Macroeconomic Consequences of Volatile Discretionary Fiscal Policy: Evidence from Developing Countries

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https://doi.org/10.62345/jads.2023.12.3.44

Abstract

This study aims to investigate the macroeconomic implications of discretionary spending volatility. The study considers a panel of developing economies, including 55 economies – 25 upper- and 30 lower-middle-income countries. The study utilizes panel data that cover a period from 2000-2021. The study estimates the discretionary public spending through a fiscal rule and its volatility via the years moving average standard deviation method. To estimate the impact of discretionary spending volatility on economic growth and private investment, this study employs the Generalized Method of Moment (GMM) estimation technique. The estimation results for the aggregated panel show that volatility in discretionary public spending adversely affects economic growth and private investment. Interestingly, the estimation results confirm that aggregated findings remain intact for the disaggregated panels, i.e., volatility in discretionary public spending adversely affects economic growth and private investment in upper and lower middle-income countries. However, volatility in discretionary public spending has a relatively high negative impact on economic growth and private investment in lower-middle-income countries. It suggests that fiscal rules (i.e., permanent numerical limits on total government expenditure) should be introduced to restrict government from the volatile use of discretionary policy.

Keywords: Discretionary Spending, Economic Growth, Private Investment, Generalized Method of Moments (GMM), Developing Economies.

Introduction

The fiscal policy that includes government spending and taxation is considered an essential macroeconomic tool at the disposal of governments to stimulate economic growth, achieve macroeconomic stability, and set paths for sustainable social outcomes (Bogolib, 2015). The studies on public spending and economic growth document conflicting findings. For instance, one strand of studies verifies a positive association between public spending and growth (Tagkalakis, 2014; Dash & Sharma, 2008; Albatel, 2000), while some report a negative association (Barro, 1991; Grier & Tullock, 1989; Agell et al., 2006), yet few report no association between said variables (Butkiewicz & Yanikkaya, 2011; Dureevall & Henrekson, 2011). These contradictory results arise due to overlooking two critical dimensions of public spending. These include discretionary spending, i.e., a part of public spending that fiscal authorities exercise for correcting business cycle fluctuations or political benefits. Secondly is the policy's stability, i.e., the volatility associated with discretionary spending (Ali et al., 2018; Ali & Khan, 2020).

Fiscal authorities commonly practice fiscal discretion in a volatile fashion. The discretion in fiscal policy indicates the fiscal authorities' intended adjustments in government spending and

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Compliance with ethical standards: There are no conflicts of interest (financial or non-financial). This study did not receive any funding.

taxation for various economic and political motives. However, the volatility in discretionary government expenditures exerts diverse effects on the economy's overall performance (Rasul et al., 2021). The consequential effects of discretionary fiscal volatility vary among countries, ranging from positive to harmful and sometimes ineffective (Ali & Khan, 2018). Fiscal authorities commonly practice fiscal discretion in a volatile fashion. The volatile behavior of discretionary spending is observed to have specific macroeconomic implications; therefore, it cannot be ignored. A part of economic agents' decisions is influenced by economic policies (Ali et al., 2018).

Consequently, volatility in discretionary public spending creates uncertainty among them and adversely affects their economic decisions. Alternatively, economic agents inversely react to the uncertainty associated with fiscal measures (Ali, 2012; Ali & Khan, 2018; Albuquerque, 2011). For instance, investors delay their investment decisions when they fail to predict the behavior of fiscal instruments, which retards economic growth. Hence, the stability and predictability of fiscal instrument is necessary to avoid crowding out effect and guarantee sustained economic growth (Cavallari & Romano, 2017).

Undoubtedly, the predictability of fiscal instruments is necessary for a stable economic system. However, discretionary spending volatility is considered desirable in certain cases – for instance, if exercised to counter business cycle fluctuations (Attinasi and Klemm, 2016).[3] In this case, discretionary spending volatility is believed to eliminate output volatility and positively cause long-run economic growth (Baddi & Lahlou, 2013; Cyrus & Elias, 2014). Additionally, the ability of the fiscal authorities to correct business cycle fluctuations is based on specific mechanisms and conditional to certain factors. It is observed that fiscal retractions, i.e., putting numerical limits on public expenditure, lower the fiscal authorities' ability to exercise volatility in discretionary spending, leading to a slower response to unexpected shocks (Lane, 2003). Conversely, it is argued that imposing restrictions on fiscal measures could not significantly affect the nature of the business cycle because the positive and negative effects of restrictions neutralize each other (Alesina & Bayoumi, 1996). Nevertheless, discretionary spending volatility is the primary source of output volatility and lower economic growth (Ali & Khan, 2020). Put differently, discretionary spending volatility intensifies business cycle fluctuation and adversely causes long-run economic growth.

