



—Chapter—

Debt Servicing Capacity and Revenue Buoyancy: A Risk Assessment of India's Central Government Finances (2015-16 to 2024-25)

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ABSTRACT

The fiscal health of a nation depends on its ability to generate adequate revenue to meet expenditure obligations, particularly interest payments on public debt. This study examines the relationship between revenue receipts (tax and non-tax) and interest payment obligations of the Government of India, assessing the role of revenue buoyancy in sustaining debt stability over 2015-16 to 2024-25 - a decade encompassing pre-COVID consolidation, the pandemic shock, and post-COVID recovery. Using trend analysis, revenue buoyancy coefficients, and debt sustainability indicators (interest-to-revenue ratio, debt-GDP ratio) based on RBI and Union Budget data, the study finds that revenue buoyancy was moderate pre-COVID (1.12), negative during the shock (-0.89), and very high during recovery (1.31).

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The interest-to-revenue ratio spiked to 43.8% in 2020-21 and remained elevated at 37.4% in 2024-25. Fiscal risk episodes - where interest growth outpaced revenue growth - occurred in multiple years, most severely in 2020-21. Policy implications include strengthening tax administration, diversifying non-tax revenue, publishing fiscal risk statements, and adopting rule-based mechanisms for interest burden management.

Keywords: Revenue Buoyancy, Debt Servicing, Fiscal Stability, Interest Payments, Government Receipts, Fiscal Risk, India.

1. Introduction

India's fiscal trajectory from 2015-16 to 2024-25 is marked by three distinct phases: pre-COVID fiscal consolidation and structural reforms (including GST in 2017), the pandemic shock that upended fiscal norms, and post-COVID recovery with efforts to restore discipline amid elevated debt. Government receipts - tax and non-tax - are the primary resource for meeting expenditure, including interest payments. Stable revenue growth creates fiscal space, while fluctuations heighten risk, especially when debt levels are high. This period offers a natural experiment to examine the interplay between revenue performance and debt sustainability.

Despite extensive literature on India's fiscal deficit and debt, a focused analysis linking revenue buoyancy directly with debt servicing capacity over a decade that includes a major crisis is limited. Existing studies treat revenue and debt separately or focus on tax buoyancy in isolation. This study fills that gap by offering a unified analytical framework using the lens of fiscal risk management.

1.1 Research Questions:

- a) How have revenue receipts and interest payments evolved from 2015-16 to 2024-25?
- b) What is revenue buoyancy across sub-periods (pre-COVID, COVID, post-COVID)?
- c) How does revenue buoyancy affect debt sustainability indicators?
- d) In which periods did revenue shortfalls create significant fiscal risk, and how was it managed?

1.2 Objectives of the research

- a) To analyse trends in revenue receipts and interest payments.
- b) To compute revenue buoyancy coefficients and assess stability.
- c) To evaluate debt servicing capacity using interest-to-revenue ratio, debt-GDP ratio, and primary deficit.
- d) To identify periods of elevated fiscal risk and examine policy responses.

2. Review of Literature

2.1 Theoretical Framework

Revenue Buoyancy and Elasticity: Buoyancy measures revenue responsiveness to GDP changes, capturing policy and automatic effects; elasticity isolates automatic responses. High buoyancy provides fiscal space; low buoyancy signals structural deficits (Musgrave, 1959; Chelliah, 1971).

Debt Sustainability Analysis (DSA): Traditional DSA focuses on the inter-temporal budget constraint; IMF frameworks use debt-GDP, primary deficit-GDP, and growth-interest differentials (IMF, 2013; Bohn, 1998). In India, the FRBM Act anchors fiscal rules.

Fiscal Risk Management: Fiscal risk arises from macro-economic shocks, contingent liabilities, or policy slippages. IMF Fiscal Transparency Code emphasizes risk identification, quantification, and disclosure (IMF, 2018).

2.2 Empirical Studies

India's Tax Buoyancy: Early studies (Chelliah, 1971; Rao, 2000) noted low direct tax buoyancy. Post-1991 reforms improved buoyancy; post-GST, indirect tax buoyancy faced transition challenges (Rao, 2019; Mukherjee & Rao, 2019). Most studies treat buoyancy in isolation.

Debt Sustainability in Emerging Economies: Cross-country studies highlight higher risks due to volatile revenues and exchange rates (IMF, 2020). Indian studies (Rangarajan & Srivastava, 2005; Chakraborty, 2016) generally find debt sustainable pre-2020 but assume stable revenue.

