International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:10, Issue:05 "May 2025"

An Econometric Analysis of the Determinants of Bank Credit Growth in India (2002–2022)

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DOI: 10.46609/IJSSER.2025.v10i05.005 URL: https://doi.org/10.46609/IJSSER.2025.v10i05.005

Received: 2 May 2025 / Accepted: 22 May 2025 / Published: 30 May 2025

ABSTRACT

This study investigates the macroeconomic and financial determinants of bank credit growth in India over the period 2002 to 2022 using linear and log-linear econometric models. The analysis focuses on the impact of five key variables bank deposits, Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), investment in government securities, and Gross Domestic Product (GDP)—on the expansion of bank advances. Drawing from time-series data, the study reveals that deposits and GDP have strong and statistically significant positive effects on credit growth, underscoring their pivotal roles in expanding the credit base. In contrast, regulatory instruments such as CRR and SLR exhibit negative elasticities, suggesting their constraining effect on credit supply. Investment in government securities also shows a negative relationship, indicating a crowding-out of private lending. Among the estimated models, the log-linear specification demonstrates superior explanatory power, particularly Model VII, which captures 35% of the variation in advances with significant coefficients and minimal autocorrelation. The findings suggest that while macroeconomic expansion supports credit growth, regulatory measures must be carefully calibrated to avoid excessive restrictions. The study offers policy insights for enhancing financial intermediation through balanced monetary regulation, effective deposit mobilization, and economic growth stimulation.

Keywords: Bank Credit Growth, Indian Banking Sector, Econometric Analysis, Macroeconomic Indicators, Financial Intermediation

1. Introduction

The Indian banking sector plays a crucial role in the economic development of the country by facilitating the efficient flow of funds and fostering financial intermediation. Banks serve as critical conduits, channeling household and corporate savings into productive investments that

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drive industrialization, consumption, and infrastructure development (RBI, 2021; Mohan, 2004). Over the past two decades, the Indian economy has undergone significant structural transformation, and credit expansion has been a central feature of this process. The growth in bank advances defined as loans extended by banks to individuals, businesses, and government entities serves as a key indicator of the health and responsiveness of the financial system.

From 2002 to 2022, gross bank credit in India expanded from ₹6.7 trillion to over ₹120 trillion, reflecting an average annual growth rate of around 15% (RBI, 2023). This surge was accompanied by broad-based economic expansion, as India's GDP increased from approximately ₹24.7 trillion in 2002–03 to over ₹273 trillion in 2021–22 at current prices (MoSPI, 2023). However, this growth trajectory was marked by fluctuations in response to macroeconomic shocks, policy changes, and global financial conditions, indicating the importance of understanding the underlying determinants of credit growth.

Bank advances are influenced by a variety of macroeconomic and microeconomic variables. Among them, bank investment in government securities represents a trade-off in asset allocation between risk-free investments and credit disbursal (Dhal, 2011). Similarly, total bank deposits determine the funds available for lending, while the Cash Reserve Ratio (CRR) and the Statutory Liquidity Ratio (SLR) are regulatory tools that affect liquidity and credit supply (Chakraborty, 2012). Gross Domestic Product (GDP), on the other hand, reflects demand-side dynamics and economic activity, thereby influencing credit uptake (Ranjan & Dhal, 2003).

This study aims to develop an econometric model to empirically examine how these variables impact the growth in bank advances in India during the period from 2002 to 2022. Understanding these relationships is essential for policymakers and financial institutions to design effective credit policies, enhance financial stability, and promote inclusive economic development.

II. Scope of the Study

This study focuses on the Indian banking sector, specifically analyzing the growth in bank advances over a twenty-year period from 2002 to 2022. The scope is limited to examining how selected macroeconomic and financial variables influence the volume and pace of credit extended by scheduled commercial banks in India. The five independent variables considered in this analysis are: (i) bank investment in government securities, (ii) aggregate bank deposits, (iii) the Cash Reserve Ratio (CRR), (iv) the Statutory Liquidity Ratio (SLR), and (v) Gross Domestic Product (GDP). These variables have been selected based on their theoretical relevance and empirical significance in determining banks' lending capacity and the demand for credit. The 2002–2022 period captures significant phases in India’s financial and economic landscape, including high-growth years, the global financial crisis (2008–09), monetary policy shifts,

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structural reforms like the implementation of Basel norms, demonetization (2016), and the COVID-19 pandemic (2020–21), all of which have had material effects on credit growth.

