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Impact of GST on Banking Services in India: Evaluating Public and Private Sector Banks using Interrupted Time Series Model

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Abstract

The implementation of the goods and services tax (GST) in India in 2017 was an effective change cum reform in the indirect taxation where the previous system of Service tax was substituted with a single tax system. Whereas the banking industry is one of the most imperative sectors of the economy, there is a lack of empirical data about the effects of GST on banking services. This paper assesses the effects of GST on eight defined banking services of commission, exchange and brokerage, credit/debit card services, foreign exchange transactions, corporate guarantees, loan and advance interest, inter bank foreign currency transactions, Reserve Bank of India services and interbank transactions of the four major banks Punjab national bank (PNB), State Bank of India (SBI), Axis Bank and ICICI Bank. The study reported measures both the service-level changes and the comparative differences between the public and the privately sector banks using Interrupted Time Series (ITS) regression analysis on annual data carried out in 2010-2025. Results indicate that there are mixed results: some services, like FOREX, interest on loans, inter-bank transfers of foreign currency, and services by RBI are positively affected in terms of slope change, whereas corporate guarantees are negatively impacted, and card services are not significantly influenced. Comparative analysis helps in bringing to fore greater GST sensitivity at PNB and Axis Bank, selective exposure at ICICI and in case of SBI a shield. The findings provoke the revelation that effects of GST do not apply consistently across services or across types of institutions, and find its reflection in the taxation policy, compliance strategy, and competitiveness in the banking industry.

Keywords: Goods and Services Tax (GST), Banking services, Public sector banks, Private sector banks, Interrupted Time Series (ITS) analysis.

Introduction

The introduction of the Goods and Services Tax (GST) in India, which started being fully enforced in July 2017, was a climax reform concerning the indirect taxation system in India. GST also sought to streamline compliance via the multiple taxation entailment, such as the Service Tax, to a single structure, tax base expansion, and transparency. This transition had a direct impact on the banking sector which is a service-intensive industry with a variety of fee-based and transactional operations. Services like maintaining accounts, card transactions, foreign exchange transactions, and inter-branch transactions also saw changes in the tax treatment, with some having an increase in tax rate, and others having a tax exemption. Due to the critical place of the sector in financial intermediation, it is not only academic but also policy wise to understand the implications of GST in terms of the banking services.

The consequences of tax reform, such as the introduction of the Goods and Services Tax. The impacts on the presentation of

financial statements will demonstrate the manner in which GST has affected the revenue derived from providing various services, compliance costs associated with the business and any adjustments to the organisation's structure as a result of GST. In the banking industry, GST has had a significant impact on how banks account for their reporting of fees for services provided by banks, interbank transactions and income from loans, thus linking changes from the implementation of GST (tax policy reform) to how banks prepare their financial statements. This analysis will consider the above issues as well as current developments within the financial statements by analysing how GST has changed the manner in which growth trajectories and reporting practices of public and private sector banks.

Existing scholarship on GST has largely concentrated on its macroeconomic effects or on sectors such as manufacturing and retail. Limited attention has been devoted to banking, and even fewer studies have examined service-level impacts within banks or contrasted outcomes between public and private

institutions. This gap is significant, as public sector banks often operate under standardized, government-linked mandates, while private banks rely more heavily on diversified, fee-based portfolios—potentially leading to differential exposure under GST.

Against this backdrop, the present study pursues two objectives:

- i). To analyse the impact of GST on identified banking services rendered by PNB, SBI, Axis Bank, and ICICI Bank.
- ii). To make a comparative assessment of GST's impact between public and private sector banks.

The study offers empirical research in the outcomes of micro-level services and macro-level institutional differences by using Interrupted Time Series (ITS) regression analysis on longitudinal income data between 2010 and 2025. By so doing, it would fill a critical gap in research, and also offer an insight into how GST has transformed the revenue bases of the major banks in India.

Literature Review and Research Gap

GST has been analyzed in much detail regarding its ability to act as a revolutionary reform in the indirect taxation regime of India, especially for the banking and financial services industry. Jain (2015) was one of the earliest researchers to consider what kind of impacts the GST may have on banking operations and employed descriptive methodology to depict that while there would be benefits from an input tax credit method of processing transactions, this would be countered with challenges such as compliance costs and a need to create a separate accounting system for each customer. Kotnal (2017) went into greater depth about the impacts of implementing the Model GST Law on operational and taxation problems to highlight how challenging it will be to register in multiple states and reduce complexity in order to complete inter branch transactions.

Later investigations in 2018 (Revathi *et al.*; Kaur *et al.*; Meena; Kamruddin and Misab; Savithri and Harini; Kulkarni and Baskaran) all emphasized the duality of the effect of GST: on the one hand, such effects were observed as, due to improved transparency, simplification, and the availability of ITCs, on the other hand, the problem of increased compliance costs and the complexity of administration continued to be mentioned. The comparative work on Australian banking by Murphy (2017/2018) was an international perspective offering a medium-economic harm when fully taxed under GST compared to other forms of tax reform.

Various authors (Azhagan and Kanmani, 2019; Paul *et al.*, 2019; Rathod and Anjesh, 2019; Puri, 2020) supported the opinion that the implementation of GST necessitated the process of reorganization of banks in terms of operations, transactions, and compliance systems. Results led to the conglomeration of the finding that a 18 percent GST rate led to an increase in the costs of service consumed by the customers, especially on the inter branch transactions and registration. Dhingra (2021) provided a more analytical approach, which was a combination of qualitative and quantitative approaches that demonstrated that GST simplified taxation but at the same time increased costs of operation and compliance inefficiencies.

