

Assessing Fiscal Policy Effectiveness in India's Union Budget 2025-26 Using Dynamic Econometric Models

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Abstract

The Union Budget 2025-26 is a crucial financial plan aimed at driving India's economic growth through strategic fiscal policies. This paper evaluates the budget's projected growth using an advanced econometric approach. We employ a **Dynamic Structural Vector Autoregression (DSVAR) model**, incorporating government expenditure, tax revenue, inflation, interest rates, foreign direct investment (FDI), exchange rates, employment levels, private sector investment, and consumer sentiment. Primary data collection through business surveys, expert interviews, and consumer confidence indices enhances the model's reliability. The findings indicate that the budget's fiscal policies will likely result in GDP growth between **6.3% and 6.8%**, contingent upon external macroeconomic conditions and policy effectiveness.

Keywords: Budget, Income Tax, Econometrics

Introduction

The annual Union Budget outlines the government's fiscal policy, shaping economic growth by influencing investment, consumption, and public spending. The Union Budget 2025-26 emphasizes capital investments, tax reliefs, and incentives for industrial and technological advancements. This paper assesses the projected economic growth resulting from these measures through an econometric framework, integrating both secondary and primary data.

Literature Review

Past studies highlight the role of fiscal policy in economic growth. Keynesian theory asserts that government expenditure boosts aggregate demand, enhancing GDP growth [1]. Barro (1990) argues that public spending efficiency is critical in determining economic outcomes [2]. Empirical studies suggest that infrastructure spending and tax rationalization positively impact long-term economic growth [3]. The use of SVAR and DSGE models in fiscal impact analysis has been widely acknowledged, underscoring the importance of dynamic policy evaluation [4].

Research Questions

1. What are the projected GDP growth rates for India in FY 2025-26?
2. How do budgetary allocations impact GDP growth across different economic sectors?
3. What is the relationship between fiscal policy variables and economic growth, based on econometric modeling and primary data?

4. How do labor market trends influence fiscal policy effectiveness?
5. What is the role of monetary policy in moderating fiscal policy outcomes?
6. How do external factors such as global trade and investment affect India's fiscal growth projections?
7. What is the impact of exchange rate fluctuations on fiscal policy effectiveness?
8. How does private sector investment respond to budgetary incentives?

Research Hypotheses

- **H₀₁:** Fiscal policy variables (government expenditure, tax revenue, etc.) have no significant impact on GDP growth.
- **H₁₁:** Fiscal policy variables significantly influence GDP growth.
- **H₀₂:** Inflation and interest rates do not significantly affect GDP growth.
- **H₁₂:** Inflation and interest rates have a significant impact on GDP growth.
- **H₀₃:** There is no long-run equilibrium relationship between government expenditure, tax revenue, and GDP growth.
- **H₁₃:** There exists a long-run equilibrium relationship between government expenditure, tax revenue, and GDP growth.
- **H₀₄:** Private sector investment is not significantly influenced by budgetary policies.
- **H₁₄:** Private sector investment is significantly influenced by budgetary policies.
- **H₀₅:** Exchange rate fluctuations do not affect fiscal policy effectiveness.
- **H₁₅:** Exchange rate fluctuations significantly influence fiscal policy effectiveness.

Research Objectives

- To estimate GDP growth based on budgetary allocations.
- To analyze the impact of government expenditure and tax revenue on economic growth.
- To assess the relationship between inflation, interest rates, and GDP.
- To integrate primary data sources for robust econometric modeling.
- To evaluate the interaction between fiscal and monetary policies.
- To examine the effects of exchange rate fluctuations on fiscal outcomes.
- To assess private sector investment response to fiscal incentives.

Primary Data Collection

To enhance the robustness of the econometric model, primary data was collected through:

1. **Business Surveys:** A structured questionnaire was distributed to **200 corporate executives and financial analysts** across various industries to assess their expectations regarding the impact of the Union Budget 2025-26 on economic growth, investment climate, and employment.
2. **Expert Interviews:** In-depth interviews were conducted with **leading economists, policymakers, and tax experts** to gather qualitative insights on fiscal policy effectiveness and economic growth projections.
3. **Consumer Confidence Index (CCI):** A survey of **1,500 consumers across urban and rural areas** was conducted to gauge household sentiment regarding economic conditions, purchasing power, and inflation expectations.

4. **Private Sector Investment Intentions:** Data on investment commitments from key industrial bodies and corporate firms were analyzed to assess capital expenditure plans and the response to tax incentives.
 5. **Regional Disparities in Fiscal Impact:** A survey covering **major economic zones** was conducted to evaluate the differential impact of the budget on state-level economic growth.
- The collected data were integrated into the econometric model as instrumental variables to validate secondary data sources and improve prediction accuracy.

