

Research Article

Dynamic Fiscal Policy and Economic Growth in Bangladesh: Short-run and Long-run Evidence from ARDL Cointegration Analysis

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Abstract

This study investigated the dynamic short-run and long-run effects of fiscal policy on the economic growth of Bangladesh using time series data spanning from 1999 to 2024. By utilising the Autoregressive Distributed Lag (ARDL) cointegration model, the analysis was conducted to examine the impact of government revenue, government expenditure, and government investment on Bangladesh's GDP growth. The ARDL Bounds Test confirms that among the variables, there is a stable long-term cointegration exists. The findings reveal that government expenditure has a statistically significant positive impact in both the short and long run, supporting the idea of a Keynesian stimulus effect. Conversely, government revenue shows a significant negative impact, indicating a short-term contractionary effect of taxation. A notable and surprising result shows that, in the short run, investment has spurred growth; however, in the long run, it has a significant negative impact, indicating diminishing returns or the crowding-out effect of private investment. However, ECT where the coefficient is suggesting a statistically significant result, which confirms the model's robustness and indicates that nearly 35% of the disequilibrium from the long-run relationship is corrected within one year. The economy required approximately three years ($1/0.35$) to immediately resume its long-run equilibrium path of growth acceleration after recovering from the shock. All diagnostic tests were performed, including normality, the serial correlation LM test, and heteroskedasticity tests, which confirm the model's robustness. This finding provides policymakers with critical insights for designing balanced fiscal strategies that promote sustainable economic growth in Bangladesh.

Keywords

Fiscal Policy, Economic Growth, Autoregressive Distributed Lag Model, Government Expenditure, Government Revenue, Public Investment, Cointegration, Bangladesh

1. Introduction

Financial crises, especially those in the 1930s and 2008, as well as the COVID-19 pandemic, have highlighted the critical role of fiscal policy in stabilising productivity and employment generation. However, the effectiveness of fiscal policy

remains contested, with the IMF later suggesting that counter-cyclical measures have **become** an obstacle or insufficient to minimise adverse shocks [1]. One finding strongly proved that public investment crowds out private investment, both in the

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short and long run; however, public investment strategy and supportive liberalised policy offset this effect and support private growth [2]. The economic implications of government expenditure were found to be significant in the long run for economic development; however, it was also evident that massive government expansion proved inefficient. Here, strategic expansion is significantly important. [3] In the Thailand context, the author highlighted that monetary policy helped long-term growth, whereas fiscal policy was required for handling recessing and the combined effective application of these two policies helped macroeconomic stability and growth [37].

1.1. Research Questions

The research questions are as follows:

- 1) What is the long-run cointegrating relationship between government revenue, expenditure and investment with economic growth in Bangladesh?
- 2) What is the short-term dynamic effect of revenue, investment, and expenditure on economic growth?
- 3) Does government investment crowd in or crowd out economic growth?

1.2. Research Objectives

The study aims to investigate the impact of government revenue, government expenditure and government investment on Bangladesh's economic growth.

1.3. Hypothesis

Highlighting the null hypothesis below:

H_{0_1} = There is no long-run relationship between GDP growth and government revenue, expenditure and investment.

H_{0_2} = Government revenue has no significant short-term impact on GDP growth.

H_{0_3} = Government expenditure has no significant short-term impact on GDP growth.

H_{0_4} = Government investment has no significant short-run or long-term impact on GDP growth.

2. Literature Review

2.1. Introduction

The efficiency of fiscal policy as an instrument for boosting economic growth is a central theme in macroeconomic discourse. However, the relationship between economic growth and fiscal policy is a highly dynamic and contentious issue in empirical research. According to [4], the relationship between fiscal policy and economic growth was not constant, fluctuating frequently, and was often represented as favourable, unfavourable, or neutral.

