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DETERMINANTS OF FINANCIAL INCLUSION OF RURAL AGRICULTURAL HOUSEHOLDS IN INDIA

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Abstract

Using nationally representative survey data from 21,648 rural agricultural households, the current study investigates the financial inclusion level among distinct social groups across the major Indian States. The results show that 18.49 per cent of rural agricultural households have no access to formal institutions. Rural agriculture households are more financially included from the banks (78.37 per cent) compared to the post offices (15.39 per cent). Findings further exhibit the low level of financial inclusion and prevailing inequality for financial access among socially disadvantaged groups. Open category agricultural households show a relatively high financial inclusion level compared to socially disadvantaged groups. A logistic regression model is applied to examine the factors influencing the degree of financial inclusion of rural agricultural households, which reveals some interesting facts. The level of financial inclusion from banks and post offices increases with education level, size of landholdings, age, and households belonging to the open category, among others. Further, the chances are high for financial inclusion of men, while the presence of post office increases the probability of financial inclusion of women.

Keywords: Farmers, Financial Inclusion, Personal Finance, Logistic Regression.

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Introduction

In most developing economies, including India, access to finance and the available range of services is limited, which means that financial development benefits cannot be transferred to individuals and small enterprises, leading to the proportion of population in absolute poverty (Jeanneney & Kpodar, 2011). The consequences of lack of financial access are likely to hinder rural development. While economic and financial reforms improve the living standards in rural and urban areas, concerns about inclusiveness with wide disparities between States, social groups, income groups, and by gender continue to grow (IFAD, 2016).

Poverty is now more concentrated regionally (mostly in rural areas) in labour-intensive sectors (agriculture) and among the socially disadvantaged group comprising other backward class (OBC), scheduled caste (SC), and scheduled tribe (ST) (Dhongde, 2017; Thorat et al., 2017). The implication of poverty is more profound and direct, marked by a lagging agriculture sector, income inequality, caste and gender inequality, and growing regional imbalances. Socially disadvantaged groups (mostly rural population) have a dynamic relationship with poverty, and financial access promises to help poverty reduction and stimulate economic development, especially in rural areas (Conroy, 2005; Karlan & Morduch, 2010; Rewilak, 2013). As per Census 2011, the total rural population is 68.8 per cent of the country's population, and agricultural households constitute 57.8 per cent of the rural households in India.

The importance of agriculture sector can be understood by the fact that it shares 64.1 per cent in rural employment, which employs approximately 70.9 per cent of the total workforce and shares 39.2 per cent in net domestic product. (Chand et al., 2017; Netar, 2017). But unfortunately, a large majority of people residing in rural India are excluded from access to financial services (Cnaan et al., 2012; Singh et al., 2014; Iqbal & Sami, 2017). When financial services are available at critical times, they play a vital role in ascertaining whether a poor household has the chance to move out of poverty or weather shock without being pushed deeper into poverty (Baag, 2017). Nevertheless, financial inclusion can act as a catalyst for improving economic growth, income distribution, and opportunities and reducing poverty (Conroy, 2005; Hamada, 2010; Karlan & Morduch, 2010; Rewilak, 2013; Zhuang et al., 2009). However, empirical evidence examining the financial inclusion status of rural agricultural households and its determinants remain scarce in India.

After the initiation of financial reforms in 1991, the Indian banking sector recorded a significant growth and development (Mohan & Ray, 2017). However, a critical area in which the Indian banking sector continues to seek better results is providing financial access to the rural population, especially those working in the agriculture sector. Despite the substantial growth in the banking sector, which is the major driver of financial inclusion in India, 45.57 per cent of households residing in the rural area were financially excluded, according to Census 2011. Majority of the financially excluded rural population in India comprises small and marginal farmers, oral lessees, landless labourers, self-employed and employed people in the unorganised sector, ethnic minorities, socially disadvantaged groups including other backward class, scheduled caste and scheduled tribes, senior citizens, and women (Thorat, 2007 ; Mahadeva, 2008; Singh et al., 2014).