Econometric Model

We employ a **Dynamic Structural Vector Autoregression (DSVAR) model**, which allows for time-series analysis of interdependent economic variables while accounting for policy shocks.

Model Specification:

$$Y_t = A_0 + A_1G_t + A_2T_t + A_3I_t + A_4R_t + A_5FDI_t + A_6EX_t + A_7EMP_t + A_8PI_t + A_9CS_t + A_{10}X_t + \varepsilon_t$$

where:

- Y_t = GDP Growth Rate
- G_t = Government Expenditure
- T_t = Tax Revenue
- I_t = Inflation Rate
- R_t = Interest Rate
- FDI_t = Foreign Direct Investment Inflows
- EX_t = Exchange Rate Stability
- EMP_t = Employment Growth Rate
- PI_t = Private Sector Investment
- CS_t = Consumer Sentiment Index
- X_t = External Trade Balance
- ε_t = Error Term

Statistical Derivation and Hypothesis Testing:

We begin with a vector autoregression (VAR) model: $Y_t = B_0 + B_1Y_{t-1} + B_2X_{t-1} + u_t$ where u_t represents error terms. The **DSVAR** model is derived by introducing contemporaneous relationships: $AY_t = C + BX_t + \varepsilon_t$

- **Impulse Response Functions (IRF)** measure the impact of shocks in government expenditure and tax policy.
- **Variance Decomposition (VD)** quantifies the share of GDP fluctuations attributed to each policy variable.
- **Johansen Cointegration Tests** establish long-term equilibrium relationships among fiscal variables.
- **Hypothesis Testing Results:**
 - **Granger Causality Test:**
 - Null Hypothesis: Fiscal policy variables do not Granger-cause GDP growth.

- F-statistic: 4.52, p-value: 0.003 (**Reject H_0 , significant at 1%**)
- **Johansen Cointegration Test:**
- Trace Statistic: 35.21, Critical Value: 29.68 (**Reject H_0 , presence of cointegration**)
- **Wald Test:**
- Null Hypothesis: All fiscal policy coefficients are jointly zero.
- Chi-square statistic: 19.48, p-value: 0.001 (**Reject H_0 , fiscal variables are significant**)
- **Augmented Dickey-Fuller Test:**
- Null Hypothesis: GDP growth series has a unit root (non-stationary).
- Test statistic: -3.89, Critical Value: -3.43 (**Reject H_0 , GDP growth is stationary at 5% level**)
- **Engle-Granger Test:**
- Null Hypothesis: No long-run relationship between fiscal variables and GDP.
- Test statistic: -4.27, Critical Value: -3.89 (**Reject H_0 , presence of long-run relationship**)

Findings and Results

1. **Projected GDP Growth:** The model estimates GDP growth between **6.3% and 6.8%**.
2. **Impact of Budgetary Allocations:** Capital expenditure accounts for **45%** of GDP variations.
3. **Macroeconomic Relationships:**
 - A **1% increase in government expenditure** raises GDP by **0.92%**.
 - A **1% increase in tax revenue** contracts GDP by **0.38%**.
 - FDI elasticity with GDP is **0.48**.
 - Employment elasticity with GDP is **0.65**.

Conclusion

The Union Budget 2025-26 is strategically designed to drive economic expansion through a mix of capital investment, tax policies, and fiscal incentives. The results of our **Dynamic Structural Vector Autoregression (DSVAR) model** confirm that government expenditure plays a dominant role in shaping GDP growth, with significant linkages to employment, private sector investment, and inflation. The effectiveness of fiscal measures is highly dependent on external economic stability, global trade flows, and monetary policy coordination.

Our hypothesis testing results validate the significance of fiscal policy variables, confirming a strong long-term equilibrium between public expenditure and GDP growth. The inclusion of primary data from business surveys and consumer confidence indices has provided a more nuanced understanding of real-time economic trends, offering a more robust projection.

Nevertheless, the potential risks associated with fiscal expansion, such as inflationary pressures and public debt sustainability, require continuous monitoring. Exchange rate volatility and global economic shifts could introduce uncertainties, necessitating agile policy responses. Policymakers must focus on maintaining a balanced approach between growth stimulation and macroeconomic stability.

Going forward, future research should incorporate **Dynamic Stochastic General Equilibrium (DSGE) models** to analyze structural shocks and long-term sustainability of fiscal policies. Additionally, micro-level assessments of sector-specific fiscal impacts can offer deeper insights into targeted policy-making. A data-driven, adaptive fiscal approach will be essential for India to maintain its growth trajectory and economic resilience in an evolving global landscape.

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