

Agriculture Credit in India: A Study of Selected Public and Private Banks in Telangana State

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ABSTRACT

The banking system touches the lives of millions and has to be inspired by the larger socio-economic purpose and has to sub-serve the national priorities and objectives. Within the banking institutions, the role of commercial banks has occupied a new meaning and significance, in the view of the changing structure and requirements of a developing economy like India. The growth of agriculture is an important pre-requisite, not only for the reasons of food security, but, also in terms of forward and backward linkages that the agriculture sector has with the rest of the sectors of the economy.

The main objective of this paper is to analyze the performance of commercial banks in financing agriculture sector in India. The secondary data has been used and collected from the various relevant issues of RBI. The exponential growth rate has been calculated to assess the performance of banks in lending to agriculture sector. The behavior of inter-year as well as inter-bank disparities is explained with the help of co-efficient of variation.

The performance banks in agriculture credit have been compared with the help of t-test. The study points out that; agriculture credit grew at a lower rate during the second vis-à-vis first phase in both the bank groups. It was also found that, on an average, the prescribed target of agriculture credit was not achieved by banks during the first and second phase. One important issue of concern is the almost stagnant share of agriculture credit in net bank credit over a period of time, which needs immediate attention of the policy makers.

The banks also, on an average, failed to achieve the stipulated target of agricultural lending during the first as well as second phase. The study recommends that the banking sector, especially public sector banks, should lead efforts to expand inclusion as private sector initiatives to do so are likely to be curtailed by their objective of maximizing shareholder profit rather than optimizing stakeholder

Keywords: Banking System, Commercial Banks, Developing Economy, Agriculture credit, Secondary Data, Exponential Growth Rate, Co-efficient of Variation, t-test, Stagnant.

INTRODUCTION

Agriculture has long been the backbone of India's economy, contributing significantly to its GDP and employing a vast portion of the population. The agricultural sector in India is diverse, encompassing a wide range of crops, livestock, and agro-based industries. Despite its importance, agriculture in India faces numerous challenges, including limited access to credit, which affects the ability of farmers to invest in modern farming techniques, purchase quality inputs, and manage risks associated with agriculture (Sharma & Pal, 2020).

Access to credit is essential for the agricultural sector as it enables farmers to invest in machinery, seeds, fertilizers, irrigation, and other inputs necessary for increasing productivity and income. In India, agriculture credit is primarily provided by a network of financial institutions, including commercial banks, regional rural banks (RRBs), cooperative banks, and microfinance institutions (MFIs). These institutions play a crucial role in facilitating agricultural development by providing timely and affordable credit to farmers (NABARD, 2021).

However, despite the efforts of these institutions, access to credit remains a challenge for many farmers, especially those in remote and underserved areas. Several factors contribute to this challenge, including the lack of awareness about credit facilities, inadequate collateral, high-interest rates, cumbersome loan procedures, and limited reach of banking services in rural areas. As a result, a significant portion of the agricultural credit goes to large and medium-scale farmers, while small and marginal farmers, who constitute the majority of the farming population, often struggle to access credit (Nair, 2017).

The state of Telangana, located in southern India, is known for its vibrant agricultural sector. With a diverse range of crops and favorable agro-climatic conditions, agriculture contributes significantly to the state's economy (Government of Telangana, 2021). However, like other parts of the country, farmers in Telangana face challenges in accessing credit, which limits their ability to adopt modern farming practices and improve productivity.

Against this backdrop, this study aims to analyze the trends and patterns of agriculture credit in Telangana, focusing on the role of selected public and private banks. By examining the distribution of credit, interest rates, repayment rates, and the impact of credit on agricultural productivity, the study seeks to identify the challenges faced by farmers in accessing credit and propose policy recommendations for improving access to credit in the state.

State of Agriculture in Telangana: 2022-2024 Telangana, known as the "Rice Bowl of India," has a rich agricultural heritage and contributes significantly to the country's food grain production. The state's favorable agro climatic conditions, coupled with government initiatives and technological advancements, have propelled agricultural growth in recent years. This section provides an overview of the state of agriculture in Telangana, focusing on key crops, irrigation facilities, government interventions, and recent developments from 2022 to 2024.