Financial access is fundamentally the same as financial inclusion, and the latter term has become more common since the last decade (World Bank, 2014). The 'Committee on financial inclusion' in India defined it as "The process of ensuring access to financial services and timely and adequate credit when needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost"(Rangarajan, 2008). Allen et al. (2016) defined three levels of financial inclusion as "ownership of formal bank account; use of a formal savings account; frequent use of the account (three withdrawals or more every month)." Most banks

offer an array of financial services; however, the present study focuses on access to the formal account (first level of financial inclusion) for several reasons. First, ownership of a formal account is comparable across the States in India, whereas in the case of credit, it varies by maturity, interest, collateral requirements, etc. Secondly, the formal account provides savings and payment mechanisms that are likely more universal than credit (Allen et al., 2016). Further, even if we assume that 100 per cent of the population demands credit, there is no evidence that everyone deserves credit. Nevertheless, in developing economies, the first challenge is to provide financial access from formal financial institutions to all sections of society (Chakrabarty, 2011; Demirgüç-Kunt et al., 2018).

Against this backdrop, the current study addresses two major objectives using the unit-level data of 21,648 rural agricultural households from AIDIS 2013 (NSSO 70th round data). The first one measures the financial inclusion level of rural agricultural households among distinct social groups across major States in rural India, and the second one explores the critical determinants influencing the degree of financial inclusion in rural areas. Importantly, this study measures the degree of financial inclusion amid rural agricultural households at a macro level and among the distinct social group as well.

Financial Inclusion Initiatives for Rural India

With the formation of credit cooperative societies in India, a greater emphasis has been placed on improving the financial inclusion level among people in rural areas since 1904. The efforts towards financial inclusion intensified after Indian independence (1947) following the recommendation of the All India Rural Credit Survey Committee of 1954. Since then, various initiatives have been taken to facilitate rapid outreach among the unbanked population. The major milestone in improving financial access among rural population includes nationalisation of commercial banks (1969 and1980), lead bank scheme (1970), formation of regional rural banks (1975), National Bank for Agriculture and Rural Development (1982), Kisan Credit Cards for agricultural activities (1998-99) and General-Purpose Credit Cards (2005-06). Financial inclusion has gained significant impetus since 2005 with a more structured and planned approach to address this issue after RBI mentioned the term 'Financial Inclusion' in the Annual Policy Statement (2005-06). In 2005-06, RBI directed banks to open no-frills accounts with zero balance (now known as Basic Savings Bank Deposit account (BSBDA)). In 2008, under the Chairmanship of Dr. Raghuram G. Rajan, a high-level 'Committee on Financial Sector Reforms' was formed (i) to include every section in the growth process, and (ii) to improve stability, resilience and growth. This committee suggested strategies for improving financial inclusion across the country (Rajan, 2013).

In 2011, Swabhimaan initiative was launched by the Indian Banks Association and the Government of India to minimise the economic gap between urban and rural India. This campaign aimed at bringing the economically weaker sections into the manifold of formal banking to ascertain that the benefits of growth pass every section of society, i.e., socio-economic equality. Swabhimaan, a nationwide financial security programme, ensures banking facilities in areas having a population of more than 2000 by March 2012. Through this initiative, the banking sector was expected to reach 73,000 unbanked villages (NABARD, 2018). Most recently, the quantum jump came when GoI launched the Pradhan Mantri Jan-Dhan Yojana (PMJDY) to provide financial access to the unbanked in August 2014. PMJDY aims to ensure the availability of banking services to every section of society in India. According to World Bank Report (2017), 55 per cent of new accounts opened worldwide came from India only, which can be directly attributed to the Government of India's initiatives under PMJDY (Demirgüç-Kunt et al., 2018).

Factors Affecting the Level of Financial Inclusion

Academic literature has consistent evidence

directing towards the advantages of financial inclusion, particularly for individuals with lower-income and rural households. Studies show that financial inclusion is strongly correlated with well-being, economic growth, employment, pro-poverty increased agriculture production, and improvement in business activities of small-scale entrepreneurs (Burgess & Pande, 2005; Dupas & Robinson, 2013; Narayanan, 2016; Tambunlertchai, 2018). In developing countries, including India, financial access itself is a major issue (RBI, 2019b) . Measurement is essential for understanding financial inclusion and the bottlenecks that may hinder people from accessing financial access. Demand-side (consumers' perspective) and supply -side (suppliers' perspective) factors are equally crucial for measuring the level of financial inclusion. However, demand-side factors could not draw much attention from researchers till the recent past due to the unavailability of individual-level data (Klapper & Singer, 2017; RBI, 2019a). The supply-side factors comprise distance from a branch, bank timings, documentation, cumbersome paper procedure and suitability of financial products. At the same time, the demand-side factors like income level, access points, and financial literacy affect the demand for financial services in India (RBI, 2009).

