



Role Of Agricultural Credit Schemes In Financial Inclusion Of Farmers

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Abstract: After the economic policy reforms in India in 1991, a significant discussion has emerged within policy circles regarding the role of agriculture in the country's future economic development. The discussions suggest that agriculture will gradually modernize through substantial capital investments. This rapid growth in agriculture is expected not only to secure continuous food availability but also to enhance industrial growth and increase GDP. To sustain agricultural growth, investing adequate capital is crucial since it is a key component for the success of all agricultural development projects. Therefore, financing agriculture is a critical obligation to fulfill the capital requirements of Indian agriculture, with credit serving as a driving force in advancing agriculture alongside industries, enterprises, and the service sector of the economy. The analysis presented in this research indicates that agricultural credit (used here as a proxy for the government's financial inclusion initiatives under priority sector lending) Granger causes the production of agricultural food grains. Reverse causality is also evident in this context. This highlights the importance of agrarian credit under priority sector lending in contributing towards boosting agricultural productivity and illustrates a nuanced and interconnected relationship.

Index Terms – Agricultural credit, financial inclusion, economy, farm loan

I. INTRODUCTION

Indian agriculture is mainly characterized by smallholder farming, with an average landholding size of 1.08 hectares (2015-16). A significant 86 percent of all holdings are less than 2 hectares, which constitutes approximately 47 percent of the total cultivated area. Therefore, providing timely and sufficient credit to agricultural households (agri-HHs) at a fair cost is essential for enhancing agricultural output and increasing farmers' income. Without access to credit, farmers struggle to utilize inputs effectively for their agricultural activities. This issue, together with inadequate levels of institutional credit to agriculture before 1969, prompted the Indian government to nationalize commercial banks in 1969, prioritizing agricultural lending. Additionally, to ensure formal credit reaches even the remotest areas, the government established the National Bank for Agriculture and Rural Development (NABARD) in July 1982, transitioning it from a department within the Reserve Bank of India to a key organization promoting credit in agriculture and rural regions. NABARD launched the Self-Help Groups Bank Linkage Program (SBLP) and introduced microfinance concepts into the agricultural domain. Following this, the implementation of the Kisan Credit Card (KCC) in 1998 and the policy aimed at doubling agricultural credit in 2004 significantly boosted the flow of institutional credit to agriculture. These initiatives resulted in remarkable growth in formal institutional credit for agriculture.

For instance, the total outstanding agricultural credit as a percentage of agricultural GDP increased from 16 percent in FY1982 to 42 percent in FY2016. Furthermore, the rate of short-term agricultural credit as a percentage of the agri-input needs rose even more dramatically, from 22 percent in 1990-91 to 123 percent in 2015-16. However, the All India Debt and Investment Survey (AIDIS) conducted by the National Sample

Survey Office (NSSO) for 2012-13 revealed that non-institutional sources account for as much as 36 percent of the total outstanding debt for farming households. In addition, the NABARD All India Rural Financial Inclusion Survey for 2015-16 indicated that institutional sources provided only 72 percent of the loans acquired by an average farm household, with the remaining 28 percent sourced from non-institutional avenues (NABARD, 2018). This reliance on non-institutional sources could be due to their focus on consumption loans for farmers or because tenants, lacking land titles to serve as collateral for bank loans, find it challenging to secure financing from institutional sources. Nonetheless, the fact that a significant portion of loans to agricultural households stems from non-institutional sources, often subject to higher interest rates, highlights the limitations of the formal credit system in fulfilling the overall credit demands of farming families. Another issue that has sparked ongoing debate in the country is the decreasing share of long-term agricultural credit within the total agricultural credit, raising concerns about investments and capital development in the agricultural sector.