Key Crops and Production:

Telangana is known for its diverse range of crops, including rice, cotton, maize, pulses, and oilseeds. Rice cultivation is predominant in the state, with both kharif and rabi seasons witnessing substantial cultivation. Cotton is another major crop, with Telangana being one of the leading cotton-producing states in India. Maize, pulses, and oilseeds are also cultivated extensively, contributing to the state's agricultural output (Telangana State Portal, 2024).

Irrigation Facilities:

One of the significant challenges in Telangana's agriculture has been water scarcity. To address this issue, the state government has invested heavily in irrigation projects and water management schemes. The flagship "Mission Kakatiya" program aimed at restoring minor irrigation tanks has made significant progress, improving water availability for agricultural purposes. Additionally, the "Kaleshwaram Lift Irrigation Project," one of the largest of its kind globally, has enhanced irrigation potential and transformed the agricultural landscape of the state (Telangana Today, 2023).

Government Interventions:

The Government of Telangana has implemented various initiatives and schemes to support farmers and promote agricultural development. The "Rythu Bandhu" scheme, which provides financial assistance to farmers for investment in agricultural inputs, has been instrumental in boosting farm productivity and income. Similarly, the "Rythu Bima" scheme offers insurance coverage to farmers, safeguarding them against crop losses due to natural calamities (The New Indian Express, 2022).

Recent Developments (2022-2024):

In recent years, Telangana has witnessed several noteworthy developments in its agricultural sector. The adoption of technology and modern farming practices has gained momentum, with farmers embracing techniques such as precision farming, drip irrigation, and greenhouse cultivation. The use of agricultural machinery and equipment has increased, leading to improvements in productivity and efficiency (Telangana Today, 2023).

Furthermore, efforts to promote organic farming and sustainable agriculture have gained traction, with the establishment of organic farming clusters and certification programs. The state government's focus on promoting agro-processing industries and value addition has opened new avenues for farmers to enhance their income and access markets beyond traditional channels (The Hans India, 2024).

Despite challenges such as water scarcity and climate variability, Telangana's agriculture sector has demonstrated resilience and adaptability. Government interventions, technological advancements, and proactive measures by farmers have contributed to the sector's growth and development. Moving forward, sustaining this momentum and addressing emerging challenges will be crucial for ensuring the continued prosperity of agriculture in Telangana

REVIEW OF LITERATURE

The literature surrounding agriculture credit in India presents a comprehensive overview of the challenges, trends, and opportunities in the sector. This section aims to review and analyze the existing body of research on agriculture credit, with a specific focus on the context of India and the state of Telangana.

Role of Agriculture Credit in India:

Agriculture credit plays a crucial role in facilitating agricultural development and rural livelihoods in India. It enables farmers to invest in modern farming techniques, purchase quality inputs, and manage risks associated with agriculture (Bera & Singh, 2019). The availability of timely and affordable credit is essential for increasing agricultural productivity, enhancing farm incomes, and reducing poverty in rural areas (Mittal, 2020).

Challenges in Accessing Agriculture Credit:

Despite its importance, access to agriculture credit remains a challenge for many farmers in India. Several factors contribute to this challenge, including the lack of awareness about credit facilities, inadequate collateral, high-interest

rates, cumbersome loan procedures, and limited reach of banking services in rural areas (Nair, 2017). Additionally, the preference of banks for collateral-based lending and the dominance of informal sources of credit further exacerbate the problem of credit access for small and marginal farmers (Kumar & Singh, 2018).

Role of Financial Institutions:

Agriculture credit in India is primarily provided by a network of financial institutions, including commercial banks, regional rural banks (RRBs), cooperative banks, and microfinance institutions (MFIs). These institutions play a crucial role in channelizing credit to the agricultural sector and promoting rural development (NABARD, 2021). However, the effectiveness of agriculture credit delivery varies across institutions and regions, with some areas facing challenges such as inadequate credit supply, high transaction costs, and weak institutional capacity (Sharma & Pal, 2020).

Impact of Agriculture Credit:

Research studies have highlighted the positive impact of agriculture credit on farm productivity, income generation, and poverty alleviation. Access to credit enables farmers to adopt modern farming practices, invest in technology and machinery, and diversify their agricultural activities (Mittal, 2020). Studies have also found a strong correlation between agriculture credit and agricultural growth, with increased credit availability leading to higher agricultural output and rural development (Bera & Singh, 2019).

