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An Assessment of Fiscal Policy and Long-Term Economic Growth in Selected Countries: Afghanistan, Nepal, and Sri Lanka

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Abstract

This study examines the effect of fiscal policy on long-term economic growth in Afghanistan, Nepal, and Sri Lanka over the period 2003 to 2021. Annual panel data from the World Bank World Development Indicators (WDI) are used to investigate how government expenditure, government revenue, public debt, inflation, and gross capital formation influence GDP growth. The study is grounded in Barro's (1990) endogenous growth model and employs panel unit root tests, pooled ordinary least squares (OLS), and fixed effects estimation. The redundant fixed effects test confirms that the fixed effects model is the appropriate estimation framework. The results reveal that government expenditure has a negative and statistically significant effect on GDP growth, while government revenue and gross capital formation show positive and statistically significant effects. Public debt and inflation do not produce statistically significant effects during the study period. These findings suggest that the quality and efficiency of fiscal management matter more than the scale of public spending alone. The study contributes comparative empirical evidence on three underexplored South Asian economies and offers policy-relevant insights for strengthening fiscal frameworks in developing-country contexts.

Keywords: *fiscal policy; economic growth; panel data; fixed effects; South Asia; government expenditure; gross capital formation.*

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1. Introduction

One of the key macroeconomic policies governments can use to impact their economy is fiscal policy. Fiscal policy has a number of impacts on the economy through public expenditure, revenue generation and government borrowing, in particular influencing aggregate demand, investment and the productive capacity of an economy over the longer-term. In developing countries, the public sector is frequently the main source of finance for the development of infrastructure, for education, for health, for food, for energy, and all other sectors that contribute to sustainable economic growth. Therefore, the role of the public sector is particularly important in driving long-term development.

The connection between fiscal policy and economic growth is far from simple and very sensitive to economic and institutional parameters. Increases in the efficiency and effectiveness of government spending and revenue collection, along with investments in productive capital, can boost the economic activity by increasing productivity and improving fiscal sustainability. On the other hand, an inefficient use of public funds, underdeveloped tax administration, high public debt and inflationary pressures create constraints for the effectiveness of fiscal policy and negatively impact the economic performance. Thus, the question of whether or not fiscal policy affects growth is not the only one that should be of concern to policy makers; questions of the sensitivity of the growth effects of different fiscal variables to different economic and institutional contexts should also be focused on.

Especially for Afghanistan, Nepal and Sri Lanka. These countries are part of South Asia, but, they vary widely with regards to fiscal capacity, institutional development, macroeconomic conditions and development challenges. The conflict, fragility of institutions, and significant reliance on foreign support have impacted Afghanistan's fiscal structure and its economic performance. Nepal still has structural and administrative difficulties, such as structural impediments related to domestic revenue mobilization, and inefficiency in public sector (Kharel, 2012). However, Sri Lanka has been facing heavy fiscal pressures and other debt-related issues which has made fiscal management a critical issue in the country's economic development journey (Sriyalatha & Torii, 2019). The selected countries are suitable for a comparative study of fiscal policy and economic growth due to these differences.

The selection of Afghanistan, Nepal, and Sri Lanka is motivated by three deliberate analytical considerations rather than by data convenience. First, these three economies represent distinct and instructive fiscal experiences within South Asia that remain under-examined in the comparative empirical literature. Afghanistan illustrates the fiscal challenges of extreme aid dependence and post-conflict fragility, culminating in the catastrophic fiscal collapse of 2021; Nepal exemplifies the challenges of low-income fiscal transformation through federal restructuring and persistent capital-expenditure execution

difficulties; and Sri Lanka demonstrates the consequences of progressive revenue erosion, unsustainable debt accumulation, and eventual sovereign default.Together, these three trajectories capture a rare combination of fiscal fragility, institutional transition, and debt-crisis dynamics within a single regional panel.

Second, the larger South Asian economies — India, Pakistan, and Bangladesh — have received considerably more attention in the empirical fiscal-growth literature, including studies by Rahman et al. (2019) and Beyer and Milivojevic (2021), while Afghanistan, Nepal, and Sri Lanka have been studied predominantly in single-country settings using inconsistent methodologies. This has left a specific gap in the comparative panel evidence base, which the present study is designed to address. Including India, Pakistan, or Bangladesh in the panel would shift the analytical focus toward larger economies whose fiscal experiences are already well documented, diluting the study's contribution to the under-examined smaller-economy segment of the region.

Third, the three selected countries share common South Asian developing-country characteristics — fiscal constraints, narrow tax bases, infrastructure deficits, and high exposure to external shocks — that make their fiscal experiences comparable within a unified empirical framework. Their differences in conflict exposure, institutional development, and debt trajectory generate the cross-sectional variation needed to identify fiscal-growth relationships at the within-country level. While the resulting three-country panel is admittedly small, the analytical trade-off favours depth of country-specific interpretation over the breadth that a larger regional panel would provide, an approach consistent with the comparative case-study logic that complements panel data analysis in small-N settings.

Although the impact of fiscal policy on the development of economies is well established, the evidence from empirical analysis is rather scanty for the smaller South Asian economies. Research to date has been largely conducted at the level of the advanced economies, the large developing economies and the individual country level. Therefore, the evidence base on the combined effects of government spending, government revenue, public debt, inflation and gross capital formation on the long-term economic growth of Afghanistan, Nepal and Sri Lanka is limited and not available in a common empirical framework.

In this context, the present study investigates the effect of fiscal policy on long-term economic growth in Afghanistan, Nepal and Sri Lanka in the period 2003-2021. The study utilizes annual panel data in which GDP growth is the dependent variable, and government expenditure, government revenue, public debt, inflation and gross capital formation are the explanatory variables. A panel data approach is used to account for a cross-country dimension and temporal dynamics, hence to gain a more complete picture of the fiscal-growth relationship. The results will provide actionable recommendations on how to manage fiscal policy effectively to help sustain economic growth in developing countries with fiscal and structural limitations.

Specific objectives of the study are:

1. To analyse the impacts of government spending on long term economic growth in Afghanistan, Nepal and Sri Lanka.
2. To measure the effect of government revenue on the economic growth of the countries selected in the long run.
3. To discuss impact of public debt on long-term economic growth in selected countries.
4. To explore the effect of inflation on long-term economic growth of the chosen countries.
5. To assess the impact of gross capital formation on long run economic growth in the selected countries.