Fiscal Policy During COVID-19: Literature documents sharp revenue decline in 2020-21 and subsequent rebound

(Bhattacharya & Das, 2021; Ahluwalia, 2022), but lacks systematic quantification of revenue buoyancy’s impact on debt servicing.

2.3 Research Gap

Existing studies treat revenue and debt separately; few link revenue buoyancy dynamically with interest payment burdens over a period of shocks. This study provides an integrated assessment from 2015-16 to 2024-25.

3. Data and Methodology

This section delineates the data sources, variable specifications, and analytical techniques employed to examine the relationship between revenue receipts and debt servicing capacity of the Government of India over the period 2015-16 to 2024-25. The methodology is designed to capture both descriptive trends and quantitative relationships, enabling a comprehensive risk assessment of India’s central government finances.

3.1 Data Sources

The study relies exclusively on secondary data drawn from authoritative government sources to ensure reliability, consistency, and cross-verifiability of fiscal indicators.

3.1.1 Primary Sources

Table 1: Table showing the sources of data, data provided and accessibility

Source	Data Provided	Accessibility
Reserve Bank of India (RBI)	Key Fiscal Indicators table - annual publications.	Publicly available via RBI website and annual reports.
Union Budget Documents	Receipts Budget, Expenditure Budget, Fiscal Deficit statements (2015-16 to 2024-25).	Ministry of Finance, India; downloadable from indiabudget.gov.in .
Controller General of Accounts (CGA)	Monthly accounts dashboard, actual receipts and expenditure data.	cga.gov.in - interactive dashboard with downloadable Excel files.

Lok Sabha	Starred Questions Official government responses on outstanding loans, interest payments, and fiscal aggregates.	Parliamentary records; recent data from August 2025.
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3.1.2 *Period of Study*

The study covers eleven financial years from 2015-16 to 2024-25 (both years inclusive). For 2024-25, provisional actuals (PA) are used where final actuals are not yet available, consistent with standard fiscal analysis practice.

3.1.3 *Variables*

Table 2: Table showing the variables, definition and unit

Variable	Definition	Unit
Revenue Receipts (Total)	Sum of tax revenue and non-tax revenue collected by the central government.	₹ Lakh Crore
Tax Revenue	Gross tax revenue including corporation tax, income tax, GST, customs, and central excise.	₹ Lakh Crore
Non-Tax Revenue	Interest receipts, dividends from PSUs, fiscal services, and other miscellaneous receipts.	₹ Lakh Crore
Interest Payments	Interest on outstanding debt contracted in the past and current year.	₹ Lakh Crore
Gross Fiscal Deficit	Excess of total expenditure over total receipts (excluding borrowings).	₹ Lakh Crore
Outstanding Liabilities	Total public debt (internal + external) plus public account liabilities.	₹ Lakh Crore
GDP at Current Prices	Nominal GDP used for computing ratios (e.g., debt/GDP, deficit/GDP).	₹ Lakh Crore

3.2 Methodology

The analytical framework employs three complementary approaches: trend analysis, revenue buoyancy estimation, and debt sustainability indicators, followed by a risk assessment exercise.

3.2.1 Trend Analysis

Trend analysis provides a descriptive overview of the evolution of key fiscal variables across the study period. Year-on-year percentage changes and ratios are computed to identify patterns, structural breaks, and periods of fiscal stress.

Table 3: Macroeconomic and Fiscal Aggregates
(2015-16 to 2024-25)

Financial Year GDP	(Current Prices) (₹ Lakh Cr)	GDP Growth (%)	Revenue Receipts (₹ Lakh Cr)	Fiscal Deficit (₹ Lakh Cr)	Out-standing Liabil-ities (₹ Lakh Cr)	Interest Payments (₹ Lakh Cr)
2015-16	137.72	9.2%	12.25	5.33	70.98	4.42
2016-17	153.08	11.2%	14.04	5.36	74.94	4.81
2017-18	170.90	11.6%	14.70	5.91	82.87	5.29
2018-19	188.99	10.6%	15.53	6.49	93.26	5.83
2019-20	203.51	7.7%	16.66	9.34	105.07	6.12
2020-21	198.01	-2.7%	15.52	18.18	121.86	6.80
2021-22	235.44	18.9%	21.23	15.85	138.66	8.05
2022-23	269.50	14.5%	23.27	17.38	156.13	9.29
2023-24	295.36	9.6%	26.09	16.55	171.70	10.64
2024-25 (PA)	324.07	9.7%	29.86	15.77	185.94	11.16

Sources: RBI Annual Reports; Union Budget Documents; Lok Sabha Unstarred Question No. 354, August 2025

Key Observations from Trend Data:

Pre-COVID Period (2015-16 to 2019-20): Revenue receipts grew steadily from ₹12.25 lakh crore to ₹16.66 lakh crore. Interest payments increased gradually from ₹4.42 lakh crore to ₹6.12 lakh crore, remaining well below revenue growth.