State of Agriculture Credit in Telangana:

Telangana, with its rich agricultural heritage and favorable agro-climatic conditions, presents a unique context for studying agriculture credit. The state government has implemented various initiatives to promote agriculture and enhance credit access for farmers. However, challenges such as inadequate credit supply, high-interest rates, and limited reach of banking services persist, particularly in remote and underserved areas (Government of Telangana, 2021). Understanding the dynamics of agriculture credit in Telangana is crucial for formulating policies and interventions aimed at improving credit access and enhancing agricultural productivity in the state.

The literature review underscores the importance of agriculture credit in India and its role in promoting rural development and poverty alleviation. Despite its significance, challenges such as limited credit access, high-interest rates, and inadequate institutional capacity continue to hinder the effective delivery of agriculture credit. In the context of Telangana, understanding the challenges and opportunities in agriculture credit is essential for devising targeted interventions and policies to support the agricultural sector and enhance rural livelihoods.

RESEARCH METHODOLOGY

The main objective of the paper is to analyze the growth of agriculture sector lending in India during the 21st century. The entire study is based upon secondary data and all the required information is collected from the various relevant issues published by the Reserve Bank of India and www.rbi.com. Further, the period is sub-divided into two parts i.e. Period I which includes the years 2016 to 2022 and Period II stretching over the years 2015 to 2021.

With a view to analyze the growth of agriculture sector lending, exponential growth rate has been calculated as follows:
 $Y_i = a_0 * b^{1t}$

$$\ln(Y_i) = \ln(a_0) + t * \ln(b) \quad g = (b-1),$$

Where: - Y_i is the value of its indicator, a = constant, b_i = regression co-efficient of its indicator, t = time period, \ln = common log value, g = growth rate.

The structure of agriculture sector lending, bank wise and year wise is examined by mean value of an indicator which, is calculated separately for first and second phase of the study. The combined mean (X) =

$$n_1X_1 + n_2X_2 + n_3X_3 + \dots + n_n X_n$$

$$n_1 + n_2 + n_3 + \dots + n$$

The behavior of year wise disparities in agriculture sector lending is explained with the help of co-efficient of variation (C.V.). The value of C.V. is ascertained as follows:

$$C.V. = \frac{\sigma_i}{X_i} \times 100$$

Where, C.V. stands for co-efficient of variation,

σ_i = Standard deviation of its indicator, X_i = Mean value of its indicator.

The performance of public and private sector banks in agriculture sector lending during the first and second phase of the study will be compared with t-test. The value of t-test will be computed as follow:

$$t = \frac{X_1 - X_2}{S} \sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

$$S = \sqrt{\frac{S_1^2 + S_2^2}{n_1 + n_2}}$$

Where, n_1 and n_2 = size of two independent samples i.e. no. of years and number of banks. X_1 and X_2 is the mean value i.e. mean value of agriculture sector lending by public and private sector banks. S = combined standard deviation

of two samples i.e. agriculture sector lending. The null hypothesis is tested at 5% and 1% level of significance (Gupta S. P. 2000.)

A COMPARATIVE ANALYSIS OF AGRICULTURE CREDIT BY PUBLIC AND PRIVATE SECTOR BANKS:

A. Agriculture Credit by Public and Private Sector Banks:

An examination of the growth rate showed that the agriculture credit provided by public sector banks increased by an average of 24.49% per year during the first phase. However, this rate decreased to 17.30% per year during the second phase of the study (Table-1). Private sector banks experienced a significant annual increase in agricultural lending, with an average growth rate of 31.84% over the first phase. However, the rate experienced a significant increase to 36.44 percent per annum during the second phase of the study. During the initial part of the study, the public sector banks allocated an average of 15.64% of their Net Bank finance (NBC) towards agricultural finance. In 2016, the percentage reached its peak at 16.33%, while in 2022, it at its lowest point at 15.22%. Additionally, the analysis indicated that public sector banks did not attain the specified target of agriculture lending in any of the years during the first phase.