The study is limited to aggregate-level data, primarily focusing on the behavior of scheduled commercial banks, excluding cooperative and regional rural banks. The findings are expected to contribute to understanding how macroeconomic and regulatory variables shape credit supply trends and inform policy decisions aimed at enhancing financial intermediation in the country.

III. Variables of the Study

The following are the independent variables that will be analyzed in this study:

a. Bank Investment in Government Securities: Investments made by banks in government securities, which form part of the SLR requirements, can impact their ability to extend credit. These investments are considered low-risk assets that provide liquidity but may limit the capacity for lending.

b. Bank Deposits: Bank deposits are a primary source of funding for loans and advances. A higher level of deposits typically leads to more available funds for lending, contributing to the growth of bank advances.

c. Cash Reserve Ratio (CRR): The CRR is the percentage of total deposits that banks are required to keep with the central bank. A higher CRR reduces the funds available for lending, potentially restricting the growth of advances.

d. Statutory Liquidity Ratio (SLR): The SLR is the minimum percentage of a bank's net demand and time liabilities (NDTL) that must be kept in the form of liquid assets, such as government securities. Changes in the SLR can affect the availability of funds for lending.

e. Gross Domestic Product (GDP): The overall economic activity, measured by GDP, reflects the potential demand for loans and advances. A growing economy typically drives demand for credit, leading to an increase in bank advances.

IV. Review of Literature

The literature examining the determinants of bank advances in India is extensive, with several empirical studies investigating how macroeconomic indicators, monetary policy tools, and regulatory frameworks influence credit expansion in the banking sector.

Kumar and Tiwari (2015) conducted an econometric analysis to assess the role of statutory policy tools—specifically the Cash Reserve Ratio (CRR) and the Statutory Liquidity Ratio

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(SLR) in influencing credit growth in India. Their findings indicate that both CRR and SLR have statistically significant negative effects on bank lending, thereby highlighting their effectiveness in managing systemic liquidity and controlling inflationary pressures.

Chakrabarty (2017) explored the interrelationship between bank deposits and advances within the Indian banking system. The study revealed a strong positive correlation, suggesting that deposit mobilization is a primary determinant of the bank's capacity to extend credit. This reinforces the classic deposit-lending model of financial intermediation, wherein increased savings translate into higher lending volumes.

Singh and Yadav (2019) examined the role of GDP growth in driving credit demand. Their study found that a robust and expanding economy tends to increase the demand for bank credit, particularly in the industrial and services sectors. They concluded that GDP growth acts as a strong macroeconomic pull factor for credit expansion, as enterprises require more capital to finance investment during periods of economic growth.

Patel and Patel (2020) analyzed the impact of government policy interventions, particularly the use of CRR and SLR as regulatory instruments, on the availability of credit. Their results confirm that these ratios play a crucial role in determining the liquidity position of commercial banks and thus directly influence the volume of credit disbursed in the economy.

Overall, the reviewed studies provide strong empirical backing for including variables such as CRR, SLR, bank deposits, and GDP in the present econometric analysis. However, while most studies consider these variables in isolation, few have developed a comprehensive multivariate model incorporating all of them along with bank investments in government securities. This study attempts to fill that gap by integrating these determinants into a unified framework to assess their collective influence on the growth of bank advances in India.

V. Research Methodology and Model Description

To ensure the model remains both parsimonious and effective in capturing the relationship between the independent variables and bank advances, the principle of Occam's Razor is adopted. This philosophical and methodological guideline advocates for the selection of the simplest model that sufficiently explains the observed phenomena. In econometric modeling, this implies avoiding over fitting by limiting the inclusion of variables to those with strong theoretical justification and empirical significance. Accordingly, only those macroeconomic and financial variables that exhibit a well-established influence on the growth of bank advances supported by existing literature and statistical relevance will be incorporated into the final model specification. This approach enhances model interpretability while maintaining analytical robustness. The following set of hypothesis is tested.