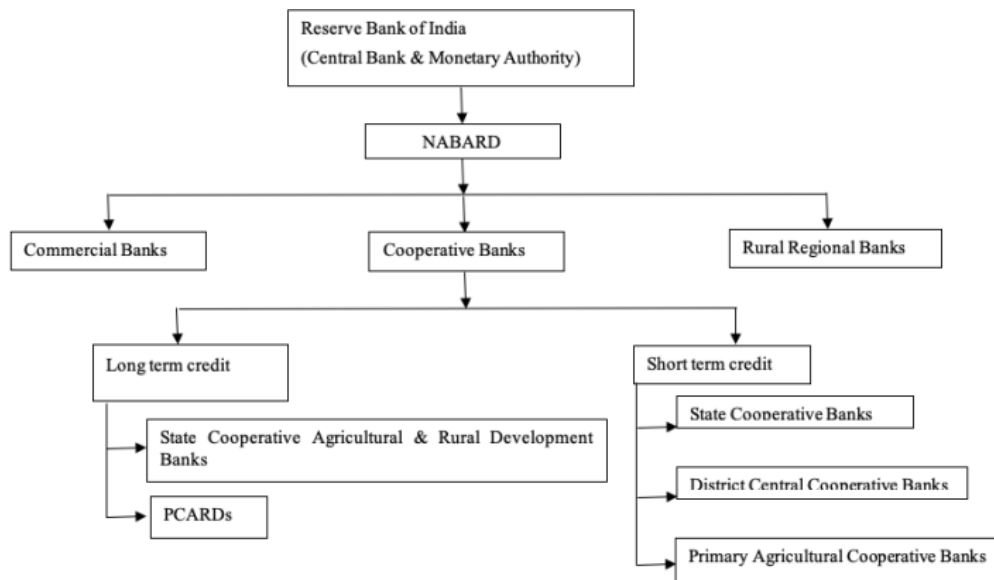


Figure 1: Structure of agricultural credit disbursement in India; Source: Saravanabhavan, S. (2018)

As inferred from Figure 1, The agricultural credit sector in India primarily comprises three key components: commercial banks, cooperative banks, and regional rural banks, with the Reserve Bank of India serving as the top authority and monetary regulator of the country. NABARD was established to oversee and regulate the agricultural credit operations within the Indian agricultural credit sector. Cooperative banks extend short-term credit through state cooperative banks, district central cooperative banks and primary agricultural cooperative banks; they also extend long-term credit through State cooperative agricultural and rural development banks and PCARDs as well. Apart from Cooperative Banks, Commercial banks and Regional Rural banks are also backed by NABARD as institutions extending agricultural credit.

Some of the major Financial assistance programs available for farmers by the government of India were:

- **Pradhan Mantri Jan Dhan Yojana:** Launched in 2014, this scheme aims to achieve financial inclusion by allowing individuals to open a bank account with no initial deposit, along with providing insurance. Any person who doesn't have an account at another bank can open this account at any bank branch.
- **Kisan Credit Card (KCC):** Established in 1998, this scheme is designed to offer farmers timely and adequate credit support through straightforward and flexible processes. Farmers can utilize this credit card to purchase seeds, fertilizers, pesticides, and more.
- **PM Kisan Samman Nidhi:** Initiated in 2018, this program provides financial support to small and marginal farmers in need. Under this scheme, farmers receive an annual financial aid of 6000, disbursed in three installments.
- **Pradhan Mantri Fasal Bima Yojana:** Introduced by the Government of India in 2016, this crop insurance program offers coverage against crop failure to help stabilize farmers' income.