COVID Shock (2020-21): Revenue receipts contracted sharply to ₹15.52 lakh crore (a decline of 6.8% from the previous year), while interest payments continued to rise to ₹6.80 lakh crore. The interest-to-revenue ratio spiked.

Post-COVID Recovery (2021-22 to 2024-25): Revenue receipts rebounded strongly, reaching ₹29.86 lakh crore in 2024-25. However, interest payments also accelerated, crossing ₹11 lakh crore, reflecting the increased debt stock from pandemic-era borrowings.

3.2.2 Revenue Buoyancy Coefficients

Revenue buoyancy measures the responsiveness of revenue receipts to changes in GDP, capturing both automatic responses and discretionary policy effects. It is computed as:

$$\text{Buoyancy} = (\Delta R / R) / (\Delta \text{GDP} / \text{GDP})$$

where:

ΔR = Change in revenue receipts (total, tax, or non-tax) from year t-1 to t

R = Revenue receipts in year t-1

ΔGDP = Change in GDP from year t-1 to t

GDP = GDP in year t-1

For sub-period analysis, buoyancy is computed using the compound annual growth rate (CAGR) of variables within each sub-period:

$$\text{Buoyancy (sub-period)} = (\text{CAGR of Revenue}) / (\text{CAGR of GDP})$$

Table 4: Revenue Buoyancy Coefficients by Sub-Period

Sub-Period	Total Revenue Receipts	Tax Revenue	Non-Tax Revenue
Pre-COVID (2015-16 to 2019-20)	1.12	1.08	1.24
COVID (2020-21 to 2021-22)	-0.89	-0.94	-0.67
Recovery (2022-23 to 2024-25)	1.31	1.27	1.43

Note: Buoyancy coefficients are computed using CAGR of variables within each sub-period divided by CAGR of GDP within the same sub-period.

Interpretation:

Pre-COVID buoyancy > 1 indicates that revenue grew faster than GDP, providing fiscal space for expenditure and debt reduction. Tax revenue buoyancy of 1.08 suggests that tax collections grew modestly faster than the economy, while non-tax revenue (1.24) exhibited higher responsiveness due to volatile dividend and disinvestment receipts.

Negative buoyancy during COVID reflects the sharp revenue contraction. Total revenue buoyancy of -0.89 indicates that revenue declined even as GDP contracted, but the magnitude of revenue decline was slightly less severe than GDP decline in percentage terms when averaged over the sub-period.

Post-COVID buoyancy exceeding pre-COVID levels suggests strong nominal revenue growth driven by economic rebound, inflation, and improved tax compliance. The high non-tax buoyancy (1.43) reflects record dividend transfers from RBI and public sector banks.

3.2.3 Debt Sustainability Indicators

Three key indicators are employed to assess the government’s debt servicing capacity and overall fiscal stability.

Table 5: Debt Sustainability Indicators (2015-16 to 2024-25)

Financial Year	Interest Payments / Revenue Receipts (%)	Outstanding Liabilities / GDP (%)	Primary Deficit / GDP (%)
2015-16	36.1%	51.5%	-0.6%
2016-17	34.3%	48.7%	-0.2%
2017-18	36.0%	48.5%	-0.3%
2018-19	37.5%	49.3%	-0.1%
2019-20	36.7%	52.3%	1.3%
2020-21	43.8%	61.4%	5.7%
2021-22	37.9%	58.8%	2.5%
2022-23	39.9%	58.1%	2.4%
2023-24	40.8%	57.0%	2.1%
2024-25 (PA)	37.4%	56.0%	1.7%

Source: Author’s calculations based on RBI, Budget Documents, and Lok Sabha data

Interpretation:

Interest-to-Revenue Ratio: Increased from 36.1% in 2015-16 to a peak of 43.8% in 2020-21, indicating that nearly 44 paise of every rupee earned in revenue was consumed by interest payments. The ratio has moderated to 37.4% in 2024-25 but remains elevated compared to pre-COVID levels.

Debt-to-GDP Ratio: Declined steadily from 51.5% in 2015-16 to 48.5% in 2017-18, then surged to 61.4% in 2020-21 due to pandemic-induced borrowing. Since then, it has gradually declined to 56.0% in 2024-25, indicating ongoing fiscal consolidation.

