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Volatility in Discretionary Public Spending and Economic Growth: A Cross Country Analysis

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Volatility in discretionary public spending has diverse implications for the overall economic performance of economies. In this study, we examine the impact of volatile non-systematic discretionary public spending on economic growth. By employing cross-country data of 74 developed and developing economies, we find that volatility in non-systematic discretionary public spending has an adverse impact on economic growth. In particular, such impact is severe in the case of less developed economies. Our findings are robust to the problem of endogeneity. In order to ensure the accuracy of the results, we conduct sufficient sensitivity analysis by incorporating a bunch of potential control variables. In most of the cases, the results with regard to the policy volatility remain intact. This suggests that effective spending rules, i.e. permanent numerical limits, should be imposed on budgetary aggregates to restrain governments from the volatile use of discretionary spending.

JEL Classification: H3; H5
Keywords: Volatility in Discretionary Public Spending, Economic Growth, Effective Spending Rule

1. INTRODUCTION

Since the onset of the 'Global Financial Crisis' (2007-08), researchers and policy practitioners are assessing the overall impact of the crisis and policy prescriptions in this regard. In general, the previous major crises, i.e. the Great Depression and the Stagflation of the 1970s, have profoundly changed both the macroeconomics and macroeconomic policy (Blanchard & Summers, 2017). Similar is the case with the Global Financial Crisis which has redirected interest in the role of macroeconomic policies as stabilising instruments, especially in developed countries (Kawai & Takagi, 2009).[1] In particular, the fiscal policy is back in active fashion after the years when it was believed to be too sluggish and ineffective in addressing the macroeconomic issues.[2] Although the aggressive use of discretionary fiscal policies stimulates economic activities in the short

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[1]This interest incorporates both the monetary and fiscal policies.

[2]For instance, discretionary fiscal measures are used quite often these days. Discretionary fiscal measures are the deliberate response of fiscal authorities to change the size of fiscal instruments for various reasons.

run, there are many concerns regarding the potential medium- and long-term adverse consequences of such policies (de Castro Fernández & Hernández de Cos, 2006; Fatas & Mihov, 2013; Mutuku & Koech, 2014; Surjaningsih, Utari, & Trisnanto, 2012). There are quite a few that analyse the macroeconomic consequences of fiscal instruments, i.e. taxes and government spending (Barro, 1990; Kneller, Bleaney, & Gemmell, 1999; Nworji, Okwu, Obiwuru, & Nworji, 2012; Skinner, 1987; Tanzi & Zee, 1997). Most of this literature takes fiscal policy in the level form while ignoring important aspects of the policy, i.e. fiscal discretion and the volatility associated with such discretionary measures (Albuquerque, 2011; Ali, 2005; Fatás & Mihov, 2007). In many studies, the behaviour of fiscal instruments is seen as volatile in nature (Antonio Afonso & Furceri, 2010; António Afonso & Jalles, 2012; Furceri & Poplawski Ribeiro, 2008). For instance, such volatility is obvious in the case of general government spending and more apparent in its subcomponent−the non-systematic discretionary spending (Furceri, 2007); (Fatás & Mihov, 2003). The non-systematic discretionary expenditures are basically the public expenditures that are not associated with current macroeconomic conditions. These are purely political spending used by politicians for political gains (António Afonso & Jalles, 2012; Fatás & Mihov, 2007).[3]

The volatility in non-systematic discretionary spending cannot be ignored due to its macroeconomic consequences. For instance, the volatility in discretionary fiscal arrangements may adversely affect the decisions of investors and economic agents (Pindyck, 1988), which in turn, might adversely affect the growth pattern (Ali, 2005; Eller, Fidrmuc, & Fungáčová, 2016; Fatás & Mihov, 2007; Fernández-Villaverde, Guerrón-Quintana, Kuester, & Rubio-Ramírez, 2015).[4] Thus, anticipated economic policies and clear rules of the game are of high significance (Pindyck, 1988). However, this does not suggest that discretionary volatility in fiscal parameters is always harmful. In some situations, it might be desirable. For instance, it is optimal, if it is used to smooth out fluctuations in the business cycle (Furceri & Poplawski Ribeiro, 2008). In such situations, discretionary spending shocks are expected to have a positive impact on economic activity (Baddi & Lahlou, 2013; Caldara & Kamps, 2008; de Castro Fernández & Hernández de Cos, 2006; Tenhofen, Wolff, & Heppke-Falk, 2010; Yadav, Upadhyay, & Sharma, 2012). Thus, the literature on the consequences of volatility in discretionary fiscal measures is not in consensus. Evidence from prior studies shows that discretionary fiscal shocks have diverse consequences for different economies – ranging from ineffective, to constructive, to sometimes damaging. In Indonesia, discretionary fiscal shocks stimulate economic growth in the long-run (Surjaningsih et al. 2012). Similarly, in Greece, such a policy not only promotes growth but also encourages private consumption and non-residential investment (Tagkalakis, 2014). Likewise, similar effects of discretionary public spending are observed in India (Yadav et al. 2012), Slovenia (Jemec, Kastelec, & Delakorda, 2011), Kenya (Mutuku & Koech, 2014), Span (de Castro Fernández & Hernández de Cos, 2006), and the US (Edelberg, Eichenbaum, & Fisher, 1999).

[3]Fiscal rules proponents argue that governments are not benevolent and do not aim to optimise citizens' welfare but aim to be re-elected. Besides, each generation is selfish and does not care about the situation for future generations (Mathieu & Sterdyniak, 2013).

[4]Most of the decisions of economic agents and private investors are partially affected by the government controlled factors. Investors and economic agents, thus react inversely to the volatility and uncertainties related to future trends of fiscal parameters (Ali, 2005).

However, in certain economies, discretionary policies are often seen as ineffective. For instance, in the case of Pakistan, discretionary spending shocks fail to stimulate output and employment (Ismail & Husain, 2012). In Germany as well, discretionary changes do not promote economic activities (Bank, 2011). In general, discretionary fiscal policy is detrimental when it is used independently of fluctuations in the business cycle. For instance, in many regions and countries, it did produce volatility in output and economic instability (Badinger, 2009).

Given the above discussion, the present study continues with this debate. In particular, this study investigates the macroeconomic consequences of volatile non-systematic discretionary public spending. In order to extract the non-systematic discretionary part of public spending, we follow the fiscal rule literature. Fatás and Mihov (2003) offers the fiscal rule to separate the non-systematic discretionary spending part from the total government expenditure. The residual part of the fiscal rule model corresponds to non-systematic discretionary expenditure, which is independent of business cycle fluctuations of the economy. Since non-systematic discretionary spending is the neglected part of fiscal-growth research agenda, this study contributes to existing literature by exploring the growth effects of non-systematic discretionary expenditures. We first examine this impact at the aggregate level, and then at the disaggregated level, for a set of developed and developing economies using their respective discretionary policy volatility. According to the findings, the volatile nature of discretionary spending retards economic growth. This negative impact appears significant both at the aggregate level and the disaggregate level in developing economies. The adverse impact appears significant using a set of control variables, which is shown by the sensitivity analysis. Moreover, we control for the problem of endogeneity by employing the GMM approach and find similar estimates like that of OLS. The rest of the paper is organised into four sections. Section 2 reviews the literature on the issue. Section 3 provides the methodology, estimation procedure, and information about data. Section 4 discusses the empirical findings of the study, while Section 5 concludes the paper.