This review navigates this complex terminology to lay a strong foundation for explaining Bangladesh's fiscal dynamics. It is outlined in three parts. Firstly, it exhibits a theoretical battleground between neoclassical and endogenous growth theories. Secondly, it identifies empirical and methodological phenomena ranging from meta-analysis [5] to country-specific applications [2], which manifest the context-oriented nature of fiscal multipliers. Lastly, it shows a recent understanding that factors such as corruption and poor public investment management are key to long-run economic growth [6]. So, the review is very important for identifying the critical research gap that the current study seeks to address. Fiscal policy positively influences economic growth in the short run; however, for long-run success depends on institutional quality and fiscal governance [34]. One study suggested infrastructure development and education expenditure for getting positive benefit of fiscal policy [35].

2.2. Theoretical Aspect

This study reviewed theoretical and empirical articles to establish a relationship between fiscal policy and economic growth; however, their assessment proved less robust and remained inconclusive [3]. [7] Authors presented three assessment frameworks for determining growth, and fiscal policy is also analysed in the literature. They focused on the neoclassical growth model, endogenous growth theory, and the role of institutions. [8] and [9], the neoclassical theorists, believed that fiscal policy had a short-term effect on growth; however, in the long run, the economy grew exogenously through technological progress. [10] and [11] agreed on several mechanisms to explain differences in growth rates across economies. To identify fiscal policy shocks, [12] suggested a two-step approach to the tax and transfer institutional information system, including its timing. Regarding the fiscal deficit, [13] reported a negative relationship with economic growth. Some researchers have found a positive relationship between government size and economic growth. [14] assessed 115 countries from 1960 to 1980 and found a very significant relationship between government expenditure and growth. Since the emergence of the endogenous growth model, a long-term growth approach to fiscal policy has been considered crucial; however, significant debate persists among researchers [15].

2.3. Methodological Aspect

Researcher [16] assessed the short- and long-run effects of fiscal policy on Turkish economic growth, applied a VECM model and impulse-response analysis, and found that government investment had a crowding-out effect on the private sector. In contrast, current expenditure was subject to private-sector crowding out. The study [5] employed meta-analysis to investigate the impact of fiscal policy on economic development, drawing on 93 published articles and yielding 123 observa-

tions. In this paper, the fiscal tools considered were consumption, revenue, expenditure on education, defence, and infrastructure. In this study, the results showed a weaker correlation between fiscal policy and growth; however, they found a strong relationship between education and infrastructure development. Researcher [4], in a literature review, argued that the relationship between fiscal policy and economic growth was not constant, exhibiting fluctuations that were sometimes favourable, sometimes unfavourable, and sometimes neutral. This paper employed a time-varying parameter vector autoregressive methodology to capture expenditure and tax shocks, using data from 2001Q1 to 2013Q3. The findings suggested a small effect of fiscal policy on economic growth. Researcher [17] employed a time-varying parameter vector autoregressive methodology to capture expenditure and tax shocks, using data from 2001Q1 to 2013Q3. The findings suggest a small effect of fiscal policy on economic growth, and the coefficient time variation is very insignificant. The study [18] utilised panel data from 17 OECD countries to investigate the impact of fiscal consolidation on income inequality, spanning the period from 1978 to 2013. Used impulse response features and found fiscal austerity led to income inequality, where the Gini coefficient rose 0.4 per cent to 0.6 per cent, and the inequality became more pronounced when there was a crisis period, longer, larger or expenditure cuts.

This study examined literature on fiscal policy and economic growth, and the results strongly indicate that there are several tax rates and government expenditures that have a direct impact on economic growth [19]. To assess the impact of government spending through fiscal stimulus on Brazil's growth, the Threshold Vector Autoregressive (TVAR) approach was applied; however, the model proved non-robust and failed to establish statistical significance [20]. To analyse the discretionary effects of fiscal measures in Croatia, [21] employed a structural VAR (SVAR) with the Blanchard-Perotti identification approach, and the results confirmed different levels of multipliers. This paper applied ARDL bound testing for public and private investment in Bangladesh, using data from 1981 to 2015, and suggested strategic investment [2]. One study mentioned that context-sensitive fiscal policy is crucial for sustainable economic growth [32].