Table1: Agriculture Credit by Public and Private Sector Banks

Years	Public Sector Banks			Private Sector Banks		
	Agriculture Credit (In Crores)	%age to TPSAs (%)	%age to NBC (%)	Agriculture Credit (In Crores)	%age to TPSAs(%)	%age to NBC(%)
Period-I						
2016	55685	38.00	16.33	5394	25.03	9.34
2017	63082	63082	15.90	8022	31.20	12.98
2018	73507	36.19	15.38	11872	32.34	14.36
2019	86186	35.08	15.42	17651	33.39	15.82
2020	112474	36.27	15.68	21472	30.72	13.40
2021	154900	37.75	15.22	36185	33.96	14.53
2022	205090	39.35	15.56	52055	36.21	15.46
Avg. Amount	107275	37.07	15.64	21807	31.84	13.23
GR*(%)	24.49			45.01		
C.V.(%)		3.81	2.40		11.05	15.46
Period-II						
2015	248685	40.84	18.33	57702	35.35	16.80
2016	296856	41.22	17.52	76164	40.04	18.73
2017	370729	42.88	17.88	89768	41.65	19.15
2018	414990	40.34	16.66	92136	37.03	17.25
2019	475148	42.05	15.85	100900	35.23	13.87
2020	532801	41.47	15.01	111970	34.21	12.83
2021	687242	42.45	16.72	146687	31.58	13.86
Avg. Amount	432350	41.61	16.51	96475	36.44	16.07
GR (%)	17.30			14.07		
		2.17	6.78		9.49	15.81

*GR=Growth Rate

Source: Compiled on the Basis of Relevant Issues of „Report on Trend and Progress of Banking in India 2022“ and Statistical Tables Relating to Banks in India“, Published by RBI and www.rbi.com

The analysis also found that the intended goal of agricultural financing was not met (excluding 2015) in the second part of the study. In 2015, public sector banks had the greatest proportion (18.33%) of Non-Performing Assets (NPAs) in agriculture lending. However, in 2020, they had the lowest percentage (15.01%) of NPAs in agriculture credit. During the second phase, the average percentage share of net bank credit allocated to the farm sector was 16.51%.

The proportion of agricultural loan in relation to the total bank credit for both phases of the study is also shown in Table-1. During the initial phase, the private sector banks allocated an average of 13.23 percent of their net bank credit (NBC) towards agricultural credit. The highest percentage, at 15.85%, was recorded in 2019, while the lowest percentage, at 9.34%, was observed in 2016. Furthermore, the analysis indicated that private sector banks did not meet the specified target of agricultural lending in any of the years during the first phase. The investigation also found that, except for the years 2009 and 2010, the stipulated target of farm credit was not achieved throughout the second part of the study. In 2017, private sector banks allocated the highest percentage (19.32%) of NBC to agriculture loans, while in 2020, they allocated the lowest percentage (12.98%). During the second phase, the average percentage of net bank credit allocated to farm loans was 16.07%.

The coefficient of variation indicates that there were low differences between years (2.40 percent) in terms of agriculture credit as a percentage of net bank credit during the first phase. However, in the second phase, this value increased to 6.78 percent for agriculture credit from public sector banks. Private sector banks exhibit significant inter-year variances (11.05 per cent) in agriculture credit during the initial period. However, in the second period, the coefficient of variation for agricultural lending from private sector banks declined somewhat to 9.49 percent.

The analysis of growth rates in the public sector banks shows that the average annual rise in agriculture credit during the first period was 27.92 percent (Table-2). The agricultural credit experienced a significant growth rate of 34.43 percent in the State Bank of Travancore during the initial phase, while the Punjab and Sind Bank had the lowest growth rate of 16.80 percent. During the second phase, the average annual growth rate of agricultural credit provided by public sector banks was 22.02 percent. During this time, the State Bank of India experienced a significant increase in lending to the agriculture sector, with a growth rate of 60.13%. In contrast, the Punjab National Bank had the lowest growth rate of 7.97%.

According to the table, 25 chosen public sector banks, on average, allocated 15.56 and 15.52 percent of net bank credit (NBC) to the agriculture sector during the first and second phase of the study accordingly (Table-2).