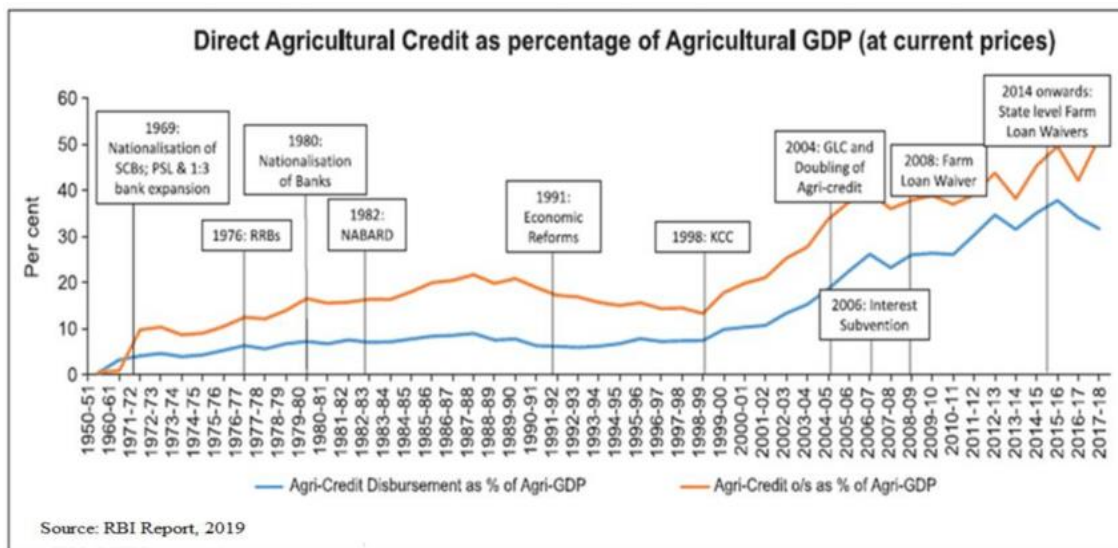


Figure 2: Direct agricultural credit as a percentage of agricultural GDP; Source: Saravanabhavan, S. (2018)

Figure 2 indicates that the proportion of Agri-Credit outstanding to Agri-GDP surged from 0.6 percent in 1950-51 to 9.81 percent in 1971-72. After 1972, this ratio displayed a rising trend until 1987-88, reaching 21.76 percent. The remarkable growth of agricultural credit in relation to agricultural GDP during the 1950s to 1980s can be attributed to the nationalization of banks and the establishment of RRBs, which improved the accessibility of formal credit across the nation. However, a decline in this ratio was noted starting from 1990-91, dipping to 13.34 percent by 1998-99. Following 1999, the ratio rose significantly, climbing to 39.55 percent in 2006-07, signifying that the introduction of KCC greatly enhanced agricultural credit and significantly transformed credit access for the agricultural community. In subsequent years, despite some fluctuations, it stabilized at 49.63 percent in 2015-16 and 51.56 percent in 2017-18. The chart illustrates that the trends of both agri-credit outstanding and disbursement as a percentage of agri-GDP are mainly aligned, with a few exceptions during certain periods. Possible explanations for these discrepancies could include the announcement of loan waivers, which adversely affected borrowers' repayment behaviors and made lending institutions hesitant to provide new loans. Despite these notable successes, agricultural households have continued to rely on non-institutional sources over the years, although this reliance has decreased significantly.

The Jagdish Kapoor Task Force in 1999 on the cooperative credit system suggested the creation of a cooperative rehabilitation and development fund at NABARD. The Vyas Expert Committee on rural credit in 2001 recommended restoring the viability of primary agricultural credit societies (PACs). The dynamics of globalization and financial deregulation have introduced new challenges and opportunities. Given these circumstances, the agricultural sector needs increased credit to bolster the primary production base and invest in farming equipment and essential inputs, enabling higher value addition and export orientation. Continuing its effort to improve credit flow to agriculture by addressing delivery obstacles, the RBI and the Government of India implemented various suggestions and recommendations from numerous committees related to agricultural credit flow. In 1998-99, an innovative credit delivery mechanism was introduced to provide farmers with easy and prompt access to short-term credit for agricultural activities. Consequently, the Government of India launched the "Kisan Credit Card" in 1998 to ensure timely and adequate credit from commercial banks and rural regional banks (RRBs). As of September 2010, approximately 970.64 lakh KCCs had been issued.

