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Determinants of Rural Financial Inclusion in India: A Short Note using the AIDIS 2019

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ABSTRACT

The present study utilizes the latest All India Debt & Investment Survey released in 2019 to examine the factors shaping rural financial inclusion across 28 selected states of India. A fresh set of socio-economic factors are incorporated into the analysis of financial inclusion determinants identified through a rigorous review of literature. Rural asset ownership including land, rural wealth inequality, education, rural population density, and rural unemployment are located as the key determinants. Elasticities of financial inclusion, measured from a deposit perspective, concerning these variables are worked out using a log-log regression model. The study found that improvements in the level of wealth ownership, education, and population density can promote rural financial inclusion. However, inequality in distribution of rural wealth, higher land ownership amongst indebted households, and higher rural unemployment worsens financial inclusivity in rural India. Furthermore, results show considerable robustness across gender-based inclusion measures; though, the size of the estimated elasticities differs across gender-specifications of financial inclusion.

HIGHLIGHTS

◎ Rural financial inclusion is examined across genders through a unique socio-economic database.
◎ Wealth and its distribution have a significant impact on inclusivity in rural India.
◎ Gender differences are reflected in the size of the estimated elasticities but not the direction.

Keywords: Development Economics, Econometrics, Financial Inclusion, Log-Log regression, Rural Economics, Wealth Distribution

Inclusive economic growth is a fundamental policy concern in India, especially since the advent of the structural economic reforms of the early 1990s. By promoting economic expansion along with increased access to institutional finance, the ability of the vulnerable and weaker sections to participate in the growth process can be improved. Consequently, the quality of economic progress can be enhanced and the gains from growth can be dispersed more equitably. The prominence of financial inclusivity as a policy aim is also well reflected in the volume of literature dedicated to this issue in the Global and Indian contexts. The international community has also recognized financial inclusion as a policy lever for fairer and equitable development, as reflected

in the Sustainable Development Goals (SDGs) 1, 8, 10 and 16. The literature in the Indian context has particularly focused on composite financial inclusion – assumed to be homogenous across genders and regions. However, the challenge of financial exclusion can manifest itself heterogeneously over genders and regions. The focus on composite financial inclusion could be better complemented with an analysis of inclusion at narrower levels of abstraction. There is a need to focus more actively on

inter-region and inter-gender financial inclusion in the Indian context. The present study is a short note to address this need. It assesses the determinants of financial inclusion in rural India across alternative gender specifications including the composite perspective. This task is further enriched by the use of a unique database that focuses on the financial conditions of the vulnerable sections of Indian society – namely the All India Debt & Investment Survey (AIDIS). The latest round of this survey was conducted in 2019 by the National Statistical Office (NSO), and the data provided in the AIDIS – 2019 report at the state-level are deployed in the present study.

LITERATURE REVIEW

Analysis of the factors shaping financial inclusion in the international and domestic literature has generally been undertaken from either the macroeconomic perspective (such as Chithra and Selvam 2013, Olaniyi and Adeoye 2016, Ajide 2017, Uddin *et al*. 2017, Eldomiaty *et al*. 2020, Ozili 2020, Liu *et al*. 2021, and Kuznyetsova *et al*., 2022) or the microeconomic approach (Kuri and Laha 2011; Bapat and Bhattacharya 2016; Soumaré *et al*. 2016; Zins and Weill 2016; Rashdan and Eissa 2020; Khan and Alhadi 2022). The disaggregated microeconomic approach has been rather the most prominent choice amongst analysts both internationally and within India. Another strategy to examine the determinants of financial inclusion adopted in the literature is through a demand-oriented (e.g. Dar and Ahmed 2020; Mindra *et al*. 2017; Ozili 2021) or a supply-side perspective (e.g. Ajide 2017; Uddin *et al*. 2017; Le *et al*. 2019; Wokabi and Fatoki 2019; Eldomiaty *et al*. 2020; Ain *et al*. 2020; Mhlanga and Dunga 2020; Rambaud *et al*. 2022; Tsouli 2022; Murshed et al. 2023). Different combinations of the micro and macro approaches with the demand and supply frameworks have allowed analysts to examine the determinants of financial inclusion from diverse angles. The dominance of socio-economic factors in extant literature indicates that perhaps a demand-side microeconomic approach has been the primary analytical tool. This has resulted in a large number of evidence using either cross-sectional or panel data approaches while employing disaggregated socio-economic data. The present study adopts this dominant analytical approach and uses a