2. REVIEW OF LITERATURE

There are two strands of research that are related to this study. The first strand examines the implications of the overall government spending volatility while the second strand focuses only on the discretionary part of the volatility in public spending. Here, we are citing both forms of studies, while mainly focusing on the latter part.

Ismail and Husain (2012) study the macroeconomic effects of discretionary fiscal measures for Pakistan's economy. The authors, while employing OLS on differenced time-series data (1971-2010), find no effects of such policy on inflation, output and employment. However, Ali (2005), using the same econometric technique for a panel data (1975–1998) set of 90 economies, observes that discretionary policy significantly hampers economic performance. In the same line, Fatás and Mihov (2003, 2007) inquire the cost of volatile discretionary public spending for a panel set of 91 developed and developing economies for the 1960- 2003 period. The authors employ both the OLS and Instrumental Variables methods (IVLS, GMM) and confirm that aggressive discretionary fiscal measures prompt output volatility and lower economic growth. Whereas, the adverse impact appears more prominent in developing economies exercising

discretionary fiscal policy more aggressively. Following the approach of Fatás and Mihov (2003), Badinger (2009) tries to investigate the link between the discretionary fiscal policy, macroeconomic instability, and inflation volatility in a panel, as well as in a cross-country setting, of 20 OECD countries. The author using different econometric techniques like OLS, 2SLS, GMM, and LSDV finds that such policy significantly incites volatility in output and all components of GDP, except volatility in inflation. Likewise, Sacchi and Salotti (2015) in analysis from 1985 to 2012, confirm that although discretionary fiscal policy triggered output and inflation volatility in OECD economies, when they incorporate fiscal rule in their model, they observe the stabilising effect of the policy (except stabilising the inflation).

Surjaningsih et al. (2012) probe the impact of discretionary fiscal policy on output and inflation level in the case of Indonesia. Applying Johansen Cointegration and Vector Error Correction Model (VECM), the authors observe that in the short-run, government spending shocks positively cause GDP, but taxes lower the economic growth. Nevertheless, in the long-run, they observe the opposite findings for taxes. Likewise, Tagkalakis (2014) studies the impact of discretionary fiscal changes on the economic performance in Greece. The estimates of the VAR model predict that discretionary changes in government expenditure significantly stimulate private consumption, output growth, and non-residential investment. However, such a policy negatively causes residential investment.

Furceri (2007) studies the association between government spending volatility and long-run economic growth in a panel of 116 economies for the 1970-2000 period. The author calculates the cyclical component of public spending through various techniques and then calculates government expenditure volatility through moving average standard deviation. The results of the Fixed Effect Model reveal that government expenditure volatility significantly declines the growth rate. Following Furceri (2007) Afonso and Furceri (2010) examine the impact of government spending and revenue volatility on economic growth in the EU and OECD economies. They apply the same estimation techniques and confirm that both the size and the volatility of government spending and revenue significantly and negatively lower economic growth. Further, Afonso and Jalles (2012) also investigate the impact of financial crises and fiscal volatility on economic growth in a panel of emerging and developed economies from 1970 to 2008. The study uses the Fixed Effect and GMM techniques and supports the results of Furceri (2007) and Afonso and Furceri (2010).

Blanchard and Perotti (2002) attempt to characterise the dynamic economic effects of the US government taxes and spending in the postwar period setting. They use a mixed structural VAR/event study approach and observe that positive government spending shocks stimulate the output. However, such shocks from the revenue side stunt output. Additionally, their findings reveal that both government spending and tax shocks negatively affect investment spending. Similarly, Bank (2011) analyses the impact of discretionary fiscal policy on Germany's economy. The study employs time series data and SVAR approach. The study reveals no association between discretionary fiscal policy and economic performance of the country. However, for the same region and using the same estimation technique, Tenhofen et al. (2010) observe that government expenditure shocks stimulate output and private consumption, while affecting private investment

adversely, albeit insignificantly. Jemec et al. (2011), using the Blanchard and Perotti (2002) SVAR approach, also find that a government spending shock positively affects the components of GDP, while revenue shocks negatively affect investment, consumption, and output. However, following the SVAR technique, Cyrus and Elias (2014) conclude that both the fiscal instrument shocks (taxes and expenditure) stimulate economic growth. Similarly, Easterly and Rebelo (1993) explore the association between fiscal regularities and economic growth performance. They find that (i) poor countries largely depend on trade taxes, while the developed mainly focus on income tax; (ii) fiscal policy of countries is affected by the economy scale; (iii) the investment made in transportation and communication strongly correlated with growth, and; (iv) it observed that it was difficult to isolate the effects of taxation empirically.

Similarly, de Castro Fernández & Hernández de Cos (2006) examine the effects of exogenous fiscal shocks on the economy of Spain. The authors use quarterly data from 1980 to 2004. They note that expansionary public spending shocks in the short-run encourage economic growth, but at the cost of higher public deficit, higher inflation, and lower growth in the medium- and long-term, while taxes insignificantly stimulate output in the short-run but leave a significant negative effect on growth in the medium term. Furthermore, both net government revenue and expenditure lead to a public deficit in the medium term. Using similar data, Edelberg et al. (1999) also study the effects of exogenous government spending shocks on the US economy. They find that in response to positive shocks of government spending, non-residential investment, employment, and output increase. However, residential investment, real wage, and consumption expenditures fall.

To conclude, the literature on overall public spending volatility and economic growth seems to agree that overall public spending volatility harms economic growth. However, the other strand of the literature, which examines the association between discretionary public spending shocks and economic outcomes produces mixed and contradictory results. Some of the studies confirm the stabilising effects of discretionary fiscal changes on the overall economy, while others note the destabilising role of volatile discretionary fiscal policy. Since the findings related to discretionary fiscal volatility are mixed, therefore, the present study investigates the issue using non-systematic discretionary fiscal volatility. To the best of our knowledge, no study is available in existing literature that directly probes the association between non-systematic discretionary fiscal volatility and economic growth. The present study explores this relationship by augmenting the neoclassical growth model to evaluate the actual effects of discretionary fiscal volatility.

3. THEORETICAL FRAMEWORK, METHODOLOGY, AND DATA

In this section, we provide the theoretical framework of our analysis. Also, we discuss here the estimation methodology and data.