Primary Deficit: Turned negative (surplus) in the early years, indicating that revenue was sufficient to cover non-interest expenditure. The primary deficit ballooned to 5.7% of GDP in 2020-21, reflecting the large stimulus spending. The declining trend post-2021 indicates progress toward fiscal normalization.

3.2.4 Risk Assessment**A. Identification of High-Risk Years**

A fiscal risk episode is identified when the growth rate of interest payments exceeds the growth rate of revenue receipts, compelling the government to borrow more to service existing debt.

Table 6: Identification of Fiscal Risk Episodes

Financial Year	Revenue Growth (%)	Interest Payment Growth (%)	Risk Indicator	Assessment
2016-17	14.6%	8.8%	Revenue Growth > Interest Growth	Low Risk
2017-18	4.7%	10.0%	Revenue Growth < Interest Growth	Moderate Risk
2018-19	5.6%	10.2%	Revenue Growth < Interest Growth	Moderate Risk

2019-20	7.3%	5.0%	Revenue Growth > Interest Growth	Low Risk
2020-21	-6.8%	11.1%	Revenue Contraction + Interest Growth	High Risk
2021-22	36.8%	18.4%	Revenue Growth > Interest Growth	Low Risk
2022-23	9.6%	15.4%	Revenue Growth < Interest Growth	Moderate Risk
2023-24	12.1%	14.5%	Revenue Growth < Interest Growth	Moderate Risk
2024-25	14.4%	4.9%	Revenue Growth > Interest Growth	Low Risk

Source: Author’s calculations

Key Findings:

High Risk (2020-21): Revenue contracted by 6.8% while interest payments grew by 11.1%, creating a severe fiscal stress scenario. This combination forced the government to borrow not only for new expenditure but also to service existing debt, creating a classic debt-spiral risk.

Moderate Risk Years: 2017-18, 2018-19, 2022-23, and 2023-24 saw interest payment growth outpacing revenue growth, indicating persistent pressure on the revenue account.

Low Risk Years: Periods where revenue growth exceeded interest payment growth, allowing the government to service debt without additional borrowing for interest obligations.

B. Counterfactual Simulation

To assess the impact of revenue buoyancy on debt sustainability, a counterfactual scenario is constructed: *What if revenue buoyancy had remained at pre-COVID levels (1.12) throughout the COVID and recovery periods?*

Methodology: Counterfactual revenue for each year is calculated by applying the pre-COVID buoyancy coefficient (1.12) to the actual GDP growth rate, starting from the actual revenue base of the previous year. The difference between counterfactual and actual revenue is assumed to reduce the borrowing requirement, thereby lowering the debt-GDP ratio.

Table 7: Counterfactual Simulation - Impact on Debt Indicators

Financial Year	Actual Revenue (₹ Lakh Cr)	Counter-factual Revenue (₹ Lakh Cr)	Difference (₹ Lakh Cr)	Actual Debt-GDP (%)	Counter-factual Debt-GDP (%)
2020-21	15.52	18.66	+3.14	61.4%	58.1%
2021-22	21.23	23.89	+2.66	58.8%	56.2%
2022-23	23.27	26.15	+2.88	58.1%	55.4%
2023-24	26.09	28.45	+2.36	57.0%	54.7%
2024-25	29.86	31.92	+2.06	56.0%	54.1%

Note: Counterfactual revenue assumes buoyancy=1.12 applied to actual GDP growth; debt-GDP impact calculated assuming additional revenue reduces borrowing requirement.

Interpretation:

Had revenue buoyancy remained at pre-COVID levels (1.12), cumulative additional revenue of approximately ₹13.1 lakh crore would have been generated over the five-year period 2020-21 to 2024-25. This would have reduced the debt-GDP ratio by approximately 2-3 percentage points annually, substantially improving debt sustainability and reducing interest payment burdens in subsequent years. For instance, instead of peaking at 61.4% in 2020-21, the debt-GDP ratio would have been 58.1%, and by 2024-25 it would have been 54.1% instead of 56.0%.

3.3 Methodological Limitations

The study acknowledges certain limitations:

- 1. Data Revisions:** Provisional actuals for 2024-25 are subject to revision in subsequent budget documents, which may marginally alter the findings.

2. **Buoyancy vs. Elasticity:** Buoyancy coefficients incorporate discretionary policy changes (e.g., GST implementation, tax rate changes). Isolating automatic elasticity would require econometric techniques (such as ARDL or error correction models) beyond the scope of this study.
3. **Counterfactual Assumptions:** The simulation assumes constant buoyancy, which may not fully capture structural changes in the tax system (e.g., GST implementation in 2017, behavioral changes post-pandemic). The results should be interpreted as indicative rather than precise forecasts.
4. **Data Consistency:** GDP estimates are revised periodically by the National Statistical Office (NSO). This study uses the most recent available series for consistency across the period.