Despite the abovementioned disagreement, supporting literature prevails that believes that discretionary spending volatility could be the leading source of output volatility, economic instability, and stagnant growth (Castro, 2006). Additionally, it is advocated that economic growth in developing countries is significantly discouraged by volatile discretionary government spending, but this is different in developed countries (Ali & Khan, 2020). This difference in the behavior of discretionary public spending arises due to the difference in their economic structure. Consequently, fiscal policy functions differently in developing countries (Ali & Khan, 2020).

In particular, this study models the volatility of total discretionary spending in the case of a large panel of developing economies. It assesses its impact on economic growth and private investment. The study follows the fiscal rule literature for extracting the discretionary part of government spending. For this purpose, the study follows the fiscal rule model introduced by Aizenman and Marion (1991) to extract the given part for the entire panel. The error term is the discretionary part of government spending. Additionally, to find the volatility associated to error term, this study adopts the three-year moving average standard deviation approach, as utilized by many researchers such as Ali and Khan (2020), Ali and Khan (2018), Fatas and Mihov (2009), and Ismail and Husain (2012).

[3]*This policy refers to a counter-cyclical fiscal policy. Through such fiscal measures the government intentionally counter the boom and recession and stabilizes the economy. For detailed discussion, see also Jha et al. (2014).*

This study contributes to the existing literature by estimating the total component of discretionary government expenditure for a selected set of developing economies. Moreover, it assesses the impact of the same policy on private investment for said panel of economies both at aggregated and disaggregated levels to identify the channel through which such spending volatility affects economic growth.
This study contributes to the existing literature by estimating the total component of discretionary government expenditure for a selected set of developing economies. Moreover, it assesses the impact of the same policy on private investment for said panel of economies both at aggregated and disaggregated levels to identify the channel through which such spending volatility affects economic growth.

Methodological Framework

Fiscal Discretion and its Volatility

Fiscal policy consists of two main components: (a) automatic stabilizers component and (b) discretionary component (Ali et al., 2018; Dolls et al., 2012). Since this study is interested in inquiring about the impacts of the later part of the policy, for this purpose, the study follows the fiscal rule model introduced by Aizenman and Marion (1991) to extract the given part. The said fiscal rule model follows the first-order autoregressive form and is given as follows:

$$G_{it} = \beta_0 + \beta_1 G_{it-1} + \varepsilon_{it} \quad (1)$$

where 'i' denotes the country index, and 't' denotes the period. The is the current total government expenditure, while is the lagged government expenditure. The term is the discretionary part of government spending. This study estimates the fiscal rule model for the entire panel. Additionally, to find the volatility associated with, this study adopts the three-year moving average standard deviation approach, which is given by the following formula:

$$spv_{it} = \sqrt{\frac{\sum (\varepsilon_{it} - \underline{\varepsilon})^2}{n}} \quad (2)$$

The spv_{it} is the volatility of discretionary spending. The prior studies, like Ali and Khan (2020), Ali and Khan (2018), Fatas and Mihov (2009), and Ismail and Husain (2012) applied the same method. To examine the impact of volatile discretionary government spending on economic growth and private investment, the component spv_{it} is incorporated in growth and private investment models, respectively.

Fiscal Measures and Economic Growth

This study investigates the impact of discretionary spending volatility on economic growth. For this purpose, monetary models put forth by Kydland and Prescott (1977) and Barro and Gordon (1983) have been adjusted to create the theoretical framework. While the model's core characteristics are kept the same, it is modified to fit a fiscal framework where the government, as the policy maker, is interested in stabilizing both GDP and its fiscal deficit around a desired level (which we simplify by supposing to be zero). We focus on an open economy where the decision-makers in each economy try to minimize the following loss function:

$$L = \frac{1}{2} \{ \beta_i (y_i - k_i)^2 + d_i^2 \} \quad (3)$$

Where *y* represents output measured in deviations from the trend, *d* denotes deficit, β stands for the relative weight of output deviations from its target *k*. Because of distortions such as imperfect competition or taxes, this target is supposed to be higher than zero. It is assumed that aggregate economy for each (open) economy is determined by:

$$y_i = A + \theta_i d_i + \epsilon_i + w_i \epsilon_j \quad (4)$$

Where A is the autonomous component of aggregate demand, ϵ_i and ϵ_j are the domestic and foreign shocks, with w_i denoting the impact of the foreign shock on domestic production. It is

assumed that these shocks have zero mean and variance, which correspond to σ_i^2 and σ_j^2, respectively.