3.1. Framework of the Study

A fiscal policy consists of three components (a) the automatic stabilisers component, where the fiscal instruments are designed to automatically respond to the current state of the economy without any intervention by the fiscal authorities, as in

recessionary pressures that public spending automatically increase to boost aggregate demand, and thus correct the direction of macroeconomic variables, while the opposite in case of a boom; (b) the systematic discretionary component, i.e. a systematic and deliberate response of the government to increase or decrease the expenditure level to correct the unfavourable economic environment; and (c) the non-systematic discretionary component, it is the form of government spending that is completely independent of business cycle fluctuations or current state of the economy, rather such spending is used to attain political motives by the political authorities (Fatás & Mihov, 2003).[5] This study focuses on the third component of the fiscal policy. In order to extract the exogenous discretionary part, i.e. a part of government expenditure that is not associated with cyclical fluctuations in the economy, Fatás and Mihov (2003) introduced the following equation:

$$Fiscal\ policy_t = \alpha + \beta\ Economic\ activity_t + \varepsilon_t \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Parameter β includes both automatic stabilisers and the discretionary (systematic) response of the government to economic fluctuations, Fatás and Mihov (2003, 2007) interpret the residual term (ε_t) of the fiscal rule as exogenous discretionary (non-systematic) changes in fiscal policy. These exogenous changes in fiscal policy are not related to the current state of the economy, rather such changes are made by the government for political motives.[6] The standard deviation of ε_t refers to the aggressiveness (volatility) of the non-systematic discretionary part of fiscal policy. The higher dispersion of the values of the series of the ε_t from its mean value implies higher volatility of non-systematic discretionary spending. Fatás and Mihov (2003) presented the following full form of the equation:

$$\Delta G_{it,} = \alpha_i + \beta_i \Delta G_{i,t-1} + \tau_i \Delta Y_{i,t} + \theta_i \sum W_{i,t} + \varepsilon_{i,t} \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

The subscripts i and t represent country index and time respectively Where G is the log of real government expenditure, Y is the log of real GDP. W Include other control variables, which could influence government expenditure like inflation, inflation square and deterministic component like time trend.[7] ε_{it} is inferred to as quantitative estimates of discretionary policy. The volatility of non-discretionary spending (ε_{it}) is calculated as three-year moving average standard deviation approach ($\delta_{it} = \sqrt{\frac{(\varepsilon_{it} - \bar{\varepsilon}_{it})^2}{n-1}}$). The component δ_{it} is interpreted as the aggressiveness or volatility of discretionary fiscal policy. To examine the effect of volatile non-systematic discretionary spending on economic growth, we incorporate the component in the growth model. We provide some discussion on economic policies and economic growth to see whether economic policies affect the nature of economic growth.

[5]Similar to this approach Debrun and Kapoor (2010) also discuss the three dimensions of fiscal policy: (a) the automatic stabilisers, (b) cyclical fiscal policy, which reflects the cyclical adjusted balance to the business cycle fluctuations, and (c) the exogenous discretionary changes which capture those cyclical adjusted balances that are not systematically related to macroeconomic conditions of the economy. Thus, their debate actually leads to the same approach as that of Fatás and Mihov (2003).

[6]For detail discussion see also Persson and Tabellini (2002).

[7]Inflation square is incorporated in the fiscal rule model to capture the non-linear association between government expenditure and inflation over time.

3.2. Role of Economic Policies in Growth Regression

The main determinants of economic growth have always been a part of the general debate in the literature. Recently, most researchers follow the agnostic approach, which means including all the potential variables in the growth regression and then examining the robustness of each using different econometric techniques. In their analysis, Levine and Renelt (1992) found that only investment, the initial GDP level, human capital, and openness robustly explained economic growth. However, the policy variables (fiscal policy) are redundant in growth regression. Following growth specification of Levine and Renelt (1992); Ali (2005) also illustrates that policy variables (if measured in the level form), have no significant explanatory role in growth regression. Adopting a very different framework (Bayesian approach) Doppelhofer & Miller (2004) also conclude that policy variables have no significant role in growth regressions. Easterly (2005) and Acemoglu, Johnson, Robinson & Thaicharoen (2003) give a possible interpretation of why policy variables have no role in growth regressisons. They argue that policies are simply the outcome of institutions, and so the main determinants of the differences in cross country growth are differences in their economic institutions. Once the institutions are controlled for the differences, the effect of economic policies turn out to be significant.

Additionally, the main concern in the above studies is the absence of policy volatility in their analysis. All the studies measure policy variables in the level form and ignore the role of volatility or uncertainty in policy variables (Afonso & Furceri, 2010; Albuquerque, 2011; Fatas & Mihov, 2013). Guided by the discussion, we incorporate non-systematic discretionary policy volatility in the growth regression. For this purpose, we consider the following Solow growth model of Cobb-Douglas form:[8]

$$Y_{it} = f(A_{it}\, K_{it}\, H_{it}) = A_{it}\, K_{it}^{\propto_1}\, H_{it}^{1-\propto_2} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

The subscripts i and t represent country index and time, respectively. Y_{it} is GDP per capita, K_{it} is total physical capital stock, H_{it} is human capital, and $\propto_1$ and $1-\propto_2$ are their respective shares in production. $H_{it} = e^{\emptyset\, r_{it}}$, where $\emptyset$ is a return to education and r_{it} is the average years of schooling. A_{it} shows the effect of all the o factors on GDP per capita other than that of K_{it} and human capital H_{it}.[9] We can also write Equation (3) as follows:

$$Y_{it} = A_{it}\, K_{it}^{\propto_1} (e^{\emptyset r_{it}})^{1-\propto_2} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

The motion equations of physical capital stock (K_{it}) and human capital stock (H_{it}) are given as follows.

$$\dot{K}_{it} = s_{iK} Y_{it} - \delta_{iK} K_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (5)$$

$$\dot{H}_{it} = s_{iH} Y_{it} - \delta_{iH} K_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

s_{iK} and s_{iH} are the portion of output level, devoted to physical and human capital stocks, respectively.

[8]Cobb-Douglus production function satisfies basic inada conditions, i.e., $\lim_{k\to o} F'(k) = \infty$, and $\lim_{k\to\infty} F'(k) = 0$, $\lim_{H\to 0} F'(H) = \infty$ and $\lim_{k\to\infty} F'(H) = 0$.

[9]A_{it} is also known as Solow residuals.

After log transformation (4) becomes:

$$lnY_{it} = lnA_{it} + \propto_1 lnk_{it} + (1-\propto_2) \emptyset r_{it} \, ln\text{e} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

As lne = 1, so we write the above equation as:

$$y_{it} = lnA_{it} + \propto_1 lnk_{it} + (1-\propto_2) \emptyset r_{it} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

As the preliminary objective of the study is to assess the effect of δ_{it} on economic growth, therefore,for this purpose, we augment the Solow growth model by incorporating δ_{it} and other control variables in the Solow Residual.

$$A_{it} = (\delta_{it}, \sum Z_{it}\ ) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

Based on an above theoretical growth model, the econometric model of growth to be estimated as follows:

$$y_{it} = \gamma_0 + \gamma_1 K_{it} + \gamma_2 H_{it} + \gamma_3 \delta_{it} + \varphi^{\tau} \sum Z_{it} + e_{it} \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

y_{it} is the log GDP per capita, K_{it} is the logarithm of gross fixed capital formation, and H_{it} is the log secondary school enrollment. δ_{it} is the non-systematic discretionary policy volatility, and Z_{it} is the set of control variables, incuding government expenditure, urbanisation, trade openness, the area of a country, conflicts, natural resource rents, the rule of law, government effectiveness, health expenditures, and taxes. e_{it} is the error term.