Beck and De La Torre (2007) considered financial access indicators across three dimensions: affordability, physical access, and eligibility. The authors concluded that factors impacting the level of financial inclusion like location, minimum account balances, fees, fees associated with payments, documentation requirements and processing time vary across banks and countries. In a cross-country study, Sarma and Pais (2011) found that total income, education, mobile & internet usage, and location are the critical factors that determine the financial inclusion level in an economy.

Kempson et al. (2004) identified age, geographical location, identity requirement, and psychological and cultural barriers as important factors for identifying those at the risk of banking exclusion. Rhine and Greene (2006) studied the socio-economic and demographic characteristics of the households to learn about the barriers to financial inclusion. The study revealed that unbanked households tend to have low education, lower income, and belong to socially disadvantaged groups. Financial literacy, cultural barriers (religion, ethnicity), lack of need, lack of awareness, perceptions regarding the individual's creditworthiness and financial system (regarding costs of financial products and trust in financial system) are the factors that restrain households/ individuals from accessing financial services, especially involuntary exclusion (Claessens, 2006; Beck & De La Torre, 2007; Karlan et al., 2014).

A study by Cámara& Tuesta (2014) among households in Peru found that income, education, gender, and town size are important characteristics affecting the degree of financial inclusion among households and enterprises. Households living in small towns reduce the probability of financial inclusion. Fungáčová and Weill (2014, 2015) studied the reason for banking exclusion in Asian and BRICS countries, considering the distance, cost, documentation, trust, income, religion and family member having a bank account. The authors reported that lack of money, religious reasons, and family member with at least one account are significant factors impacting financial inclusion levels in Asian and BRICS countries. However, in the case of India, lack of money is the most crucial factor for financial exclusion, followed by lack of trust and distance from the branch.

Zins and Weill (2016) studied household characteristics like gender, age, income, and education to measure the financial inclusion level in African countries. They found that income is a vital factor associated with a high level of financial inclusion, while education is the most significant factor associated with the usage of savings and credit from formal institutions. On a similar line, using the 2012 World Bank Global Findex Database, the analysis made by Allen et al. (2016) pointed out that income, religious reasons, family member having an account (voluntary exclusion),

distance, cost, documentation, and lack of trust (involuntary) are major factors determining the level of financial inclusion among households. The authors concluded that the probability of financial inclusion is higher for educated, richer, older, conveniently located (urban), employed, married and separated individuals. In another study, Soumaré et al. (2016) identified that education, total income, location, employment status, trust in financial service providers, marital status, and households' size are dominant factors in explaining the level of financial inclusion among African nations. In a cross-country analysis, Coffinet and Jadeau, (2017) observed that older, unemployed, lower income and wealth (assets) class households increase the chances of not having a bank account. Tambunlertchai (2018) examined the determinants of financial inclusion among households in Myanmar and reported that to improve outreach, more access points to financial institutions (bank branches) that offer appropriate savings products are needed. Insufficient income, lower level of education, and geographical location (living in the non-urban area) are relatively more dominant factors in determining financial inclusion.

Cole et al. (2013) analysed the household data collected from rural households. It revealed that farm size, financial literacy, education, religion, caste, low income and lack of trust among financial institutions reduce their probability of accessing finance from formal institutions. Chithra and Selvam (2013) observed that income and education have a positive relation with the level of financial inclusion in India. Majumdar and Gupta (2013) concluded that households belonging to socially disadvantaged groups, minority classes, and agricultural labour are most financially excluded. Bhatia and Chatterjee (2010) and Kumar (2013) indicated that the low financial inclusion level in rural areas is majorly due to the absence of bank branches, limited timings of banks, distance from the bank, lack of awareness and low-income level. Singh et al. (2014) examined the determinants among farmers and found that level of education, farm sizes, non-farm income and easily availability of informal credit impact the level of financial inclusion. Bapat and Bhattacharyay (2016) observed the positive relationship between the level of financial inclusion and household characteristics such as age, family type, occupation, expenses and savings classification, housing type, and occupation. Sahoo et al. (2017) observed that education, annual income, land size, and age of household head are significant factors that impact the financial inclusion among tribal people. They concluded that total household income, educational qualification of the household head, and land ownership are significant determinants influencing the level of financial inclusion among disadvantaged groups in India.