2. Literature Review

2.1 Theoretical Literature Review

The endogenous growth theory offers a complete set of links between fiscal policy and long-term economic growth, and is the primary basis of the present study. Endogenous growth theory differs from neoclassical growth theory in that it places more emphasis on the endogenous origins of economic growth, as opposed to the exogenous nature of growth in neoclassical growth theory. These endogenous factors encompass investment, infrastructure development, human capital accumulation, innovation, and government policies. Fiscal policy is therefore seen as a major influence on long-term economic performance, not just a short-term stabilizer.

Of all the different endogenous growth models, the model proposed by Barro (1990) is of particular interest for the purposes of this study, as it explicitly includes productive government expenditure in the growth process. Barro claimed that in addition to private capital, government services, including infrastructure, education, and health care, can also boost the productivity of private investment, and thus directly stimulate economic growth. His model assumes that government spending is financed by taxes and that government spending is viewed as an input to the aggregate production function.

The Cobb-Douglas form of Barro's model is given by:

$$\frac{\mathbf{y}}{\mathbf{k}} = \mathbf{A}\left(\frac{\mathbf{g}}{\mathbf{k}}\right)^{\alpha}$$

In Equation (1), y refers to output per worker, k denotes private capital per worker, g denotes productive government services, A denotes total factor productivity, and α denotes the elasticity of output with respect to government services, such that $0 < \alpha < 1$. For the combination of private capital and productive government expenditures, it is assumed that there are constant returns to scale. As a result, the positive effects of fiscal policy on economic growth will depend not only on the amount of government expenditure but also on its efficiency in terms of being invested productively. Thus, from a theoretical

perspective, there is justification for choosing government expenditure as an important explanatory variable, as the productive investment of government resources plays a major role in economic growth.

The present study uses government expenditure and government revenue as key explanatory variables, and this is well justified by this theoretical framework. A sound and effective revenue system allows governments to generate revenues for productive expenditures and to keep their finances sustainable. This is borne out by Kneller et al. (1999) and Bleaney et al. (2001) who suggested that the overall size of fiscal policy was not as relevant to long-term economic growth as the composition and effectiveness of the policy.

The neoclassical growth model (Solow, 1956) and endogenous growth theory justify the addition of gross capital formation. The Solow model states that investments are a mechanism for economic growth by adding physical capital which improves productive capacity. Gross capital formation is one of the key measures of investment activity and accumulation of capital in an economy. The contribution of gross capital formation to economic growth is significant in South Asian countries as supported by the empirical evidence given by Rahman et al. (2019).

The debt overhang theory (Krugman 1988, Sachs, 1989) is used to include public debt in the study. According to the theory, high public debt can increase the uncertainty surrounding the future taxation and debt servicing requirements which will deter the investment, and thus lower the long-term growth potential. High debt levels can also mean that public funds are diverted to repay debt instead of investing in other productive activities. In keeping with this argument, Presbitero (2012) found a significant negative correlation between public debt and economic growth in developing countries.

One of the indicators of macroeconomic stability includes inflation. The classical view of macroeconomics is that excessive (and chronic) inflation misallocates prices, depresses purchasing power, generates uncertainty, and curtails investment, which all have negative impacts on economic growth. This goes in line with the empirical finding from Azam and Khan (2022) that high inflation has a strong negative impact on economic growth.

The theoretical frameworks reviewed above can be integrated into a unified conceptual framework that guides the empirical analysis of this study. Figure 1 presents this framework, illustrating how each of the five fiscal variables included in the model is theoretically linked to GDP growth through distinct transmission channels. Government expenditure affects growth through the Barro (1990) productive-versus-non-productive spending channel, where the growth impact depends on whether public spending augments the productivity of private capital. Government revenue affects growth through the fiscal capacity channel, by enabling the financing of productive public expenditure without recourse to growth-distorting forms of deficit financing. Public debt affects growth through the Krugman (1988) and Sachs (1989) debt overhang channel, in which high debt levels discourage private investment by raising

expectations of future taxation. Inflation affects growth through the classical price distortion channel, in which high and unpredictable inflation generates uncertainty and reduces the efficiency of investment decisions. Gross capital formation affects growth through the Solow (1956) capital accumulation channel, the fundamental mechanism by which physical capital deepening raises output per worker in capital-scarce economies. Together, these five channels constitute the theoretical foundation for the panel regression analysis presented in Section 4.