Despite considerable research in this field, it has not captured the short and long-run effects of fiscal policy on growth. Therefore, the current study aims to mitigate this gap. For this reason, this study has significant findings. To examine public and private investment, researchers [2] applied Bangladeshi BSS data from 1981 to 2015, and the ARDL methodological approach were utilised, and it was found that public investment negatively affects private investment in both the short and long term; however, policy liberalisation can mitigate this effect. Researchers [22] examined data from 1970 to 2017 from Jordan, where the dependent variable was GDP, and the independent variables were tax and expenditure. Here, the ARDL approach was employed, and the results were highly significant at the aggregate level.

2.4. Recent Literature Consensus

Recent research has further refined the fiscal policy growth strategy, particularly in developing countries. Empirical studies have emphasised the importance of institutional quality and fiscal composition. For example, [6] stated that growth through public investment declined due to high corruption and weak investment management, which provides a credible account of the long-run adverse investment effects observed in research such as this study. Similarly, [23] and [33] found that Fiscal consolidation often prioritised tax increases, thereby imposing short-term growth costs on emerging economies, which aligns with this result: the contractionary revenue effect. Furthermore, [24], in a meta-regression analysis, finds that expenditure multipliers were larger and more robust than tax multipliers, supporting the Keynesian effect of Government expenditure, as observed in Bangladesh. Education and health expenditure have long-term positive effects on economic growth [30]. Researchers found that public investment crowds out private investment in developed economies, whereas in developing economies it crowds in private investment. Here, researchers suggest that effective fiscal policy formulation is a powerful tool for economic growth [31]. One study strongly said that public investment is necessary during a recession because it boos economy and, at the same time, it stimulates private investment and consumption [36].

3. Methodology

3.1. Introduction

In this paper, the dependent variable is Gross Domestic Product (GDP), and the independent variables are Total Government Revenue (comprising tax, non-tax, and grants), Total Government Expenditure, and Total Government Investment. For different statistical analyses, time series data were applied from 1999 to 2024, sourced from the Bangladesh Bureau of Statistics (BBS), and are expressed in million Taka, with 2015-16 as the base year. In the ARDL model estimations, variables applied are in stationary forms, i.e., $D(GDP)$ is $I(0)$, INV is $I(0)$, etc.

3.2. Model Specification

The article analyses the effects of government revenue, government consumption, and government investment on Bangladesh's economic development. This analysis is conducted using the Autoregressive Distributed Lag (ARDL) Model and the ARDL Long-run Bound Test and Error Correction Model (ECM).

To identify the continuous effects of revenue, expenditure, investment, and lagged values on GDP growth at time t , this research employs an autoregressive distributed lag model. The econometric form of the ARDL Model equation is represented below.

$$GDP_t = \alpha + \sum_{i=1}^p \delta_{2i} GDP_{t-i} + \sum_{r=0}^m \beta_{2r} Rev_{t-r} + \sum_{r=0}^m \gamma_{2r} EXP_{t-r} + \sum_{r=0}^m \mu_{2r} Inv_{t-r} + u_t \quad (1)$$

In the above equation $i = 1, 2, \dots, p$ and $r = 0, 1, 2, \dots, m$. Where, δ_{2i} , β_{2r} , γ_{2r} , and μ_{2r} are parameters. These parameters are estimated by employing the Ordinary Least Squares (OLS) method under the assumption that $u_t \rightarrow N(0, \sigma^2)$. The ARDL model is specified in levels, and the underlying long-run relationship yields the Error Correction Model (ECM).

The Bound Test

The bound test is an F-test of the coefficient on the level variables in the ECM equation, testing the combined significance of the ECM equation.

Testing Hypothesis

This study applied various hypothesis testing for parameter and model estimation [26].