The existing literature on financial inclusion largely focuses on measuring the level of financial inclusion from supply-side factors, but there is no significant study from the demand side to measure the degree of financial inclusion of rural agricultural households in India and the factors influencing the level. To bridge the existing gap, the present study investigates the level of financial inclusion and determinants among rural agricultural households.

Data and Methodology

The current study utilises the unit-level household data from the All India Debt and Investment Survey (AIDIS), NSSO 70th round collected from January 2013 to December 2013. Decennial in nature, AIDIS is a national representative sample survey designed to obtain demand-side information on various dimensions like socio-economic characteristics, total assets owned, etc., of agricultural households. The data set furnishes information at the macro level regarding the debt and investment status of 1,10,800 agricultural households. After segregating the agricultural households in the rural area based on the operating agricultural land, we finally ended up with 21,648 observations (the household head is considered representative of the house). Agricultural households are classified on the basis of land holding into marginal (<1.0 ha.), small (1.0 < 2.0 ha.), semi-medium (2.0 < 4.0 ha), medium (4.0 < 10.0 ha) and large (>10.0 ha. and above) (Agriculture Census Division, 2019). This

segregation and statistics give a sense of the progress of outreach of financial institutions among agricultural households. For financial access, financial institutions considered in the current study include banks and post offices.

A binary logistic regression model is used to explain the significance of the identified factors influencing financial inclusion amongst agricultural households. It is a statistical approach used in modelling the relationship of multiple independent variables with the dichotomous dependent (outcome) variable (Agbemava et al., 2016). The 'financial inclusion' (FI) is dichotomous, whereas proposed covariates are a mixture of categorical and dichotomous random variables. Thus, the logistic regression is chosen for the study over others due to the purpose and data structure. Further, the independent variables need not be normally distributed with intervals and equal variance within each group. To make the interpretation easy, we have reported the marginal effects (at means) results instead of odds ratios (Norton & Dowd, 2018).

The study considers gender, age, operational landholdings, total assets, the proportion of income from livestock, education level and social category as the influencing factors (independent variables).

The binary logistic regression model is described as:

$$\pi_i = \Pr(Y_i = 1 \mid X_i = x_i) = \frac{e^{(\beta_0 + \beta_1 x_i)}}{1 + e^{(\beta_0 + \beta_1 x_i)}} \quad (1)$$

which is simplified as:

$$\text{logit}(\pi_i) = \log\left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 x_{i1} + \ldots + \beta_k x_{ik} \quad (2)$$

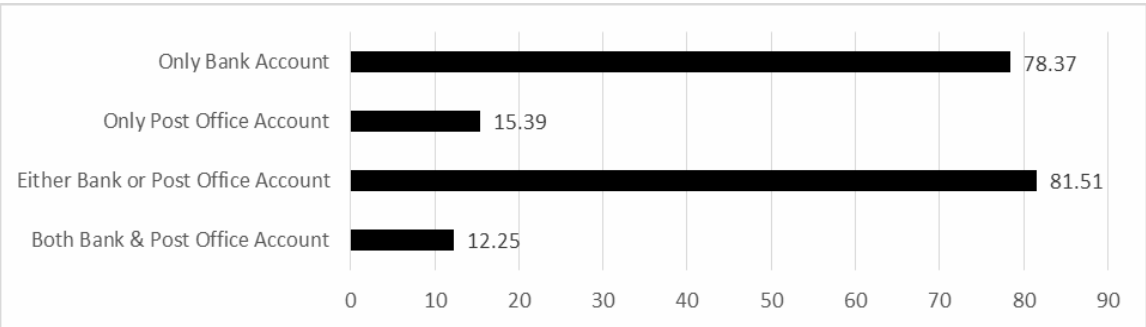
where Y is a binary response variable, $Y_i = 1$ if the trait is present in observation i (agricultural households own at least a bank or post-office account), $Y_i = 0$ if the trait is not present in observation i (agricultural households do not own a bank or post-office account), and $X=(X_1, X_2,...X_k)$ is a set of explanatory variables and can be discrete, continuous, or a combination. The observed value of the explanatory variables for observation i is denoted by x_i .