3.3. Data and Estimation Methodology

We use a panel of 74 countries including both developed, and developing, economies.[10] Given data limitations, we rely on cross-sectional regressions, which are based on both the annual and averaged data. The use of cross-sectional data is justified for various reasons. First, the panel is not balanced, i.e., for some countries, the variables are averaged over longer periods but in other cases, they are averaged over smaller periods. For instance, if a country is either established later or if the data is not available over a long period for it, then we use the data for the available smaller periods. Second, the institutional variables are highly persistent. For instance, the behaviour regarding the discretionary spending policy, which is often assumed as the outcome of political institutions, remains persistent in countries. For instance, it is generally predictable in developed countries, while volatile and unpredictable in developing countries, over the whole period covered. So the unbalanced panel combined with the persistent institutional variables would not add much to the analysis. The selection of countries is data specific, the sample includes all those countries for which the variables of our interest are available.

We employ two different econometric techniques: the Ordinary Least Square (OLS) and Generalised Method of Moment (GMM). Firstly, while assessing the macroeconomic effects of the discretionary policy volatility, we employ the OLS method. The OLS estimates, however, may conceivably be influenced by the problem of endogeneity associated with discretionary policy volatility.[11] As is generally agreed

[10]Countries list is available in the Appendix in Table A1.

[11]For detailed discussion about the endogeneity of discretionary spending volatility see also Fatas and Mihov (2003).

among the scholars, policies are the outcome of economic and political institutions in a country (Acemoglu, Johnson, & Robinson, 2001, 2005). Therefore, policies could never be dealt with as purely exogenous, rather they have their own data generating process which endogenises their behaviour. As far as the non-systematic discretionary policy is concerned, beyond doubt a political spending policy, it is obviously endogenous in nature because such policy behaviour is exclusively based on the political preferences of the political agents (Albuquerque, 2011). Hence, to tackle the issue of the endogeneity, we proceed to the GMM which is based on instrumental variables approach. We use as instruments the discretionary spending volatility by some institutional variables like the political system or political regime of the country (whether the country has a presidential or parliamentary system), the settler mortality rate, number of elections (legislative and executive elections), and number of government seats.

The political system of a country is typically perceived as an important element in shaping fiscal policy. For instance, under the presidential system, the power regarding various policy options is concentrated in fewer hands and, consequently, the government faces fewer political constraints. This results in significant variation in the policy which is relatively easier as compared to the parliamentary system of government.[12] According to Shugart and Carey (1992), under the presidential system of government, public authorities usually have greater independence and therefore more centralised authority and accountability. So the economic policies are usually effectively formulated and executed without any deferment from the legislature. Likewise, under such a system, the policy could be reversed easily if its outcomes are undesirable from the perspective of society's welfare. However, according to Persson and Tabellini (2001), the presidential system usually operates smaller governments and so they observe a smaller opportunistic electoral cycle.[13] Additionally, the settler mortality rate determines the behaviour of the current economic and political institutions, which, in turn, define the shape of current economic policies (volatility and persistence). The systematic differential in some countries political and economic institutions is mainly attributed to the former 'European Colonisation', started in the 18th century (Acemoglu et al. 2001). The colonisers used to develop an extractive institutional setup in colonies where they faced higher settler mortality rate, while they were more likely to introduce the institutions for protecting private property rights and encouraging investments activities in regions where they could settle. This diversification in the institutional arrangements by the colonisers has diverse consequences for the current institutional set-up of economies, and, therefore, for their current economic policies. The economies which are following volatile economic policies were mostly the part of the extractive institutional setup of the colonisers. Likewise, the economies which are exercising persistent policies were usually part of the regions where the colonisers set up inclusive institutions.

Elections also matter by keeping the policymakers accountable and disciplined (Fatás & Mihov, 2003). The volatile use of policies could question the credibility of political agents. However, it is equally conceivable that the positive effect of elections

[12]According to Sirimaneetham (2006), in the parliamentary system of government, where the government faces several rules and constraints.

[13]Opportunistic electoral cycle arises when political parties in power carry out expansionary fiscal policy at the time when it is considered unnecessary. Such expenditures are used by them to maximise their own preference in term of re-elections. For the detailed discussion see also Nordhaus (1975).

might completely be wiped out by the fairly expansionary fiscal policy to win re-election, or by changing policy directions. The desire for re-election might incentivise the executives to use policy tools in such a way that public spending increases in election years in order to attract the attention of voters. This might be at the cost of potential adverse effects on fiscal sustainability and aggregate macroeconomic stability. In the same way, the number of government seats matters for policy outcomes (Albuquerque, 2011). Higher government seats in the house represent higher government influence over policy alterations. This, in fact, indirectly measures the government concentration ratio. The major share of seats by some ruling parties could enable them to lower the constraints in their favour and manipulate the policy in such a manner that it could maximise their own preferences over the society's interest (in case of selfish incumbents). However, it could also be possible that a higher share of seats by the government could motivate them to produce more persistent economic policies. Given these instruments, we conjecture that the instruments have no direct effect on the economic growth of the countries.

4. EMPIRICAL RESULTS

In this section, we provide empirical results of our analysis. First, we discuss the results of OLS. Secondly we discuss the results of GMM. Table 1 reports the details of the estimates which are obtained through OLS. As is visible, there are eleven different specifications in which we scrutinise the consequences of volatile non-systematic discretionary spending policy for economic growth in the aggregated list of our countries. In the first column, when we regress log GDP per capita on policy volatility. We observe that volatility in non-systematic discretionary spending has a significant negative impact on GDP per capita. The associated coefficient of policy volatility indicates that a 1 percent increase in non-systematic discretionary spending volatility reduces economic growth by 1.55 percent. This finding is consistent with the study of Eller et al. (2016), who also documents the unfavourable impact of discretionary fiscal policy on economic growth. The reason for the adverse impact is that most of the decisions of economic agents and private investors are partially affected by government-controlled factors. Investors and economic agents react inversely to the volatility and uncertainties related to fiscal parameters (Ali, 2005). Generally, this disparaging impact generates aggregate output volatility, which in turn lowers the average growth level (Fatás & Mihov, 2007). In order to check the robustness of this relationship, from Regression 2 onwards, we do sensitivity analysis which incorporates all the plausible covariates which might have effects on economic growth.