$H_0: \pi_{yy} = 0$ and $\pi_{x1} = \pi_{x2} = \dots = \pi_{xk} = 0$ (No Long – Run Relationship)

$H_1: \pi_{yy} \neq 0$ and $\pi_{x1} \neq \pi_{x2} \neq 0$ and/or and/ or $\pi_{xk} \neq 0$ (Long – Run Relationship Exists)

For the null hypothesis, the F-statistic is calculated. Here, the decision rule is taken based on the F-statistic calculation to two sets of critical values stated by [25]:

Here, F is calculated as the F-statistic:

Here CV_{Lower} be the critical value assuming all variables are I (0). Further here CV_{Upper} be the critical value, assuming all variables are I (1).

If $F > CV_{Upper}$: Reject H_0 cointegration exists

If $F < CV_{Lower}$: Fail to Reject H_0 No cointegration

If $CV_{Lower} \leq F \leq CV_{Upper}$: The Test is Inconclusive

4. Findings and Discussion

4.1. Introduction

This study applied various models to analyse fiscal macro-economic variables, primarily revenue, expenditure, and investment, in relation to Bangladesh's GDP. For parameter estimation, this paper employs ordinary least squares (OLS), the autoregressive distributed lag (ARDL) model, and the Error-Correction Model (ECM). All these approaches facilitated the uncovering of dynamic, time-varying effects across various periods.

4.2. Test of Stationarity: ADF Test Findings

For all time-series variables, including GDP, government revenue, government expenditure, and government investment, the Augmented Dickey-Fuller (ADF) test is used to

avoid spurious results. Using the Akaike Information Criterion (AIC) to select the optimal lag length, the test was conducted. Table 1 highlights the ADF findings.

Table 1. Unit Root Test Result.

Variable	ADF Statistic	Order of Integration
GDP	-5.30	I (2)
Revenue (REV)	-4.60	I (1)
Expenditure (EXP)	-4.60	I (1)
Investment (INV)	-3.74***	I (0)

***p<0.01, **p<0.05, p<0.10

The ADF test results above confirmed the stationarity of the variables. By combining the mixed-order integration [25], this ARDL model meets the model specifications by applying I (0) and I (1). Here, GDP exhibits a highly volatile trend that becomes stationary after second differencing. In contrast, revenue and expenditure become stationary after the first difference. The investment p-value is less than 0.05, indicating that the investment is stationary at the level.

4.3. ARDL Models Estimation

To assess the impact of both current and lagged fiscal macro variables on the current year's GDP, this paper employed different quantitative models. All model parameters were estimated using OLS. Based on the parameter, these approaches also assess goodness-of-fit and describe the estimated coefficients. Additionally, the statistical significance of the parameters was tested using t-tests. Moreover, the autocorrelation of the models was identified through the use of the Durbin-Watson (DW) test; here, the key statistics are R^2 and Adjusted R^2 .

4.3.1. ARDL Combined Effect Model (Model 1)

Table 2. ARDL Short-Run Results.

Variable	Coefficient	p-value
D (GDP (-1))	0.6499***	0.0009
D (REV)	-217.23*	0.0918
D (REV (-1))	-481.30***	0.0005
D (EXP)	301.28**	0.0253
D (EXP (-1))	423.08***	0.0031
D (EXP (-2))	250.79**	0.0168

Variable	Coefficient	p-value
D (INV)	264.65**	0.0255
D (INV (-1))	-165.63	0.2092
D (INV (-2))	-736.07***	0.0002

***p<0.01 and **p<0.05

Table 2 suggests lagged D (GDP_{t-1}) has a statistically significant impact ($\beta = 0.649900, p = 0.009$). Which represents that a 1 unit increase in previous years' GDP growth results in an 0.649900 unit is expected to increase in the present year's GDP growth.

Impact of Revenue changes D (REV) leads to a marginally significant negative impact on GDP growth here, the coefficient ($\beta = -217.23, p = 0.09$). However, lagged D (REV_{t-1}) here coefficient ($\beta = -481.30, p = 0.0005$) highly significant negative impact. It means that an increase in government revenue through taxation negatively affects short-run GDP growth, supporting the economic theory that taxation withdraws money from the market, likely slowing economic activity.