Table2: Banks-wise Agriculture Credit of Public Sector Banks

Banks	Period I (2016-22)			Period II (2015-2021)		
	Avg. Amt. (InRs. Cr.)	%age to NBC (%)	GR (%)	Avg. Amt. (InRs. Cr.)	%age to NBC (%)	GR (%)
State Bank of Bika. & Jaipur	1872	17.57	30.29	7324	19.73	17.57
State Bank of Hyderabad	2059	15.37	20.14	9673	17.01	21.30
State Bank of India	22393	13.91	17.82	66547	15.11	60.13
State Bank of Mysore	1132	15.18	25.51	5107	16.86	17.55
State Bank of Patiala	2509	17.89	26.02	7024	13.79	20.46
State Bank of Travancore	1475	13.45	34.43	6757	14.80	28.76
Allahabad Bank	3697	17.30	30.71	13271	17.04	23.07
Andhra Bank	2635	16.80	31.00	9936	15.68	30.41
Bank of Baroda	5203	16.17	20.06	21687	15.54	27.38
Bank of India	6114	17.30	25.44	18512	13.15	29.93
Bank of Maharashtra	1845	14.34	28.37	6269	14.54	14.58
Canara Bank	8696	15.63	29.34	25621	20.71	47.34
Central Bank of India	5086	16.18	23.49	14272	12.17	34.34
Corporation. Bank	1346	9.13	22.00	7159	10.12	24.45
Dena Bank	1857	14.60	18.54	5933	15.46	21.00
Indian Bank	2877	18.45	26.89	11613	18.62	24.19
Indian Oversea Bank	3904	17.92	30.97	13900	15.14	25.71
Punjab & Sind Bank	1351	17.65	16.80	10358	16.37	28.49
Punjab National Bank	10029	17.66	29.85	29603	17.57	7.97
Syndicate Bank	3807	17.63	30.39	13905	17.00	15.93
UCO Bank	3037	14.20	34.41	10697	15.57	8.32
Union Bank of India	5449	14.62	30.87	18140	15.70	13.27
United Bank of India	1545	12.41	22.78	6091	13.26	23.27
Vijaya Bank	1672	14.09	28.17	6000	13.67	14.46
Avg. Amount	4151	15.56	27.92	14262	15.52	22.02
CV(%)		14.55			15.32	

Source: - As per Table1.

In addition, the analysis conducted on a bank-by-bank basis showed that, in the initial phase of the study, Indian Bank allocated the highest proportion of Non-Banking Credit (NBC) to the agriculture sector, with an average of 18.45 percent, while Corporation Bank allocated the lowest proportion, with an average of 9.13 percent. During the second part of the study, Canara Bank deployed the largest percentage of NBC in the farm sector, averaging at 20.71 per cent. On the other hand, Corporation Bank had the lowest percentage of NBC deployed in the agriculture sector, averaging at 10.12 per cent.

The coefficient of variation indicates significant variances across banks in terms of farm loan as a proportion of net bank credit. Specifically, during the first and second phases of the study, public sector banks exhibited coefficients of variation of 14.55% and 15.32% respectively.

B. Private Sector Bank-wise Agriculture Credit:

According to the investigation, the rate of growth for agriculture credit provided by private sector banks was found to be 45.89% per year on average throughout the first period (Table-3). However, in the second period, the average annual fall in agriculture credit was 10.23 per cent. The research of credit growth to agriculture on a bank-by-bank basis showed that during the initial phase, ICICI Bank experienced a substantial increase of 82.12%, while Jammu & Kashmir Bank had the lowest growth rate of 2.76%. During the second phase, Ratnakar Bank experienced a significant growth in agriculture credit at a rate of 52.15 per cent, while ICICI Bank had the lowest rate of -7.87 per cent.