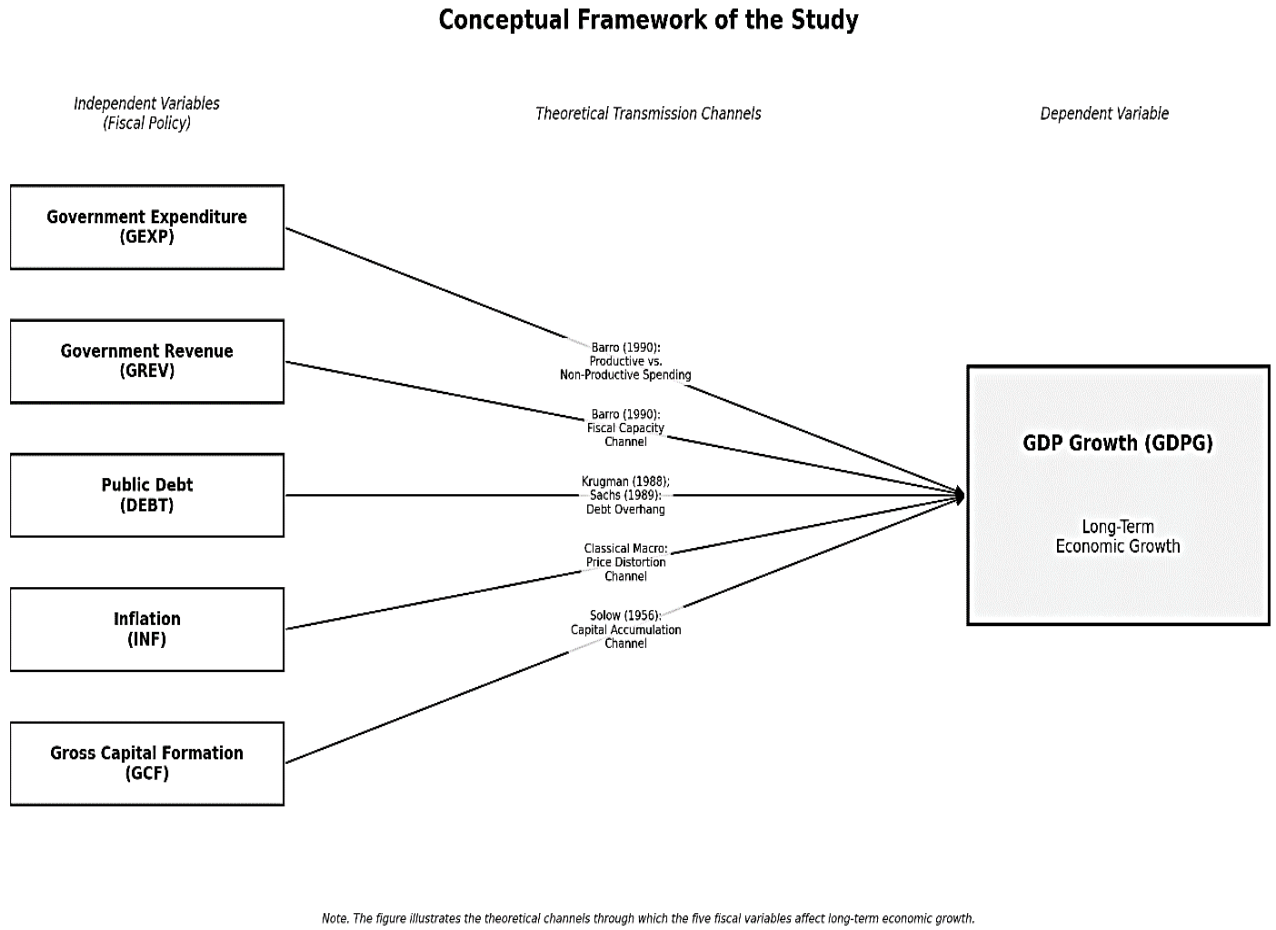

Figure 1

Conceptual Framework of the Study

Note. The figure illustrates the theoretical channels through which the five fiscal variables — government expenditure (GEXP), government revenue (GREV), public debt (DEBT), inflation (INF), and gross capital formation (GCF) — are hypothesized to affect long-term economic growth (GDPG). Each channel is grounded in a specific theoretical framework: Barro's (1990) endogenous growth model, Solow's (1956) neoclassical growth model, the Krugman (1988) and Sachs (1989) debt overhang theory, and classical macroeconomic theory.

2.2 Empirical Literature Review

A large body of literature exists that discusses the link between fiscal policy and economic growth in both developed and developing countries. The empirical evidence, however, is rather mixed, with varying conditions of fiscal structures, institutional quality and economic conditions, and methodologies. Some studies have found positive relationships between the growth and the fiscal policy, while others found negative or insignificant relationships as a function of the composition of public expenditure, taxation policy, the level of public debt, and macroeconomic conditions.

Kneller et al. (1999) used panel data for 22 OECD countries from 1970-1995 to examine the fiscal policy-economy growth link. They found that the positive impact on economic growth of productive government spending outweighs the negative impact of unproductive spending. The study emphasizes the need to separate out productive and non-productive expenditures of government in the evaluation of the results of fiscal policy.

Likewise, Bleaney et al. (2001) investigated the impact of fiscal policy on economic growth in a panel of OECD countries. The study identified that when measured using fixed-effects estimation techniques, productive government spending and tax rates that do not distort labour and/or capital markets have a positive effect on economic growth. In contrast, distortionary taxes and unproductive expenditures were found to hinder growth. The findings indicate that the content and the quality of fiscal policy holds greater significance than the size of government.

Presbitero (2012) studied the public debt and economic growth nexus, focusing on the span of 91 low and middle income economies, from 1990 to 2007. The study found that the GMM estimator results showed a statistically significant negative relationship between the level of public debt and its impact on economic growth, especially above certain levels.

Azam and Khan (2022) studied the relationship between inflation and growth for developed and developing nations between 2005 and 2019 in a panel setting. The authors used the panel threshold regression method, which revealed that inflation rates above threshold values have a negative impact on economic growth. The study also found that gross fixed capital formation positively and significantly affects the economy.

Rahman et al. (2019) examined the determinants of economic growth based on the annual panel data of eight countries in South Asia from 1980 to 2016 in the South Asian context. The study used the dynamic system GMM estimation and obtains the positive and statistically significant result of gross capital formation and economic growth. Other factors that were found to be important for growth in the region were trade openness and financial development.

Beyer and Milivojevic (2021) have tested fiscal policy in South Asia based on panel data for six countries for the period of 1990-2018. The study used panel vector autoregression and concluded that government

expenditure positively and significantly influences economic activity but a significant impact from the change in tax revenue does not exist.

In Nepal, fiscal policy and growth were studied by Kharel (2012) who concluded that the fiscal policy of the government has positive impact on growth and it can crowd in private investment. This evidence is directly relevant to this study in the country.

Sriyalatha and Torii (2019) applied ARDL-ECM & Granger causality approach to study fiscal policy and growth in Sri Lanka. Based on their findings, the government expenditure, government revenue, and investment expenditure are found to positively affect long-run growth which is also relevant to this study in the country-specific context.

More recently, Kaharudin and Ab-Rahman (2022) examined the effects of fiscal policy on private expenditure using a panel vector autoregression model for a sample of developing countries between 1990 and 2020. Disaggregating government spending into defense, economic, and social expenditure, the study found that defense expenditure crowds out private spending and domestic income, whereas economic and social expenditure crowd in private consumption and income. The authors classify defense expenditure as non-productive and economic and social expenditure as productive, concluding that the composition of government spending, rather than its aggregate size, determines its ultimate effect on growth. This finding provides direct and recent empirical support for the productive-versus-non-productive distinction that underlies the interpretation of the government expenditure results in the present study.

On the revenue side, Lompo (2024) examined the determinants of tax revenue mobilization using panel data from 46 developing countries over the period 1995–2017. The study found that financial sector development significantly and positively influences a government's capacity to raise tax revenue, with the effect operating through both the banking system and financial markets, and with direct taxes benefiting more than indirect taxes. The study further found that this relationship is sensitive to a country's level of economic development, financial openness, and fiscal policy stance. These findings reinforce the fiscal capacity channel through which stronger domestic revenue mobilization is theorized to support long-term growth, and they highlight financial sector development as a complementary structural factor relevant to revenue performance in Afghanistan, Nepal, and Sri Lanka.