microeconomic demand-oriented framework as explained in the next section.

RESEARCH METHODS

Identification of variables, key hypotheses and the theoretical model

The present study measures financial inclusion in terms of the proportion of the adult population, above 18 years of age, in the rural regions having a bank account in any of the Scheduled Banks as obtained from the AIDIS – 2019. This variable is used specifically for rural males (FI_M), rural females (FI_F), and rural total (FI_T). The measurement of financial inclusion is a complex issue. There are different measures used in the literature ranging from a single indicator approach (Kuri and Laha, 2011; Olaniyi and Adeoye, 2016) such as the one adopted in this study to multiple indicator approaches using parametric (Chithra and Selvam, 2013; Sarma, 2016) or non-parametric methods (Datta and Singh, 2019; Tsouli, 2022). The data availability in the AIDIS – 2019 restricts the usage of multiple indicators and hence a single indicator approach has been employed.

There are a large number of potential determinants of rural financial inclusion. Hence, a prudent choice needs to be made in order to strike a balance between the data availability and the theoretical appropriateness. Furthermore, identifying variables that can capture deeper socio-economic forces at play in the process of financial inclusion can be achieved by using a dataset that has granular information on such dimensions. Hence, this study employs the data contained in AIDIS-2019 which provides a rich source of information on wealth, income, indebtedness and related dimensions at the grassroots level.

Exclusion from formal finance can be construed as a form of socio-economic inequality as it skews the distribution of income and more importantly of wealth unfavourably for the vulnerable sections of society. Due to limited access to stable, regulated and affordable financial resources, those at the lower percentiles in the income distribution are prevented from accumulating capital. Lack of capital accumulation hinders their ability to generate income and move out of the clutches of prolonged indebtedness. The duration of the

indebtedness cycle – the average time that a rural borrower would spend being indebted to informal sources, gets lengthened. Such conditions would not permit sufficient savings and hence would prevent the usage of formal sources. Achieving a certain threshold level of savings is necessary for an average rural poor person to utilize formal financial sources. Whether it is opening a basic savings bank account or more relevantly availing of a loan from a formal institution, sufficiency in the level of savings is needed to qualify for the same. Savings, if undertaken on a continuous basis, can allow the creation of wealth – i.e. assets that can yield income over and above what is earned via labour. Hence, the first determinant is identified as the average value of assets owned per household (AVA) in rural areas. The expected sign of this coefficient is positive.

However, the information on the average value of assets per household masks the distribution of the same. An adversely skewed wealth distribution could prevent the vulnerable sections from being able to save sufficient resources that are critical for shifting to formal finance. Institutional lenders have stricter eligibility requirements, and a lack of savings and assets could prevent access to valuable secured loans. With wealthier households controlling a higher proportion of rural assets, the leverage available to the poorer households is further restricted. Hence, the second variable is identified as the inequality in the distribution of wealth, measured by the Gini coefficient of the average value of assets per household (i.e. WINQ). The expected impact of WINQ is negative. These two factors – namely AVA and WINQ, represent the social dimension of financial exclusion as their emergence can be located in complex socio-cultural processes that manifest themselves slowly over time into the very structure of society. The present paper links wealth distribution with financial inclusion through these two variables which the literature has not adequately addressed.