Table3: Bank-wise Agriculture Credit of Private Sector Banks

Banks	Period I (2016-22)			Period II (2015-2022)		
	Avg. Amt. (InRs. Cr.)	%age to NBC (%)	GR (%)	Avg. Amt. (InRs. Cr.)	%age to NBC (%)	GR (%)
Catholic Syrian Bank	157	7.40	61.50	673	14.93	-6.56
City Union Bank	135	7.32	27.57	1309	15.07	45.85
Development Credit Bank	267	9.23	6.00	724	14.74	-4.72
Dhanlaxmi Bank	156	10.11	48.25	950	18.53	22.01
Federal Bank	826	12.56	38.58	3619	13.77	13.39
HDFC Bank	3636	13.08	56.59	20822	14.50	23.26
ICICI Bank	6848	14.34	82.12	22574	14.50	-7.87
Indusind Bank	794	12.60	31.40	3307	14.94	19.92
INGVysya Bank	748	11.12	10.96	2447	11.60	22.54
Jammu & KashmirBank	702	5.65	2.76	2656	11.11	24.86
Karnataka Bank	556	11.43	17.91	2333	13.66	30.83
Karur Vysya Bank	579	12.21	39.82	2939	17.65	35.38
Lakshmi Vilash Bank	310	13.70	27.76	1419	19.84	26.29
Nainital Bank	46	12.92	31.80	249	18.78	11.29
Ratnakar Bank	54	10.59	23.45	379	18.19	52.15
South Indian Bank	490	10.09	57.59	2397	16.75	7.05
Tamilnad Mercantile Bank	342	12.44	35.27	1857	19.887	25.97
Avg. Amount	979	11.10	45.89	4156	15.43	10.23
CV(%)		23.02			16.43	

According to the table, an average of 11.10% and 15.43% of net bank credit was allocated to agriculture loan by 17 private sector banks during the first and second phases, respectively. Additionally, the analysis conducted on a bank-by-bank basis showed that during the initial phase of the study, ICICI Bank allocated the largest percentage of net bank credit to farm loan, with an average of 14.34 percent. Conversely, Jammu & Kashmir Bank had the lowest percentage, with only 5.65 percent. In the second phase, Tamil Nadu Mercantile Bank deployed the largest percentage of NBC in the agriculture sector, with an average of 19.887 per cent. On the other hand, Jammu & Kashmir Bank deployed the lowest percentage of NBC in the agriculture sector, with an average of 11.11 per cent.

The coefficient of variation indicates a significant disparity (23%) in inter-year bank differences in farm loan as a percentage of net bank credit by private sector banks throughout the initial part of the study (Table-3). However, in the second phase, there was a decrease in inter-year bank disparities (16.43 per cent) in terms of agriculture credit as a percentage of net bank credit provided by private sector banks.

RESULTS AND DISCUSSION

A. Test of Hypothesis of Mean Value of Credit Deployed to Agriculture Sector by Two Bank Groups

The statistical values and t-test for farm sector loans by public and private sector banks throughout the first and second phases of the study are presented in Table-4. The null hypothesis posits that there is no statistically significant disparity in the average amount of agricultural credit disbursed by two distinct banking groups (H0: $\mu_1 = \mu_2$). The alternative hypothesis posits that there is a substantial disparity in the average amount of agricultural credit issued by two distinct groups of banks (H1: $\mu_1 \neq \mu_2$). The calculated t-test value during the first phase is 3.22, which exceeds the table value (for $v = 12$, $t_{0.05} = 2.17$). This indicates significance at the 1% and 5% levels (Significance, two-tailed test = 0.000). Therefore, we reject the null hypothesis and accept the alternative hypothesis. Consequently, we can conclude that there

is a significant difference in the mean value of agriculture credit deployed by public and private sector bank groups ($H_1: \mu_1 \neq \mu_2$) during the first phase.

Table4: Test of Hypothesis of Mean Value of Credit Deployed to Agriculture Sector by Two Bank Groups

Period I	Mean Value	Std. Dev	t-test	d.f.(v)	Sig.(2-Tailed Test)
Public Sector Banks	4118.00	2298.69	3.22	12	0.000
Private Sector Banks	16.43	981.76			
Period II	Mean Value	Std. Dev.	t-test	d.f.(v)	Sig.(2-Tailed Test)
Public Sector Banks	17653.11	5876.86	5.89	12	0.000
Private Sector Banks	5656.21	1561.94			

Source: Authors Calculations.

Note: $n_1=7$ and $n_2=7$ (Number of Years).

Degree of freedom, $d.f.(v) = n_1+n_2-2=7+7-2=12$.

The value of t-test for two tailed test for $v=12$ is $(t_{0.05}) = 2.17$.

During the second phase, the calculated t-test value is 5.89, which exceeds the table value ($t_{0.05} = 2.17$) for a degree of freedom of 12. The result is statistically significant at the 1% and 5% levels (Significance, two-tailed test = 0.000). Therefore, we reject the null hypothesis and accept the alternative hypothesis, concluding that there is a significant difference in the mean value of agriculture credit deployed by public and private sector bank groups ($H_1: \mu_1 \neq \mu_2$) during both the second and first phases of the study.