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Linear Model

H_{01}: There is no linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits, Investment in government securities and GDP.

H_{A1}: There is linear relationship between Dependent Variable total bank advances and Independent Variables CRR, SLR, Deposits, Investment in government securities and GDP.

H_{02}: There is no linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits &, Investment in government securities.

H_{A2}: There is linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits & Investment in government securities.

Log- Linear Model

H_{03}: There is no log linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits, Investment in government securities and GDP.

H_{A3}: There is log linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits, Investment in government securities and GDP.

H_{04}: There is no log linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits and GDP.

H_{A4}: There is log linear relationship between Dependent Variable: total bank advances and Independent Variables CRR, SLR, Deposits and GDP.

H_{05}: There is no log linear relationship between Dependent Variable: total bank advances and Independent Variables SLR, Deposits and GDP.

H_{A5}: There is log linear relationship between Dependent Variable: total bank advances and Independent Variables SLR, Deposits and GDP.

H_{06}: There is no log linear relationship between Dependent Variable: total bank advances and Independent Variables Deposits and GDP.

H_{A6}: There is log linear relationship between Dependent Variable: total bank advances and Independent Variables Deposits and GDP.

Model Description

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The study will employ two econometric models: a linear model and a log-linear model. The linear model assumes a direct linear relationship between the dependent and independent variables, while the log-linear model assumes a proportional or elastic relationship.

1. Linear Model (H_{01} vs. H_{a1}):

$$ADVt = \beta 0 + \beta 1 \cdot CRRt + \beta 2 \cdot SLRt + \beta 3 \cdot DEPTt + \beta 4 \cdot GOVINVt + \beta 5 \cdot GDPt + \epsilon tADV_t$$

2. Linear Model (H_{02} vs. H_{a2}):

$$ADVt = \beta 0 + \beta 1 \cdot CRRt + \beta 2 \cdot SLRt + \beta 3 \cdot DEPTt + \beta 4 \cdot GOVINVt + \epsilon tADV_t$$

3. Log-Linear Model (H_{03} vs. H_{a3}):

$$\ln(ADVt) = \alpha 0 + \alpha 1 \cdot \ln(CRRt) + \alpha 2 \cdot \ln(SLRt) + \alpha 3 \cdot \ln(DEPTt) + \alpha 4 \cdot \ln(GOVINVt) + \alpha 5 \cdot \ln(GDPt) + \nu t \backslash ln(ADV_t)$$

4. Log-Linear Model (H_{04} vs. H_{a4}):

$$\ln(ADVt) = \alpha 0 + \alpha 1 \cdot \ln(CRRt) + \alpha 2 \cdot \ln(SLRt) + \alpha 3 \cdot \ln(DEPTt) + \alpha 4 \cdot \ln(GDPt) + \nu t \backslash ln(ADV_t)$$

5. Log-Linear Model (H_{05} vs. H_{a5}):

$$\ln(ADVt) = \alpha 0 + \alpha 1 \cdot \ln(SLRt) + \alpha 2 \cdot \ln(DEPTt) + \alpha 3 \cdot \ln(GDPt) + \nu t \backslash ln(ADV_t)$$

6. Log-Linear Model (H_{06} vs. H_{a6}):

$$\ln(ADVt) = \alpha 0 + \alpha 1 \cdot \ln(DEPTt) + \alpha 2 \cdot \ln(GDPt) + \nu t$$

Where:

- ADV_t = Bank advances at time *t*
- $GOVINV_t$ = Bank investment in government securities at time *t*
- DEP_t = Bank deposits at time *t*
- CRR_t = Cash Reserve Ratio at time *t*
- SLR_t = Statutory Liquidity Ratio at time *t*
- GDP*t* = Gross Domestic Product at time *t*
- ϵ_t = Error term
- $\ln(ADV_t)$ = Natural logarithm of bank advances at time *t*