Level of education (EDU), population density (PDEN) and land ownership amongst indebted households (LOWN) are the other three socio-economic factors identified as determinants in this study. EDU is measured by the Gross Enrolment Ratio (GER) in 11th and 12th standards in rural regions of Indian states. The decision to use GER

for higher secondary education is to also roughly proxy the level of financial literacy in rural regions. If increased enrolment is being made at the higher secondary level, perhaps, the use of mobile banking and the internet would also improve as the population becomes more aware of the financial system around them. Hence, it is expected that EDU will have a positive impact on financial inclusion. PDEN is a measure to broadly capture the economies of scale that formal institutions can enjoy when expanding their operational reach. With higher population density, the cost of banking services can be reduced leading to better incentives for expanding the delivery channels and mobilizing deposits (Olaniyi and Adeoye, 2016). This could foster better financial inclusivity through the push approach – indicating that the formal institutions try to reach the last mile person rather than the pull approach – where the last mile rural person has to approach these institutions. Hence, it is hypothesized that PDEN has a positive impact on inclusion.

The rural economy has a higher dependency on land, which is increasingly being transferred from rural communities to profit-seeking entities (Nielsen and Oskarsson, 2017). Additionally, a large portion of rural wealth is stored in the form of land (Subramanian and Jayaraj, 2008). Land ownership pattern is also closely associated with the incidence of indebtedness through the income channel because those owning smaller land parcels are more prone to lower levels of income than those with larger landholdings (Reddy *et al.* 2020). Moreover, with more land ownership amongst indebted rural households, their ability to leverage the asset to clear the informal debts and shift to formal sources can improve leading to better financial inclusivity. Hence, the hypothesized impact of this variable is positive. The data on all the variables enlisted above are sourced from the AIDIS – 2019. An additional variable incorporated into the analysis of the determinants is the level of unemployment (UNEMP). This is defined as the number of persons unemployed as per the 'usual status' definition. Data are sourced from the RBI Handbook of Statistics on Indian States for the year 2019-20. It is expected that higher rural unemployment rates will lead to a worsening of rural financial inclusion. In other words, it will increase the extent of exclusion

– perhaps through the contraction of savings and increased substitution towards the informal sources of credit. Given that informal sources already are a preferred source of finance among rural households (Ray, 2019), increased unemployment would only worsen their dependency on such sources of finance. Given the discussion above, the theoretical model is specified as shown in equation one.

FI_T = f (Assets, Wealth Inequality, Education, Population Density, Incidence of Land Ownership amongst indebted households, Level of Unemployment, error term) ...(1)

Econometric methodology

Determinants of financial inclusion have been examined through diverse econometric perspectives in the extant literature. Studies focusing on the disaggregated dynamics have generally chosen to employ qualitative regression approaches on lines of probit, tobit or logit models (e.g. Kuri and Laha, 2011; Chithra and Selvam, 2013). Analysts have also employed panel econometric models to capture the dynamics of financial inclusion across space and time (e.g. Uddin *et al.* 2017). Interestingly, there is very little evidence using time series econometric approaches. The present study is a short note on the factors that can enable or constrain the level of financial inclusion across states. Given the cross-sectional nature of this issue, the underlying hypotheses, and the distribution of individual variables, a double-log regression model is employed within the ordinary least squares framework. The analysis of determinants necessitates estimating of the impact emerging from the selected variables on financial inclusion. The direction of the impact and its size both are critical elements in this analysis. Furthermore, heteroskedasticity can be a major issue in estimations using cross-sectional data. Hence, logarithmic transformations are utilized where applicable, to help prevent this issue to a considerable extent. Furthermore, this permits the interpretation of the coefficients as elasticities.

RESULTS

Before delving into the estimates, an overview of the interstate distribution of chosen variables is presented in Table 1. The level of financial inclusion is well anchored at a higher level across the states for both males and females, but inclusion for the female adult population remains lower than that of males indicating a gender gap in financial inclusion. Asset ownership across states has shown considerable variability as indicated by the gap between the minimum and maximum values of AVA. Similarly, the inequality in the interstate distribution of wealth ownership shows wide differences as indicated by the minimum and maximum values of WINQ.