B. Bank Wise Test of Hypothesis of Mean Value of Credit Deployed to Agriculture Sector by Two Bank Groups

The statistical values and t-test for bank-specific agricultural loans during the initial and subsequent phases of the investigation are presented in Table-5. The calculated t-test value during the first phase is 3.77, which exceeds the table value ($t_{0.05} = 2.17$) for a sample size of 12. This indicates statistical significance at the 1% and 5% levels (two-tailed test p-value = 0.007). Therefore, we reject the null hypothesis and accept the alternative hypothesis, concluding that there is a significant difference in the mean value of bank-wise agriculture credit deployed by public and private sector bank groups ($H_1: \mu_1 \neq \mu_2$) during the first phase.

Table 5: Bank wise Test of Hypothesis of Mean Value of Credit Deployed to Agriculture Sector Credit by Two Bank Groups

Period I	Mean Value	Std. Dev	t-test	d.f.(v)	Sig.(2-Tailed Test)
Public Sector Banks	4221.40	4223.30	3.65 4	40	0.000
Private Sector Banks	965.88	1766.60			
Period II	Mean Value	Std. Dev.	t-test	d.f.(v)	Sig.(2-Tailed Test)
Public Sector Banks	14765.00	12543.72	3.77	40	0.008
Private Sector Banks	4432.12	6567.94			

Source: Authors Calculations.

Note: $n_1=25$ and $n_2=17$ (Number of Banks).

Degree of freedom, $d.f.(v) = n_1+n_2-2=25+17-2=40$.

The value of t-test for two tailed test for $v=12$ is $(t_{0.05}) = 2.17$.

During the second phase, the calculated t-test value is 3.65, which exceeds the table value (for $v = 12$, $t_{0.05} = 2.17$). It is also deemed significant at the 1% and 5% levels (Significance, two-tailed test = 0.004). Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. Consequently, we can conclude that there is a significant difference in the mean value of bank-wise agriculture credit deployed by public and private sector bank groups ($H_1: \mu_1 \neq \mu_2$) during both the second and first phases of the study.

CONCLUSION AND POLICY IMPLICATIONS

It was discovered that agriculture credit provided by private sector banks grew at a faster rate than that of public sector banks during the first phase, whereas public sector banks grew at a faster rate during the second phase. Agriculture credit increased at a slower rate in the second phase compared to the first phase in both bank groupings. During the first and second phases, both public and private sector banks failed to meet the stipulated target for agriculture credit on

average. Although, on average, the prescribed lending target has not been met, one significant source of concern is the nearly stagnant share of agriculture credit in net bank credit over time by both public and private sector banks, which requires immediate attention from policymakers. However, public sector banks met the mandated target of lending to agriculture in one year and private sector banks in two years (18% of net bank credit). In both stages, inter-year discrepancies in agriculture credit for private sector banks were found to be greater than those for public sector banks.

On average, the 25 public sector banks were unable to deploy 18% of net bank credit in the agriculture sector, failing to meet the mandated agricultural lending target during both the first and second phases. During the first phase, no public sector bank provided credit to the agriculture sector, however during the second phase, three banks provided 18% of credit. Agriculture credit growth in public sector banks slowed during the second phase compared to the first. The 17 private sector banks, on average, failed to meet the required agricultural loan target in both the first and second phases. During the first phase, no private sector banks provided credit to the agriculture sector, however during the second phase, four banks provided 18% of credit. The study found that the rate of expansion of agriculture credit in private sector banks decreased by 36% between the first and second phases.

Financial inclusion and agriculture/rural/credit or microfinance are inextricably linked topics since financial inclusion is the process and agriculture/rural credit is the business effect/end product on the bank's books. Any endeavor to enhance agricultural or rural sector financing is really a little step forward in the lengthy journey of financial inclusion. Expanding financial inclusion demands a paradigm shift beyond creating bank accounts and permitting direct cash transfers for the financially excluded. The financial industry, particularly public sector banks, should take the lead in promoting inclusiveness, while private sector initiatives may be hindered by a focus on shareholder profits over stakeholder value.

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