing studies have pointed out the sources of the real contribution of economic shocks to the generation and spread of macroeconomic fluctuations.[20] Although one perception of macroeconomic volatility is that it emerges due to economic crises, still economic volatility in developing countries is not confined to the emergence of crises only but it appears to be *endemic* (Malik & Temple, 2009). The prevailing output volatility and crises in these countries is not only due to their deteriorating economic performance but due to the fact that their institutional infrastructure is unable to respond to these crises. As North (1990) pointed out: *"Third world countries are poor because the institutional constraints define a set of payoffs to political/economic activity that do not encourage productivity".* Thus, institutional quality not only affects

[19] E.g. Ramey and Ramey (1995), Hnakovska and Loayza (2004), Loayza & Ventura (2007).
[20] For example, Shapiro & Watson (1988); Blanchard & Quah (1989), etc.

the economic performance but it has also significant impact on macroeconomic volatility. Drawing from Acemoglu et al. (2003, 2005), by controlling the institutional effects, the small effect of macroeconomic policies on volatility indicates that weak institutions are the central cause of macroeconomic volatility through different micro and macroeconomic transmission channels. This idea is strengthened by Calderon et al. (2016) that high quality institutions can augment the countries to implement the counter-cyclical macroeconomic policies. If on one side, weak institutions are leading towards political and economic instability through encouraging coups and revolutions (Acemoglu & Robinson, 2001), then on the other hand, the institutional failure also makes economic adjustments difficult after exogenous and policy shocks. In particular, the countries with extractive institutions from the time of colonialism including many developing countries are more likely to experience high volatility and economic crises (Acemoglu et al. 2003).

Further, countries equipped with weak institutional infrastructure not only fails to address their own economic and political shocks but are also not capable to deal with the global crises and economic slowdowns as well as global developments in the form of technological advancements and international trade. Under weak institutional condition, some risks are not contractible and certain risk-smoothing strategies are not implementable which place strict limits on the ability of both private agents and governments to manage risk. Developing countries are subject to more and frequent deeper slumps and bad governance as compared to advanced countries. It necessitates whether macroeconomic policies can help alleviate the problem including the policy strength of institutional and economic freedom. Due to the respect of norms, property rights and laws, there is acceleration of economic growth through incentives to save, invest, innovate and adopt new technologies. Also, low quality political institutions allow for political violence and fail the system to fulfill economic provisions. Further, these also disrupt the enactment of coherent polices which undermines the competence of governments and diminishes its resilience to accommodate shocks that ultimately result into macroeconomic disequilibrium.

Consequently, instead of emphasizing on few dimensions of institutional features, it is crucial to consider the North's (1981) view of both political and economic institutions[21] for evaluating the impact of institutional infrastructure on output volatility. Hence, the current research looks macroeconomic volatility to not only economic factors but also on political and institutional factors. Unlike the sustainable economic outcomes in developed countries, the prolonged output volatility in emerging and developing countries is quite surprising and is still an important challenge not yet satisfactorily confronted by economics profession. Thus, this study will extensively test the effects of institutional quality on macroeconomic volatility as measured by output growth volatility through the use of dynamic panel models to thoroughly check whether institutional cluster mitigates the overall macroeconomic volatility. In addition, unlike

[21] Economic institutions such as enforcement of property rights, entry barriers, risk of expropriation, economic freedom and corruption are determined as a collective decision by the society at large but as all individuals and groups will not prefer the same set of institutions which results in conflict of interest and hence political power such as political structure, political risk and competitiveness plays an important role (Acemoglu et al., 2005).

the existing considerable amount of literature on institutions and economic growth, this study attempts to understand the mystery of how institutional change has potentially high payoff on macroeconomic volatility through its moderating role on the volatility of macroeconomic fundamentals. Hence, it fills the gaps in literature of explaining economic volatility by addressing the channels though which institutions affect the influence of volatility of economic fundamentals.