Empirical Results

While measuring the financial inclusion degree, it has been observed that 18.49 per cent of agriculture households do not have an account with any financial institution. There are four types of account ownership such as banks only, post office, either bank or post office, and both bank and post office, and the current study provides two sets of statistics (Figure 1). Notably, 78.37 per cent of agricultural households possess bank accounts, indicating that the rest, 21.63 per cent, do not have an account with banks. Nearly 84.61 per cent do not have an account with post offices, whereas the rest, 15.39 per cent, have accounts. However, having an account with the post office is least common in most economies (Ansón et al., 2018).

Figure 1

Percentage of agriculture households having financial access.

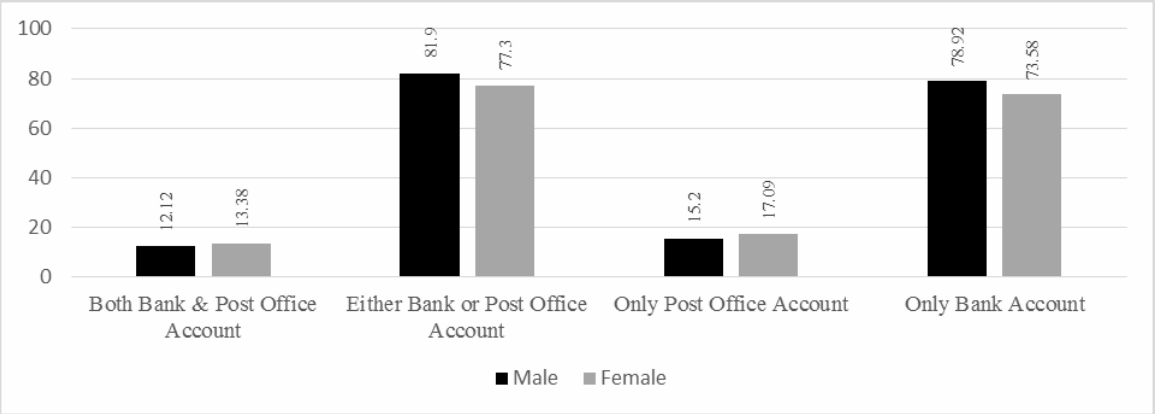


Source: Author's Calculation.

Only 10.3 per cent of the sample rural agriculture households are headed by females, whereas 89.68 per cent are headed by male members (similar results are reported by Mukherjee & Ray, 2014)). The results indicate a gender gap of 4.6 per cent among households, and females are more vulnerable to financial exclusion. Surprisingly, a greater number of females have bank and post office accounts compared to males (Figure 2).

Figure 2

Gender-wise financial institutions accessibility among rural agricultural households

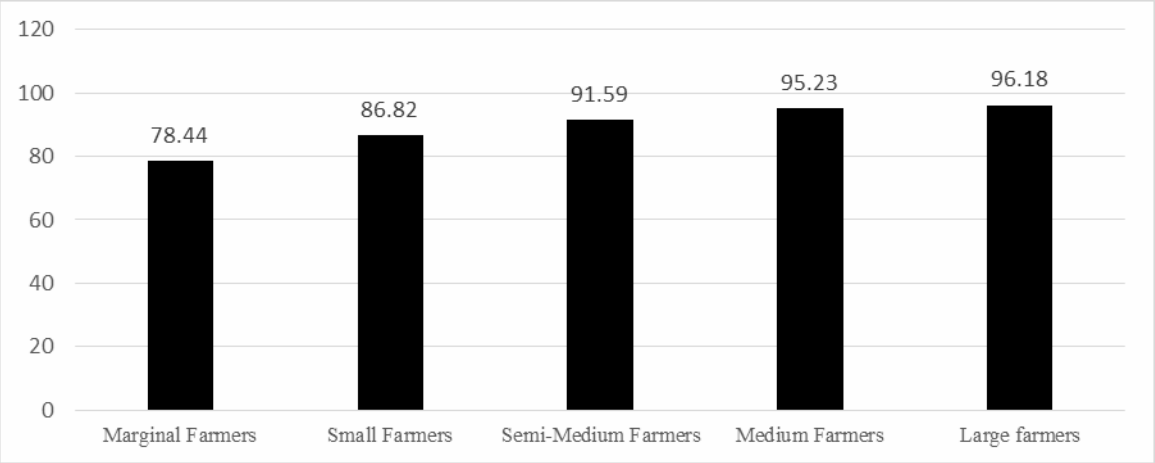


Source: Author's calculation.