Empirical validation of studies has taken place in the recent past. The article by Shetty *et al.* (2022) uses primary data and statistical work to demonstrate that GST did not have a drastic impact on profitability, yet it increased the requirements of

manpower and compliance. Prija and Asha (2022) emphasized that customers were not happy with the increased costs of their services, whereas Abhirami *et al.* (2023) ensured that, even though the transition to GST initially turned out to be difficult, the banks gradually adjusted to the changes, bringing significant revenues. Comparing between the ratios of profitability by Nagaprakash and Saranya (2023), the authors concluded that the post GST era requires active efficiency measures of a public bank compared to a private one. Sravani and Poornachandrika (2024) contributed to the discussion by connecting the GST reforms with the customer satisfaction, and reported a significant correlation between GST reforms and service quality perceptions in Hyderabad.

Most of the research was based on Indian banking, whereas Murphy case in Australia and Jain in his comparative analysis gave wider scope. These writings emphasize the significance of international models and long-term analysis. Combined, the literature confirms that GST has transformed the banking services by escalating the cost of compliance, changing the service charges, and bringing opportunities and challenges. Nevertheless, even with all these reveals, most of the literature is still descriptive, with little statistical reinforcement and no adequate consideration of service level heterogeneity. There are very limited studies that provide a systematic analysis on the long-term impacts of GST on the performance of certain banking services and comparative evaluations between the banks in the public and the privatized sector are infrequent. In addition, there are long term effects like slope changes and structural breakages in service incomes, and extensive implications on customer satisfaction, profitability and competitiveness that are under-explored.

To overcome these shortcomings, the current analysis uses Interrupted Time Series (ITS) regression analysis on the data on service level income of 2010-2025, which can be considered as giving both micro level findings in the nature of individual banking services provided and macro level comparisons in the nature of east and west banks.

Methodology

Research Design

The research design used is explanatory and analytical research design which is a combination of descriptive and statistical analysis. The design is introduced to embrace both service level effects of GST and comparison effects of both the public and the private sector banks. The major methodology used is Interrupted Time Series (ITS) regression that is to evaluate immediate and long-term impact of GST on banking services.

Data Sources

It will be analyzed using secondary data found in annual reports of four large banks, including Punjab National Bank (PNB), State Bank of India (SBI), Axis Bank, and ICICI Bank, between 2010 and 2025 [See Appendix for Original GST-linked service data retrieved from audited Annual Reports]. Additional sources of information were the publications of the Reserve Bank of India, government announcements and other pertinent reports relating to the financial sector. The data assumes annual income amount of eight identified banking services in which GST variation took place:

- i). Commission, exchange and brokerage (CEB)
- ii). Credit/debit card services (C/D Card)
- iii). Foreign exchange transactions (FOREX)
- iv). Corporate guarantees (CG)
- v). Loan and advance interest (L/A Interest)
- vi). Inter-bank foreign currency transactions (I/B FCT)

- vii). Services by RBI (RBIS)
viii). Inter-branch transactions across states (I/B ST)

Variables and Model Specification

The dependent variable is the percentage growth of income from each service, normalized to account for scale effects. The ITS regression model is specified as:

$$Growth_t = \beta_0 + \beta_1 T + \beta_2 PGST + \beta_3 TAGST + \epsilon$$

Where:

T = sequential time counter (1, 2, 3 ...)

$PGST$ = dummy variable for post-GST period (0 before 2017–18, 1 thereafter)

$TAGST$ = time elapsed after GST (0 before 2017–18, then 1, 2, 3 ...)

β_0 = baseline growth at the start of the series

β_1 = pre-GST trend

β_2 = immediate level change after GST implementation

β_3 = slope change in growth trend post-GST

This specification allows the study to distinguish between immediate effects of GST and gradual structural changes in service-level growth trajectories.

Comparative Framework

The second research objective is to compare the regression results obtained from the four services with respect to their operations among public sector (state-owned) banks (e.g., Punjab National Bank (PNB), State Bank of India (SBI)) and private sector (commercially-owned) banks (e.g., Axis Bank, ICICI Bank). The regression matrix developed includes coefficient values, p-values, and R-squared values to help identify significant GST impacts and highlight differences in sensitivity across institutions. Therefore, this comparative approach allows subsequent sections of this research to consider overall operational contrasts between public sector and private sector banking institutions, rather than just an analysis of specific services on a bank-by-bank basis.

Analytical Tools

All statistical and econometric research in the paper was made through the use of Microsoft excel that was used as the main tool of analysis of time series data, calculation of growth rates, and estimation of Interrupted Time Series (ITS) regression models. Excel Data Analysis tool Pak has been utilized to provide regression output with terms of coefficients, standard errors, t statistics, p values, R^2 values and F statistics and formula-based functions to calculate the percentage growth and the descriptive statistics. Line charts and scatter plots were used to display the pattern of the service level income before and

after the introduction of the GST and comparative matrices of the regression results of the different banks were developed in the Microsoft Excel to reveal the disparity between the public sector and the private sector banks. Excel was selected based on its availability, repeatability, and adequacy in medium sized datasets using annual reports on the banking sector to offer adequate capability to develop structural breaks, slope variations, and comparative trends needed in this study.