1.3.3 Political and economic institutional cluster and inflation volatility

It is widely acknowledged that high and volatile inflation significantly affects society's welfare and economic growth. If prices are constantly changing, planning for future consumption may be difficult due to households' real income fluctuations. The risk-averse behavior of households can lead to significant negative effect of inflation volatility on growth. Growing inflation uncertainty renders the economy less efficient through introducing markets frictions and thus inflation volatility may be more disruptive than higher inflation (Friedman's (1977). Owing to this realization, economic literature devoted great effort to fully comprehend the inflationary process while, few studies disentangled the effects of higher inflation from those of inflation volatility on welfare and economic growth. Despite its severe effects on growth, the existing studies have rarely explored the determinants of inflation volatility, especially in developing countries. Also these studies have mainly researched the economic factors for higher inflation volatility with the exception of few studies emphasizing on policies and political and institutional factors.[22]

Importantly, most economists acknowledge the difference in the macroeconomic policies among countries as the main reasons behind high inflation volatility they sustain. However, this idea further leads to a much deeper and fundamental question of why countries differ on the way they conduct their macroeconomic policies. Also, whether the elevated macroeconomic volatility observed in emerging and developing countries simply a result of these economies being hit by larger fundamental shocks or does some country-specific features of these countries cause them to respond differently when hit by shocks that affect all economies. Despite the optimal use of monetary policies for stabilizing the business cycles in industrialized countries, the emerging market economies and developing countries are characterized by pro-cyclical, or at most, a-cyclical monetary policies and higher inflation volatility. Specifically, as evidenced by the recent scarce literature (e.g., Calderon et al. (2016)) that these countries are unable to exercise the countercyclical macroeconomic policies due to their weak financial and political institutions. The conventional arguments to this query lie on the structural view of inflation that governments in under developed countries might find it optimum to rely more on seigniorage instead of output taxes to finance their expenditures. However, Edwards & Tabellini (1991) and Cukierman et al. (1992) found no evidence for theory of optimal taxation (Phelps, 1973; Aizenman,

[22] For instance, Rother (2004) regards the volatility in discretionary fiscal policies for inflation volatility, Bowdler & Malik (2017) find the negative effect of trade openness while Cukierman et al. (1992) for central bank independence, Acemoglu et al. (2003) and Woo (2003) for distortionary macroeconomic policies and Aisen & Veiga (2006; 2008, 2013) for political instability and democracy.

1992) in developing countries which motivated the use of theoretical and empirical models to explore the role of political and institutional factors.

Institutions play a critical role in determining whether macroeconomic policies will generate sustainable productive macroeconomic outcomes. The theoretical debate on this era claims that unlike to achieve maximum social welfare, the incumbent governments try to maximize their chance of remaining in power by abusing the central monetary management to generate monetary surprise in order to enhance output growth in the short run which resulting higher inflation without any output gain and thus generates macroeconomic fluctuations. The influence of the political governments on the inflation targeting strategy and on the power of the central banks is also the root causes of the above phenomenon. In setting with weak institutions, there is also a strong risk that public expenditures will be used to serve the ruling elite for remaining in power. More precisely, the susceptibility of political shocks due to political instability interrupt the continuity of economic planning and hence the discontinuous monetary and fiscal policies leads to high and volatile economic outcomes. In line to Acemoglu et al. (2003, 2005), these are institutions which determine the volatility, crises and growth through the mechanism to ensure contract enforcement and property rights which, in turn determine the strength of macroeconomic policies. Thus, countries with weak institutions not only have lower and volatile growth but may also present higher inflation volatility.

Thus, at third issue, this study examines whether political and economic institutional arrangements contribute to macroeconomic stability by investigating their impact both in direct way as well as to check whether institutional improvements help developing countries to channelize the effects of volatile macroeconomic fundamentals on inflation volatility. This study tests the hypothesis whether strong institutions augment the countries to mitigate the volatility of economic fundamentals such as real volatility, fiscal policy volatility and the volatility of financial and exogenous shocks. While exploring the effects of volatility of fundamentals on inflation volatility via political and economic institutional cluster, this study aims to investigate whether monetary policy volatility as measured by inflation volatility in developing countries is characterized by their weak institutional arrangements including prevalent corruption, unconstrained political elites, repudiation of contracts and lack of enforcement of property rights. More importantly, this part of the study adds to literature by identifying the indirect or indexing role of institutional arrangements through their interaction effects with volatility of fundamentals in influencing price stability.

Consequently, the prevailing diversity of macroeconomic performance and volatility across emerging and developing countries is a puzzling phenomenon. The recent financial crisis has shown the role of economic and political factors which can render the economy less exposed to crises. Though political institutions are believed to have much to matter regarding the choice of macroeconomic policy and outcomes and both political and economic institutions reduce the consequences of economic shocks through appropriate policy responses, still, it is unclear exactly which institutions are important and in what contexts they affect economic outcomes. Due to the nature of

the countries considered in this study and their unstable political, institutional and economic structure as compared to advanced countries, the motivation of the second (third) objective of this study calls for empirical evidence on the effects of politico-economic institutional quality and other economic shocks affecting the output growth volatility (inflation volatility). As far as the impact of institutional cluster on macroeconomic volatility is concerned and in order to avoid the empirical weaknesses of other proxies for measuring politico-economic institutional infrastructure in the literature, this study utilizes the appropriate and novel measures of political and market supporting institutions to incorporate the effects of multi-dimensional institutional cluster on macroeconomic volatility in the selected countries.