Expenditure Income Changes when D (EXP) coefficient is ($\beta = 301.28, p = 0.025$) which suggests a strong positive Keynesian effect on GDP growth. Similarly, in lagged 1 year D (EXP_{t-1}) coefficient is ($\beta = 423.08, p = 0.003$) It shows a statistically significant and positive impact. Additionally, in 2-year lagged periods D (EXP_{t-2}) coefficient is ($\beta = 250.79, p = 0.017$) it also represents a very positive, statistically significant impact.

Impact of Investment on GDP D (INV) suggesting that a one unit increase in investment in the current year has a statistically significant positive impact on current year GDP growth this case, the coefficient is ($\beta = 264.65, p = 0.026$) very significant positive impact. Conversely, investment in a 2-year lagged period D (INV_{t-2}) the coefficient is ($\beta = -736.07, p = 0.0002$) has a significant negative impact. Investment in this ARDL results in a complex dynamic. In the current period, investment boosts growth immediately; however, over a two-year lag, it has a substantial adverse effect. This can occur due to adjustment cycles or an initial surge in demand followed by a phase of consolidation.

The ARDL model diagnostic suggests the highest goodness of fit ($R^2 = 0.982$) the model explains 98.2% of the variation in GDP growth, indicating an excellent fit. F-statistics is 72.83 (Probability is 0.000000). The overall model is highly statistically significant. Durbin-Watson (DW=2.288), which is very close to 2, revealing no serial autocorrelation in the residuals. These key features suggest that the overall model is well specified and robust with respect to the outcomes.

4.3.2. ARDL Long Run Bounds Test

Table 3. ARDL Bound test Results.

Statistic	Value
F-Statistic	11.943
Upper Bound (1%)	4.660
Decision	Cointegration Exists

Table 3 model specification is the dependent variable D ($GDP, 2$) the second difference of GDP is the acceleration of GDP growth (change in the rate of GDP Growth). This model explains why the economic growth rate accelerates or decelerates.

The F-Bound Test, one of the model's most notable features, states that the null hypothesis is that no long-run relationship exists. Furthermore, it explains that if the F-value is less than I (0), we cannot reject the null hypothesis, indicating that there is no long-run relationship. Cointegration does not exist in the estimated equation.

Additionally, Regressive Distribution in the ARDL model. If the F-value is higher than I (1), we reject the null hypothesis and conclude that a long-run relationship and cointegration exist in the estimated equation.

Error Correction Model (ECM) If the F value is between I (0) and I (1), the test is considered inconclusive.

In this model, the F-statistic is 11.94336, even with the strict finite number ($n=30$), where the critical value at the 1% significance level is 4.66. The comparison of the critical value F-statistic (11.94336, which is enormously greater than the upper bound (4.66). Here, the null hypothesis is readily selected, and the bound test strongly supports the existence of a long-run cointegration relationship.

4.3.3. Equation in the Long-Run (Level Equation)

The equation suggests a long-term relationship between the dependent variable, GDP, and the independent variables, government revenue, government expenditure, and government investment.

Table 4. Long Run Coefficient.

Variable	Coefficient	p-value
Revenue (REV)	-1995.24	0.0648
Expenditure (EXP)	2785.34***	0.0074
Investment (INV)	-1819.62**	0.0122

***p<0.01, **p<0.05.

When considering D (REV) as an independent variable, its coefficient ($\beta = 1995.24$; $p = 0.065$) this can be interpreted in the long run as indicating that an increase in revenue growth is linked with a deceleration of economic growth (a decrease in the growth rate). The result is marginally significant, suggesting a contractionary effect of the tax measure. In the case of independent variable government expenditure, the coefficient ($\beta = 2785.34$; $p = 0.007$), which can be explained in the long run as an increase in expenditure growth linked to the acceleration of economic growth (a speeding-up of the growth rate). This result supports Keynesian theory. Conversely, in Government investment D (INV) it's coefficient ($\beta = -1819.62$; $p = 0.012$) This can be explained in the long run as an increase in investment associated with a deceleration in economic growth.