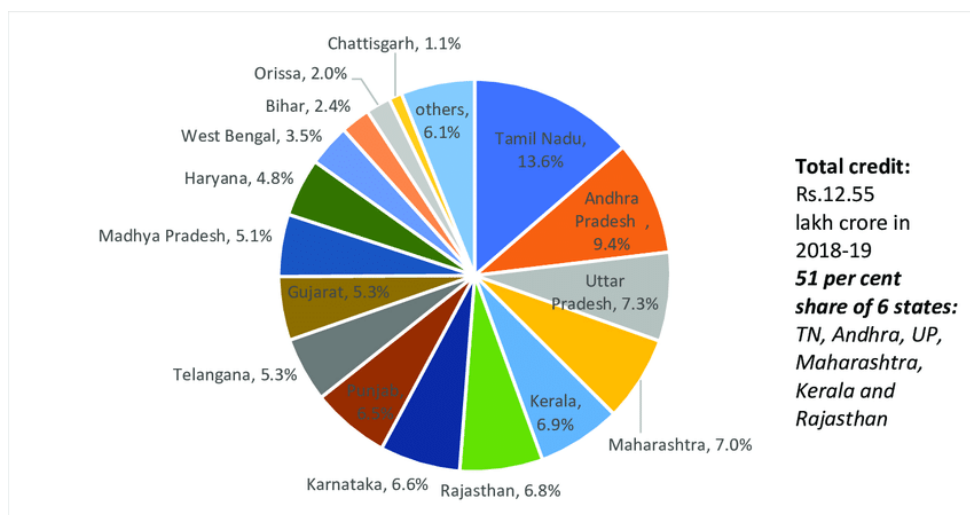


Figure 3: State-wise composition of agricultural credit disbursed in India in 2018; Source: PIB

Typically, six states make up approximately 50 percent of the agricultural credit disbursed each year: Rajasthan (6.8 percent), Kerala (6.9 percent), Maharashtra (7 percent), Uttar Pradesh (7.3 percent), Andhra Pradesh (9.4 percent), and Tamil Nadu (13.6 percent) (Figure 8). Tamil Nadu holds an unusually large portion of India's agricultural credit. At the same time, it is clear that regions in the northeast, along with states such as Jharkhand, Assam, and Himachal Pradesh, receive a smaller fraction of the agricultural credit distributed nationally. Eighteen states, which include those in the northeast, comprised less than a 3.3 percent share of the total agricultural credit allocated in the country.

As per existing literature, some of the key features of Kisan Credit Card schemes are:

- Farmers should have access to adequate and prompt financing options.
- Borrowers' credit needs should be met for an entire year.
- There should be minimal paperwork and simplicity for bank withdrawals.
- Farmers should have the flexibility to withdraw cash whenever needed and buy inputs accordingly, with the option to return any surplus funds when possible.
- Loans should always be available, leading to reduced interest costs for farmers.
- The facility will be approved for three years, with annual reviews, an acceptable operation, and opportunities for expansion.
- There should be the option to withdraw funds from a branch of a financial institution that is different from the bank's branch.
- A Personal Accident Insurance Scheme provides coverage for KCC holders against accidental death or permanent disability up to limits of Rs. 50000/- and Rs. 25000/-, respectively. The card-issuing institutions and borrowers will share the premium cost in a ratio of 2:1. Bankers are encouraged to issue KCC to tenant farmers, sharecroppers, oral lessees, and joint liability groups.

However, it has been also noted that agricultural credit waiver policy announcements by the government are often a politically orchestrated move to garner votes. This not only promotes credit indiscipline among farmers, but also causes problems like a rise in nonperforming assets of banks and mismanagement in debt policy of banks. Farmers often take loans for personal uses under the tag of agricultural purpose, expecting that the government would waive off the debt in the forthcoming elections. In the figure given below, we can see how waiver policy announcements and elections coincide to each other in many states.

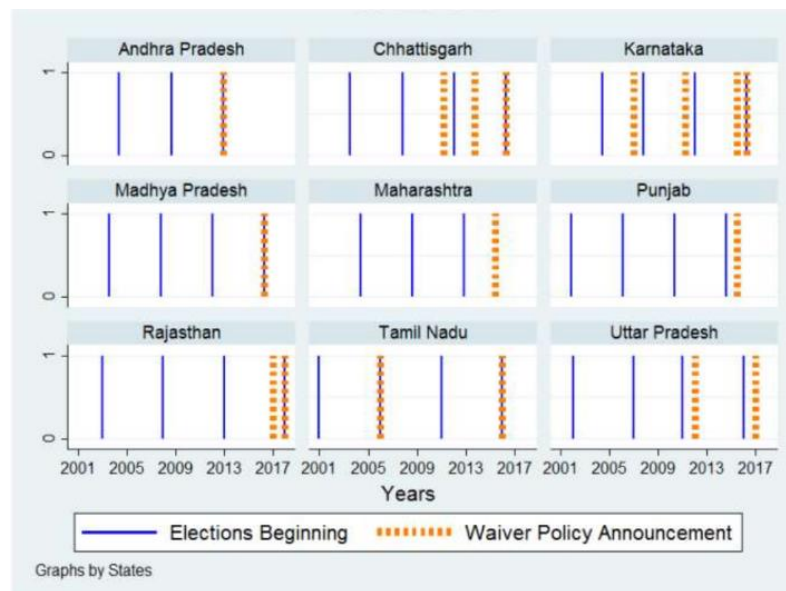


Figure 4: Figurative analysis of coinciding of elections with farm loan waiver announcements; Source: mse.ac.in