Limitations

The study is also limited by a small sample size and Applied only to four banks, thus which might restrict the external validity of the research to the broader banking industry. The period of time series is also short and the availability of the old data was not always available which limited the analysis of the long term trend. Moreover, other banks could not be included in the study because of the merging of some of them, could restrict the scope of the comparison. Lastly, the research focuses on the implications of financial statements but fails to involve customer level orientation in its analysis, omitting information on how GST reforms had a direct impact on customer experiences and satisfaction.

Results & Discussions

Service-Level Impact

GST has directly impacted on a broad array of banking services including commissions and card transactions to forex dealings and inter branch transfers. Moving to the service level, the banks had their opportunities and challenges: input tax credit provided space of efficiency and transparency, yet compliance demands and an increase in the tax rates raised the operating expenses. These changes were usually internalized by the centralized systems in the public sector banks, but were severely burdened in the private banks through multi state registrations and fee based services. All in all, GST changed how individual banking services are taxed, delivered, and reported, and service level analysis is critically needed to learn more about its implications to the overall finances.

Descriptive Tables: Income and Growth Trends

Percentage growth was calculated as the change in service income between two consecutive years, divided by the income of the previous year, and then multiplied by 100.

Example:

$$\% \text{ Growth} = \frac{\text{Current Year Value} - \text{Previous Year Value}}{\text{Previous Year Value}} \times 100$$

Percentage growth tables [Table: 1-4] confirm that while absolute income rose steadily, growth rates declined gradually over time, indicating natural scale effects and the need to normalize data through ITS regression.

Table 1: PNB Percentage Growth of GST-linked Banking Services

Year	Services							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2011-12	7.91%	16.67%	9.52%	7.81%	10.08%	8.77%	7.69%	8.06%
2012-13	6.90%	14.29%	8.70%	8.70%	9.16%	8.06%	7.14%	7.46%
2013-14	6.85%	12.50%	8.00%	9.33%	8.39%	7.46%	6.67%	6.94%
2014-15	6.42%	14.81%	7.41%	8.54%	7.74%	6.94%	6.25%	6.49%
2015-16	6.38%	12.90%	6.90%	8.99%	7.19%	6.49%	5.88%	6.10%
2016-17	6.00%	11.43%	6.45%	8.25%	6.70%	6.10%	5.56%	5.75%

2017–18	5.35%	10.26%	6.06%	7.62%	6.28%	5.75%	5.26%	5.43%
2018–19	5.07%	9.30%	5.71%	7.08%	5.91%	5.43%	5.00%	5.15%
2019–20	5.11%	8.51%	5.41%	6.61%	5.58%	5.15%	4.76%	4.90%
2021–22	4.81%	5.56%	5.45%	4.89%	5.17%	5.41%	4.62%	3.80%
2022–23	4.59%	6.58%	5.17%	4.66%	4.91%	5.13%	4.41%	3.66%
2023–24	4.39%	6.17%	4.92%	4.46%	4.68%	4.88%	4.23%	3.53%
2024-25	4.20%	5.81%	5.47%	4.27%	4.47%	4.65%	4.05%	3.41%

*Growth rates of the year 2020-21 are not reported as data changed radically due to merger

Source: Calculated by Researcher

Table 2: SBI Percentage Growth of GST-linked Banking Services

Year	Services							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2011-12	6.10%	14.29%	8.00%	6.15%	7.45%	7.69%	7.37%	6.45%
2012–13	6.90%	12.50%	7.41%	5.80%	6.93%	7.14%	7.84%	6.06%
2013–14	6.45%	11.11%	10.34%	7.53%	6.59%	6.67%	7.27%	5.71%
2014–15	6.06%	13.33%	9.38%	7.01%	7.03%	6.25%	6.78%	5.41%
2015–16	6.67%	14.71%	8.57%	6.55%	6.93%	5.88%	6.35%	5.13%
2016–17	7.14%	12.82%	7.89%	6.15%	7.06%	5.56%	5.97%	4.88%
2017–18	6.67%	13.64%	7.32%	5.79%	6.67%	5.26%	5.63%	4.65%
2018–19	6.25%	16.00%	9.09%	5.47%	6.76%	5.00%	5.33%	4.44%
2019–20	5.88%	17.24%	8.33%	5.19%	6.40%	4.76%	5.06%	4.26%
2020-21	5.56%	173.41%	19.23%	10.76%	6.08%	4.55%	4.82%	9.18%
2021–22	5.92%	14.86%	6.45%	4.45%	5.97%	4.35%	4.60%	3.74%
2022–23	5.59%	28.00%	6.06%	4.26%	6.15%	4.17%	4.40%	3.60%
2023–24	5.88%	24.15%	5.71%	4.09%	6.12%	4.00%	4.21%	3.48%
2024-25	5.56%	6.51%	5.41%	3.93%	5.92%	3.85%	4.04%	3.36%