The relationship between public debt and growth has also received renewed empirical attention. Shah et al. (2025) applied a dynamic panel threshold model to a large sample of developing countries over 1990–2020 and found that public debt negatively affects economic growth once it exceeds a threshold of approximately 51 percent of GDP, with the precise threshold varying between lower-middle-income economies (50.2 percent) and upper-middle-income economies (62.6 percent). The study further found that inflation interacts with the debt threshold, lowering the tolerable debt level as inflation rises. These findings are directly relevant to the present study's panel, in which average public debt in Sri Lanka (55.4

percent of GDP) sits close to the estimated threshold range, while Afghanistan's much lower debt levels remain comfortably below it, illustrating the heterogeneity that likely underlies the non-significant pooled debt coefficient reported in Section 4.

Similarly, Augustine and Rafi (2023) investigated the nonlinear dynamics between public debt and economic growth across thirty-nine emerging and developing economies, estimating country-specific debt thresholds that ranged widely from 24 to 132 percent of GDP. The study found an inverted U-shaped relationship in only a subset of countries, while in others debt continued to support growth beyond the estimated threshold, and in a few cases debt constrained growth even at comparatively low levels. This considerable cross-country heterogeneity in the debt-growth relationship reinforces the view that a single pooled linear coefficient, such as the one estimated in the present study, may mask substantial underlying variation across countries with very different debt profiles and fiscal institutions.

On inflation, Oyadeyi et al. (2025) applied a threshold regression approach to Nigerian macroeconomic data and identified a growth-maximizing headline inflation threshold of approximately 9 percent, with core inflation and food inflation thresholds of 8.7 percent and 12.7 percent, respectively. Inflation below these thresholds was found to be compatible with, and in some specifications supportive of, economic growth, while inflation above them became growth-retarding. This threshold-dependent pattern is consistent with the broader inflation-growth literature reviewed above and offers further support for the interpretation, developed in Section 5, that the non-significant panel-level inflation coefficient in the present study may reflect the pooling of below-threshold and above-threshold inflation episodes across Afghanistan, Nepal, and Sri Lanka rather than a genuine absence of an inflation-growth relationship

Although the literature on fiscal policy and economic growth has grown substantially, including recent contributions on expenditure composition, revenue mobilization, and threshold effects in debt and inflation, comparative cross-country evidence remains scarce for the smaller South Asian economies. Few studies have focused on Afghanistan, Nepal, and Sri Lanka jointly within a common empirical framework using a consistent set of variables and estimation methods. This study contributes to the literature by studying five fiscal policy variables simultaneously across these three countries over the period 2003–2021, situating the findings within the recent threshold and composition-based literature reviewed above.

3. Methodology

3.1 Data and Empirical Analysis

This study covers fiscal policy effect on long-run economic growth in Afghanistan, Nepal and Sri Lanka during the time period of 2003–2021. Data from World Bank World Development Indicators (WDI) database are used. The panel data are balanced, comprising 19 annual observations per country for a total of 57 observations.

The raw levels of the variables are used instead of logarithmic transformations as all the variables are already measured as a percent of GDP or annual percentage change. This ensures that the coefficients are still economically interpretable, and are directly comparable across countries and time periods. The dependent variable is GDP growth (GDPG), which is the percentage growth rate of real GDP per year. The explanatory variables are government expenditure (GEXP), government revenue (GREV), public debt (DEBT), inflation (INF) and gross capital formation (GCF). A summary of all variables in terms of their definitions and sources is provided in Table 1.

Table 1

Definition and Measurement of Variables

Variable	Definition	Measurement	Source
GDPG	GDP growth	Annual % change	World Bank WDI
GEXP	Government expenditure	% of GDP	World Bank WDI
GREV	Government revenue	% of GDP	World Bank WDI
DEBT	Public debt	% of GDP	World Bank WDI
INF	Inflation	CPI (annual %)	World Bank WDI
GCF	Gross capital formation	% of GDP	World Bank WDI

Note. WDI = World Development Indicators. GDPG = GDP growth rate; GEXP = government expenditure; GREV = government revenue; DEBT = public debt; INF = inflation; GCF = gross capital formation. Data source: World Bank.

The panel regression model estimated in this study is as follows:

$$GDPG_{it} = \beta_0 + \beta_1 GEXP_{it} + \beta_2 GREV_{it} + \beta_3 DEBT_{it} + \beta_4 INF_{it} + \beta_5 GCF_{it} + \mu_{it} \quad (2)$$

Where i denotes the country and t denotes the year. The error term μ_{it} captures unobserved factors affecting GDP growth.

Figure 2. *Trend of All Variables for Afghanistan, Nepal, and Sri Lanka (2003–2021)*