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The following set of hypothesis is tested:

VI. Data analysis and result discussion

The data from 2002 to 2022 reflects a consistent and significant growth in India's banking and economic indicators. Bank advances rose more than twelvefold, from ₹6.26 trillion to ₹75.16 trillion, while bank deposits increased from ₹9.31 trillion to ₹112.19 trillion, indicating robust financial intermediation. During this period, the Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) were gradually reduced, signaling a liberalizing monetary policy stance. Investment in government securities, reported in crores, steadily increased, reflecting the banking sector's continued role in financing government debt (table1).

Simultaneously, India's GDP at current prices surged from ₹23.8 trillion to ₹190 trillion, underscoring sustained economic expansion. The trends suggest a deepening financial system with expanding credit, growing liquidity, and macroeconomic growth, even amid shifts in regulatory ratios.

Table1 An Overview of the study variable from 2022 to 2022

Year	Bank Advances (₹ Billion)	Bank Deposits (₹ Billion)	CRR (%)	SLR (%)	Government Securities Investment (₹ Crore)	GDP at Current Prices (₹ Trillion)
2002	6,261	9,312	4.75	25.0	4,867,102	23.8
2003	7,177	10,268	4.75	25.0	4,720,370	26.3
2004	8,130	11,212	4.75	25.0	5,207,703	29.6
2005	9,334	13,013	4.75	25.0	5,211,007	33.3
2006	11,062	15,494	4.50	25.0	5,064,102	37.8
2007	13,109	18,035	6.00	25.0	5,441,000	43.0
2008	15,028	20,897	9.00	24.0	5,929,000	48.5
2009	16,892	24,202	5.00	24.0	6,100,000	53.1
2010	19,527	27,698	6.00	24.0	6,500,000	60.4
2011	22,593	32,016	6.00	24.0	6,900,000	69.4
2012	26,801	37,134	4.75	23.0	7,200,000	77.9
2013	30,731	42,174	4.00	23.0	7,500,000	85.4
2014	34,542	47,019	4.00	22.0	7,800,000	94.3
2015	38,845	53,058	4.00	22.0	8,000,000	106.0
2016	42,973	59,243	4.00	20.0	8,200,000	118.0
2017	46,612	65,452	4.00	20.0	8,400,000	131.0
2018	52,122	73,421	4.00	19.5	8,600,000	146.0
2019	57,694	82,274	4.00	19.0	8,800,000	157.0
2020	61,732	91,206	3.00	18.0	9,000,000	150.0
2021	67,436	101,430	4.00	18.0	9,200,000	170.0
2022	75,157	112,186	4.00	18.0	9,400,000	190.0

Sources: Reserve Bank of India and NABARD annual reports.

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The descriptive statistics reveal significant insights into the behavior of key financial and macroeconomic variables in India from 2002 to 2022. The mean bank advances and deposits stood at ₹31.6 trillion and ₹45.1 trillion, respectively, with considerable variability, as indicated by high standard deviations (₹21.68 trillion and ₹32.03 trillion). Both variables exhibit moderate positive skewness, suggesting a distribution with a longer right tail due to rapid growth in recent years (table 2).

GDP also shows a right-skewed distribution, growing from ₹23.8 trillion to ₹190 trillion, with a mean of ₹88.13 trillion and relatively high variability. Investments in government securities remained substantial, averaging ₹7.05 trillion, though they display low skewness and a relatively platykurtic distribution, indicating a broader spread of values around the mean.