1.4 Objectives of the study

The relationship between inflation, output growth and their volatility components have become the area of special interest in macroeconomics literature. Due to its significant strong policy relevance and its ability to examine the dynamics of various macroeconomic variables, stabilization policies are generally aimed to restore macroeconomic and financial stability. From the above discussion, we derive that in order to minimize the adverse economic consequences and welfare costs of high inflation, macroeconomic policy makers are in need to have a clear understanding of the nexus between macroeconomic uncertainty and performance, and more importantly, of the spillovers through which macroeconomic volatility may affect the real economy through inflation uncertainty. Specifically, should developing countries focus on stabilizing output growth rather than inflation, or only inflation? What sort of macroeconomic stability will best serve the economy in the decades to come? The empirical difficulties and gaps highlighted by previous empirical works take us to the main objectives of this study. This study focuses on the long-standing problem of South Asian high inflation, declining growth and macroeconomic uncertainties. It tries to identify the determinants of macroeconomic volatility in emerging and developing countries and specifically, examines the impact of political and economic institutions on macroeconomic volatility. Thus, the general objective of this study is to empirically examine the causal nexus and volatility spillovers between macroeconomic uncertainty and performance and to evaluate how institutional infrastructure affects macroeconomic volatility in emerging and developing countries. Moreover, the specific objectives that this study pursues to achieve are:

a) To investigate the dynamic causal nexuses and volatility transmissions between inflation, output growth, nominal uncertainty and real uncertainty.
b) To examine whether the quality of institutional cluster have discernible effects on output growth volatility.
c) To investigate whether institutional quality, specifically political and economic institutions, have any mitigating effects on inflation volatility.

1.5 Significance and contribution of the study

Investigating the inflation-growth nexus along with their causal links with macroeconomic uncertainty and their interactions and volatility-transmission process can be crucial in designing structural reforms aimed at complementing the main objectives of monetary policy pursued, especially in developing countries. Rigorous theoretical and empirical analysis of inflation, output growth and their uncertainties and the role of institutional cluster for mitigating macroeconomic volatility in developing countries are important from several policy perspectives. Theoretically, this study contributes to the potential nexus between macroeconomic uncertainty and performance and provides a degree of quantitative insights of the impact of institutional arrangements that could be used to further exploration of output growth volatility and inflation volatility in developing countries.

Empirically, the contribution of this study is manifold. As per the first objective, the main contribution of the present study is the countries under review, as so far the developing economies have received little attention as compared to developed and emerging economies. Owing to the substantial costs of higher inflation and inflation volatility, these countries are facing the dilemma of economic catch-up and macroeconomic stabilization as the twin key policy targets. In these countries, inflation is considered to be one of the major determinants of instability in economic environment and the uncertainty about future inflation can lead to uncertainty about other economic variables as well. Moreover, international lending institutions (IMF, ADB and World Bank) are concerned about their inflation levels and wanted them to bring down inflation to levels that can boost economic growth at sustainable level. Also due to the ongoing economic integration and globalization, the South Asian countries require the knowledge of the interactions among inflation, output growth and macroeconomic uncertainty as well as common factors affecting macroeconomic fluctuations in all member countries in the process of creating an economic and monetary union under SAARC frame work.[23] This study contributes to the prospects of central banks in these countries which aim to combat upward price pressures through tighter monetary policies. In addition, this study contributes to the empirical literature through it's distinguish methodological nature. Distinctive from the existing studies of traditional time series and univariate (bivariate) specifications, this study not only checks the causal links between macroeconomic uncertainty and performance but also quests for the volatility spillovers of the variables of interests through the advanced financial econometric techniques of multivariate GARCH family models.[24]

[23] Specifically, in South Asian region, where poverty is a rule, the concerns and adverse socio-economic impact of high inflation and volatile economic growth have a detrimental role on poverty and macroeconomic management as the region's large part of the world population has no hedge against inflation and economic volatilities. To our knowledge, this study will be the first one in this region to explore this issue more precisely.

[24] The outcome from these restrictive models can lead to misspecification problem. Importantly, we consider the dynamic asymmetric effects of macroeconomic uncertainty on inflation and output growth as ignored by most of the previous related studies.