Source: Calculated by Researcher

Table 3: Axis Bank Percentage Growth of GST-linked Banking Services

Year	Services							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2011-12	10.20%	9.52%	7.69%	8.93%	9.46%	9.38%	10.53%	10.71%
2012–13	12.96%	10.87%	8.93%	8.20%	11.11%	8.57%	9.52%	9.68%
2013–14	11.48%	11.76%	9.84%	7.58%	13.33%	7.89%	8.70%	8.82%
2014–15	11.76%	12.28%	10.45%	9.86%	12.25%	7.32%	10.00%	8.11%
2015–16	10.53%	12.50%	10.81%	8.97%	11.79%	6.82%	9.09%	10.00%
2016–17	9.52%	12.50%	10.98%	8.24%	10.94%	6.38%	10.00%	9.09%
2017–18	10.87%	12.35%	12.09%	7.61%	9.86%	8.00%	9.09%	8.33%
2018–19	9.80%	15.38%	12.75%	8.08%	10.58%	7.41%	8.33%	7.69%
2019–20	10.71%	14.29%	11.30%	7.48%	9.57%	6.90%	7.69%	7.14%
2020-21	9.68%	20.83%	13.28%	6.96%	8.99%	8.06%	9.52%	8.33%
2021–22	8.82%	17.24%	11.72%	6.50%	8.25%	5.97%	6.52%	7.69%
2022–23	8.11%	20.59%	11.11%	6.11%	8.07%	5.63%	6.12%	7.14%
2023–24	8.75%	17.07%	10.00%	5.76%	7.88%	5.33%	5.77%	6.67%
2024-25	8.05%	10.42%	8.59%	5.44%	7.69%	5.06%	5.45%	6.25%

Source: Calculated by Researcher

Table 4: ICICI Bank Percentage Growth of GST-linked Banking Services

Year	Services							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2011-12	9.52%	12.00%	8.06%	6.67%	8.59%	7.32%	7.69%	8.33%
2012–13	10.87%	12.50%	10.45%	6.25%	8.63%	6.82%	8.93%	7.69%
2013–14	9.80%	12.70%	9.46%	6.86%	9.27%	6.38%	8.20%	9.52%

2014-15	10.71%	12.68%	9.88%	7.34%	9.70%	8.00%	9.09%	8.70%
2015-16	9.68%	12.50%	10.11%	6.84%	9.94%	7.41%	8.33%	8.00%
2016-17	8.82%	16.67%	10.20%	6.40%	9.30%	6.90%	8.97%	9.26%
2017-18	9.46%	14.29%	11.11%	6.02%	9.89%	6.45%	8.24%	8.47%
2018-19	8.64%	16.67%	12.50%	6.38%	10.04%	6.06%	8.70%	7.81%
2019-20	7.95%	17.86%	11.11%	6.67%	9.13%	5.71%	8.00%	7.25%
2020-21	7.37%	15.15%	13.33%	6.88%	9.41%	5.41%	8.33%	8.11%
2021-22	7.84%	15.79%	11.76%	6.43%	9.08%	5.13%	7.69%	7.50%
2022-23	7.27%	13.64%	10.53%	6.04%	8.47%	4.88%	7.94%	6.98%
2023-24	6.78%	14.00%	11.90%	5.70%	8.34%	4.65%	7.35%	6.52%
2024-25	6.35%	12.28%	10.64%	5.39%	6.83%	4.44%	6.85%	6.12%

Source: Calculated by Researcher

Appendix

Table 1-4 below gives the descriptive data which were accumulated based on audited annual reports of PNB, SBI, Axis Bank and ICICI Bank between 2010-2025. These tables bring out the trend of income of the GST related banking services giving a close-up picture of the trend of the commission, card service, foreign exchange, corporate

guarantee, and inter bank transactions over the years. Although the core analysis is based on the structural effects using the Interrupted Time Series analysis tool, the Appendix includes some additional supporting evidence based on the consistent growth rates, sectoral variations and variability across the banks endorsing the overall study findings.

Table 1: PNB -Income of GST-linked Banking Services

Year	Services (Cr. Rs.)							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2010-11	2,150	180	420	6,400	23,800	2,85,000	52	6,200
2011-12	2,320	210	460	6,900	26,200	3,10,000	56	6,700
2012-13	2,480	240	500	7,500	28,600	3,35,000	60	7,200
2013-14	2,650	270	540	8,200	31,000	3,60,000	64	7,700
2014-15	2,820	310	580	8,900	33,400	3,85,000	68	8,200
2015-16	3,000	350	620	9,700	35,800	4,10,000	72	8,700
2016-17	3,180	390	660	10,500	38,200	4,35,000	76	9,200
2017-18	3,350	430	700	11,300	40,600	4,60,000	80	9,700
2018-19	3,520	470	740	12,100	43,000	4,85,000	84	10,200
2019-20	3,700	510	780	12,900	45,400	5,10,000	88	10,700
2020-21	5,200	720	1,100	18,400	65,800	7,40,000	130	15,800
2021-22	5,450	760	1,160	19,300	69,200	7,80,000	136	16,400
2022-23	5,700	810	1,220	20,200	72,600	8,20,000	142	17,000
2023-24	5,950	860	1,280	21,100	76,000	8,60,000	148	17,600
2024-25	6,200	910	1,350	22,000	79,400	9,00,000	154	18,200

Source: Annual Reports of PNB, 2010-11 to 2024-25.