It is pertinent to mention that with the inclusion of new regressors in growth regression, the influence of policy volatility appears to decline, however, its sign and significance remain intact in all specifications. For instance, with the addition of log capital formation in Regression 2, the negative effect of discretionary policy volatility on growth declines to 0.97 percent. However, the associated coefficient is still significant at 1 percent. Additionally, in the same regression, the log capital formation has a positive and significant impact on economic growth. The coefficient of log capital formation predicts that 1 percent increase in capital formation stimulates economic growth by almost 0.31 percent. This finding is also in line with Ndambiri et al. (2012) and supported

Table 1

OLS Regression; Dependent Variable Log GDP Per Capita

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Discretionary Policy Volatility	-1.548***	-0.972***	-0.584***	-0.359*	-0.425**	-0.346*	-0.336*	-0.340**	-0.271**		
	(0.148)	(0.212)	(0.165)	(0.200)	(0.185)	(0.178)	(0.173)	(0.164)	(0.092)	–	–
Log Capita Formation		0.307***	0.105	0.158**	0.119**	0.215***	0.241***	0.241***	0.361**	0.175***	0.344***
		(0.0673)	(0.0716)	(0.0641)	(0.0568)	(0.0628)	(0.0546)	(0.0589)	(0.169)	(0.037)	(0.071)
Log Secondary School Enrolment			1.279***	1.179***	0.851**	0.690**	0.511*	0.509*	0.283***	0.129*	0.241***
			(0.250)	(0.225)	(0.355)	(0.344)	(0.293)	(0.285)	(0.061)	(0.071)	(0.021)
Log Govt: Expenditure				0.951***	0.773**	0.561*	0.713**	0.726**	0.071*	0.317***	0.751**
				(0.344)	(0.309)	(0.300)	(0.288)	(0.310)	(0.038)	(0.019)	(0.371)
Log Urbanization					0.710	0.746	0.838**	0.841**	0.241**	0.277*	0.373*
					(0.478)	(0.458)	(0.388)	(0.391)	(0.132)	(0.118)	(0.201)
Log Openness						0.515**	0.213	0.211	0.041***	-0.029***	0.083**
						(0.233)	(0.225)	(0.292)	(0.011)	(0.003)	(0.041)
Log Area							-0.153***	-0.158**	-0.104**	-0.175**	-0.113**
							(0.0551)	(0.0709)	(0.039)	(0.085)	(0.051)
Log Natural Resource Rent								-0.00681	-0.126	-0.113*	-0.061
								(0.128)	(0.083)	(0.062)	(0.263)
Conflicts									-0.415**	-0.417**	-0.271
									(0.167)	(0.183)	(0.185)
Government Effectiveness									0.0732**	.032***	.125***
									(0.015)	(0.001)	(0.001)
Rule of Law									0.131*	0.261*	0.196**
									(0.072)	(0.139)	(0.092)
Log Health Expenditure									.031***	0.068	0.241***
									(0.011)	(0.155)	(0.017)
Taxes									-0.104	-0.052*	0.103**
									(0.244)	(0.021)	(0.049)
Developing Dummy*Policy Volatility										-0.241**	
										(0.114)	–
Developed Dummy*Policy Volatility											-0.083
										–	(0.173)
Constant	1.25***	2.985	1.920	-1.882	-1.823	-5.196**	-2.729	-2.681	1.941**	2.955	-3.173**
	(0.273)	(1.884)	(1.458)	(2.047)	(1.744)	(2.132)	(2.082)	(2.168)	(0.793)	(1.793)	(1.644)
Observations	74	74	74	74	74	74	74	74	74	74	74
R-squared	0.588	0.677	0.812	0.835	0.856	0.867	0.880	0.878	0.893	0.899	0.90

Robust standard errors in parentheses. *** P < 0.01, ** P < 0.05, * P < 0.1.

by theory, which suggests that higher availability of capital per worker enhances the growth pace. Similarly, with the inclusion of log secondary school enrollment in Regression 3, the negative effect of volatile discretionary spending policy further declines to 0.58 percent. However, as in the earlier two models, the coefficient remains significant at 1 percent. Similar to the positive impact of capital formation on economic growth, school enrollment also promotes economic growth. This finding is consistent with Hanushek, Jamison, Jamison & Woessmann (2008), who also discuss the positive effects of education on economic growth via cognitive skill development. Furthermore, with the addition of log of the government expenditure as an additional control variable in Regression 4, the negative impact of policy volatility on economic growth falls to 0.36 percent, which is still significant at 10 percent level of significance. Likewise, the other two covariates, government expenditure also encourages economic growth at 1 percent level of significance. This finding is supported by the Blanchard and Perotti (2002). Generally, government spending promotes growth through public investment and social expenditure, which dominates the crowding out and rent-seeking phenomena (Kelly, 1997).

Similarly, we control the growth regression for urbanisation, openness, the area of the country, and natural resources rent in Regressions 5, 6, 7 and 8, respectively. After controlling for these factors, though the negative magnitude of policy volatility falls from 0.42 percent to 0.34 percent, the effect is still significant in all specifications. In Regression 8, we observe that a 1 percent rise in discretionary policy volatility reduces economic growth by 0.34 percent. In the same regression, besides the capital formation, secondary school enrolment, and government spending, openness of economies and urbanisation also positively cause economic growth. However, the area of the country and natural resource rent adversely affect growth. The estimated coefficient associated with trade openness, though insignificant, is compatible with Levine and Renelt (1992).

Trade openness allows the utilisation of comparative advantage, quick diffusion of knowledge and technology, increasing the return to scale and exposure to competition. All these factors in turn positively affect economic growth. Similarly, the urbanisation estimate is supported by Turok and McGranahan (2013), as such a process leads to market and infrastructure investment. The negative impact of country area is supported by the Alouini and Hubert (2012) study. Although, a larger country enjoys a greater endowment of resources but also suffers from larger transportation and management costs which significantly lower economic growth. Similarly, the negative effect of natural resource rent on economic growth is in line with Sachs and Warner (2001). The advocates of resource curse provide various explanations that ineffective policies regarding exports and wealth creation by some governments turn the blessing of natural resources into a curse. Finally, after including all potential covariates as depicted in Regression 9, the negative effect of policy volatility drops to 0.31 percent. However, the associated coefficient is significant at 5 percent. Additionally, similar to Regression 8, all the previous covariates have the same effect on growth: among the new covariates, government effectiveness, rule of law, and health expenditure have a positive significant effect, while taxes have negative growth consequences. The positive effects of effective government policies is in line with Alam, Kiterage, and Bizuayehu (2017).

The improvement in the effectiveness of government is multidimensional, encompassing civil and public service qualities, the independence of authorities from political pressures, execution and preparation of quality policies and government's commitment to its policies (Kaufman, Kraay, & Mastruzzi, 2008). The improvement in all these dimensions surely promotes economic growth. Similarly, rule of law and health expenditures also positively and significantly cause economic growth as observed in Ozpolat, Guven, Ozsoy, and Bahar (2016), and Piabuo and Tieguhong (2017) respectively. Similar to the effectiveness of government, the rule ranges from trust in rules of society, efficient contract enforcement, the efficiency of courts, property rights, and trust in the courts and police. Improvement in all these institutional dimensions stimulates economic growth. Since expenditure on health provides healthy and efficient workers, it also stimulates economic growth. The negative effect of taxes on economic growth is supported by the study of Surjaningsih et al. (2012).

Nevertheless, in our analysis, such an effect is insignificant. It is fascinating to note that, in all specifications, the results imply that any unnecessary volatile public spending policy will significantly harm economic growth.