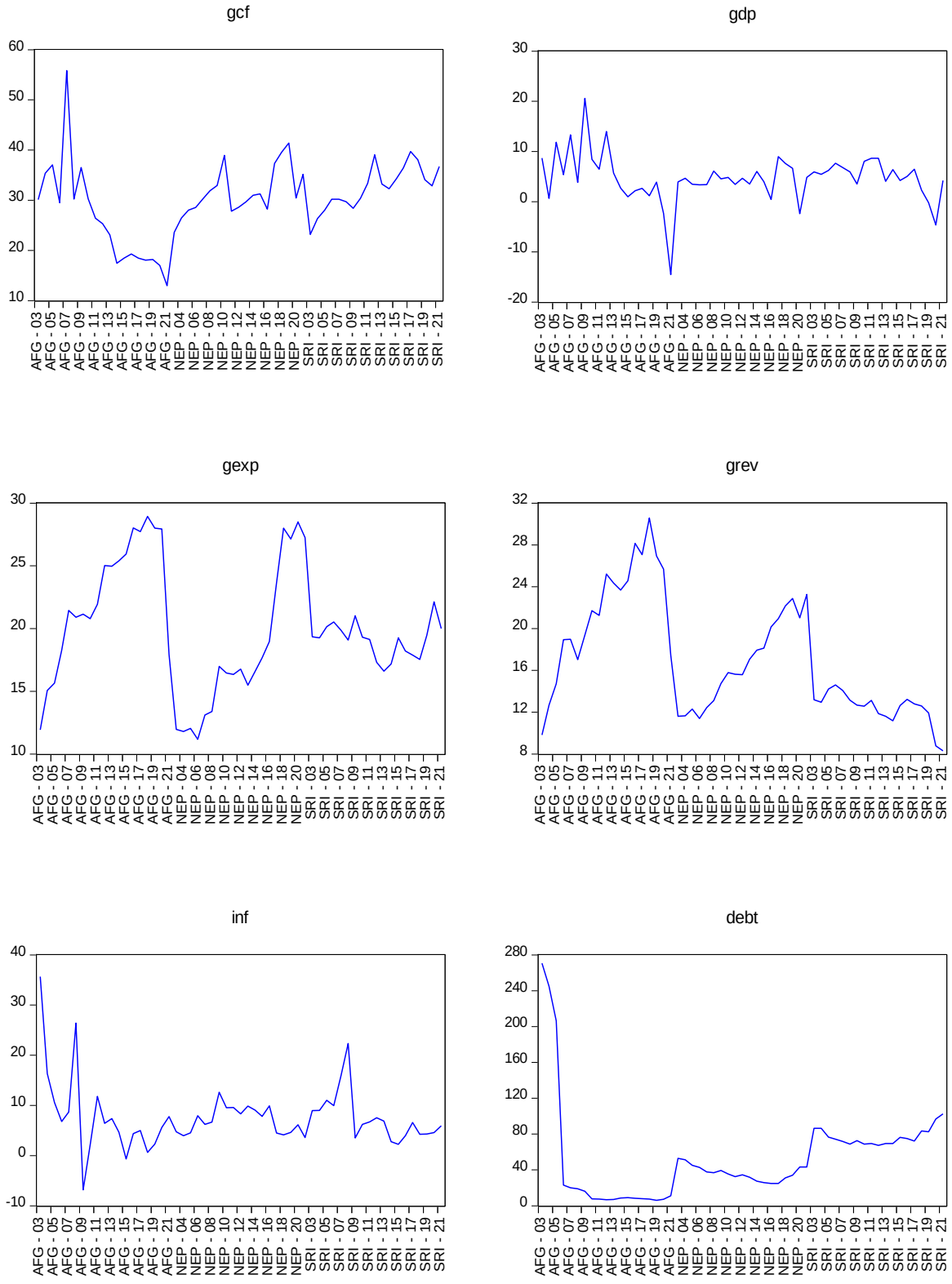

Table 2 presents descriptive statistics for all variables in over the period 2003-2021. GDP growth has a mean of 3.93 and a standard deviation of 6.44, suggesting large variation across countries and over time. The negative minimum of −33.63 percent indicates the depth of the economic contractions in Afghanistan during period of uncertainty, and the maximum of 21.01 percent indicates periods of strong recovery.

Compared with government revenue (12.61 percent of GDP) government expenditure has averaged 19.87 percent of GDP, indicating ongoing fiscal deficits. Sri Lanka has an average public debt of 55.36 per cent of GDP and a peak of 154.80 per cent. Sri Lanka has a higher debt burden with an average public debt of 55.36 per cent of GDP and a peak level of 154.80 per cent of GDP. The mean of the inflation rate is 7.48 percent, and the standard deviation is 8.21 percent, with high inflation in Afghanistan contributing much to the mean. Gross capital formation accounts for 24.54 percent of GDP on average.

Table 2

Descriptive Statistics of All Variables (2003–2021)

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
GDPG (%)	57	3.928	6.437	−33.628	21.012
GEXP (% GDP)	57	19.874	8.921	8.310	44.330
GREV (% GDP)	57	12.607	6.312	2.660	28.510
DEBT (% GDP)	57	55.361	31.982	19.140	154.800
INF (%)	57	7.483	8.209	−8.486	49.958
GCF (% GDP)	57	24.543	7.867	11.030	48.320

Note. N = 57 (3 countries × 19 years). Percentages are given for all variables. Data source: World Bank WDI.

3.2 Hypotheses of the Study

Based on the theoretical framework and the empirical literature reviewed in Section 2, the study tests the following five null hypotheses concerning the effect of each fiscal variable on long-term economic growth in Afghanistan, Nepal, and Sri Lanka:

H_{01}: Government expenditure has no statistically significant effect on GDP growth.

H_{02}: Government revenue has no statistically significant effect on GDP growth.

H_{03}: Public debt has no statistically significant effect on GDP growth.

H_{04}: Inflation has no statistically significant effect on GDP growth.

H_{05}: Gross capital formation has no statistically significant effect on GDP growth.

Rejection of each null hypothesis at the conventional five percent significance level ($p < 0.05$) is interpreted as evidence of a statistically significant relationship between the corresponding fiscal variable and GDP growth in the direction indicated by the estimated coefficient.

3.3 Empirical Properties

When using panel data analysis, a key precondition is stationarity; otherwise, regressions might yield misleading results. The study uses the panel unit root test of Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), ADF-Fisher and PP-Fisher at level and first difference. The findings have been summarized in Table 3.

Table 3

Summary of Panel Unit Root Test Results

Variable	Level	First Difference	Integration Order
GDPG	Mixed / non-stationary	Stationary	I(1)
GEXP	Non-stationary	Stationary	I(1)
GREV	Non-stationary	Stationary	I(1)
DEBT	Stationary	—	I(0)
INF	Stationary	—	I(0)
GCF	Non-stationary	Stationary	I(1)

Note. The abbreviations in the title refer to the following tests: ADF = Augmented Dickey-Fuller; IPS = Im, Pesaran and Shin; PP = Phillips-Perron; LLC = Levin, Lin and Chu. I(0) = stationary at level, I(1) = stationary at first difference, — = test not required.

The results show that the GDPG, GEXP, GREV, and GCF are of order 1, or integrated once, and the DEBT and INF are stationary at level, or of order 0. Since the mixture of integration orders, the study is continued using fixed effects estimation in levels, suitable to study the within panel relationship between the variables.

The mixed integration orders identified in the panel unit root tests would ideally call for a formal panel cointegration analysis to justify level estimation. However, with only three cross-sectional units, panel cointegration tests such as Pedroni (1999), Kao (1999), and Westerlund (2007) have very limited statistical power and produce inference that is highly sensitive to specification choices. Formal cointegration analysis is more appropriate for panels with substantially larger cross-sectional dimensions. Following the approach adopted in comparable small-panel studies such as Bleaney et al. (2001), the present study proceeds with fixed effects estimation in levels, justified on theoretical grounds: the theoretical framework strongly implies a long-run structural relationship among the fiscal and growth variables, and the fixed effects estimator absorbs the country-specific components of any deterministic trends in the I(1) variables.

This methodological choice is acknowledged as a limitation, and future research using larger regional samples is encouraged to apply formal panel cointegration techniques.