In addition, due to structural rigidities, increasing conflicts, political instability and weak institutional infrastructure, there is an increase in macroeconomic fluctuations in most of the emerging and developing countries. At the same time, there is no precise relevant study to model these macroeconomic dynamics and volatilities, thus, it is imperative to investigate macroeconomic volatility in developing countries. Notably, owing to the fact that developing countries are heavily plagued with poor track record of institutional frameworks, this study undertakes the information on institutional environment with the various other sources of macroeconomic volatility to investigate the direct and indirect role of institutional infrastructure. Amid unprecedented higher volatilities in these countries, this study aims to identify the role of institutional quality which remains (and is likely to continue to be) the major driver of sustained macroeconomic performance. Thereby, quantifying the impact of institutional cluster on macroeconomic volatility is crucial not only for its own sake, but also for finding out the extent of operational macroeconomic policy framework for affecting economic outcomes. Thus, unlike to *policy view*, this study emphasizes on the *institutional view* in affecting macroeconomic volatility. Further, knowledge of the links between macroeconomic performance and uncertainties and factors for prevailing macroeconomic volatility is often a key concern for foreign investors in these countries which will present a benchmark in formulating their expectations. Specifically, a better understanding of the causes of macroeconomic volatility can lead to more effective macroeconomic policy that directly addresses the long term underlying features of volatility instead of focusing only on fiscal policy which is an ex-post attempt to temporary affect short run volatility.

Thus, this study also fills the void in literature by complementing the traditional literature for determining macroeconomic volatilities through the politico-economic institutional framework, avoided in the previous studies. Surprisingly and somewhat frustratingly, the term "macroeconomic volatility" has been rather roughly used in economic literature (Goyal & Sahay, 2007) where it has been applied to indicate growth volatility as well as the volatility of other macroeconomic outcomes, policies and shocks. However, from the perspective of a policy maker, on one side, it is critical to distinguish among volatility, macroeconomic outcomes and shocks and on the other hand, to emphasize on the major indicators of macroeconomic volatility such as real and nominal volatility. Further, with respect to developing and emerging countries, it is especially important to uncover the structural sources of macroeconomic volatility to manage internal and external shocks and economic crises more successfully. Specifically, the combination of modern econometric techniques along with richer data coverage provides a more accurate exploration of the institutional and economic sources of macroeconomic volatility. Practically, this study fills a time gap by utilizing the longer data series, in a panel context and by more robust estimating techniques of dynamic panel models in order to capture new developments in economic volatility process and to address the econometric limitations of the previous related studies.

Finally, in the context of more stable, yet still fragile and uncertain global economic conditions such as the recent economic slowdown of China and U.S. and the increasing financial turmoil in global markets, the existing macroeconomic volatility and the possible shocks can potentially cloud the future of developing countries. Thus, this

study provides a protocol for stable economic structure and adds value to the literature by complementing the few studies that attempt to embed the analysis of institutions into economic volatility literature. But the key innovation of this study lies on its conceptual and analytical framework that accounts for the joint impact of broad range of political and economic institutions on both output volatility and inflation volatility. To my knowledge, similar encompassing work is yet to be found in the existing literature. This combination of political and economic institutions creates a broader variety of dimensions of institutions as well as broader ground for a better understanding of the prevailing macroeconomic fluctuations in developing countries. Importantly, this study contributes by expanding the existing scarce evidence through the impact of volatility of economic fundamentals on macroeconomic volatility conditional on the level of politico-economic institutional arrangements. Finally, in the context of recent economic crises such as global recession and economic uncertainty which have been proved to be more severe than they were before, and the consideration of volatility as a second order issue by the existing literature (though, its impact on growth has first order welfare implications), this study contributes to the institutional determinants of economic volatility.