The level of education at the higher secondary level has been rather weak as indicated in the mean value of EDU. The concentration of population (PDEN) has shown considerable interstate variability as indicated by its standard deviation. It is also noteworthy that the majority of the indebted households in rural India own land as depicted by the median value of LOWN. This variable is also considerably homogenous across the selected 28 states. Lastly, unemployment has been considerably diverse across the states as seen in the standard deviation of UNEMP. The descriptive summary of the chosen variables reveals that Indian states have experienced heterogeneous socio-economic conditions. Specifically, rural females have remained at a disadvantage in terms of inclusivity in the formal financial system. There is thus a need to understand if there are important differences in how financial inclusion manifests itself across the genders. The results in the next section attempt to address this concern.

The econometric model adopted in this study is shown in equation two. All the variables except the level of unemployment are specified in logarithmic form. The estimates are worked out for three different dependent variables – namely the level of financial inclusion for rural males, rural females, and total rural population. This approach permits the analysis of how gender differences affect the phenomenon of financial inclusion.

$lnFI = \beta_0 + \beta_1 lnAVA + \beta_2 lnWINQ + \beta_3 lnEDU + \beta_4 lnPDEN + \beta_5 lnLOWN + \beta_6 UNEMP + \varepsilon$ ......(2)

DISCUSSION

The results contained in Table 2 indicate important inferences. For composite financial inclusion – aggregated over genders and represented by Model 1, states with higher accumulation of assets, better educational participation, and higher population density have experienced higher inclusivity. These three factors continue to show a positive role in the

Table 1: Descriptive estimates of the chosen variables across the 28 states

Statistics	FI_M	FI_F	FI_T	AVA	WINQ
	%	%	%	Rs. per household	Gini coefficient
Minimum	51.10	35.20	43.90	532.00	0.40
Mean	87.05	77.75	82.48	2058.86	0.56
Maximum	97.60	95.00	94.40	6434.00	0.72
Median	89.75	79.25	83.95	1493.00	0.56
SD	8.96	12.37	10.19	1447.40	0.07
Statistics	EDU	PDEN	LOWN	UNEMP	
	%	Persons per sq. Km.	%	Persons per thousand population	
Minimum	30.80	17.00	79.40	11.00	
Mean	53.28	364.64	92.21	53.50	
Maximum	83.40	1106.00	99.50	258.00	
Median	52.95	308.00	93.90	43.00	
SD	14.75	290.71	5.25	46.57	

Note: *SD is Standard Deviation;* **Source**: *Authors' estimation using AIDIS – 2019 data.*

Table 2: Empirical Estimates

Sl. No.	Variable	Model 1 $\ln FI_T$	Model 2 $\ln FI_M$	Model 3 $\ln FI_F$	Expected Sign	Actual Sign
1	Constant	6.92*** (5.577)	6.13*** (6.021)	7.94*** (4.584)	N.A.	N.A.
2	lnAVA	0.04$^\$$ (1.541)	0.05** (2.483)	0.02 (0.741)	+	+
3	lnWINQ	-0.23* (-1.845)	-0.20* (-1.927)	-0.28$^\&$ (-1.593)	-	-
4	lnEDU	0.12* (1.994)	0.08$^\%$ (1.684)	0.16* (1.956)	+	+
5	lnPDEN	0.03* (2.056)	0.02 (1.488)	0.05** (2.261)	+	+
6	lnLOWN	-0.77*** (-3.042)	-0.55** (-2.674)	-1.05*** (-2.970)	+	-
7	UNEMP^	-0.002*** (-7.456)	-0.001*** (-7.783)	-0.002*** (-6.637)	-	-
R^2		0.82	0.81	0.79	N.A.	
F-statistic		15.92***	15.92***	13.52***	N.A.	
White's Test statistic for Heteroskedasticity		10.948 [0.533]	14.49 [0.270]	12.10 [0.437]	N.A.	