The optimum level of the deficit will be, in equilibrium, by minimizing (3) with respect to (4):

$$d_i = \frac{[\beta_i (k - A) - \beta_i \epsilon_i - \beta_i w_i \epsilon_j]}{1+\beta_i \theta_i} \quad (5)$$

The output variance is computed by substituting equation (5) into equation (4):

$$Var(y_i) = \frac{1}{(1+\beta_i \theta_i)^2} \sigma_i^2 + \frac{w_i^2}{(1+\beta_i \theta_i)^2} \sigma_j^2 + \frac{2 w_i}{(1+\beta_i \theta_i)^2} cov(\epsilon_i, \epsilon_j \quad (6)$$

To describe the country domestic shock as a function of the domestic level of deficit and the foreign shock, equation (5) is reorganized in order to evaluate the effect of fiscal convergence on output volatility for each economy.

$$\epsilon_i = w_i \epsilon_j + (k - A) - \frac{1+\beta_i \theta_i}{\beta_i} d_i \quad (7)$$

Successively, in equation (7) each domestic shock as function of domestic and foreign deficit can be expressed by substituting for the foreign shocks, assuming the symmetrical equilibrium for each economy:

$$\epsilon_i = \frac{1-w_i}{1-w_i-w_j}(k-A) - \frac{1+\beta_i \theta_i}{\beta_i (1-w_i-w_j)} d_i + \frac{w_i (1+\beta_j \theta_j)}{\beta_j (1-w_i-w_j)} d_i \quad (8)$$

The resulting variance will be as follows:

$$\sigma_i^2 = \frac{(1+\beta_i \theta_i)^2}{\beta_i^2 (1-w_i-w_j)^2} \sigma_{di}^2 + \frac{w_i^2 (1+\beta_j \theta_j)^2}{\beta_j^2 (1-w_i-w_j)^2} \sigma_{dj}^2 - \frac{w_i (1+\beta_i \theta_i)(1+\beta_j \theta_j)}{\beta_i \beta_j (1-w_i-w_j)} cov(d_i, d_j) \quad (9)$$

And covariance

$$cov(\epsilon_i, \epsilon_j) = \frac{w_j (1+\beta_i \theta_i)^2}{\beta_j^2 (1-w_i-w_j)^2} \sigma_{di}^2 + \frac{w_i (1+\beta_j \theta_j)^2}{\beta_j^2 (1-w_i-w_j)^2} \sigma_{dj}^2 + \frac{2 w_i w_j (1+\beta_i \theta_i)^2 (1+\beta_j \theta_j)^2}{\beta_i \beta_j (1-w_i-w_j)^2}$$
$$cov(d_i, d_j) \quad (10)$$

When equation (6) along with (9) and (10) is examined, it is observed that there exists some uncertainty regarding the impact of fiscal coordination on output volatility. It is assumed, on one hand, the positive transmission of foreign shocks ($w_i > 0$) and countercyclical fiscal deficit ($\frac{1+\beta_i \theta_i}{\beta_i}$ >0), and thereby the variance of country specific shocks is assumed to be lessened by higher deficit convergence ($cov(d_i, d$)). On the other hand, the positive transmission of foreign shocks ($w_i > 0$) and countercyclical fiscal deficit ($\frac{1+\beta_i \theta_i}{\beta_i}$ >0), is assumed. The higher covariance between domestic and foreign shock will be resulted due to higher fiscal deficits convergence ($cov(d_i, d)$) leading to higher output volatility. The higher output volatility lowers the economic growth and vice versa.[4]

Models Specification

Specification of Growth Model

This study considers the following growth model. The similar model is already used by various studies like Ali and Kham (2020), Ali et al. (2018), and Fatas and Mihov (2013).

$$y_{it} = \gamma_0 + \gamma_1 y_{it-1} + \gamma_2 lf_{it} + \gamma_3 hc_{it} + \gamma_4 spv_{it} + \gamma_4 to_{it} + \gamma_6 fdi_{it} + \gamma_7 inf_{it} + \varepsilon_{it} \quad (11)$$

The subscripts i and t in the above model represent countries in the panel and time periods, respectively. The variable of interest is spv_{it} i.e., discretionary spending volatility. This study is interested to assess how volatility in discretionary spending affect the pattern on economic growth in various sets of countries. The γ_i's represent parameter estimates that encapsulate the impact of each independent variable on economic growth. Whereas: y_{it} = GDP growth, y_{it-1} = Lag GDP growth, lf_{it} = Labour Force Participation, hc_{it} = Human Capital, spv_{it} =

[4]*For details see Ali et al (2020) & Fatas and Mihov (2006).*

Discretionary Spending Volatility, to_{it} = Trade Openness, fdi_{it} = Foreign Direct Investment, inf_{it} = Inflation, ε_{it} = Error Term.

Specification of Investment Model

After analyzing the impact of discretionary spending on economic growth, this study tries to explore the path through which such effect transfer to economic growth. For this purpose, the present study investigates the impact of discretionary spending on the investment behavior of investors. This study borrows the investment model from the prior work of Ayeni (2020) and Agwu (2015) and provides the modified model in the following form:

$$pi_{it} = \beta_0 + \beta_1 pi_{it-1} + \beta_2 spv_{it} + \beta_3 y_{it} + \beta_4 inf_{it} + \beta_5 s_{it} + \beta_6 r_{it} + \mu_{it} \quad (12)$$

The subscripts i and t in the above model, represent countries in the panel and time periods, respectively. The variable of interest in the above model is spv_{it} i.e., discretionary spending volatility. The β_i's represent parameter estimates that account for each independent variable's impact on economic growth. Where: pi_{it} = Private Investment, pi_{it-1} = Lag Private Investment, spv_{it} = Discretionary Spending Volatility, y_{it} = GDP Growth, inf_{it} = Inflation, s_{it} = Saving, r_{it} = Real Interest Rate. μ_{it} = Error term

Data and Estimation Methodology

This study uses a panel of 55 developing economies. The selection of the economies in the panel is purely based on the data's availability. Since data for most developing economies are available from 2000, this study considers the year 2000 as the starting point of data and collects to the most recent year, i.e., 2021.