The results show that 87.9 per cent of agricultural households of small and marginal farmers own agricultural lands having an area less than or equal to 2.00 hectares. The data shows skewed penetration of banks among farmers. Our analysis indicates that only 78.44 marginal and 86.82 small farmers enjoy access to banks despite the government's policy to encourage financial access from banks (Figure 3). Lack of sufficient and regular income hinders farmers from financial exclusion (Priyadarshini et al., 2020).

Figure 3

Landholding-wise percentage of agricultural households having a bank account (%)



Source: Author's calculation.

The data was analysed further by segregating the agricultural households among distinct social groups in order to check if inequality exists in terms of financial access. This analysis brings certain interesting facts. OBC, OC, SC and ST are caste-based categories in India. From Table 1, it is evident that other backward class (OBC) farmers in Uttar Pradesh have the highest financial inclusion (20.87 per cent), followed by Rajasthan (8.75 per cent), Tamil Nadu (8.6 per cent), Kerala (7.8 per cent), and Madhya Pradesh (7.24 per cent). These top five States constitute more than 50 per cent of the financial inclusion within the OBC category.

On the other hand, financial inclusion in OBC category farmers in States like Nagaland, Meghalaya, and Arunachal Pradesh is found to be zero. In terms of post office accounts, Kerala stands top with 13.51 per cent, followed by Rajasthan (11.61 per cent), Tamil Nadu (10.24 per cent), Maharashtra (6.53 per cent) and Andhra Pradesh (5.69 per cent). On the other hand, it is observed that OBC category farmers in Nagaland, Meghalaya, and Arunachal Pradesh had no post office accounts.

Table 1

Social Group-Wise Farmer's Financial Inclusion across the Indian States Based on AIDIS-2013 Survey (%)

State/ Account Type	OBC		OC		SC & ST	
	Bank	Post Office	Bank	Post Office	Bank	Post office
Andhra Pradesh	2.45	5.69	2.20	3.85	2.71	4.24
Arunachal Pradesh	0.00	0.00	0.18	0.11	1.82	1.15
Assam	3.08	4.55	4.73	8.04	4.55	6.63
Bihar	6.29	4.93	3.97	2.49	1.47	0.88
Chhattisgarh	2.16	3.41	0.07	0.23	4.36	8.83
Gujarat	4.72	2.58	4.04	1.93	3.78	5.04
Haryana	0.97	0.61	3.31	1.59	0.41	0.44
Himachal Pradesh	0.88	1.82	4.48	7.81	2.39	3.80
Jammu & Kashmir	0.88	0.53	7.57	3.40	2.33	0.88
Jharkhand	2.16	2.96	1.09	1.70	3.29	6.10
Karnataka	4.69	5.31	3.69	3.62	2.69	2.39
Kerala	7.80	13.51	5.88	11.78	1.41	1.50
Madhya Pradesh	7.24	4.93	4.17	3.28	7.41	6.36
Maharashtra	6.75	6.53	12.50	10.99	4.21	2.83
Manipur	1.89	1.90	0.80	0.11	2.54	0.88
Meghalaya	0.00	0.00	0.29	0.11	3.97	0.97
Mizoram	0.03	0.00	0.00	0.00	2.56	6.01
Nagaland	0.00	0.00	0.04	0.00	3.05	1.06
Odisha	4.12	4.78	3.15	2.83	5.60	6.10
Punjab	0.41	0.23	3.89	1.93	1.13	0.62
Rajasthan	8.75	11.61	3.91	4.98	7.63	8.04
Sikkim	0.88	0.76	0.00	0.00	1.65	1.15
Tamil Nadu	8.60	10.24	0.27	0.23	3.52	3.45
Telangana	2.13	3.26	0.84	0.45	2.20	2.56
Tripura	0.48	0.46	1.22	0.11	3.84	1.15
Uttar Pradesh	20.87	5.69	13.48	5.32	12.56	1.86
Uttaranchal	0.24	0.23	2.35	2.94	0.53	1.06
West Bengal	1.57	3.49	11.88	20.16	6.41	14.05

Source: Author's calculations.