The objectives of the research are:

- To find an empirical relationship between agricultural credit disbursed through formal sector lending and agricultural productivity
- To analyze recent policy developments to promote the financial inclusion of farmers
- To analyze trends in disbursement of agricultural credit and give policy recommendations to promote it

2. Literature Review

Meenakshi Rathi, Vivek Sharma (2020) The study aims to analyze the impact of credit access on agricultural productivity in Madhya Pradesh. Based on secondary data compiled from various sources, the research reveals that formal agricultural credit, in real terms, has increased significantly over the past decade. The findings provide evidence of a long-term relationship between agricultural production and credit extended to small and marginal farmers. Results indicate that total agricultural credit has a positive and statistically significant effect on agricultural output in the region. Additionally, the study explores the nature of the relationship between formal credit and crop productivity, which has contributed to an overall improvement in the state's GDP. The research emphasizes the need for the development of more innovative approaches—particularly through the application of econometric financial models—to enhance the availability and accessibility of agricultural credit.

Thomas, Saji (2018) This study examines the recovery performance of State Cooperative Banks in relation to short-term agricultural credit in India. The primary objective is to analyze the trends and patterns of agricultural credit disbursement and recovery among Scheduled Commercial Banks. The study evaluates the recovery procedures and recovery rates across various states. Notably, states such as Madhya Pradesh, Goa, Tripura, Punjab, Telangana, Tamil Nadu, and Andhra Pradesh have reported recovery rates exceeding 50%, while most other states exhibit significantly lower recovery percentages. The paper emphasizes the need for an effective and practical recovery mechanism to facilitate the timely repayment of agricultural credit.

Thakor, Prusty (2017) The paper highlights the importance of effective financial inclusion across all segments of the economy. It was observed that in the state of Gujarat, the savings behavior of tribal communities improved as a result of increased access to banking and financial services in previously unbanked regions. The implementation of the Pradhan Mantri Jan Dhan Yojana (PMJDY) significantly enhanced financial awareness among residents in the study area. According to the analysis, tribal populations that are financially included tend to experience better socio-economic conditions, attributed to increased productivity and the adoption of improved agricultural and livelihood inputs.

Srivastava. K. Vinay, et al (2016) The study was conducted in Udaipur district, Rajasthan, which is predominantly inhabited by rural and tribal communities. It identified a significant gap in access to basic banking services among the poor and underprivileged sections of the region. The research concluded that the Pradhan Mantri Jan Dhan Yojana (PMJDY) has played a pivotal role in advancing financial inclusion within the district.

Hirwe. R (2016) Studied impact of Kisan Credit Card Scheme among the Beneficiary Farmers in Maheshwar block, Khargone District of M.P. The findings of the study indicate that the Kisan Credit Card (KCC) scheme provided by banks has had a significant positive impact on the productivity of beneficiaries in Khargone district, Madhya Pradesh. While beneficiaries received timely financial support through the scheme, they lacked access to necessary technical assistance, which limited the full potential of the program.

Kanel S.S (2016) The study highlighted the significance of the Kisan Credit Card (KCC) scheme in Madhya Pradesh. It was observed that the average landholding size among beneficiary farmers was 3.39 hectares, compared to 3.34 hectares for non-beneficiaries. The cropping intensity was recorded at 140.33% for beneficiaries and 143.78% for non-beneficiaries. Additionally, the educational status of the selected beneficiary farmers showed that 33.33% of large farmers, 19.23% of medium farmers, and 22.22% of small/marginal farmers were illiterate. Among non-beneficiary farmers, the illiteracy rates were 17.64% for large, 24.00% for medium, and 12.50% for small/marginal farmers.

Vallaseri, A.N (2015) The study observed significant transformations between the pre- and post-reform periods. One notable change was the sharp decline in the average size of landholdings in recent years. To support the findings, analytical tools such as Average Annual Growth Rate (AAGR) and ANOVA were employed. The decennial growth rates of both institutional and non-institutional credit were examined, revealing that Regional Rural Banks (RRBs) and Commercial Banks held a dominant position among formal credit sources. The analysis also highlighted marked differences in the overall economy between the pre- and post-reform eras.