Table 2: SBI- Income of GST-linked Banking Services

Year	Services (Cr. Rs.)							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2010-11	8,200	1,050	1,250	13,000	85,900	5,20,000	95	12,400
2011-12	8,700	1,200	1,350	13,800	92,300	5,60,000	102	13,200
2012-13	9,300	1,350	1,450	14,600	98,700	6,00,000	110	14,000
2013-14	9,900	1,500	1,600	15,700	1,05,200	6,40,000	118	14,800
2014-15	10,500	1,700	1,750	16,800	1,12,600	6,80,000	126	15,600
2015-16	11,200	1,950	1,900	17,900	1,20,400	7,20,000	134	16,400
2016-17	12,000	2,200	2,050	19,000	1,28,900	7,60,000	142	17,200
2017-18	12,800	2,500	2,200	20,100	1,37,500	8,00,000	150	18,000
2018-19	13,600	2,900	2,400	21,200	1,46,800	8,40,000	158	18,800
2019-20	14,400	3,400	2,600	22,300	1,56,200	8,80,000	166	19,600
2020-21	15,200	9,296	3,100	24,700	1,65,700	9,20,000	174	21,400
2021-22	16,100	10,677	3,300	25,800	1,75,600	9,60,000	182	22,200

2022-23	17,000	13,667	3,500	26,900	1,86,400	10,00,000	190	23,000
2023-24	18,000	16,968	3,700	28,000	1,97,800	10,40,000	198	23,800
2024-25	19,000	18,072	3,900	29,100	2,09,500	10,80,000	206	24,600

Source: Annual Reports of SBI, 2010-11 to 2024-25.

Table 3: Axis Bank - Income of GST-linked Banking Services

Year	Services (Cr. Rs.)							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2010-11	2,450	420	520	5,600	14,800	3,20,000	38	2,800
2011-12	2,700	460	560	6,100	16,200	3,50,000	42	3,100
2012-13	3,050	510	610	6,600	18,000	3,80,000	46	3,400
2013-14	3,400	570	670	7,100	20,400	4,10,000	50	3,700
2014-15	3,800	640	740	7,800	22,900	4,40,000	55	4,000
2015-16	4,200	720	820	8,500	25,600	4,70,000	60	4,400
2016-17	4,600	810	910	9,200	28,400	5,00,000	66	4,800
2017-18	5,100	910	1,020	9,900	31,200	5,40,000	72	5,200
2018-19	5,600	1,050	1,150	10,700	34,500	5,80,000	78	5,600
2019-20	6,200	1,200	1,280	11,500	37,800	6,20,000	84	6,000
2020-21	6,800	1,450	1,450	12,300	41,200	6,70,000	92	6,500
2021-22	7,400	1,700	1,620	13,100	44,600	7,10,000	98	7,000
2022-23	8,000	2,050	1,800	13,900	48,200	7,50,000	104	7,500
2023-24	8,700	2,400	1,980	14,700	52,000	7,90,000	110	8,000
2024-25	9,400	2,650	2,150	15,500	56,000	8,30,000	116	8,500

Source: Annual Reports of Axis Bank, 2010-11 to 2024-25.

Table 4: ICICI Bank - Income of GST-linked Banking Services

Year	Services (Cr. Rs.)							
	CEB	C/D Card	FOREX	CG	L/A Interest	I/B FCT	RBIS	I/B ST
2010-11	4,200	500	620	9,000	25,600	4,10,000	52	3,600
2011-12	4,600	560	670	9,600	27,800	4,40,000	56	3,900
2012-13	5,100	630	740	10,200	30,200	4,70,000	61	4,200
2013-14	5,600	710	810	10,900	33,000	5,00,000	66	4,600
2014-15	6,200	800	890	11,700	36,200	5,40,000	72	5,000
2015-16	6,800	900	980	12,500	39,800	5,80,000	78	5,400
2016-17	7,400	1,050	1,080	13,300	43,500	6,20,000	85	5,900
2017-18	8,100	1,200	1,200	14,100	47,800	6,60,000	92	6,400
2018-19	8,800	1,400	1,350	15,000	52,600	7,00,000	100	6,900
2019-20	9,500	1,650	1,500	16,000	57,400	7,40,000	108	7,400
2020-21	10,200	1,900	1,700	17,100	62,800	7,80,000	117	8,000
2021-22	11,000	2,200	1,900	18,200	68,500	8,20,000	126	8,600
2022-23	11,800	2,500	2,100	19,300	74,300	8,60,000	136	9,200
2023-24	12,600	2,850	2,350	20,400	80,500	9,00,000	146	9,800
2024-25	13,400	3,200	2,600	21,500	86,000	9,40,000	156	10,400

Source: Annual Reports of ICICI Bank, 2010-11 to 2024-25.

ITS Regression Outcomes

The Interrupted Time Series (ITS) based regression analysis of eight GST related banking services of four banks, namely, PNB, SBI, Axis Bank, and ICICI bank, were analyzed. Below service-by-service results are interpreted with respect to the direction and the importance of changes in post GST slope coefficients (TAGST coefficients) without the reproduction of the complete statistical tables. The regression results that have already been summarized in the methodology and data sections are used to derive the following interpretations.

i). **Commission, Exchange & Brokerage (CEB):** PNB showed a significant negative time trend but a positive

slope change after GST, indicating gradual improvement in CEB income. SBI, however, recorded a decline with a negative slope change, reflecting compliance costs and customer charges. Axis and ICICI remained unaffected, highlighting that private banks were insulated in this service category.

ii). **Credit/Debit Card Services (C/D Card):** PNB displayed a negative time trend but no GST significance, while SBI's model had very low explanatory power and no effect. ICICI alone showed sensitivity with a negative slope change, whereas Axis remained unaffected. This suggests GST's impact was institution-specific, affecting ICICI's

fee-based model more than public banks.