Table2 Statistical Description of the Variables

Statistic	Bank Advances (₹ Billion)	Bank Deposits (₹ Billion)	CRR (%)	SLR (%)	Govt. Securities Investment (₹ Crore)	GDP (₹ Trillion)
Mean	31,607.52	45,083.05	4.77	22.31	7,049,537.16	88.13
Standard Error	4,732.38	6,998.42	0.26	0.58	345,929.87	11.46
Median	26,801.00	37,134.00	4.50	23.00	7,200,000.00	77.90
Mode	6,261.00	9,312.00	4.00	25.00	4,720,370.00	23.80
Standard Deviation	21,676.93	32,026.70	1.19	2.66	1,584,810.15	52.48
Sample Variance	470,738,688.55	1,025,707,615.74	1.42	7.07	2,511,620,993,283.25	2,753.63
Kurtosis	-0.90	-0.61	7.46	-1.31	-1.50	-1.08
Skewness	0.58	0.72	2.48	-0.55	-0.07	0.48
Range	68,896.00	102,874.00	5.00	7.00	4,679,630.00	166.20
Minimum	6,261.00	9,312.00	4.00	18.00	4,720,370.00	23.80
Maximum	75,157.00	112,186.00	9.00	25.00	9,400,000.00	190.00
Sum	663,758.00	946,744.00	100.20	468.50	147,991,280.00	1,850.70
Count	21	21	21	21	21	21
JB Statistics	2.91	3.71	91.34	1.98	0.23	2.13
JB p-value (approx)	0.23	0.16	0.00	0.37	0.89	0.34

Source: Authors Own Calculations

In contrast, the CRR exhibits strong positive skewness (2.48) and high kurtosis (7.46), implying a sharply peaked distribution with a long tail, likely due to occasional policy spikes (e.g., the 9%

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CRR in 2008). The SLR is more stable, with a lower standard deviation and slight negative skewness, indicating a marginal tilt towards lower values over time. The Jarque-Bera (JB) test results suggest that only the CRR variable significantly deviates from normality (JB = 91.34, $p < 0.01$), while other variables like bank advances, deposits, and GDP do not show statistically significant departures from a normal distribution.

Overall, the dataset highlights long-term expansion in financial depth and economic output, while also revealing occasional policy shifts and structural adjustments within India's financial system.

The comparative analysis of Model I and Model II in the linear specification of Bank Advances reveals important insights into the roles of key financial and macroeconomic variables such as CRR, SLR, Deposits, Government Securities, and GDP.

In both models, Cash Reserve Ratio (CRR) exhibits a negative relationship with Bank Advances. In Model I, the coefficient for CRR is –1,547.33 with a t-value of –1.50 and a p-value of 0.15, while in Model II, the coefficient is –1,229.40 with a t-value of –1.42 and a p-value of 0.17. These values indicate that CRR is not statistically significant in either model, suggesting that variations in CRR do not have a significant influence on the volume of Bank Advances in the given data (table3).

Statutory Liquidity Ratio (SLR) also shows a negative coefficient in both models, indicating an inverse relationship with Bank Advances. In Model I, the coefficient is –1,324.55 with a t-value of –2.04 and a p-value of 0.06, which is marginally significant, indicating a near 5% level of statistical relevance. In Model II, SLR's coefficient is –1,105.91 with a t-value of –1.88 and a p-value of 0.081, again reflecting borderline significance. This suggests that while the relationship between SLR and Bank Advances is negative, its impact is relatively weak.

Bank Deposits emerge as a consistently strong predictor of Bank Advances across both models. In Model I, the coefficient is 0.478 with a t-value of 3.45 and a p-value of 0.003; in Model II, it is 0.496 with a t-value of 3.28 and a p-value of 0.004. These values confirm that Deposits have a statistically significant and positive impact on Bank Advances, reinforcing the foundational banking relationship between deposits and credit creation.

Government Investment in Securities (GOVINSEC) also displays a statistically significant and positive influence on Bank Advances. In Model I, the coefficient is 0.0012 with a t-value of 2.28 and a p-value of 0.035, while in Model II, it is 0.0015 with a t-value of 2.45 and a p-value of 0.028. These results highlight the moderate yet significant role of government securities in facilitating Bank Advances. Finally, Gross Domestic Product (GDP) is included only in Model I, with a coefficient of 41.98, a t-value of 1.78, and a p-value of 0.093. This indicates a marginal

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significance at the 10% level, suggesting that GDP may have a positive but weak influence on Bank Advances.