To make sure that results are not driven by a set of particular economies, we control the regression for developing and developed countries with the same control variables. Thus in Specifications 10 and 11, we introduced the interaction terms for developing and developed economies with their respective policy volatility. The coefficient of the interaction term in Regression 10 predicts that in comparison to developed economies, a unit increase non-systematic discretionary policy volatility in developing economies significantly retards economic growth by 0.24 percent.[14] However, the coefficient of the interaction term in Regression 11 suggests that in comparison to developing economies, policy volatility reduces economic growth in developed economies by almost 8 percent, however, not significantly.[15] This finding is in line with Fatás and Mihov (2003), who also reach to the same conclusion. This could be due to the fact that developed economies usually operate under strict fiscal rules,[16] thus it is not possible for the policymakers to use volatile or aggressive discretionary spending policies (Rodriguez, Tokman, & Vega, 2007). In fact such rules effectively bring economic stability which stimulates economic growth (Larraín & Parro, 2008). In contrast, in developing economies, uncertainties and volatility are usually observed to be higher (Fernández-Villaverde, Guerrón-Quintana, Rubio-Ramírez, & Uribe, 2011). Thus, any volatility in policies which is not linked to the business cycle or the current state of the economy can cause further uncertainty and volatility (Fatás & Mihov, 2003). Alternatively, in developing economies, volatile discretionary policies intensify macroeconomic uncertainty which in turn adversely affects the decisions of economic agents, resulting in negative consequences for economic outcomes.

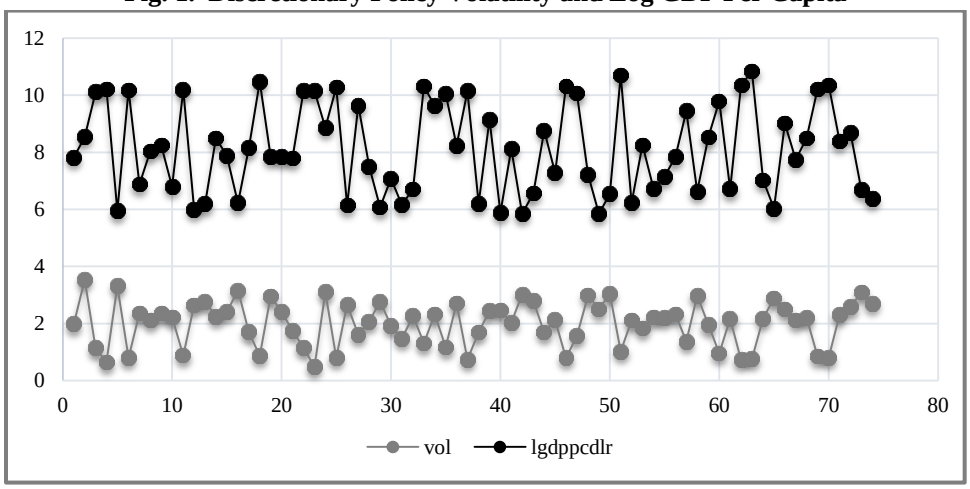
[14]In developing economies, taxes and openness significantly reduce economic growth, while health expenditures insufficiently promote growth. Taxes in these economies create distortions (Marrero & Novales, 2005), higher inefficiency in production lower their comparative advantage (Hunt & Morgan, 1995), and inefficient allocation of health funds does not improve their citizens' health (O'Donnell, 2007).

[15]Unlike developing economies, in developed economies, natural resource rent and conflicts could not significantly retard economic growth, while taxes in such economies have a positive effect on economic growth. All such effects are contributed to efficient institutional setups (Acemoglu et al. 2003).

[16]A fiscal rule imposes a long-lasting constraint on fiscal policy through numerical limits on budgetary aggregates. Fiscal rules typically aim at correcting distorted incentives and containing pressures to overspend, particularly in good times, so as to ensure fiscal responsibility and debt sustainability.

Although, the OLS results are congruent with our conjecture, the findings of OLS could be questioned because of the endogenous behaviour of discretionary policy volatility. The endogenous behaviour of discretionary policy arises due to two reasons; (a) discretionary spending directly depends on the political preferences of political agents, and (b) the reverse causality, running from GDP per capita to policy volatility. Figure 1 endorses that economies where GDP per capita is high (developed), policy volatility is low and the opposite is true for low GDP per capita economies (developing).

Fig. 1. Discretionary Policy Volatility and Log GDP Per Capita



Additionally, we also apply the Durban-Wu-Hausman test to check the endogenous behaviour of discretionary policy volatility. Table 2 represents the findings of the test.

Table 2

Durban-Wu-Hausman Test for Endogeneity of Discretionary Policy Volatility

Ho: Variables are Exogenous		
Robust score chi2(1)	12.1565	p = 0.0005
Robust regression F(1,46)	32.1573	p = 0.0000

Since, the probability value (0.0005) is significant, i.e., lower than 0.1, therefore, we reject the null hypothesis and conclude that discretionary policy is endogenous in nature. In the presence of such possibility, the OLS estimates are expected to be biased. In order to overcome the problem of endogeneity, we proceed to the approach of GMM.[17] We employ the political system, settler mortality rate, number of elections, and government seats in the house as instruments for policy volatility. The corresponding results of GMM are reported in the following Table 3.[18]

[17]We also use the Hausman m-statistic test which suggests that GMM results are more consistent than OLS estimates. The results of test are reported in appendix in table A3.

[18]We conducted Sargent test of over-identification restriction for the exogeneity of the instruments, which confirms the exogeneity of instruments in all the specifications of GMM. The results of test are reported in appendix in table A3. We have also reported the 2SLS results in the appendix in table A2.

Table 3

GMM Regression; Dependent Variable Log GDP Per Capita

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Discretionary Policy Volatility	-2.271***	-2.221***	-1.254***	-0.902**	-0.763**	-0.601*	-0.661***	-0.645***	-0.608***		
	(0.211)	(0.177)	(0.466)	(0.431)	(0.355)	(0.311)	(0.012)	(0.026)	(0.210)	–	–
Log Capita Formation		0.316***	0.098*	0.111***	0.049*	0.165*	0.205***	0.173**	0.193***	0.283*	0.291*
		(0.001)	(0.053)	(0.041)	(0.026)	(0.088)	(0.061)	(0.081)	(0.076)	(0.157)	(0.159)
Log Secondary School Enrolment			0.761***	0.652*	0.454*	0.217***	0.184	0.138***	0.107*	0.119*	0.221***
			(0.019)	(0.347)	(0.235)	(0.013)	(0.337)	(0.014)	(0.059)	(0.065)	(0.087)
Log Govt: Expenditure				0.293**	0.622**	0.466*	0.477***	0.751*	0.522*	0.325**	0.728**
				(0.139)	(0.288)	(0.249)	(0.118)	(0.413)	(0.277)	(0.161)	(0.349)
Log Urbanization					0.401***	0.657	0.803**	0.855***	0.873**	0.203*	0.477*
					(0.012)	(0.391)	(0.399)	(0.214)	(0.433)	(0.109)	(0.263)
Log Openness						0.206*	-0.131	-0.287*	0.628*	-0.141**	0.189*
						(0.113)	(0.079)	(0.153)	(0.348)	(0.067)	(0.105)
Log Area							-0.187*	-0.290**	-0.251*	-0.133*	-0.134
							(0.098)	(0.137)	(0.137)	(0.073)	(0.372)
Log Natural Resource Rent								- 0.361	- 0.408**	-0.324	- 0.067
								(0.217)	(0.201)	(0.261)	(0.211)
Conflicts									-0.236	-0.233*	-0.149
									(0.162)	(0.125)	(0.093)
Government Effectiveness									0.113*	0.098***	0.251*
									(0.061)	(0.013)	(0.135)
Rule of Law									0.261***	0.193*	0.108***
									(0.072)	(0.106)	(0.013)
Log Health Expenditure									0.031*	0.138	0.061*
									(0.044)	(0.086)	(0.034)
Log Taxes									-0.152	-0.083***	0.124*
									(0.293)	(0.032)	(0.068)
Developing Dummy*Policy Volatility										-0.291***	
										(0.031)	–
Developed Dummy*Policy Volatility											-0.167
										–	(0.353)
Constant	10.221***	8.12***	1.485	2.652**	1.133	-0.755	1.772***	3.201	4.193	1.696	-3.203
	(1.99)	(2.688)	(1.711)	(1.291)	(0.962)	(2.693)	(0.538)	(4.178)	(3.973)	(3.308)	(2.405)
Observations	67	66	62	59	59	57	55	55	53	51	51
R-squared	0.512	0.527	0.543	0.570	0.611	0.677	0.701	0.722	0.755	0.841	0.826