Similar to the OBC category, farmers from other castes (OC) category in Uttar Pradesh are more financially included through banks (13.48 per cent), followed by Maharashtra (12.5 per cent), West Bengal (11.88 per cent), Jammu & Kashmir (7.57 per cent) and Kerala (5.88 per cent). These top five States constitute more than 51 per cent of bank accounts within the OC category, whereas the financial inclusion level of OC category farmers in Mizoram and Sikkim is zero. In terms of post office accounts, West Bengal stands on top with 20.16 per cent, followed by Kerala (11.78 per cent), Maharashtra (10.99 per cent), Assam (8.04 per cent) and Himachal Pradesh (7.81 per cent). These five States constitute more than 58 per cent of post office accounts within the OC category. On the other hand, OC category farmers in Nagaland, Mizoram and Sikkim have no post office account.

Similar to OBC and OC categories, farmers from scheduled caste and scheduled tribe (SC & ST) category in Uttar Pradesh are more financially included by banks with 12.56 per cent. It is followed by Rajasthan (7.63 per cent), Madhya Pradesh (7.41 per cent), West Bengal (6.41 per cent) and Odisha (5.6 per cent). These top five States constitute more than 39 per cent of bank accounts within the SC & ST category. Unlike OC and OBC categories, there are no zero financial inclusion States in the case of SC & ST category farmers. However, SC & ST category farmers in Uttaranchal and Haryana stand least in financial inclusion, with less than one per cent. In terms of post office accounts, West Bengal stands top with 14.05 per cent, followed by Chhattisgarh (8.83 per cent), Rajasthan (8.04 per cent), Assam (6.63 per cent) and Madhya Pradesh (6.36 per cent). These five States constitute more than 43 per cent of post office accounts within the SC & ST category. On the other hand, post office accounts of SC & ST category farmers in Punjab and Haryana are less than one per cent.

The study sought to determine the factors impacting the financial inclusion level among agriculture households. Table 2 depicts the logistic regression (marginal effects) estimates of the factors influencing the financial inclusion level among the Indian agricultural households in rural areas. We consider the following four types of accounts as a measure of financial inclusion: owning only a bank account, owning only a post office account, owning either bank or post office, and owning bank and post office accounts together.

The results show that the probability of being financially included is higher among male farmers than female counterparts when the bank account is considered the financial inclusion measure. These findings support the World Bank's finding of gender inequality with respect to financial access in developing economies (Demirgüç-Kunt et al., 2018). On the contrary, when we consider the post office account as a financial inclusion indicator, it is positive and statistically significant. This indicates that a post office account makes women more financially included than a bank account. The post office might be in the same village compared to the bank branch, which is located in semi-urban areas. Besides, the location (distance from home to bank) and minimum balance criteria with the bank could be a major concern for the farmers. Age is positively related to financial inclusion and is identical across all four types of financial inclusion measures. Age is negatively and statistically significant except in the case of post office accounts. It clearly indicates a non-linear relationship between the age of the head of household and financial inclusion. This result corroborates with Allen et al. (2016) and (Fungáčová & Weill, 2015).

Land is positively related to financial inclusion except in the case of post office accounts. As the land size increases, not only the farmers' financial needs go up but also their socio-economic status pushes them to have a formal financial account with banks more than the post offices. The nature of the account could be a major reason for this kind of result. Banks provide savings and loan account services, while the post office simply provides the savings account only. Unlike land, total assets are positively related to financial inclusion across all financial inclusion measures. Higher total assets make the farmers economically well off; thus, they will try to use more financial products than farmers

holding lower (less) total assets. If the major income comes from livestock, then there is a probability of having a bank account than the post office account. Since income from the livestock enables the farmers to make continuous financial transactions, the bank account serves the purpose much better than the post office. Therefore, farmers whose major income source is livestock will have bank accounts than post office accounts. Similarly, education is positively significant across all types of financial inclusion measures. Compared to illiterate, educated farmers have a better understanding of the benefits of financial inclusion, and thereby they tend to open bank and post office accounts.

Regarding distinct social groups, the probability of financial inclusion of agricultural households in the OC category is higher than those in OBC and the SC&ST categories. Similar to OC, the OBC and SC & ST farmers also tend to have a bank account than a post office account. Overall, most of our findings are in line with studies carried out by Allen et al. (2016) and (Fungáčová & Weill, 2015) in terms of the factors determining the financial inclusion among Indian farmers.