3.4 Diagnostic Tests

Before proceeding to the correlation and regression analysis, a comprehensive set of diagnostic tests is conducted to assess the statistical validity of the empirical model. Following standard practice, the tests cover multicollinearity, normality of residuals, heteroskedasticity, serial correlation, and cross-sectional dependence. Where the tests indicate potential violations of classical assumptions, corrective measures are applied and reported.

Multicollinearity among the explanatory variables is assessed using Variance Inflation Factors (VIF), computed from auxiliary regressions of each explanatory variable on all remaining explanatory variables, with VIF = $1/(1 - R^2)$. As reported in Table 4, all VIF values are well below the conventional threshold of 10, ranging from 1.24 (GCF) to 3.96 (GREV), with a mean VIF of 2.32. The highest value, for government revenue, reflects the strong bivariate correlation between government expenditure and government revenue but remains comfortably within acceptable limits. These results indicate that multicollinearity does not pose a serious threat to the reliability of the coefficient estimates, and the simultaneous inclusion of both expenditure and revenue variables is statistically justified.

Table 4

Variance Inflation Factor (VIF) Test for Multicollinearity

Variable	Auxiliary R^2	Centered VIF
GEXP	0.663	2.97
GREV	0.748	3.96
DEBT	0.497	1.99
INF	0.297	1.42
GCF	0.194	1.24
Mean VIF	—	2.32

Note. VIF = $1/(1 - R^2)$, where R^2 is obtained from the auxiliary regression of each explanatory variable on all other explanatory variables. VIF values below 10 indicate the absence of serious multicollinearity.

The residual-based diagnostic tests are summarized in Table 5. The Jarque-Bera test rejects the null hypothesis of normally distributed residuals (JB = 14.108, p = 0.001). Inspection of the residual moments indicates that this rejection is driven by excess kurtosis (5.43) rather than skewness (−0.10), reflecting the presence of a small number of extreme observations, most notably Afghanistan's 2021 economic

contraction. Non-normality does not bias the coefficient estimates, and with 57 observations, statistical inference retains reasonable asymptotic justification.

Heteroskedasticity is tested using the Breusch-Pagan procedure, in which the squared residuals from the main regression are regressed on the full set of explanatory variables. The resulting LM statistic ($LM = n \times R^2 = 57 \times 0.049 = 2.80$) is well below the 5 percent critical value of the chi-square distribution with five degrees of freedom (11.07), with an implied p-value of approximately 0.73; the F-version of the test yields the same conclusion ($F = 0.527$, $p = 0.755$). The null hypothesis of homoskedasticity is therefore not rejected, indicating that the error variance is constant across observations.

The Durbin-Watson statistics of the pooled OLS and fixed effects models (1.162 and 1.338, respectively) fall below the conventional benchmark of 2, suggesting the presence of positive first-order serial correlation in the panel residuals. In addition, the Pesaran (2004) CD test rejects the null hypothesis of cross-sectional independence at the 5 percent level ($CD = 2.397$, $p = 0.017$), with the Breusch-Pagan LM (7.384, $p = 0.061$) and Pesaran scaled LM (1.790, $p = 0.074$) statistics pointing in the same direction at the 10 percent level. Cross-sectional dependence is economically plausible in this panel, as the three countries were exposed to common regional and global shocks during the study period, including the 2008 global financial crisis, international commodity price movements, and the COVID-19 pandemic.

Table 5

Summary of Residual Diagnostic Tests

Test	Null hypothesis	Statistic	p-value	Conclusion
Jarque-Bera	Residuals are normal	14.108	0.001	Rejected (excess kurtosis; 2021 outlier)
Breusch-Pagan LM	Homoskedasticity	2.80	≈ 0.73	Not rejected (no heteroskedasticity)
Durbin-Watson (pooled / FE)	No first-order serial correlation	1.162 / 1.338	—	Positive serial correlation indicated
Breusch-Pagan LM (cross-section)	No cross-sectional dependence	7.384	0.061	Marginal evidence of dependence

Pesaran scaled LM	No cross-sectional dependence	1.790	0.074	Marginal evidence of dependence
Pesaran CD	No cross-sectional dependence	2.397	0.017	Rejected (dependence present)

Note. The Breusch-Pagan LM heteroskedasticity statistic is computed as $n \times R^2$ from the auxiliary regression of squared residuals on the explanatory variables and is distributed as $\chi^2(5)$ under the null hypothesis. Cross-sectional dependence tests are computed on the residuals of the pooled model.

Because neither serial correlation nor cross-sectional dependence biases the coefficient estimates, but both can distort conventional standard errors, the pooled model is re-estimated with White cross-section robust standard errors as a corrective measure. As reported in Table 6, the coefficient estimates are unchanged by construction, and the central results are qualitatively preserved under robust inference: gross capital formation remains positive and highly significant ($p < 0.001$), and government revenue remains significant at the 10 percent level ($p = 0.064$). The robustness of the investment coefficient in particular indicates that the study's strongest finding is not an artifact of understated standard errors. The fixed effects model remains the preferred specification for the main analysis in Section 4, and the sensitivity of inference to robust standard errors is acknowledged in the limitations.

Table 6

Pooled OLS with White Cross-Section Robust Standard Errors (Dependent Variable: GDP Growth)

Variable	Coefficient	Robust Std. Error	t-Statistic	Prob.
Constant	−8.8138	4.5324	−1.9446	0.0573*
GEXP	−0.3080	0.2498	−1.2332	0.2231
GREV	0.4567	0.2407	1.8971	0.0635*
DEBT	0.0093	0.0176	0.5444	0.5886
INF	−0.0313	0.1213	−0.2582	0.7973
GCF	0.3901	0.1026	3.8052	0.0004***

Note. *** p < 0.01, ** p < 0.05, * p < 0.10. N = 57. Coefficients are identical to the conventional pooled OLS estimates in Table 8; only the standard errors and the associated inference change. White cross-section standard errors are robust to cross-sectional heteroskedasticity and correlation.

4. Empirical Results

4.1 Correlation Matrix

The correlations between all variables are first explored in pairs to check for relationships (direction and magnitude), and to check for potential multicollinearity before estimating the regression model. The results are shown in Table 7.