This division of developed and developing countries is based on the most recent categorization of World Bank's data (in the appendix, the list of countries and their respective income groups. are given). After dividing the aggregate panel of 55 countries, 25 countries were selected into upper-middle-income countries and 30 into lower-middle-income countries.

This study relies on the Generalized Method of Moment (GMM) to estimate the given models. The GMM is a renowned econometric technique that extends the Instrumental Variable (IV) technique. Interestingly, the GMM helps solve the problem of endogeneity and allows the capture of the dynamic effect in a model. Additionally, the model to be estimated need not be homoscedastic and serially independent when using the GMM approach (Blundell & Bond, 2000). Thus, GMM generates accurate estimates even when serial correlation and heteroskedasticity are present. (Perera and Lee, 2013; Ali et al., 2018). It also avoids the dynamic panel bias (Nickell, 1981).

Results and Discussion

Growth Model Estimation

Aggregated Sample Results of Growth Model

The validity of the instruments is demonstrated by the null hypothesis of the Arellano-Bond AR2 test, which asserts that the instruments are not correlated with the error term. Alternately, the model's instruments are not endogenous. In other words, the Arellano-Bond AR2 test's alternative hypothesis contends that using instruments is invalid since they are endogenous and linked with error terms. The Hansen over-identification restrictions test exhibits the null hypothesis that the instruments used in the model are exogenous, strictly representing the endogenous variables. The probability values for the Hansen over-identification restrictions test and Arellano-Bond AR2 test, shown in the table, are 1.00 and 0.16, respectively. It recommends that the model utilize those instruments which are exogenous and reliable. Thus, a confident interpretation of the coefficients is possible.

Table 1: Impact of Discretionary Spending Volatility on Economic Growth

Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag GDP Growth	0.19***	0.043	4.35	0.000	0.104	0.274
Labor Force Participation	0.002	0.026	0.08	0.937	-0.049	0.054
Human Capital	0.012	0.019	0.62	0.537	-0.026	0.051
Discretionary Spending Volatility	-0.33***	0.074	-4.46	0.000	-0.477	-0.186
Trade openness	0.01	0.018	0.55	0.585	-0.026	0.047
Foreign Direct Investment	0.28*	0.165	1.70	0.089	-0.042	0.606
Inflation	0.04	0.053	0.79	0.432	-0.062	0.146
Constant	0.797	2.993	0.27	0.790	-5.070	6.663
	No. of Countries in the Panel = 55			No. of Observations = 1210		
	Arellano-Bond AR2 Test = 0.16			Hansen Over-Identification Restriction Test = 1.00		

Note: Author's Own Calculations. The star (*) on coefficients depict the significance level, where,***p<0.01,**p<0.05,*p<0.1.

In Table 1, for lag GDP growth, the coefficient is 0.18, which is significant at 1%. It indicates that a 1% improvement in economic growth in the previous period significantly stimulates economic growth in the current period by 19%. This finding is compatible with the study of Ali et al. (2018) and Slesnick (2020), which observed a positive association between lag and current economic growth. It is also supported by the argument that encouraging growth in the previous periods was a signal for an economic agent to expand economic activities in the future and maximize their share. The coefficient associated with labor force participation is 0.002, but it is insignificant. Although a 1% increase in labor force participation promotes economic growth of 0.02%, it cannot be regarded as a significant rise. This result is compatible with the prior studies of Haque et al. (2019) and Akimov et al. (2009), which observed a positive but insignificant relationship between labor force participation and economic growth, respectively. The coefficient associated with human capital also appears positive but insignificant. The associated coefficient with human capital is 0.012, which suggests that an increase in schooling by one year stimulates economic growth by more than 1%. However, this rise must be viewed as insignificant. This finding is compatible with the study of Ali et al. (2018) and Kanayo (2013). The positive impact of human capital on economic growth is justified mainly by two arguments. Firstly, human capital affects the internal rate of return on innovation. Secondly, it enhances the rate of technological diffusion (Pelinescu, 2015). However, in developing countries, low levels of institutions need to develop quality human capital. Consequently, the inexperienced labor force needs to promote the pace of economic growth (Ali et al., 2012; Muhammad et al., 2015).