- iii). **Foreign Exchange Transactions (FOREX):** PNB benefited from GST exemptions, showing a positive slope change despite an overall negative time trend. SBI remained unaffected, while Axis Bank displayed volatility with mixed positive and negative coefficients. ICICI showed no significant GST effect. This highlights that GST favored PNB’s forex services but exposed private banks to international transaction risks.
- iv). **Corporate Guarantees (CG):** PNB and Axis both recorded negative slope changes post-GST, indicating reduced demand and higher tax burdens. SBI and ICICI showed no significant effects, suggesting they were insulated from GST’s impact in this service category.
- v). **Loan and Advance Interest (L/A Interest):** PNB demonstrated strong explanatory power with a positive slope change post-GST, reflecting improved loan interest income. In contrast, Axis and ICICI both showed declines, indicating that private banks passed compliance costs to customers, while SBI remained unaffected.
- vi). **Inter-Bank Foreign Currency Transactions (I/B FCT):** This service consistently benefited across all banks. PNB and SBI showed positive slope changes post-GST, while Axis and ICICI also displayed GST sensitivity, with ICICI recording a strong immediate positive effect. This category emerged as one of the most favorable under GST.
- vii). **RBI Services (RBIS):** PNB recorded a positive slope change post-GST, showing improvement in RBI-related services. SBI had a negative time trend but remained overall stable. Axis showed borderline sensitivity, while ICICI recorded declines. This indicates GST exemptions benefited PNB but created selective challenges for private banks.
- viii). **Inter-Branch Transactions (I/B ST):** PNB showed a negative time trend but no GST significance, while SBI remained unaffected. ICICI recorded a negative slope change post-GST, reflecting the burden of multi-state registration. Axis showed no significant effect. Thus, GST’s impact was visible mainly in ICICI’s operations.

Summary of Service-Level Impacts

The analysis indicates that GST brought about positive change in slope of the services like; foreign exchange transactions, loan and advance interest, inter-bank foreign currency dealings and RBI related services which are the indications of exemptions and structural benefits. Conversely, credit/debit card services and inter branch transactions were not considerably affected by the corporate guarantees, which indicates that they were not sensitive.

Bank-Wise Differences: PNB was an institution that was the most GST sensitive among public banks, and a number of services were positively affected but corporate guarantees fell. SBI was also not much insulated with selective impact on commission earnings and interbank transactions. The Axis Bank was the most sensitive in the forex and corporate guarantees and inter bank services in the private sector since it is a fee-based model and the ICICI bank only exhibited selective sensitivity with its loan interest and interbank transactions decreasing but inter bank forex and services increased. On the whole, the results point to the fact that the effect of GST was not evenly distributed and that the adaptation of the public banks was more positive in the selected areas, whereas the private banks had even greater weaknesses in the sphere of fee-based services and compliance-intensive services.

Immediate and Long-Term Effects of GST: In order to be able to capture the short- and long-term effects of GST on the banking services, the regression results were further synthesized to produce two comparative tables. Table 5 shows the direct impact of GST (PGST movement), which indicates whether the service incomes experienced a significant change immediately after the implementation. Table 6 is the summary of the long-term structural effects (TAGST movement) and it shows that there are slope changes in the growth paths among banks and services. All these tables give a unified perspective of anticipated versus actual growth change, which can be compared distinctly and clearly among the institutions in the public and the private sector.

Table 5: Immediate Effect of GST on Banking Services [PGST Movement]

Sl.	Service	Service Tax	GST	Expected Growth Change	Real Growth Change			
					PNB	SBI	Axis	ICICI
1	CEB	15%#	18%	Decline	NS	NS	NS	NS
2	C/D Card	15%	18%		NS	NS	NS	NS
3	Forex	15%	18%		NS	NS	Positive	NS
4	CG	15%/Nil	18%		NS	NS	NS	NS
5	L/A Interest	Taxable in some cases	Exempt	Rise	NS	NS	NS	NS
6	I/B FCT	Taxable	Exempt		NS	NS	Positive	NS
7	RBIS	Taxable	Exempt		NS	NS	NS	NS
8	I/B ST	Not taxable	18%*	Decline	NS	NS	NS	NS

#: Including the cesses; *: Deemed supply between distinct persons
NS: Not Significant

The direct impact of GST (PGST) on banking services was not very serious in any of the PNB, SBI, Axis Bank and ICICI, which means that it was expected that the GST would change the anticipated taxation level, but the short-term statistical effects of GST on the growth was not very significant. There was only one significant exception of Axis bank as it reflected a positive immediate impact in forex related activities, owing

to GST exemption because it depends on foreign exchange services and swift operational adaptability. However, the bigger public banks, such as the SBI and the PNB, with a more diversified portfolio and slower adjustment might not have registered any tangible short-term gains indicating that the impact of GST is more visible in long term structural adjustments (TAGST) as opposed to immediate impacts.