Table 2

Logistic Regression Estimates of Factors Influencing Financial Inclusion

Variable	Only Bank	Only Post Office	Either bank or post office	Both (Bank & Post Office)
Female	-0.01*	0.02***	-0.01	0.02***
	[-1.71]	[2.87]	[-1.57]	[2.90]
Age	0.01***	0.00**	0.01***	0.01***
	[10.60]	[2.56]	[9.66]	[4.73]
Age^2	-0.00***	0.00	0.00***	0.00***
	[-8.22]	[-1.55]	[-7.32]	[-3.47]
Land	0.05***	0.00	0.05***	0.00***
	[16.53]	[1.10]	[15.99]	[2.87]
Total Assets	0.00***	0.00***	0.00***	0.00***
	[6.40]	[2.85]	[6.55]	[3.06]
Income from Livestock	0.03**	-0.02	0.01	0.00
	[2.49]	[-1.46]	[1.41]	[-0.23]
Education	0.10***	0.03***	0.08***	0.04***
	[17.29]	[4.96]	[16.04]	[8.03]
Other Backward Class	0.10***	-0.01	0.08***	0.02***
	[15.63]	[-1.70]	[12.82]	[2.71]
Other Caste	0.12***	0.00	0.09***	0.02***
	[14.96]	[-0.18]	[12.83]	[3.63]
Schedule Casts & Tribes	0.10***	-0.01	0.08***	0.01
	[11.93]	[-1.09]	[10.81]	[1.07]
Observations	21648	21648	21648	21648
Pseudo R^2	0.070	0.005	0.0663	0.0127
Log-Likelihood	-10512	-9253	-9675	-7950

Note: This table reports logit estimates of the financial inclusion determinants in rural India. The dependent variable is mentioned at the top of each column. Reported coefficients show marginal effects (at means). Here, parentheses include robust Z-statistics. ***, **, and * indicates significance level at 1, 5 and 10 per cent, respectively.

Source: Author's Calculation.

Conclusion

The current study highlights the financial inclusion status among agricultural households and different social groups in rural India. Approximately 20 per cent of agricultural households do not have access to any financial institution. Findings reveal that farmers' financial inclusion level across distinct social groups has not been satisfactory. Farmers are more financially included with banks as compared to the post office. However, due to the extensive branch network, the post office can act as an alternative vehicle to reach the unbanked population in remote areas. Inequality still exists across all States with respect to financial inclusion between distinct social groups in India. OC rural agricultural households are more financially included than OBC and SC & ST categories, while SC& ST category is least included in formal financial institutions.

Logistic regression results disclose that education, size of land, age, total assets, and social group are the significant factors impacting the level of financial inclusion among rural agricultural households. Education level has been the most significant predictor of financial inclusion; low education level lowers the likelihood of financial access from banks and post offices. Therefore, one way of augmenting financial inclusion among rural agricultural households is to focus on providing education rather than focusing exclusively on access to formal financial institutions. The size of land is one of the major socio-economic factors that affect the degree of financial inclusion among agricultural households. The larger the size of agricultural landholding, the higher the probability of having a formal account with financial institutions. Further, the results show the prevalence of gender inequality in accessing formal financial institutions. Male farmers have higher chances of owning an account with financial institutions than females. Receiving additional income from livestock makes the farmers more financially included. It further addresses the issue of financial inclusion amongst different social groups. Irrespective of the social group, rural agricultural households are more likely to own a bank account than a post office account. Agrarian households belonging to other castes have a better probability of bank account ownership than the social disadvantage population (OBC, SC & ST categories). Addressing these determinants can enhance the financial inclusion amongst rural agricultural households in India.

As a future scope of the study, it would be interesting to analyse the determinants of financial inclusion with regard to the size of the landholding owned by marginal, small, semi-medium, medium, and large farmers to get further insights from the policy perspectives.

Author's contribution

Sonia Antil: Preparation of the first draft, identification of the research problem, critical review of literature and collection of relevant data for the study.

Niranjan Swain - Editing of the first draft, added inputs to the introduction, literature review and conclusion in the second draft.

Mukesh Kumar—Editing of the final draft, econometric analysis and presentation of empirical results.

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