Chakrabarty (2010) Study considered financial inclusion as vital means for development, with policymakers view it as a necessity rather than a mere option. It noted that recently, the implementation of financially inclusive policies has become more prominent. Inclusive growth entails not only the need for rapid economic expansion but also that such growth should be widely disseminated across various sectors and encompass a significant portion of the nation's population. It concluded that financial system plays a pivotal role in enhancing the process of inclusive growth.

3. Research Methodology

The research aims to test the impact of the disbursement of agricultural credit on boosting productivity in the agricultural sector through Granger causality analysis. Granger causality checks the degree of causality between two or more time series variables. In this research, we use the agricultural credit disbursed to farmers (in Rs. Crores; current values) from 1987 to 2024 and agricultural consolidated food grain production in tonnes from 1987 to 2024 (Data has been sourced from RBI's handbook of statistics on Indian economy). Here, the agricultural credit disbursed is used as a proxy for the financial inclusion practices of the government, as per mandates of priority sector lending to the agriculture sector by scheduled commercial banks to promote the growth of the agricultural sector.

3.1. Unit root tests (Augmented Dickey Fuller tests)

In statistics, the augmented Dickey–Fuller test (ADF) evaluates the null hypothesis that a unit root exists in a given time series sample. The alternative hypothesis varies based on the specific version of the test utilized, but it typically concerns stationarity or trend-stationarity. This test is an enhancement of the Dickey–Fuller test designed for a broader and more complex range of time series models. The ADF statistic, which is utilized in this test, is represented as a negative number. A more negative value indicates a stronger likelihood of rejecting the hypothesis that a unit root is present at a certain level of confidence. The equation for ADF test is given as follows:

$$\Delta y_t = \alpha + \beta t + \gamma y_{t-1} + \delta_1 \Delta y_{t-1} + \cdots + \delta_{p-1} \Delta y_{t-p+1} + \varepsilon_{t(1)}$$

In this context, α is a constant, β represents the coefficient for a time trend, and p denotes the lag order of the autoregressive model. By imposing the constraints $\alpha = 0$ and $\beta = 0$, one effectively models a random walk, whereas applying the constraint $\beta = 0$ alone corresponds to modeling a random walk that includes a drift. As a result, there are three primary variations of the test that are similar to those found in the Dickey–Fuller test. The null hypothesis for this test, which we can test at 5% level of significance, is:

H0: There exists a unit root problem in the time series data set

H1: There exists no unit root problem in the time series data set

3.2. Granger Causality test

Granger causality is a statistical concept regarding causation that focuses on prediction. If a signal X_1 "Granger-causes" (or "G-causes") a signal X_2 , it implies that the historical values of X_1 provide information useful for predicting X_2 , in addition to the information derived from the historical values of X_2 alone. The mathematical basis for this concept is rooted in linear regression modeling of stochastic processes (Granger 1969). While there are more complex extensions for nonlinear situations, these variations are often more challenging to implement in practice. Granger causality (or "G-causality") was introduced in the 1960s and has been extensively utilized in economics since that time.