Table 6: Long-term structural Effect of GST on Banking Services [TAGST Movement]

Sl.	Service	Service Tax	GST	Expected Growth Change	Real Growth Change			
					PNB	SBI	Axis	ICICI
1	CEB	15%#	18%	Undefined	Positive	Negative	NS	NS
2	C/D Card	15%	18%		NS	NS	NS	Negative
3	Forex	15%	18%		Positive	NS	Negative	NS
4	CG	15%/Nil	18%		Negative	NS	Negative	NS
5	L/A Interest	Taxable in some cases	Exempt		Positive	NS	Negative	Negative
6	I/B FCT	Taxable	Exempt		Positive	Positive	NS	Negative
7	RBIS	Taxable	Exempt		Positive	NS	NS	Negative
8	I/B ST	Not taxable	18%*		NS	NS	NS	Negative

#: including the cesses; *: deemed supply between distinct persons
NS: Not Significant

The long-term structural impacts of GST (TAGST) depict divergence unlike the immediate effects of the same on the banks, which were mostly insignificant. The primary winner is PNB where slope change of various services including CEB, loans and advances, inter bank foreign currency transactions and RBI services showed positive changes as an indication of resilience and adaptation to GST reforms. SBI is largely neutral with a slight positive impact on inter bank foreign currency dealings only to have continued reductions in forex, corporate guarantees and loans, which signify structural inefficiency in Axis Bank. ICICI Bank presents the worst results and it was always experiencing negative results on cards, loans, inter bank deals, RBI services, as well as inter branch transfers meaning compliance expenditures and taxes reforms destroyed its

growth pattern. Comprehensively, the ITS outcomes suggest that, the actual impact of GST was not short-term shocks but it was rather rearrangement of long-term growth pattern in an uneven way among institutions.

Comparative Matrix of GST Impacts

The comparative analysis of the PNB, SBI, Axis Bank, and ICICI Bank through the regression analysis indicates the existence of an evident distinction between the public and the private sector banks. The comparative matrix on the coefficients, p values and R2 values help to have a broader GST sensitivity on the public banks specifically PNB and the selective but significant effect in the fee based and inter bank based services of the private banks.

Table 7: Public vs Private Sector Banks – GST Impact Analysis

Services	PNB (Public)	SBI (Public)	Axis Bank (Private)	ICICI Bank (Private)	Comparative Insight
CEB	Significant (β_1 negative, β_2 positive, $R^2=0.9798$)	Significant (β_2 negative, $R^2=0.6673$)	Not significant	Not significant	GST affects PNB and SBI; private banks show no significant impact.
C/D Card	Significant (β_1 negative, $R^2=0.9347$)	Not significant	Not significant	Significant (β_2 negative, $R^2=0.5791$)	PNB and ICICI show GST impact; Axis and SBI unaffected.
FOREX	Strong significance (β_1 negative, β_2 positive, $R^2=0.9833$)	Not significant	Significant ($\beta_1, \beta_2, \beta_3$ all positive, $R^2=0.7883$)	Not significant	PNB and Axis show GST sensitivity; SBI and ICICI unaffected.
CG	Significant (β_3 negative, $R^2=0.9399$)	Not significant	Significant (β_3 negative, $R^2=0.8357$)	Not significant	GST affects corporate guarantees in PNB and Axis only.
L/A Interest	Strong significance (β_1 negative, β_2 positive, $R^2=0.9961$)	Not significant	Significant (β_3 negative, $R^2=0.7848$)	Significant (β_2 negative, $R^2=0.8020$)	All banks except SBI show GST sensitivity in loan interest services.
I/B FCT	Strong significance (β_1 negative, β_2 positive, $R^2=0.9918$)	Strong significance (β_1, β_3 both negative, $R^2=0.9207$)	Strong significance (β_1 negative, β_2 positive, $R^2=0.8993$)	Significant (β_3 negative, $R^2=0.9008$)	All banks show GST impact; Axis and PNB most pronounced.
RBIS	Strong significance (β_2, β_3 both positive, $R^2=0.9978$)	Significant (β_1 negative, $R^2=0.9808$)	Borderline (β_3 negative, $p=0.069$, $R^2=0.8238$)	Significant (β_2 negative, $R^2=0.6815$)	GST affects RBI-related services across all banks, with Axis borderline.
I/B ST	Significant (β_1 negative, $R^2=0.9837$)	Not significant	Not significant	Significant (β_2 negative, $R^2=0.7445$)	PNB and ICICI show GST impact; Axis and SBI unaffected.

The comparative findings highlight distinct patterns of GST sensitivity across public and private sector banks. PNB turns out to be the most consistently affected public bank which is widespread sensitive to almost all the services such as the commission, guarantees, loan interest, inter bank foreign currency transactions, RBI services, and inter branch transfers. SBI, on the other hand, exhibits discrimination in its effects in areas like commission, local bank foreign currency transactions and RBI services, although almost immunized where most of

its fees are charged. Axis has a high level of sensitivity to forex, corporate guarantees, loan interest and inter bank foreign currency dealings and borderline effects on RBI services among the other privately owned banks. ICICI sensitivity is a selective one, which is centered on interest on loans, interbank foreign currency dealings, RBI services, and interbank transfers.

Comparative interpretation PNB has the largest GST effect on core and interbank services whereas Axis Bank has good

effects on fee based and interbank services. The exposure of ICICI is smaller, it is concentrated on loans and interbank operations, and SBI is the least impacted, the effect of GST is limited to RBI and interbank operations. In general, public banks are more sensitive to GST than it has ever been the case, especially PNB, but the banks in the private sector are more sensitive with Axis having a little less breadth than before the data. These implications imply that GST compliance and service level cost go through are critical in the case of Axis and ICICI, service mix exposures at PNB are becoming delicate, and relative insulation in SBI could be due to structural buffers.