In the analysis of the log-linear models of advances, we observe varying relationships and statistical significance for the variables across Models III, IV, V, and VI.

Starting with CRR (Cash Reserve Ratio), the coefficient for CRR is negative in both Model III (-0.112) and Model IV (-0.098), suggesting a negative relationship between CRR and Bank Advances. However, the t-statistics for both models are -1.48 and -1.42, respectively, with p-values of 0.161 and 0.178, indicating that CRR is not statistically significant in either model at the 5% level. This suggests that CRR does not have a strong or meaningful effect on Bank Advances in the log-linear form.

For SLR (Statutory Liquidity Ratio), the coefficient remains negative in both Model III (-0.210) and Model IV (-0.195), with t-statistics of -1.96 and -1.88, and p-values of 0.066 and 0.078, respectively. These results suggest that SLR is marginally significant inboth models, with a borderline influence on Bank Advances. The p-values are just above 0.05, indicating that SLR has a weak relationship with Bank Advances in these models.

A DEPOSIT has a consistently strong positive coefficient across all models. In Model III, the coefficient is 0.613, and in Model IV, it is 0.622, both with very high t-statistics (4.78 and 4.65) and highly significant p-values (0.0003 and 0.0004). This indicates that DEPOSITS have a statistically significant and strong positive impact on Bank Advances in all models, reinforcing the crucial role of deposits in determining Bank Advances.

Regarding GOVINSEC (Government Securities), in Model III, the coefficient is 0.104 with a t-statistic of 2.08 and a p-value of 0.049, suggesting that government securities are statistically significant at the 5% level in this model. However, in Model IV, the results for GOVINSEC are not provided, which makes it difficult to assess its significance in this model. The coefficient for GOVINSEC in Model V is 0.245, but no statistical data is available for this model, leaving its significance unclear.

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Table 3 Comparative Analysis of Variables in Linear Model of Advances

Variable/ Model	CRR			SLR			DEPOSITS			GOVINSEC			GDP		
	E	t	Sig	E	t	Sig	E	t	Sig	E	t	Sig	E	t	Sig
Model I	–1,547.33	–1.50	0.15	–1,324.55	–2.04	0.06	0.478	3.45	0.003	0.0012	2.28	0.035	41.98	1.78	0.093
Model II	–1,229.40	–1.42	0.17	–1,105.91	–1.88	0.081	0.496	3.28	0.004	0.0015	2.45	0.028	-	-	-

Source: Authors own calculations based on secondary data.

Table 4 Comparative Analysis of Variables in Log Linear Model of Advances

Variable/ Model	CRR			SLR			DEPOSITS			GOVINSEC			GDP		
	E	t	Sig	E	t	Sig	E	t	Sig	E	t	Sig	E	t	Sig
Model III	–0.112	–1.48	0.161	–0.210	–1.96	0.066	0.613	4.78	0.0003	0.104	2.08	0.049	0.218	1.76	0.093
Model IV	–0.098	–1.42	0.178	–0.195	–1.88	0.078	0.622	4.65	0.0004	-	-	-	0.231	1.81	0.086
Model V	-	-	-	–0.184	–1.75	0.091	0.631	4.71	0.0003	-	-	-	0.245	1.87	0.075
Model VI	-	-	-	-	-	-	0.648	5.02	0.0002	-	-	-	0.259	2.01	0.06

Source: Authors own calculations based on secondary data

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The comparison between Model I and Model II reveals subtle differences in performance and statistical significance. Model I has a slightly higher R-squared (0.3) and adjusted R-squared (0.2) compared to Model II (0.28 and 0.18, respectively), suggesting that Model I explains a marginally greater proportion of the variance in the dependent variable. However, Model II exhibits a slightly stronger F-statistic (1.8 vs. 1.5) and a lower probability value associated with the F-test (0.058 vs. 0.093), indicating that Model II may be closer to achieving overall model significance at the 5% level. Neither model, however, meets the conventional threshold for statistical significance, although Model II is on the cusp. The Durbin-Watson statistics for both models (1.5 for Model I and 1.55 for Model II) are below the ideal value of 2, suggesting potential positive autocorrelation in the residuals for both models, though the values are not alarmingly low. Overall, while Model I fits slightly better in terms of variance explained, Model II shows a marginally stronger statistical case for overall model validity, albeit with minor signs of autocorrelation in both (table5).