The coefficient associated with discretionary spending volatility, which constitutes the critical variable of the study, appears negative and significant. The coefficient associated with discretionary spending volatility is -0.331, which is significant at 1%. It implies that one standard deviation increases in discretionary spending volatility retards economic growth by 33% points. This finding is compatible with the study of Ali and Khan (2020), Ali and Khan. (2018), and Fatás and Mihov (2013). Various arguments justify this negative impact of discretionary spending volatility on economic growth. Firstly, discretionary spending volatility

intensifies business cycle fluctuations or output volatility and reduces average economic growth. Secondly, discretionary spending volatility creates uncertainty among investors, adversely affecting their investment decisions and economic growth.

The coefficient associated with trade openness is positive but insignificant. The magnitude of the associated coefficient with trade openness is 0.010, which indicates that a 1 unit increase in trade to GDP ratio could stimulate economic growth by 1%. To put it differently, opening economies for trade cannot robustly promote economic growth. This finding is in line with Ulaşan (2015), Keho (2017), and Were (2015). The coefficient associated with foreign direct investment appears positive and significant. The coefficient associated with foreign direct investment is 0.282, which is significant as 10%. It implies that a 1% increase in the flow of foreign direct investment encourages economic growth by 28%. This finding is compatible with Baiashvili and Gattini (2020) and An (2016). Lastly, the coefficient associated with inflation is 0.04, which is insignificant. It shows that inflation does not exert a significant effect on growth. This result is consistent with the prior work of Mandeya and Ho (2021), which also observed an insignificant impact of inflation on growth.

Estimation Results of Disaggregated Growth Model

Table 2 gives the coefficient estimates of the disaggregated panel samples. At the same time, panels A and B in the table provide the parameter estimates of upper-middle-income and middle-income countries, respectively. The Arellano-Bond AR2 test values for panel A and panel B are 0.132 and 0.17, respectively, suggesting that instruments are valid, i.e., not correlated to the error term. Similarly, the Hansen over-identification restrictions test values for panel A and panel B is 1.00, which suggests that instruments are exogenous, i.e., instruments represent the model's endogenous variables.

Table 2: Impact of Discretionary Spending Volatility on Economic Growth

Upper Middle-income Countries						
Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag GDP Growth	0.173***	0.06	3.07	0.002	0.062	0.283
Labor Force Participation	0.01	0.02	0.61	0.544	-0.021	0.040
Human Capital	0.03	0.04	0.75	0.453	-0.048	0.109
Discretionary Spending Volatility	-0.25**	0.10	-2.43	0.015	-0.457	-0.049
Trade openness	0.019*	0.01	1.85	0.065	-0.001	0.041
Foreign Direct Investment	0.43***	0.13	3.31	0.001	0.176	0.689
Inflation	0.089	0.06	1.46	0.143	-0.030	0.210
Constant	-3.91	4.68	-0.83	0.405	-13.095	5.283
	No. of Countries in the Panel = 25			No. of Observations = 550		
	Arellano-Bond AR2 Test = 0.132			Hansen Over-Identification Restriction Test = 1.00		
Lower Middle-income Countries						
Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag GDP Growth	0.18***	0.07	2.61	0.009	0.044	0.316
Labor Force Participation	0.01	0.02	0.26	0.796	-0.029	0.039
Human Capital	0.02	0.02	1.10	0.273	-0.015	0.053
Discretionary Spending Volatility	-0.36***	0.08	-4.43	0.000	-0.516	-0.199

Trade openness	-0.004	0.01	-0.38	0.703	-0.027	0.018
Foreign Direct Investment	0.13	0.12	1.03	0.301	-0.115	0.373
Inflation	-0.06*	0.03	-1.72	0.086	-0.122	0.008
Constant	2.89	1.53	1.89	0.059	-0.111	5.897
	No. of Countries in the Panel = 30			No. of Observations = 660		
	Arellano-Bond AR2 Test = 0.17			Hansen Over-Identification Restriction Test = 1.00		

Note: Author's own calculations. The star (*) on coefficients depict the significance level, where,***p<0.01,**p<0.05,*p<0.1.

The coefficients associated with the discretionary spending volatility are -0.25 and -0.35 for upper-middle-income and middle-income countries, with 5% and 1% significance, respectively. It implies that one standard deviation increases in discretionary spending volatility retards economic growth in Upper Middle-income countries by 25% percent points, while in middle-income countries by 35% points, respectively. These estimates suggest that volatility in discretionary spending is undesirable for both sets of countries. However, it is more harmful for the middle-income countries. Ali and Khan (2020) and Ali et al. (2018) explain the higher negative impact of discretionary spending volatility on low-income countries. These studies provide two main justifications. Firstly, discretionary spending volatility causes higher output growth volatility or more intensely promotes business cycle fluctuations. Secondly, it creates higher uncertainty among the investors, adversely affecting their investment decisions. Consequently, middle-income countries observe a higher negative impact of discretionary spending volatility on economic growth.

Investment Model Estimation

Aggregated Sample Results of Investment Model

Table 3 provides the coefficient estimates of the aggregated sample of the private investment model.