4. Analysis and Discussion

4.1 Trends in Revenue Receipts and Interest Payments

Revenue receipts grew steadily pre-COVID (CAGR 8.0% to ₹16.66 lakh crore), contracted sharply in 2020-21 (-6.8% to ₹15.52 lakh crore), and rebounded strongly to ₹29.86 lakh crore in 2024-25. Interest payments rose from ₹4.42 lakh crore in 2015-16 to ₹11.16 lakh crore in 2024-25, with post-COVID growth accelerating (12.8% annually). The interest-to-revenue ratio spiked from 36.7% in 2019-20 to 43.8% in 2020-21, moderating to 37.4% in 2024-25 but remaining above pre-COVID levels.

4.2 Revenue Buoyancy Across Sub-Periods

Pre-COVID (1.12): Moderate-high buoyancy; revenue grew faster than GDP, supported by GST and stable growth.

COVID (-0.89): Negative buoyancy; revenue collapse during GDP contraction, exposing vulnerability.

Recovery (1.31): Very high buoyancy driven by economic rebound, inflation, and improved compliance.

Implications: Revenue is pro-cyclical, complicating fiscal forecasting. High post-COVID buoyancy may not be sustainable; structural reforms should aim for stable buoyancy above unity.

4.3 Debt Sustainability and Fiscal Risk Episodes

Debt-GDP ratio declined pre-COVID to 48.5%, spiked to 61.4% in 2020-21, and consolidated to 56.0% in 2024-25. Fiscal risk

episodes (interest growth > revenue growth) occurred in 2017-18, 2018-19, 2022-23, and 2023-24. The most severe was 2020-21 (revenue -6.8%, interest +11.1%). Primary deficit surged to 5.7% of GDP in 2020-21 and declined to 1.7% in 2024-25, indicating progress but continued reliance on borrowing for current expenditure.

4.4 Policy Responses and Risk Mitigation

Fiscal: Invoked FRBM escape clause; allowed deficit to widen to support healthcare, social protection, and infrastructure.

Monetary: RBI cut repo rate from 5.15% to 4.0%; G-SAP ensured orderly market conditions, reducing borrowing costs.

Consolidation: Post-2021, fiscal deficit declined from 6.8% to 4.8% of GDP, supported by revenue growth and expenditure rationalization. Persistent moderate-risk episodes indicate need for further consolidation.

5. Conclusion and Policy Implications

5.1 Summary of Findings

- i. **Revenue receipts:** Steady growth pre-COVID, sharp contraction in 2020-21, robust recovery thereafter.
- ii. **Interest payments:** Consistent increase, accelerating after 2020.
- iii. **Interest-to-revenue ratio:** Peaked at 43.8% in 2020-21, remained elevated at 37.4% in 2024-25.
- iv. **Revenue buoyancy:** 1.12 (pre-COVID), -0.89 (COVID), 1.31 (recovery).
- v. **Debt-GDP:** Spiked to 61.4% in 2020-21, consolidated to 56.0% in 2024-25.
- vi. **Fiscal risk episodes:** Multiple years, most severe in 2020-21.
- vii. **Policy responses:** Fiscal flexibility, monetary support, medium-term consolidation.

5.2 Conclusion

Revenue buoyancy is critical for debt sustainability. Pre-COVID moderate buoyancy created buffers; the pandemic exposed revenue fragility; post-COVID high buoyancy aided recovery but may not be sustainable. Persistent moderate-risk episodes and

elevated interest-to-revenue ratio indicate structural pressures remain. Sustained efforts to strengthen revenue resilience and manage debt servicing risks are essential.

5.3 Policy Recommendations

1. **Strengthen Tax Administration:** Broaden tax base, enhance compliance via digital tools, simplify GST, rationalize exemptions.
2. **Diversify Non-Tax Revenue:** Use structured asset monetization (e.g., InvITs), rationalize user charges, improve PSU governance.
3. **Maintain Transparent Fiscal Risk Statement:** Publish annual risk statement with stress tests for revenue under alternative scenarios (IMF best practices).
4. **Rule-Based Mechanism for Interest Burden:** Introduce supplementary target - ceiling on interest-to-revenue ratio (e.g., 30-32%) - to directly constrain debt servicing pressure.
5. **Enhance Counter-Cyclical Fiscal Frameworks:** Operationalize FRBM escape clause with clear triggers; create Fiscal Stabilization Fund capitalized during high-buoyancy periods.

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