Table 7

Correlation Matrix of All Variables

Variable	GDPG	GEXP	GREV	DEBT	INF	GCF
GDPG	1.000	—	—	—	—	—
GEXP	−0.063	1.000	—	—	—	—
GREV	−0.018	0.797	1.000	—	—	—
DEBT	0.083	−0.435	−0.598	1.000	—	—
INF	−0.004	−0.328	−0.296	0.507	1.000	—
GCF	0.493	−0.227	−0.403	0.296	0.062	1.000

Note. GDPG = GDP Growth; GEXP = Government Expenditure; GREV = Government Revenue; DEBT = public debt; INF = inflation; GCF = gross capital formation. N = 57. — means that the lower triangle was not printed for convenience.

There is a very strong positive correlation between gross capital formation and GDP growth (r = 0.493), indicating that a positive GDP growth rate is related to increases in investment. The level of government expenditure and government revenue is quite high (r = 0.797), which indicates that there is a close relationship between these two in fiscal management. This is not a serious multicollinearity issue since both are used for different fiscal instruments with different theoretical explanations. The other pairwise correlation values are moderate or low.

4.2 Pooled OLS Results

The ordinary least squares model is estimated as a base model. The results are shown in Table 8.

Table 8

Pooled OLS Regression Results (Dependent Variable: GDP Growth)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	−8.8138	4.2392	−2.0791	0.0427**
GEXP	−0.3080	0.1957	−1.5741	0.1216
GREV	0.4567	0.1999	2.2842	0.0266**
DEBT	0.0093	0.0147	0.6303	0.5313
INF	−0.0313	0.1045	−0.2995	0.7657
GCF	0.3901	0.0828	4.7093	0.0000***
R-squared	0.3186			
Adjusted R-squared	0.2518			
F-statistic	4.7691		Prob(F-stat)	0.0012***
Durbin-Watson	1.1621			

Note. *** p < 0.01, ** p < 0.05, * p < 0.10. N = 57. DW = Durbin-Watson statistic.

The results of the pooled OLS also found that government revenue and gross capital formation have positive and statistically significant impacts on GDP growth at five percent and one percent significance levels, respectively. The effects of government expenditure, public debt and inflation are insignificant. The R-squared is 0.32, meaning that the model accounts for about 32 per cent of the variation in GDP growth. The overall model is significant at the 1% level with F-statistic. Pooled OLS, however, fails to consider unobserved country-specific characteristics that could affect the results.

4.3 Fixed Effects Results

The fixed effects model estimates to account for the unobserved country specific heterogeneity that may be correlated with the explanatory variables. The results are displayed in Table 9.

Table 9

Fixed Effects Regression Results (Dependent Variable: GDP Growth)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	−9.4983	4.4689	−2.1254	0.0386**
GEXP	−0.7075	0.2725	−2.5968	0.0124**
GREV	0.8761	0.3445	2.5433	0.0142**
DEBT	0.0041	0.0154	0.2653	0.7919
INF	−0.0139	0.1017	−0.1365	0.8920
GCF	0.4466	0.0829	5.3843	0.0000***
R-squared	0.3960			
Adjusted R-squared	0.3098			
F-statistic	4.5901		Prob(F-stat)	0.0005***
Durbin-Watson	1.3376			

Note. There are country fixed-effects for Afghanistan, Nepal and Sri Lanka. *** p < 0.01, ** p < 0.05, * p < 0.10. N = 57. DW = Durbin-Watson statistic.

The fixed effects results shows that the government expenditure is negative and statistically significant at five percent level coefficient: −0.707. This implies that an extra percentage-point of government spending on GDP corresponds to a 0.71 percentage-point drop in GDP growth, which may be due to the lack of efficiency in public spending and the preponderance of recurrent over productive expenditure. The results show that government revenue positively and significantly affects economic performance with a coefficient of 0.876, which means that the increase in economic revenue contributes to the economic performance. The positive effect of gross capital formation on long-term growth is highly significant (one percent level) (coefficient = 0.447) which is an important role of investment in the process of long-term growth. There are no statistically significant effects to public debt and inflation. The R-squared value is 0.40 or 40 percent, meaning that the model accounts for about 40 percent of the variation in GDP growth. The F-statistic is significant at the one percent level.

4.4 Redundant Fixed Effects Test

An attempt was made to estimate a random effects specification alongside the fixed effects model and to conduct the Hausman test for formal selection between the two. However, random effects estimation is mathematically infeasible in the present panel: the random effects estimator requires the number of cross-sectional units to exceed the number of estimated coefficients in order to compute the between-dimension variance component, a condition that cannot be satisfied with three countries and six parameters. Consequently, the Hausman test, which requires both fixed and random effects estimates, also cannot be computed. This is a known structural limitation of very small-N panels rather than a shortcoming of the data. Model selection is therefore conducted between the pooled OLS and fixed effects specifications using the redundant fixed effects test, which formally evaluates whether the country-specific effects are jointly significant. The fixed effects specification is additionally preferred on theoretical grounds, since the three countries differ in stable geographic, institutional, and structural characteristics that are plausibly correlated with the fiscal regressors, a situation in which the random effects orthogonality assumption would be unlikely to hold even if estimation were feasible.

A redundant fixed effects test is used to compare the fixed effects model and pooled OLS to find the best estimation model. The results are shown in Table 10.

Table 10

Redundant Fixed Effects Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.1413	(2, 49)	0.0520
Cross-section Chi-square	6.8763	2	0.0321**

Note. H_0: No change in the cross-section fixed effects. A rejection of H_0 will favor the fixed effects model. ** $p < 0.05$.

The Cross-section Chi-square statistic has a value of 0.0321, which is significant at the 5% level, and so the null hypothesis of no redundancy in the fixed effects is rejected. The overall evidence supports the fixed effects model although the Cross-section F statistic is slightly above the five percent level ($p = 0.0520$). Thus the fixed effects model is chosen as an ultimate and suitable estimation model for this study.

5. Discussion

Results of the fixed effects model support the empirical findings that fiscal policy has an effect on long-term economic growth in Afghanistan, Nepal, and Sri Lanka, but the impact of fiscal policy varies in terms of direction and significance among the countries and fiscal variables.

The negative and significant relationship between government spending and the growth of GDP (coefficient = −0.707) stands out as the most interesting result. This is in line with the theoretical argument of Barro (1990) who showed that the growth effect of expenditure critically relies on "productive" allocation of fiscal resources, whereas public spending without any effect on productive capacity uses up fiscal resources in unproductive manner or in recurrent activities. This is consistent with Kneller et al. (1999), who demonstrated that nonproductive spending hurts long run growth, and with the more general international evidence that poor public financial management constrains the growth potential of public spending in developing countries. In Afghanistan, Nepal and Sri Lanka this negative relationship may be due to the fact that capital expenditures have been surpassed by recurrent expenditures.