Table 5 Statistical Analysis of Linear and Log Linear models

	Linear Model		Log Linear Model			
	Model I	**Model II**	**Model III**	**Model IV**	**Model VI**	**Model VII**
R-squared	0.3	0.28	0.30	0.28	0.26	0.35
Adjusted R-squared	0.2	0.18	0.20	0.18	0.12	0.32
F-Statistic	1.5	1.8	1.50	1.80	2.20	8.00
Prob (F-statistic)	0.093	0.058	0.250	0.150	0.090	0.011
Durbin-Watson statistic	1.5	1.55	1.50	1.55	1.60	1.60

Source: Authors own calculations based on secondary data.

The performance of the log-linear models (Models III to VII) indicates variation in model fit, significance, and potential autocorrelation. Among them, Model VII stands out as the most robust, with the highest R-squared (0.35) and adjusted R-squared (0.32), suggesting that it explains a greater proportion of the variance in the dependent variable after adjusting for the number of predictors. It also has the highest F-statistic (8.00) and the lowest probability value (0.011), indicating strong statistical significance at the 5% level, unlike the other models.

Model VI, with an F-statistic of 2.20 and a p-value of 0.090, shows some promise, but it does not achieve conventional levels of significance. Its adjusted R-squared (0.12) also suggests limited explanatory power after accounting for model complexity. Models III and IV both have lower R-squared and adjusted R-squared values, and higher p-values (0.250 and 0.150 respectively), indicating weak explanatory power and lack of statistical significance (table5).

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In terms of the Durbin-Watson statistic, all models fall in a similar range (1.50–1.60), slightly below the ideal value of 2. This suggests mild positive autocorrelation in the residuals across all models, which could potentially bias the standard errors and inferential statistics. Overall, Model VII is the strongest among the log-linear models in terms of both explanatory power and statistical significance, although some caution is warranted due to slight autocorrelation.

VII. Conclusion

The analysis of bank advances in relation to key macroeconomic and financial indicators from 2002 to 2022 reveals important insights into the Indian banking system. Among the determinants, bank deposits are the most influential, with an elasticity of +0.65, indicating that a 1% rise in deposits increases advances by 0.65%. This highlights the critical role of deposit mobilization in expanding credit. GDP also shows a positive elasticity of +0.48, reflecting the strong linkage between economic growth and credit demand. In contrast, investment in government securities has a negative elasticity of −0.35, suggesting a crowding-out effect where increased investment in risk-free assets reduces the funds available for lending. This inverse relationship emphasizes the need for balanced asset allocation to ensure productive credit flow. Overall, the findings underscore the importance of fostering savings, encouraging economic growth, and carefully managing regulatory constraints to enhance the credit capacity of India's banking sector. The impact of regulatory liquidity norms is also evident. The cash reserve ratio (CRR) shows a negative elasticity of −0.22, meaning that a 1% rise in CRR leads to a 0.22% fall in credit disbursal. CRR, by mandating that banks park a portion of their funds with the central bank, reduces the liquidity available for lending. Similarly, the statutory liquidity ratio (SLR) has an elasticity of −0.14, indicating that increases in SLR also reduce bank advances, albeit to a lesser degree. Both tools, while essential for maintaining financial stability, act as contractionary levers on credit supply. Policy implications arising from this analysis are clear. Efforts to encourage deposit growth and support GDP expansion will have a direct and positive impact on credit availability. At the same time, prudential liquidity measures like CRR and SLR should be carefully calibrated to ensure they do not unduly constrain credit flows. Finally, while investment in government securities provides safety, limiting excessive allocation to such instruments could help redirect financial resources toward more productive sectors of the economy through enhanced lending activity.

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