Table 3: Impact of Discretionary Spending Volatility on Private Investment

Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag Private Investment	0.77***	0.04	18.22	0.00	0.68	0.85
Discretionary Spending Volatility	-0.49*	0.27	-1.65	0.10	-0.99	0.08
GDP Growth	0.19***	0.05	3.65	0.00	0.09	0.30
Inflation	-0.08*	0.04	-1.96	0.05	-0.16	-0.0001
Saving	0.05**	0.02	2.42	0.02	0.01	0.09
Real Interest Rate	-0.02	0.02	-1.29	0.20	-0.06	0.01
Constant	4.50	0.93	4.83	0.00	2.67	6.33
	No. of Countries in the Panel = 55			No. of Observations = 1210		
	Arellano-Bond AR2 Test = 0.05			Hansen Over-Identification Restriction Test = 1.00		

Note: Author's Own Calculations. The star (*) on coefficients depict the significance level, where,***p<0.01,**p<0.05,*p<0.1.

These estimates are obtained through the Generalized Method of Moment (GMM). Nevertheless, before evaluating the coefficient estimates, the Hansen test of over-identification restriction and the Arellano-Bond AR test must be used to determine the suitability and sufficiency of the provided model. In Table 3, the over-identification restrictions test and the Arellano-Bond AR2 test have probability values of 0.05 and 1.00, respectively. It advocates that the model utilized that instruments are exogenous and reliable. Thus, a confident interpretation of the coefficients is possible.

The coefficient associated with discretionary spending volatility is -0.49, which is significant at 10%. It implies that one standard deviation increases in discretionary spending volatility retards private investment by 49%. This finding is supported by the prior study of Fata and Mihov (2013) and Ali (2018), which observed a negative and significant relationship between discretionary spending volatility and private investment. This higher negative impact of volatile discretionary spending on private investment is justified by the argument that discretionary spending in developing countries is exercised independently of business cycle fluctuations, i.e., it has nothing to correct economies' woes and aims to achieve political mileage. Consequently, it distorts the system and harms the investment decisions. Similarly, such spending is aggressive or volatile, creating uncertainty in the fiscal instruments and adversely affecting private investors' investment decisions (Ali, 2018).

Disaggregated Sample Results of Investment Model

Table 4 gives the coefficient estimates of the disaggregated panel samples. Panel A and B in the table provide the parameter estimates of upper- and lower-middle-income countries, respectively. The Arellano-Bond AR2 test values for panel A and panel B are 0.11 and 0.13, suggesting that instruments are appropriate, i.e., not linked to the error term. Similarly, the Hansen over-identification restrictions test values for panel A and panel B is 1.00, which suggests that instruments are exogenous, i.e., instruments represent the model's endogenous variables. These tests suggest that models are correctly estimated, and coefficients can be confidently interpreted. The coefficients associated with the discretionary spending volatility are -0.25 and -0.35 for upper-middle-income and middle-income countries, with 5% and 1% significance, respectively. It implies that one standard deviation increases in discretionary spending volatility retards economic growth in Upper Middle-income countries by 25% percent points, while in middle-income countries by 35% points, respectively. These estimates suggest that volatility in discretionary spending is undesirable for both sets of countries. However, it is more harmful for the middle-income countries. Ali and Khan (2020) and Ali et al. (2018) explain the higher negative impact of discretionary spending volatility on low-income countries. These studies provide two main justifications. Firstly, discretionary spending volatility causes higher output growth volatility or more intensely promotes business cycle fluctuations. Secondly, it creates higher uncertainty among the investors, adversely affecting their investment decisions. Consequently, middle-income countries observe a higher negative impact of discretionary spending volatility on economic growth.

Investment Model Estimation

Aggregated Sample Results of Investment Model

Table 3 provides the coefficient estimates of the aggregated sample of the private investment model.

Table 4: Impact of Discretionary Spending Volatility on Private Investment

Panel-A: Upper Middle-income Countries						
Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag Private Investment	0.84***	0.03	24.75	0.00	0.77	0.90
Discretionary Spending Volatility	-0.48*	0.29	-1.67	0.09	-1.04	0.08
GDP Growth	0.11	0.07	1.63	0.10	-0.02	0.24
Inflation	0.03	0.06	0.52	0.61	-0.09	0.16
Saving	0.04***	0.01	2.68	0.007	0.01	0.07
Real Interest Rate	-0.04*	0.02	-1.92	0.05	0.01	0.0007
Constant	2.85	0.80	3.58	0.00	1.29	4.4105
	No. of Countries in the Panel = 25			No. of Observations = 550		
	Arellano-Bond AR2 Test = 0.11			Hansen Over-Identification Restriction Test = 1.00		
Panel-B: Lower Middle-income Countries						
Variables	Coefficients	Standard Error	Z-Stat	P>|Z|	[95% Conf. Interval]	
Lag Private Investment	0.89 ***	0.04	25.43	0.00	0.82	0.96
Discretionary Spending Volatility	-0.55**	0.27	-2.05	0.04	-1.09	-0.02
GDP Growth	0.18***	0.04	4.20	0.00	0.09	0.26
Inflation	-0.006	0.02	-0.23	0.82	-0.05	0.04
Saving	0.003	0.01	0.26	0.80	-0.02	0.03
Real Interest Rate	-0.007	0.009	-0.68	0.49	-0.03	0.01
Constant	2.09	0.87	2.39	0.02	0.38	3.80
	No. of Countries in the Panel = 30			No. of Observations = 550		
	Arellano-Bond AR2 Test = 0.14			Hansen Over-Identification Restriction Test = 1.00		

Note: Author's own calculations. The star (*) on coefficients depict the significance level, where,***p<0.01,**p<0.05,*p<0.1.