4.3.4. The Error Correction Term

Table 5. Error Correction Term.

Variable	Coefficient	p-value
ECT	-0.3501**	0.0367

*** $p < 0.01$, ** $p < 0.05$.

D (GDP_{t-1}) coefficient is ($\beta = -0.3501$; $p = 0.03$) which is Error Correction Term (ECT), and which is perfect, it is negative and statistically significant $p - value < 0.05$, and it is between 0 and 1. This ensures the model's stability, requiring nearly 35% of the disequilibrium from the long-run relationship to be corrected within one year. The economy required approximately three years ($1/0.35$) to immediately resume its long-run equilibrium path of growth acceleration after recovering from the shock. The ARDL bounds test reveals how short-run shocks affect the growth rate of GDP. The notable variables D (EXP, 2) D (INV (-1), 2)) Suggest the immediate growth rate effect of expenditure and investment on the GDP acceleration.

The ARDL bounds test unequivocally rejects the null hypothesis of no long-run relationship (F-statistic = 11.94, $P < 0.01$), suggesting a stable long-run cointegrating relationship between the dependent variable, economic growth, and the independent variables: government revenue growth, government expenditure growth, and investment growth in Bangladesh. Significantly, the parameters reveal that government expenditure growth is a primary driver of economic growth, while revenue and investment growth have a decelerating effect in the long run. Additionally, the negative and significant error correction term (ECT = -0.35) confirms the stability of this long-run relationship, with approximately 35% of any short-term disequilibrium being corrected annually.

4.4. Granger Causality Test

H_0 : GDP does not Granger-cause Rev

H_1 : GDP does Granger-cause Rev

H_0 : GDP does not Granger-cause Exp

H_1 : GDP P does Granger-cause Exp

Table 6. Summary of Granger Causality results.

Direction of Causality	Result
GDP $\rightarrow$ Revenue	Significant
Revenue $\rightarrow$ GDP	Not Significant
GDP $\rightarrow$ Expenditure	Significant
Expenditure $\rightarrow$ GDP	Not Significant
GDP $\leftrightarrow$ Investment	Not Significant

As the p-value is less than 0.05, we reject the null hypothesis. That implies GDP Granger Causes Rev (or Exp), meaning there is short-run causality from GDP to Rev (or Exp).

The empirical findings of unidirectional Granger causality suggest that the relationship from GDP to Government revenue and expenditure supports the classical idea that fiscal expansion precedes economic growth, rather than being driven by it in the short term. These findings align with Wagner's Law, which states that as the economy grows, public revenue and expenditure increase due to rising demand for public services and greater tax capacity.

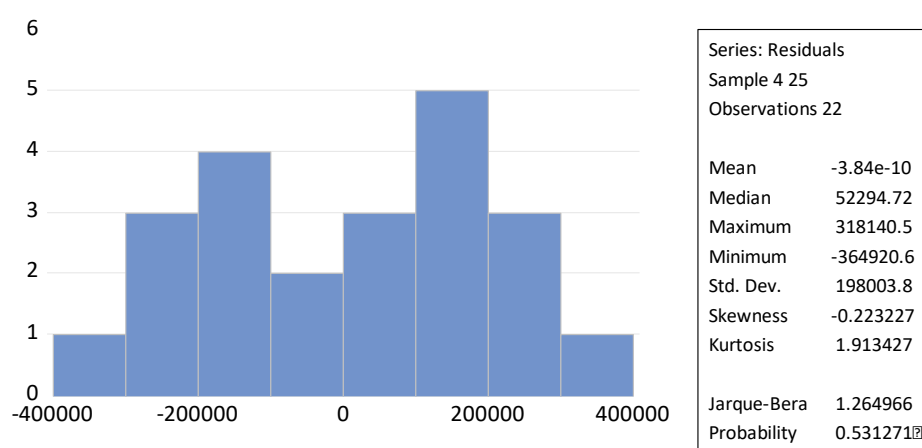
Conversely, the absence of causality suggests that, in the short run, fiscal policy tends to be reactive rather than proactive, responding to economic trends rather than shaping them. From a policy perspective, this suggests the importance of sustaining economic growth, which is a foundation of stable fiscal strength. Introducing fiscal intervention may require longer horizons to influence productivity dynamics effectively.