The positive and significant coefficient of government revenue (0.876) agrees with the Barro (1990) model fiscal capacity argument. Governments can fund productive public services without having to borrow too much, given enough revenues. Better revenue performance also reflects higher fiscal sustainability and macro-economic credibility which are essential to trigger private investment. This is in line with Bleaney et al. (2001) who showed that in OECD countries non-distortionary revenue mobilization is positively associated with long run growth.

The positive and significant result for gross capital formation (coefficient = 0.447) is consistent with both the Solow (1956) growth model and endogenous growth model of Barro (1990). This result also aligns with Rahman et al. (2019) who found that gross capital formation is one of the most important positive drivers of growth in the eight South Asian economies, thus showing that investment is one of the most powerful determinants of South Asian economic performance.

There were no statistically significant effects of public debt and inflation on GDP growth in the study period. The relative moderation in the average debt levels in Nepal and Afghanistan during the period might explain the lack of a significant debt effect, while the upper-end of the debt burden in Sri Lanka is being averaged across the panel. According to the debt overhang theory of Krugman (1988) and Sachs (1989), debt begins to appear as a growth constraint mostly at high levels of debt. Likewise, the lack of inflation effect could be an indication that inflation has stayed within a range that has not significantly misled investment decisions or macroeconomic stability during much of the period studied.

Overall, the results show that the quality and efficiency of public spending management is more important than the size of public spending. The productive expenditure, the consolidation of the revenue system and the investment are the most vital fiscal policy priorities in order to realize sustainable long-term economic growth for Afghanistan, Nepal and Sri Lanka.

6. Conclusions

This study analyzed the impact of fiscal policy on long-term economic growth in Afghanistan, Nepal, and Sri Lanka from 2003 to 2021, using panel data on an annual basis from World Bank's World

Development Indicators (WDI). A pooled OLS estimation and a fixed effects estimation were used to arrive at the results of the study, with the latter being adopted as the preferred method due to the redundant fixed effects test.

The empirical analysis shows that government spending has negatively and statistically significant to GDP growth, which indicates that government spending in the countries may not be well directed toward productive activities. The positive and statistically significant relationship of both government revenue and gross capital formation with economic performance indicate that increased revenue mobilization and investment levels have positive impacts on the long-term performance of the economy. There is no significant statistical relationship found between public debt and inflation on the GDP growth during the period of this research.

The implications of these findings are significant for policy making in Afghanistan, Nepal and Sri Lanka. The emphasis of public spending should be moved from the amount of expenditure to how well it is spent. Increased revenue mobilization, particularly increased tax bases and enhanced collection systems, could generate the revenue to finance development without increased borrowing. It is important to continue to stimulate investment in productive areas and continue prudent debt management practices to ensure ongoing growth. It offers comparative evidence on three largely under-researched South Asian economies in the study and shows that fiscal management, in terms of its composition and efficiency, is as significant as in terms of scale.

6.1 Recommendations

The following policy recommendations are made for decision makers in Afghanistan, Nepal and Sri Lanka: First, governments should reorient public spending towards productive investments like infrastructure, education and healthcare, and not towards recurrent or administrative spending. Enhancing public financial management and directing capital spending within the budget would make it possible to realize the growth-enhancing potential of public resources.

Second, there is a need to enhance the revenue mobilization process by addressing the issues in tax administration, expanding the tax base and curbing tax evasion. An increased domestic revenue base will decrease reliance on foreign financing and provide budget space for continued development spending. Third, the creation of gross capital formation should be encouraged by public investment in infrastructure and by policy interventions that encourage private investment, such as easing the regulatory environment, strengthening property rights and enhancing institutional quality. Fourth, fiscal sustainability can be preserved by having public debt at reasonable levels and by allocating borrowed resources to activities with predictable returns.

6.2 Limitations

This study has a few limitations, however. The analysis is limited to three South Asian economies between 2003 and 2021, and thus may not be fully generalizable to other countries or to other time periods. The study relies on a standard fixed effects design and assumes that there are no structural breaks, regime shifts or time-invariant factors between fiscal policy and growth. The political change in 2021 could have had a profound impact on the fiscal policy landscape, especially in Afghanistan. The R-squared value of 0.40 also indicates that other factors, such as institutional quality, governance, external shocks and flows of aid have significant roles in determining the growth outcome but are not included in the current specification.

A further limitation concerns the potential for endogeneity and reverse causality between the fiscal variables and GDP growth. Higher GDP growth may itself raise government revenue through automatic revenue buoyancy, reduce the debt-to-GDP ratio through the denominator effect, and attract investment that raises gross capital formation. These reverse channels — from growth to fiscal variables — cannot be fully separated from the direct fiscal-to-growth channels within the fixed effects framework used in this study. The fixed effects approach partially addresses endogeneity by exploiting within-country variation, but the possibility of remaining bias should be recognized in interpreting the estimated coefficients. Future research employing dynamic panel GMM estimators (Arellano & Bond, 1991; Blundell & Bond, 1998) with larger cross-sectional samples could explicitly instrument for the endogeneity of fiscal variables and provide more credible causal identification.

Additional limitations concern the linear specification and the treatment of non-linear relationships. The linear fixed effects model imposes a constant marginal effect of each fiscal variable across all levels, which may understate the true relationship at extreme values of debt or inflation. The empirical literature provides substantial evidence that both public debt and inflation have threshold-dependent effects on growth (Reinhart & Rogoff, 2010; Presbitero, 2012; Azam & Khan, 2022), and the null results reported for these two variables in the present study may partly reflect the inadequacy of the linear specification rather than the absence of underlying fiscal effects. Furthermore, the diagnostic tests reported in Section 3.4 confirm the presence of positive serial correlation and cross-sectional dependence in the panel residuals; these features do not bias the coefficient estimates but can cause conventional standard errors to be understated. White cross-section robust standard errors are therefore applied as a corrective measure, and the central findings, particularly the significance of gross capital formation, are preserved under robust inference. Future research should employ panel-corrected standard errors (PCSE), Driscoll-Kraay standard errors, or heteroskedasticity and autocorrelation consistent (HAC) standard errors to further strengthen the reliability of statistical inference.

Future work can involve using: a larger country sample, a longer time series, measures of institutional quality and governance, as well as more sophisticated techniques like dynamic panel estimators, threshold regression and time varying coefficient models.

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