The coefficients associated with the discretionary spending volatility are -0.48 and -0.55 for upper-middle-income and lower-middle-income countries, respectively. It implies that one standard deviation increases in discretionary spending volatility retards investment in upper-middle-income countries by 48% percent points while in lower-middle-income countries by 55% percent points, respectively. These estimates suggest that volatility in discretionary spending is undesirable for these countries. However, it is more harmful for the middle-income countries. The higher negative impact of discretionary spending volatility on lower-middle-income countries is explained by the fact that such volatility in discretionary intensifies business cycle fluctuations, creates uncertainty among investors, and adversely affects investment decisions (Ali & Khan, 2020; Ali et al., 2018).

Conclusion and Policy Recommendations

This study aimed to examine the macroeconomic consequences of discretionary spending volatility. For this purpose, the study considered a panel of developing economies that included

55 countries; 25 upper and 30 lower-middle-income countries. The study estimated the discretionary spending part for each country separately in the panel using a fiscal rule. The estimation findings for the aggregated panel showed that volatility in discretionary public spending hurts economic growth. Further, the estimation showed that aggregated panel results remain intact for the disaggregated panels, i.e., volatility in discretionary public spending adversely affects economic growth in upper and lower-middle-income countries. However, volatility in discretionary public spending has a relatively high negative impact on economic growth in lower-middle-income countries. There are various justifications for the findings above. Firstly, in developing economies, discretionary spending is politically motivated and is aggressively exercised by political agents because they can avoid fiscal rules. As a result, this spending intensifies business cycle fluctuations and retard economic growth. Secondly, volatility in discretionary spending creates uncertainty in fiscal instruments and leads to crowding out effects, i.e., adversely affecting the investors' investment decisions.

To conclude, discretionary spending is undesirable for developing economies. It adversely affects economic growth and private investment. At the same time, it is more harmful to the lower income countries. As a policy recommendation, this study suggests that strict fiscal rules should be introduced in these economies that restrict discretionary spending exercised by political agents purely for political objectives.

References

- Agell, J., Ohlsson, H., & Thoursie, P. S. (2006). Growth effects of government expenditure and taxation in rich countries: A comment. *European Economic Review, 50*(1), pp. 211-218.
- Agwu, C. (2015). Determinants of Private Investment in Nigeria: An Econometric Analysis. *International Journal of Economics, Commerce and Management, 3*(4), pp. 1-14.
- Aizenman, J., & Marion, N. (1999). Volatility and investment: interpreting evidence from developing countries. *Economica, 66*(262), pp. 157-1179.
- Akinlo, T., & Oyeleke, O. J. (2018). Effects of government expenditure on private investment in Nigerian Economy (1980–2016). *Emerging Economy Studies, 4*(2), pp.147-156.
- Albatel, A. H. (2000). The relationship between government expenditure and economic growth in Saudi Arabia. *Journal of King Saud University*.
- Albuquerque, B. (2011). Fiscal institutions and public spending volatility in Europe. *Economic Modelling, 28*(6), pp. 2544-2559.
- Alesina, A. F., & Bayoumi, T. (1996). *The costs and benefits of fiscal rules: evidence from US states*. Working paper, Department of Economics, Harvard University.
- Ali, A. M. (2011). Fiscal Policy and Economic Growth: The Effect of Fiscal Volatility. *Journal of Business & Economics Research (JBER), 3*(5).
- Ali, M., & Khan, K. (2020). Volatility in Discretionary Public Spending and Economic Growth: A Cross Country Analysis. *The Pakistan Development Review, 59*(1), pp. 45-68.
- Ali, M., Khan, K., & Iqbal, N. (2018). Volatile discretionary public spending and economic growth: A comparative evidence of developed and developing countries. *Pakistan Business Review, 20*(2), pp. 403-416.
- An, A. E. (2016). Impact of Foreign Direct Investment on Economic Growth of Pakistan Economics. *Gyancity Journal of Electronics and Computer Science, 4*(2), pp. 1-12.
- Attinasi, M. G., & Klemm, A. (2016). The growth impact of discretionary fiscal policy measures. *Journal of Macroeconomics, 49*, pp. 265-279.