Notes: *1. ***, **, and * indicate significance at 1%, 5% and 10% levels of significance respectively; 2. '$' indicates significant at 14% level, '&' indicates significance at 12% level, and '%' indicates significance at 11% 3. ^ The coefficient of unemployment variable is linear and not logarithmic. Hence, an interpretation of the elasticity may be made after multiplication by 100; 4. Values in rounded brackets indicate t-ratios; 5. Value in squared bracket indicates p-value; 6. Data on 28 states have been employed. Telangana was dropped due to data constraints. Jammu and Kashmir has been included as its conversion to a Union Territory occurred later in 2019.* **Source**: *Authors' estimation using data from the AIDIS – 2019.*

inclusion process for male and female populations. However, AVA has the most significant impact in the case of the male population and does not have a significant impact in the case of the female population. A higher amount of average asset ownership across households can indicate the ability of the population to substitute labour income for asset-based income.

Given that the rural economy faces higher volatility and seasonality due to agro-dependency, possessing a higher value of assets could permit such households to generate sufficient savings that can be absorbed into the formal financial system via opening a bank account. More importantly, such households will be motivated to use the bank accounts regularly leading to a lesser gap between access and usage of formal finance in rural India. The higher importance of this variable for the male population could be indicative of deeper socio-cultural forces at play that might be preventing women from controlling

more assets of households. Perhaps, the distribution of authority over household assets is higher with males in rural regions and hence this variable could show a statistically significant and positive impact on inclusion amongst the male population.

With respect to education, larger participation of females at higher secondary levels yields a larger positive impact on financial inclusivity in rural regions as indicated by the coefficient of EDU for Models 2 and 3. Better participation at higher levels of education can also improve the financial literacy of women, permitting them to reap the benefits of formal financial products. With better knowledge about financial issues, women would be motivated to open bank accounts and utilize banking services. The variable PDEN also shows a clear orientation towards the female population as seen by its estimated coefficient in Model 3. A higher density of population in rural regions promotes inclusivity amongst female populations more than that of the male population as per the estimated results. Literature has found that higher population density helps to reduce the costs of providing banking services, suggesting a supply-side relationship between this variable with inclusion. With lower costs, banks are motivated to approach potential customers proactively resulting in an improved rate of account opening. Rural regions are characterized by weaker banking infrastructure compared to urban regions. With higher density, the market size is larger and the costs of providing banking services can be spread across a larger customer base. These factors could be helping the female population improve their access to banking services. The lack of any statistically significant impact of PDEN for fostering inclusivity among the male population could be on account of the fact that a larger proportion of the male population could already have bank accounts and the scope to increase their access to banking services may be lower than that of females.

Not all the hypothesized factors have a positive impact on inclusion. As expected, wealth inequality has a negative impact across the specifications indicating that skewed ownership of scarce resources such as land, agricultural equipment, and financial assets can prevent the vulnerable sections from accessing formal finance. Savings are necessary to incentivize the weaker sections to access banking

services. Unfavourable distribution of various assets amongst rural households leads to adverse financial conditions for those already at the bottom of the economic pyramid. Given that land is a prominent avenue for parking savings (Subramanian and Jayaraj, 2008) in the rural economy, the incidence of land ownership amongst those who are already indebted should allow them to leverage the same and move out of the trap of indebtedness. However, the sign of this coefficient is negative across all three model specifications. The impact of LOWN is the highest for the female population while it is substantial across all other specifications also. It appears that a higher incidence of land ownership amongst already indebted households is not permitting them to leverage the same to move out of indebtedness. Perhaps, the households are indebted to informal sources and might have been assuming secured debt from informal or even formal sources, resulting in limited ability to liquidate the same for paying off debt and improving their saving levels. This could result in them liquidating their existing savings in formal financial sources, hence explaining the negative coefficient. Lastly, unemployment has a negative impact across all specifications and the quantum of impact is fairly similar across genders. Unemployment can lead to the persistence of indebtedness, and inability to generate sufficient income, which can lead to contraction of existing savings. This could push the existing account holders from vulnerable sections to drop out of the banking space to meet their volatile and uncertain financial conditions.