Robust standard errors in parentheses. *** P < 0.01, ** P < 0.05, * P< 0.1.

In Table 3, in all specifications (except #11) the non-systematic discretionary policy volatility negatively and significantly causes economic growth and thus supports the initial findings of OLS. As is obvious from the table, the univariate regression, depicted in Specification 1, reveals that a 1 percent upsurge in discretionary spending volatility retards economic growth by 2.27 percent at the 1 percent significance level. Though the associated coefficient of policy volatility is higher in magnitude than OLS estimate, however, Fatás and Mihov (2003) observed the same nature about instrumental variables approach in their analysis.[19] In order to conduct a sensitivity analysis, we proceeded in the same way as we did in the case of OLS. Alternatively, even in the case of GMM, we intended to check that the results were not driven by the control variables. In this regard, including the log capital formation and log secondary school enrollment in Regression 2 and 3, we observed a reduction in the magnitude of policy volatility, as its inverse impact on growth was now 2.22 percent and 1.25 percent, respectively, yet the coefficient was still a significant 1 percent. Likewise, with the inclusion of the log of government expenditure, the inverse impact of policy volatility on economic growth declined to 0.90 percent, however, still remaining significant. In the same way, with stepwise regression, the inclusion of other covariates like urbanisation, openness, the area of the countries, natural resources rents, and conflicts, do not reverse the significant adverse effects of policy volatility on economic growth. Nevertheless, similar to the OLS method, the downward trend in the coefficients of policy volatility are observed in each successive regression. From Regression 4 to 8, the total negative effect of policy volatility falls from 0.76 percent to 0.64 percent, respectively.

Finally, in Specification 9, after the inclusion of all the potential covariates in growth regression, the negative impact of policy volatility on economic growth remains 0.60 percent which is significant at 1 percent level. Again, in Regression 10 and 11, we introduced the interaction terms for developing and developed economies with their respective policy volatility. Similar to OLS findings, the discretionary policy volatility in developing economies negatively and significantly reduced economic growth as compared to developed economies. In developing economies, a 1 percent rise in policy volatility retards economic growth by 29 percent at 1 percent level of significance, while the policy volatility in developed economies reduces economic growth, but not significantly.

4. CONCLUSION AND POLICY IMPLICATIONS

The study is motivated by literature that seeks the macroeconomic consequences of policy volatility. It examines the economic cost associated with volatile use of non-systematic discretionary public spending. The analysis is carried out for the representative sample of the world and also for a different class of countries. The findings reveal that volatility in non-systematic discretionary spending significantly retards economic growth. The adverse impact of policy volatility remains robust to a set of potential covariates and the problem of endogeneity associated with discretionary spending policy.

[19]In their instrumental variable approach, estimates coefficients are 15 percent higher than OLS estimates. For more detail see also Card (1993) and Ashenfelter and Zimmerman (1997).

The analysis at a disaggregated level suggests that discretionary spending volatility significantly discourages the economic growth in developing economies, but not in developed ones. The possible explanation for this finding is that developed economies usually operate under strict fiscal rules, thus it is not possible for policymakers to use volatile or aggressive discretionary policies. In contrast, in developing economies, uncertainty is usually prevalent. Thus, any volatility in policies which is not linked to the business cycle or the current state of the economy further stimulates the uncertainty. Alternatively, in developing economies, the volatile discretionary policies intensify macroeconomic uncertainty, which in turn adversely affects the decisions of economic agents, resulting in negative consequences for economic outcomes. As a policy recommendation, it is suggested that prudent policies should be devised in order to constrain governments from the use of volatile discretionary fiscal policies. For instance, one such restriction could be the introduction of effective government spending rules, i.e., placing long-lasting numerical limits on budgetary processes, so that public officials are unable to cross a defined threshold level in spending while making fiscal decisions.

Appendix Table A1

Countries Included in the Sample

1	Algeria	38	Kenya
2	Argentina	39	Korea, South
3	Australia	40	Madagascar
4	Austria	41	Malaysia
5	Bangladesh	42	Mali
6	Belgium	43	Mauritania
7	Bolivia	44	Mexico
8	Botswana	45	Morocco
9	Brazil	46	Netherlands
10	Cameroon	47	New Zealand
11	Canada	48	Nicaragua
12	Central African Republic	49	Niger
13	Chad	50	Nigeria
14	Chile	51	Norway
15	Colombia	52	Pakistan
16	Congo, Democratic Republic	53	Panama
17	Costa Rica	54	Papua New Guinea
18	Denmark	55	Paraguay
19	Dominican Republic	56	Peru
20	Ecuador	57	Portugal
21	El Salvador	58	Senegal
22	Finland	59	South Africa
23	France	60	Spain
24	Gabon	61	Sri Lanka
25	Germany	62	Sweden
26	Ghana	63	Switzerland
27	Greece	64	Syria
28	Guatemala	65	Togo
29	Guinea	66	Trinidad and Tobago
30	Honduras	67	Tunisia
31	India	68	Turkey
32	Indonesia	69	United Kingdom
33	Ireland	70	United States
34	Israel	71	Uruguay
35	Italy	72	Venezuela
36	Jamaica	73	Zambia
37	Japan	74	Zimbabwe