1.6 Scope of the study

In terms of scope of the present study, it employs a sample of 102 emerging and developing countries including South Asian countries over the period 1980 to 2014. The sample is restricted due to data availability, especially on quality of political and economic institutions and other corresponding variables of interest and control variables (see appendix B, table B1 (A)). In addition, we not only study the time-varying correlations and volatility transmissions between macroeconomic uncertainty and macroeconomic performance but also examine the institutional determinants of macroeconomic volatility in a large number of emerging and developing countries. Specifically, the first issue underscores whether the prevailing macroeconomic uncertainty has any implications for macroeconomic performance in an ideal region (South Asia) of increasing macroeconomic fluctuations. The particular choice for the selected countries is based on a number of factors including the recent high movements and uncertainties of inflation and output growth in these countries.[25] Specifically, in this part of the study, we look at the effects of real and nominal uncertainties on macroeconomic performance for India, Pakistan, Bangladesh and Sri Lanka using a new set of data. Importantly, our data include the period of the Great Recession. Also, as developing countries, these countries need to sustain relatively high growth rate in order to raise their standard of living. Therefore, the results of such a study will assist in guiding their macroeconomic and stabilization policies. Further, volatility is inherently unobservable, and thus, the selection of the models and their definition is crucial in financial research. In addition, identifying the relative contributions of different factors to macroeconomic volatility in developing countries is complicated by the fact that these factors usually coexist.

[25] Also, their inquiry predicts the macroeconomic stability of these economies to sustain relatively high growth rate with low inflation and to assist in guiding their macroeconomic and stabilization policies.

In addition, the second and third issue explores the impact of institutional quality on macroeconomic volatility such as real volatility and nominal volatility for a large number of emerging and developing countries.[26] Thus, the focus of this study is specially the emerging and developing countries rather than advanced economies whose are already enjoying sustainable macroeconomic performance. The inclusion of the sample countries is based on their macroeconomic fluctuations and volatile macroeconomic outcomes. This study also extends the existing literature by examining the effects of a large number of institutional and macroeconomic variables jointly, comprising politico-economic institutional cluster, several traditional sources of macroeconomic volatility and the volatility impact of macroeconomic fundamentals. Thus, this study not only extends but also builds the important empirical findings of the existing literature, specifically in sample countries. In particular, the inclusion of a comprehensive set of volatility of fundamentals including both endogenous and exogenous volatility factors as well as the traditional determinants of macroeconomic volatility permits us to investigate the role of quality of both political and economic institutions across a large sample of developing countries. More importantly, this study adds value to the existing literature by identifying the channels through which institutions affects macroeconomic volatility. Thus, the transmission of the impact of political and economic institutions is made contingent through their impact on the volatility of economic policies and financial and exogenous shocks. Finally, the scope of this study is more evident in the recent environment of global recession and increasing macroeconomic uncertainties, especially in emerging and developing countries. The pronounced and persistent impact of the GFC of 2007-08 and the prevalent global recession highlight the scope of the present study to empirically investigate the association of institutions and volatility of economic fundamentals. It further checks whether countries with strong institutions can cope with shocks in short run through using appropriate institutional and policy measures.

1.7 Organization of the study

This research study is potentially comprised of five chapters. The second chapter provides theoretical and empirical considerations regarding each of the aforementioned issues by evaluating the various economic theories, while the available empirical literature is explored and critically reviewed. Thus, an attempt is made by comprehensively piecing together the most related studies addressing the volatility dynamics of macroeconomic uncertainty and performance and the emerging role of political and economic institutional cluster on macroeconomic volatility. These reviews identify the major shortcomings which motivate this research to provide solutions that the present study undertakes.

The third chapter documents the theoretical based empirical specifications, comprehensive econometric methodology and data employed in this study. The bivariate VAR-EGARCH family models are allocated to verify the nature, behavior and volatility dynamics of macroeconomic uncertainty and performance. Further, a

[26] See section 3.4 of chapter 3 and table B1 for the list of countries considered in the last two objectives of this study.

comprehensive empirical approach is adopted to explore the impact of political and economic institutional measures on macroeconomic volatility of output growth and inflation. This chapter also illustrates the detailed estimation procedures and the relevant data and their sources used for the empirical framework of all the three objectives of the study.

The detailed estimation analysis and discussion of results of the casual links and volatility spillovers between macroeconomic uncertainty and performance and the role of institutional infrastructure in affecting macroeconomic volatility are presented at fourth chapter. In order to attain the first objective, the empirical results obtained from various types of GARCH family models support significant casual nexus and volatility spillovers between macroeconomic uncertainty and performance. In order to fulfill the second and third objective of the study, this section also documents the estimated results of important role of political and market supporting institutions on output growth volatility and inflation volatility. The overall empirical evidences presented in this chapter support that improvement in political and economic institutions mitigates macroeconomic volatility both directly and indirectly. The last chapter concludes this study by presenting summary conclusions and major findings. Overall, the study argues that besides the significant volatility spillovers of macroeconomic volatility to macroeconomic performance, institutional and relevant structural reforms hold the key to restore macroeconomic stability in emerging and developing countries. This chapter also contributes to devise measures for relevant policy implications and to point out the avenues for future research.

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