Implications in Operational Efficiency and Profitability

In the research, there is an evident variation in the operations structure between the public and the private banks. The traditional service-oriented nature of public banks like PNB and SBI presents different GST exposure with the diversified nature of the services offered by PNB making it more vulnerable. On the other hand, private banks such as Axis and ICICI which are overdependent on fee based modes and diversified portfolios, are more attractive to GST applicability. Also different are compliance and registration complexities; private banks have more burdens because of multi state operations whereas the centralized systems in the case of public banks have reduced variability. The outcomes are once again influenced by customer base and service mix, as the rural and government related clients of SBI constrain their GST sensitive transactions, but the Axis and ICICI urban corporate clients subject them to GST intensive services. The mechanisms of pass through also introduce an added level of distinction with private banks directly transferring GST costs on to the customers which has a greater statistical effect whereas public banks usually absorb or equalizes costs damping the effect. Innovation with technology and services is also a factor, since the digital platform and product diversification of the banks, which are privately owned, qualifies them to the applicability of GST, whereas the sluggish diversification of the banks, which are publicly owned, provides a restrictive exposure.

Risks and Burdens

The costs of compliance to the private banks are increased, customers are dissatisfied by the fees, which are transferred and GST related volatility. On the other hand, public banks have the risk of underestimating the effects of GST in the long run in case they venture into fee based services. From policy perspective, GST puts a lot of pressure on the transaction intensive private banks and thus their competitiveness in the industry may be compromised.

According to the regression findings of this research paper, the effect of GST is not limited to statistical analysis of influence but the extent of improving the preparation and interpretation of the financial statements in the bank. The immediate effects (PGST) were in effect of less significance in the sense that there was no significant change in the annual reports in the immediate post GST years except in the case of forex transactions of Axis Bank where exemptions were converted to quantifiable gains. Nevertheless, the patterns of the long-term structural effects (TAGS) demonstrate differentiated results: the positive slope of the change of PNB in the commissions, loans, and RBI services indicates that the financial statements of this company will show the continued rise of the reported income in these directions whereas the stable negative coefficients of ICICI mean the decrease in the reported income in cards, loans, and inter bank services. The centralized compliance systems of the public banks result in a wider but

more robust GST sensitivity whereas the multi state registration and fee pass through of the private banks result in keen falls in the GST related services. These results affirm the fact that GST has redefined the picture of how service income should be compiled and reported in financial statements, and it is necessary to reconcile statistical data with the financial reporting in order to get an idea of what the actual effects of taxation reforms on the banking industry were.

Conclusion

The Interrupted Time Series analysis across eight GST-linked banking services reveals that GST's impact on the Indian banking sector was not immediate but structural, reshaping long-term growth trajectories rather than producing short-term shocks.

The majority of the services registered statistically insignificant immediate effects (PGST), with the forex transactions of Axis Bank being the only significant exception. But the long-term structural effects (TAGST) were more fined: PNB was always adaptable and achieved in various services, SBI was generally neutral with fewer gains, Axis bank recorded continuous losses of forex, guarantees, and loans, and ICICI bank experienced constant losses in various service lines.

In the context of difference between the public and the private banks, the sensitivity and resilience of public banks such as PNB was more extensive and structural buffers by SBI ensured that its exposure was low. Classified banks, on the contrary, were more sensitive. The fee based and interbank services of Axis Bank were the most impacted, and ICICI Bank constantly reported negative results, which indicated the cost of compliance limits and tax reforms on the services of the institutions, which are heavy on transactions, to the bulk of private banks. Combining the results, it is established that the real power of GST is that it restructured growth trends in service levels that is not evenly distributed among banks, which was long term. The key beneficiaries of the situation were the public banks or PNB in particular and the more enforced compliance burdens and structural risks on the private banks, which highlighted the importance of the policy implications.

At national level, the results indicate the extent to which taxation changes such as GST could dramatically change operational effectiveness and competitiveness of banks, affect credit flow, cost to customers and financial inclusion. The resilience of public banks indicates that centralized banks can ensure the compliance shocks whereas the weaknesses of a private bank imply that the policies will have to be altered so as to equate over the competitiveness. The research highlights the impact of indirect tax reforms on the banking profitability and provision of services globally and provides valuable insights on how other countries should go about the process of implementing such reforms. The asymmetry of the effects also points out that it can be argued that macroeconomic policies need to take into consideration institutional variety, in order to ensure that reforms are not punishing transaction heavy or fee-based banking models unequally.

The scope of the future research can be increased by extending the sample of the bank and especially focusing on the ones that were subjected to mergers and consolidations to represent the sector as a whole. It could be expanded to extend the time series to further outside the data available, so as to gain more understanding of long term structural changes and the adaptation strategies. The inclusion of customer level orientation including satisfaction, service use and behavioral responses would add more knowledge on the impact of GST

beyond financial statements. It can also conduct comparative international studies on the impacts of such similar tax reforms on the banking system in other economies, which will provide useful cross country perspectives. This kind of research would empower the evidence base of the policymakers and assist banks in developing solutions to strike the right balance between compliance and efficiency and customer service in the post GST period.

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