CONCLUSION

The present paper has derived important inferences on the socio-economic nature of financial inclusion in rural India. It is fairly clear that while the set of factors that promote and constrain inclusion are quite similar across male and female populations, their manifestation in quantitative terms has important differences as explained in the previous sections. The analysis in this paper is unique as it incorporates newer socio-economic dimensions such as wealth distribution, land ownership, indebtedness, and unemployment as determinants of financial inclusion. Furthermore, the impact of these variables is studied on not only the entire rural population but also on male and female populations separately.

The findings of this study motivate several policy implications that can foster higher rural financial inclusion and also a more equitable inclusion process across male and female rural populations. First, asset ownership and operational control over household assets for women should be promoted to ensure that larger savings are generated by female populations. This can incentivize them to shift to formal bank accounts rather than parking their savings in the informal economy. Promoting a social structure that allows women to control the usage of household assets can enable them to generate larger savings and move towards formal bank accounts and other services.

Second, promoting higher participation of females at higher secondary levels can yield larger gains in fostering inclusivity both amongst women and for the rural population as a whole. Better participation rates at higher secondary education levels can enable improved financial awareness as familiarity with technologies such as the Internet and mobile banking generally increases by the time students attain this stage in education. Digital financial inclusion could be a major link between better educational participation and improved access to formal finance. Third, reduction of wealth inequality amongst rural households should be an urgent policy priority to enable more inclusive economic growth. The skewed landholding pattern in rural India, particularly amongst the farmers should be improved before targeting the distribution of assets other than land. These distributional inequalities should be studied at deeper levels of disaggregation using the unit-level data of the AIDIS – 2019 so that those who are being prevented access to formal finance due to adverse wealth distribution can be better located.

Fourth, the reduction of indebtedness amongst rural households is critical to achieving better financial inclusivity. Households that may have mortgaged their lands for loans from informal sources should be given priority. This could enable them to either liquidate it or leverage it to move out of the clutches of indebtedness and poverty. This would invariably warrant urgent land reforms in rural regions. Subsequently, they can be enabled to improve their savings which can improve their chances of using formal banking services rather than relying solely on exploitative informal

avenues. Fifth, the generation of employment is a key source for promoting income generation, and consequently savings formation. With better jobs and lesser dependency on informal occupations, a larger proportion of the rural population could be incentivized to access formal banking services rather than relying on exploitative informal sources.

Lastly, some limitations have constrained this study and improving upon them can open new vistas for further research. More complex theoretical specifications can be tested with better granularity of data. Different rounds of surveys on household expenditure, debt and investment, and other related surveys can be synthesized into a single analytical framework. This could allow practically deeper insights into the nature of the financial inclusion process. Such an exercise may be necessary due to problems with the AIDIS data such as underestimation of the true extent of indebtedness and asset holding (Subramanian and Jayaraj, 2008). Furthermore, unit-level data from these diverse surveys could be utilized to build a more disaggregated model of gender-differentiated financial inclusion. This study adopts a deposit perspective to measure financial inclusion. Other viewpoints such as the credit perspective can be incorporated in later attempts. Composite measures too can be worked out by building either parametric or non-parametric indexes of financial inclusion. There is considerable scope to study how the length of the indebtedness cycle – i.e. the time period for which a rural borrower remains indebted to informal sources, affects the extent of financial inclusion. Similarly, the distribution of land ownership across rural households could be examined as a possible determinant of rural financial inclusion. These issues remain largely unaddressed in the Indian context. To conclude, there exists a large scope in the Indian context to investigate the manifestation of financial exclusion across alternative spaces such as wealth percentiles and landownership groupings while incorporating information on gender differentials. The present study was an attempt in that direction.

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