Table A2

2SLS Regression; Dependent Variable Log GDP Per Capita

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Discretionary Policy Volatility	-2.326***	-2.292***	-1.139**	-0.939**	-0.626*	-0.636*	-0.694**	-0.894**	-0.891**		
	(0.309)	(0.496)	(0.476)	(0.474)	(0.381)	(0.363)	(0.345)	(0.400)	(0.441)	–	–
Log Capita Formation		0.279***	0.00439	0.0398	0.0502	0.0964	0.185**	0.214***	0.232*	0.194***	0.315***
		(0.043)	(0.100)	(0.102)	(0.0791)	(0.0881)	(0.0848)	(0.0811)	(0.125)	(0.081)	(0.002)
Log Secondary School Enrolment			0.965***	0.964***	0.644	0.556	0.260	0.108	0.103*	0.128**	0.208*
			(0.266)	(0.240)	(0.415)	(0.402)	(0.305)	(0.284)	(0.054)	(0.063)	(0.106)
Log Govt: Expenditure				0.446	0.506	0.375	0.744**	0.875**	0.314*	0.715**	0.961***
				(0.433)	(0.386)	(0.338)	(0.368)	(0.372)	(0.174)	(0.312)	(0.211)
Log Urbanization					0.829	0.863	1.037**	1.125***	0.631**	0.498*	0.618**
					(0.574)	(0.568)	(0.450)	(0.386)	(0.291)	(0.286)	(0.310)
Log Openness						0.277	-0.0391	-0.587	-0.277*	-0.316	0.258*
						(0.258)	(0.269)	(0.384)	(0.119)	(0.193)	(0.142)
Log Area							-0.207**	-0.311***	-0.351***	-0.201*	-0.108
							(0.0924)	(0.115)	(0.085)	(0.108)	(0.211)
Log Natural Resource Rent								- 0.435**	- 0.174	-0.361***	- 0.203
								(0.206)	(0.382)	(0.031)	(0.322)
Conflicts									-0.156*	-0.172**	-0.196
									(0.083)	(0.088)	(0.155)
Government Effectiveness									0.193***	0.063*	0.137***
									(0.001)	(0.034)	(0.015)
Rule of Law									0.373*	0.211**	0.151**
									(0.196)	(0.104)	(0.072)
Log Health Expenditure									0.104**	0.112	0.031***
									(0.052)	(0.096)	(0.011)
Log Taxes									-0.266***	-0.153***	-0.094**
									(0.011)	(0.014)	(0.041)
Developing Dummy*Policy Volatility										-0.331***	
										(0.061)	–
Developed Dummy*Policy Volatility											-0.187
										–	(0.281)
Constant	12.87***	12.12***	6.485**	4.101	1.099	-0.472	1.135	3.201	1.981**	1.396	-2.421**
	(0.764)	(3.876)	(2.909)	(3.821)	(3.146)	(3.693)	(3.588)	(4.178)	(0.987)	(1.091)	(1.044)
Observations	49	48	47	47	47	47	47	46	45	45	45
R-squared	0.513	0.532	0.565	0.620	0.742	0.746	0.766	0.769	0.801	0.845	0.832

Robust standard errors in parentheses. *** P < 0.01, ** P < 0.05, * P< 0.1.

Table A3

Results of the Sargan Test for Over-Identifying Restrictions and Hausman m-statistic Test

Sargan Over-Identifying Restrictions Test Ho: Instruments are Valid		Hausman m-statistic Test Ho: OLS Estimates are Efficient	
Specification	P-Values	Specification	P-Values
1	0.673	1	0.011
2	0.611	2	0.047
3	0.281	3	0.009
4	0.194	4	0.006
5	0.097	5	0.006
6	0.144	6	0.037
7	0.172	7	0.016
8	0.093	8	0.045
9	0.154	9	0.050
10	0.082	10	0.022
11	0.088	11	0.015

Table A4

Definition of Variables

Variable	Definition	Source
GDP Per Capita	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. The data are averaged over 1960-2015.	WDI
Discretionary Policy	Government expenditures which are not associated with the business cycle fluctuations. It is calculated through moving average standard deviation approach for each county. The data are averaged over 1960-2015.	Fatas and Mihov (2013)
Urbanisation	It is the urban population as a percentage of the total population. The data are averaged from 1960 to 2015.	WDI
Conflicts	This is a dummy variable, which either takes the value 1 or 0. It takes 1 if at least internal conflicts have occurred since 1960 in the country, 0 otherwise. The data spans are from 1960 to 2014.	PRIO
Government Expenditure	General government final consumption expenditure includes all government current expenditures for purchases of goods and services. It also includes most expenditures on national defense and security but excludes government military expenditures that are part of government capital formation. The data are averaged over 1960-2015.	WDI
Trade Openness	Trade is the sum of exports and imports of goods and services measured as a share of the gross domestic product. The data are averaged over 1960-2015.	WDI

Continued—

Table A4—(*Continued*)

Capital Formation	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Net acquisitions of valuables are also considered capital formation. It are averaged over 1960-2015.	WDI
Resources Rents	It is measured as the percent share of natural resources exports (including agricultural and raw material exports, fuel exports, food exports, and ores and metals exports) in GDP, averaged from 1960 to 2000.	WDI
Secondary School Enrollment	It is the proportion, regardless of age, to the population of the age group that officially corresponds to the level of education shown. The data are averaged over 1960-2015	WDI
Area	It is the total Area in square kilometers. The data are averaged from 1960 to 2015.	WDI
Political System	This is a dummy variable which takes either the value of 1 or 0. It takes 1 if a country has a presidential system or monarchy system and 0 if the country has a parliamentary system or the system where the president is selected by the parliament. We averaged the data, closer the value to 1 indicates that the country faces more presidential years, while the value closer to 0 implies that the country has more years of the parliamentary system. It is averaged over 1975-2015.	DPI, World Bank
Settler Mortality Rate	Log of the mortality rate faced by the European settler at the time of colonisation. The data is averaged for the mortality rate faced by the European settler at the time of colonisation. The data is taken in 2012.	Acemoglu and Robinson (2001)
Government Seats	This is the averaged data of a total number of seats held by all government parties. It is averaged over 1975-2015.	DPI, World Bank
Elections	The elections include two different election series; the legislative elections and executive elections. This is a dummy variable takes the value of 1" if there was a legislative election in this year and 0 otherwise, similarly, it takes the value of 1 if there was an executive election in this year and 0 otherwise. We averaged this data, so closer the value to 1 indicate the country has experienced more the legislative and executive elections while closing the value to 0 implies that country has experienced a minimum number of elections. It is averaged over 1975-2015.	DPI, World Bank
Government Effectiveness	The quality of public services, the quality of the civil service, and the degree of its independence, the quality of policy formulation and implementation. It is averaged over 1975-2015.	DPI, World Bank
Rule of Law	Confidence in the rules of society, law, and order, the efficiency of the judicial system, the quality of contract enforcement, property rights and trust in police and the courts. It is averaged over 1975-2015.	DPI, World Bank
Taxes	Tax revenue refers to compulsory transfers to the central government for public purposes. Certain compulsory transfers such as fines, penalties, and most social security contributions are excluded. Refunds and corrections of erroneously collected tax revenue are treated as negative revenue. It is averaged over 1975-2015.	WDI
Health Expenditure	Level of current health expenditure expressed as a percentage of GDP. Estimates of current health expenditures include healthcare goods and services consumed during each year. This indicator does not include capital health expenditures such as buildings, machinery, IT and stocks of vaccines for emergency or outbreaks. It is averaged over 1975-2015.	WDI

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