4.5. Diagnostic and Stability Tests

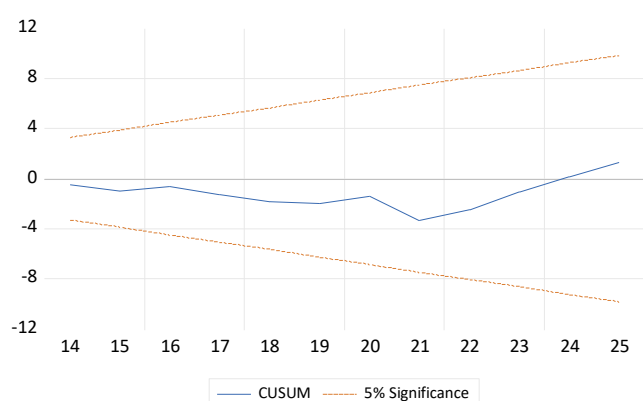
For ensuring model stability and reliability several diagnostic tests were conducted which are wild tests that confirm the existence of short run causality among variables. Additionally residual diagnostic tests further represent that model is statistically robust. Here residuals are normally distributed which are free from serial correlations, and homoscedastic. Moreover, CUSUM and CUSUMSQ tests confirm parameter stability throughout the sample period.

Table 7. Diagnostic Test Results.

Test	p-value	Conclusion
Wald Test	0.0000	Short-run causality exists
Normality Test	0.531	Residuals normally distributed
LM Serial Correlation Test	0.063	No serial correlation
Heteroskedasticity Test	0.323	Homoscedastic residuals
CUSUM/CUSUMSQ	Stable	Parameters stable

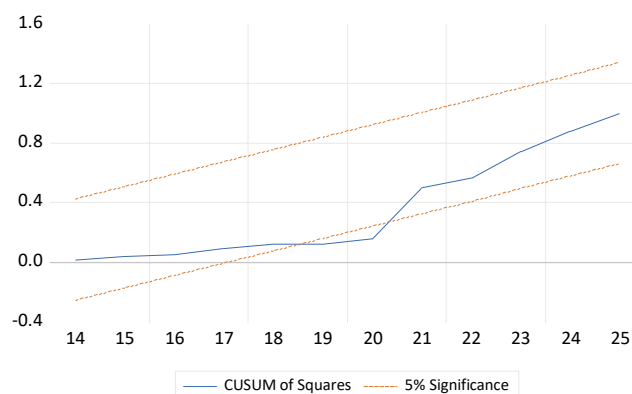
**Figure 1.** Histogram Normality Test of Residuals.

Histogram and Jarque-Bera statistics indicate that residuals are normally distributed. Since the P-value is greater than 0.531, we fail to reject the null hypothesis that the Residuals are normally distributed confirms the validity of ARDL model assumptions.

**Figure 2.** CUSUM Stability Test.

For this analysis, the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares Recursive Residuals (CUSUM Square) methods, developed [27], were

employed. These tests are crucial for avoiding model misspecification when assessing coefficient shifts in time-series analysis and for preventing biased estimation of empirical findings [28]. For parameter stability analysis, the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares Recursive Residuals (CUSUM Square) methods were employed, developed by [27]. Additionally, Figures 2 and 3 highlight the graphical presentation of CUSUM and CUSUM Square, respectively. It indicates model stability over time, as the plots remain within 5% of the critical bounds, indicating that the regression coefficients remain stable [29].