- Ayeni, R. K. (2020). Determinants of private sector investment in a less developed country: a case of the Gambia. *Cogent Economics & Finance*, *8*(1).
- Baddi, H., & Lahlou, K. (2013). The Analysis of Fiscal Policy Shocks' Transmission in Morocco. *International Journal of Business and Social Research (IJBSR)*, *3*(10).
- Baiashvili, T., & Gattini, L. (2020). *Impact of FDI on economic growth: The role of country income levels and institutional strength (No. 2020/02)*. EIB working papers.
- Barro, R. J. (1991). *A cross-country study of growth, saving, and government. In National saving and economic performance* .University of Chicago Press, pp. 271-304.
- Barro, R. J., & Gordon, D. B. (1983). Rules, discretion and reputation in a model of monetary policy. *Journal of monetary economics*, *12*(1), pp. 101-121.
- Blundell, R., & Bond, S. (2000). GMM estimation with persistent panel data: an application to production functions. *Econometric reviews*, *19*(3), pp. 321-340.
- Bogolib, T. (2015). Fiscal policy as an instrument of macroeconomic stability. *Economic Annals*, *21*(149), pp. 84-87.
- Butkiewicz, J. L., & Yanikkaya, H. (2011). Institutions and the impact of government spending on growth. *Journal of Applied Economics*, *14*(2), pp. 319-341.
- Cavallari, L., & Romano, S. (2017). Fiscal policy in Europe: The importance of making it predictable. *Economic Modelling*, *60*, pp. 81-97.
- Castro, D. F. (2006). The macroeconomic effects of fiscal policy in Spain. *Applied Economics*, *38*(8), pp. 913-924.
- Dash, R. K., & Sharma, C. (2008). Government expenditure and economic growth: evidence from India. *The IUP Journal of Public Finance*, *6*(3), pp. 60-69.
- Dolls, M., Fuest, C., & Peichl, A. (2012). Automatic stabilization and discretionary fiscal policy in the financial crisis. *IZA Journal of Labor Policy*, *1*(1), pp. 1-19.
- Durevall, D., & Henrekson, M. (2011). The futile quest for a grand explanation of long-run government expenditure. *Journal of Public Economics*, *95(*7), pp. 708-722.
- Fatas, A., & Mihov, I. (2013). Policy volatility, institutions, and economic growth. *Review of Economics and Statistics*, *95*(2), pp. 362-376.
- Grier, K. B., & Tullock, G. (1989). An empirical analysis of cross-national economic growth, 1951– 1980. *Journal of Monetary economics*, *24*(2), pp. 259-276.
- Haque, A. U., Kibria, G., Selim, M. I., & Smrity, D. Y. (2019). Labor force participation rate and economic growth: Observations for Bangladesh. *International Journal of Economics and Financial Research*, *5*(9), pp. 209-213.
- Ismail, M., & Husain, F. (2012). Fiscal Discretion and Its Impact on Pakistan Economy. *The Pakistan Development Review*, *51*(4), pp.339-364.
- Kanayo, O. (2013). The impact of human capital formation on economic growth in Nigeria. *Journal of Economics*, *4*(2), pp.121-132.
- Keho, Y. (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire. *Cogent Economics & Finance*, *5*(1).
- Kydland, F. E., & Prescott, E. C. (1977). Rules rather than discretion: The inconsistency of optimal plans. *Journal of political economy*, *85*(3), pp. 473-491.
- Lane, P. R. (2003). Business cycles and macroeconomic policy in emerging market economies. *International Finance*, 6(1), pp. 89-108.
- Mandeya, S. M. T., & Ho, S. Y. (2021). Inflation, inflation uncertainty and the economic growth nexus: An impact study of South Africa. *MethodsX*, *8*(4).
- Muhammad, A., Egbetokun, A., & Memon, M. H. (2015). Human capital and economic growth: The role of governance. *The Pakistan Development Review*, *54*(4), pp. 529-548.
- Nickell, S. (1981). Biases in dynamic models with fixed effects. Econometrica: *Journal of the econometric society*, *49*(6), pp. 1417-1426.

- Pelinescu, E. (2015). The impact of human capital on economic growth. *Procedia Economics and Finance*, *22*, pp. 184-190.
- Perera, L. D. H., & Lee, G. H. (2013). Have economic growth and institutional quality contributed to poverty and inequality reduction in Asia? *Journal of Asian Economics*, *27*, pp. 71-86.
- Slesnick, D. T. (2020). *GDP and social welfare: an assessment using regional data. In Measuring Economic Growth and Productivity*. Hutchin center working paper no. 43, pp. 481-508.
- Tagkalakis, A. O. (2014). Discretionary fiscal policy and economic activity in Greece. *Empirica*, *41*(4), pp. 687-712.
- Ulaşan, B. (2015). Trade openness and economic growth: panel evidence. *Applied Economics Letters*, *22*(2), pp. 163-167.
- Were, M. (2015). Differential effects of trade on economic growth and investment: A cross-country empirical investigation. *Journal of African trade*, *2*(1-2), pp. 71-85.