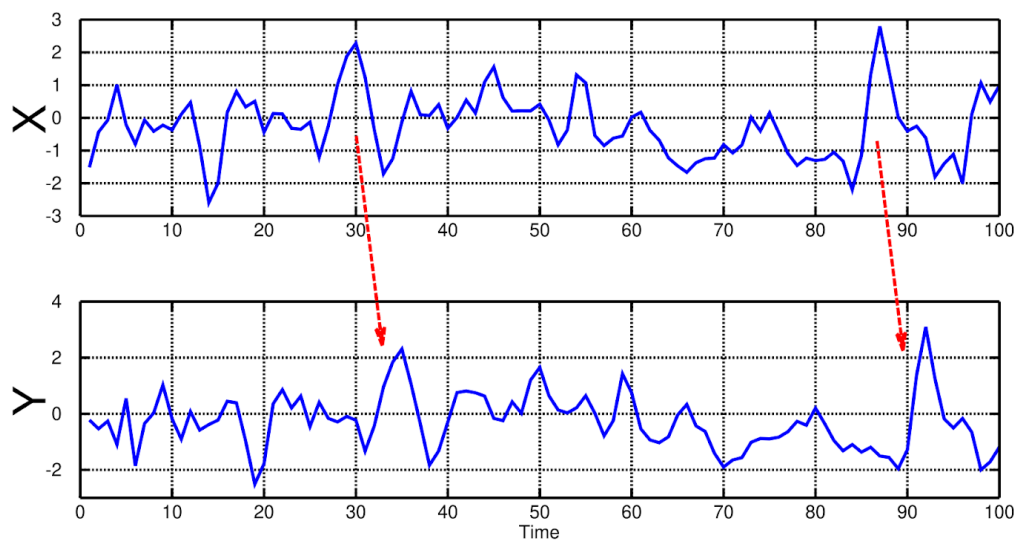


Figure 5: When time series X Granger causes time series Y , the trends observed in X tend to recur in Y following a certain time lag (two examples are shown with arrows). As a result, earlier values of X can be utilized to forecast future values of Y ; Source: medium.com

In granger causality, our null hypothesis set is:

- H0: There exists no degree of causality between the two variables
- H1: There exists causality between the two variables

4. RESULTS AND DISCUSSION

4.1. Augmented Dickey-Fuller Test

To ensure the robustness of our analysis, a stationarity test using the Augmented Dickey-Fuller (ADF) test was performed on the variables. The results indicated the presence of a unit root in the data, suggesting that the variables were non-stationary at their levels. Non-stationary data can lead to spurious regression results, which may distort the interpretation of relationships between variables.

To correct for this issue, the research applied the first difference transformation to each variable. By taking the first difference, the research was able to remove the unit root problem, ensuring that the data became stationary. This transformation allowed us to proceed with further econometric analysis, such as cointegration tests and regression models, without the risk of misleading results. This test would use a null hypothesis that there exists a unit root problem in our data, at 5% significance, and then we test the null hypothesis for the variables and first difference conversion of these variables.

Variable name	P Value	Result
Agricultural food grains production (1987-2024)	1.0000	Don't reject Null Hypothesis; Data is non-stationary
Agricultural credit from Scheduled commercial banks (1987-2024)	0.6358	Don't reject Null Hypothesis; Data is non-stationary
D_Agricultural food grains production (1987-2024)	0.0000	Reject Null Hypothesis; Data is stationary
D_Agricultural credit from Scheduled commercial banks (1987-2024)	0.0000	Reject Null Hypothesis; Data is stationary

Table 1: Augmented Dickey-Fuller Test analysis; Source: Author's analysis

4.2.Granger Causality tests

Based on results of granger causality, we find the degree of causality and reverse causality between the two variables. The results of our granger causality test reveal both linear and reverse granger causality; depicting that while agricultural credit fosters growth in agricultural food grain production, growth in food grain production also boosts banks' confidence to lend loans at cheaper interest rates.

Equation	Excluded	Chi-Square	P-Value	Inference
D_Agricultural food grains production (1987-2024)	D_Agricultural credit from Scheduled commercial banks (1987-2024)	12.656	0.000	Reject Null Hypothesis; we can conclude that agricultural credit granger causes food grain production
D_Agricultural food grains production (1987-2024)	D_Agricultural credit from Scheduled commercial banks (1987-2024)	12.656	0.000	Reject Null Hypothesis; we can conclude that agricultural credit granger causes food grain production
D_Agricultural credit from Scheduled commercial banks (1987-2024)	D_Agricultural food grains production (1987-2024)	10.723	0.021	Reject Null Hypothesis; we can conclude that food grain production granger causes agricultural credit
D_Agricultural credit from Scheduled commercial banks (1987-2024)	D_Agricultural food grains production (1987-2024)	10.723	0.021	Reject Null Hypothesis; we can conclude that food grain production granger causes agricultural credit.