**Figure 3.** CUSUM of Square Stability Test.

The cumulative sum of squared recursive residuals indicates residuals remain within the critical limits, suggesting that estimated coefficients are stable and there are no significant structural breaks present in the study periods.

5. Conclusion

This study examined the impact of fiscal policy on economic growth from 1999 to 2024 using the ARDL cointegration approach, supported by unit root tests, short-run dynamics, long-run estimates, and extensive diagnostic checks. Here, fiscal policy variables were government revenue, government expenditure and government investment. This study shows that GDP plays a key role, with past GDP values helping predict both revenue and spending, suggesting that economic growth drives financial variables.

The result reveals that government expenditure is the most prominent driver of economic growth in both the short and long run. This reinforces the Keynesian idea that well-planned public spending boosts aggregate demand and economic activity. Conversely, government revenue suggests a contractionary effect of growth, especially in the long run, suggesting that Bangladesh's tax burden may increase, restricting private-sector activity and consumption. The most remarkable findings about government investment indicate that, in the short run, it positively influences GDP growth; however, it has a significant adverse effect in the long run. The findings reveal inefficiencies, delays, cost increases, and crowding out, as documented in the country's Public Investment Management Practices.

The error-correction term, which is statistically significant and negative, indicates the model's stability. The result shows that, on average, approximately 35% of short-run deviations from long-run equilibrium are corrected each year, indicating that the economy takes about 3 years to absorb shocks and return to its long-run growth path fully. Additionally, Granger causality tests reveal unidirectional causality from GDP to Government expenditure and revenue, aligning with Wagner's Law, which holds that as the economy grows, public revenue increases and demand rise. Hence, fiscal policy appears more reactive than proactive in the short run.

Overall, the findings suggest that Bangladesh's growth path is highly sensitive to the efficiency, quality, and composition of fiscal measures. While the enhanced expenditure indicates growth, the result demonstrates the need to increase revenue mobilisation capacity without reducing economic activity and to bolster the efficiency and productivity of government investment to avoid a long-run growth delay.

From a policy perspective, the study recommends priorities high-impact expenditure based on outcomes; efficiency in revenue collection rather than raising tax collection through various measures, and strengthening project feasibility, planning, monitoring, implementation, and timely completion to achieve a positive impact in the long run. Further research may

benefit from disaggregating investment and expenditure components by applying structural break analysis or by accounting for external macroeconomic shocks to better understand fiscal-growth dynamics in the Bangladesh context.

Abbreviations

ARDL	Autoregressive Distributed Lag
ADF	Augmented Dickey-Fuller
ECT	Error Correction Term
GDP	Gross Domestic Product
BBS	Bangladesh Bureau of Statistics
OLS	Ordinary Least Squares
MTBF	Medium-Term Budget Framework

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Author Contributions

Khaleda Nasrin: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing

Data Availability Statement

The data used in this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The author declares no conflicts of interest.

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Biography



Khaleda Nasrin is a Deputy Secretary at the Ministry of Public Administration, Government of the People's Republic of Bangladesh, and is currently pursuing a PhD in Agricultural, Environmental and Food Economics at the University of Reading, United Kingdom, while on study leave. She has over 17 years of experience in public administration, public financial management, fiscal policy, and economic governance. She holds a Master of Social Science in International Relations from the University of Dhaka, a Master of Science in Leadership for Sustainable Development from Queen's University Belfast, and a Master of Economics in Development Economics from the Dhaka School of Economics, University of Dhaka, graduating with distinction. Her expertise includes macroeconomic forecasting,

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Research Field

Khaleda Nasrin: Fiscal Policy Analysis, Public Financial Management, Development Economics, Climate Finance, Sustainable Development, Environmental Economics, Economic Growth, Green Economic Transition, Applied Econometrics, Public Policy Evaluation