Table 2: Granger causality analysis; Source: Author's analysis

5. CONCLUSION

From the analysis covered in this research so far, it has been agricultural credit (which is used a proxy for financial inclusion practices of the government under priority sector lending), does Granger cause agricultural food grains production. Even reverse causality is seen here. This emphasizes the need for financial inclusion in the agricultural sector and also depicts how financial inclusion and agricultural productivity both exist in a symbiotic relationship with each other. However, this also makes us cautious enough to ensure credit discipline in the agricultural sector, since we have seen that the farm loan waiver policy announcements are often a politically orchestrated move and cause problems like free rider problem, rise in non-performing assets of banks and credit indiscipline among farmers.

REFERENCES

1. Ramakrishna, D. (2017). Agriculture credit reform and financial inclusion in India. *International Journal of Advance Research and Innovative Ideas in Education (IJARIIE)*, 3(1), 1601–1605. ISSN 2395-4396.
2. Nithyashree, R., & Vallabhaneni, M. (2023). A study on the role of financial services in the financial inclusion of farmers. *Saudi Journal of Business and Management Studies*, 8(6), 186–190.
3. Galor, O and Zeira, J (1993). Income Distribution and Macroeconomics. *The Review of Economic Studies*, 60 (1): 35-52.
4. Stiglitz, J E and Weiss, A (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, 71 (3): 393-410.
5. Claessens, S (2006). Access to Financial Services: A Review of the Issues and Public Policy Objectives. *World Bank Research Observer*, 21 (2): 207-40.
6. Banerjee, A V and Newman, A F (1993). Occupational Choice and the Process of Development. *Journal of Political Economy*. 101 (2): 274-98
7. Aghion, P, Howitt, P and Mayer-Foulkes, D (2005). The Effect of Financial Development on Convergence: Theory and Evidence. *The Quarterly Journal of Economics*, 120 (1): 173-222.
8. Saravanabhavan, S. (2018). Understanding the disparity in financial inclusion across Indian states: A comprehensive index for the period 1984–2016 (ISBN 978-81-7791-261-6). Bangalore: The Institute for Social and Economic Change.
9. Abdulaziz, Kabir & Kundu, K.K. & Malik, D.P.. (2021). CONTRIBUTION OF LENDING INSTITUTIONS IN THE GROWTH OF INDIAN AGRICULTURE. 225-233.
10. Meenakshi Rathi, Vivek Sharma (2020) Fueling Agricultural Growth In Madhya Pradesh Through Formal Credit- A Way Towards Financial Inclusion, *BSSS Journal of Commerce* : ISSN-0975-2528 (Print), E-ISSN - 2582-4651, Vol. XII, Issue-I (2020), pp 1-15
11. Thomas, Saji (2018). Recovery Performance of State Cooperative Banks (SCBs) in Short-term Agricultural Advances in India – An Analysis. *NAESCOB Journal of Rural Cooperative Credit and Banking*, 7-9.
12. Thakor,D. & Prusty,R. (2017). Economic Impact of Financial Inclusion on Farmers of Tribal Districts of Gujarat. *Abhinav International Monthly Refereed Journal of Research in Management & Technology*, 6(8), 24-28.
13. Srivastava. K. Vinay, Mukesh Kumar Sharma (2016) Financial inclusion: A study of rural area of Udaipur, *Indian Journal of Accounting*, Vol. XLVIII (1), June 2016, ISSN-0972-1479, pg 190-201
14. Hirwe, Rajendra, Choudhary, Sandhya & Wankhede, A.(2016). Impact of Kisan credit card scheme among the beneficiary farmers in Maheshwar block, Khargone district of M.P. *Social research journals*, 2(8), 20-22.
15. Kanel, S.S. (2016). Performance and Impact Assessment of Kisan Credit Card Scheme on Agricultural Economy in Dhar District of Madhya Pradesh” (Master’s Thesis) Department of Agricultural Economics and Farm Management, Jawahar Lal Nehru Krishi Vishwa Vidyalaya, Jabalpur, 23-66.
16. Vallassari, A.N. (2015). Trends and patterns of Agricultural Credits in India during the post reform period (Master Thesis). Department Of Applied Economics, Cochin University of Science and technology (CUSAT), Kochi. 93-266
17. Chakrabarty, K C (2010). Inclusive Growth – Role of Financial Sector, Address delivered by Dr K C Chakrabarty, Deputy Governor, Reserve Bank of India, at the National Finance Conclave 2010 organised by KIIT University on November 27, 2010 at Bhubaneswar. RBI Documents. Mumbai: Reserve Bank of India.