



# Financial Inclusion in India: A Regional and District Level Analysis

Tanya Nautiyal <sup>a\*</sup># and Saba Ismail <sup>a†</sup>

<sup>a</sup> Department of Economics, Jamia Millia Islamia, New Delhi-110025, India.

## Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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## ABSTRACT

Financial Inclusion aims at including all sections of society into the ambit of basic banking services. Since 2005, RBI has made several efforts to enhance financial inclusion across India. The study has analyzed the progress of various parameters of financial inclusion in all six regions of India from 2000 to 2018. The research also attempts to analyze the degree of relationship between financial inclusion and social development variables in India with the help of multiple regression models and Dummy variables. The result of the research unveils that literacy rate and urbanization are significant factors whereas the population is found to be an insignificant factor in determining the level of financial inclusion. The study concludes that the south region leads in all the parameters of financial inclusion in all the years and the northeast region remain on the lowest scale.

**Keywords:** Financial inclusion; literacy rate; urbanization; credit-deposit ratio; descriptive statistics; multiple regression model.

## 1. INTRODUCTION

In India, financial sector policies have long been driven with the intention of increasing financial

inclusion but the aim of universal financial inclusion still remains a distant dream. The network of cooperative banks to provide credit to the agriculture sector, the creation of an

# Research Scholar;

† Associate Professor;

\*Corresponding author: E-mail: tanyanautiyal92@gmail.com;

elaborate framework of priority sector lending with mandated targets, the nationalization of banks, and the establishment of Regional Rural Banks were all elements of a state-led approach to meet the credit requirements of large sections of the Indian population who had no access to institutional finance. The strategy for expanding the outreach of the institutional financial system relied primarily on expanding bank branches, setting up special purpose government-sponsored institutions (for example Regional Rural Banks), and setting targets for credit to expand categories of the excluded segment. However, the success has not been up to the level expected. India is a fast developing economy but the benefits of the growth are not trickling down to the lower segment of the country, especially the poor people living in rural areas. Despite rapid overall development in the last 20 years, the nation's financial sector still has not been able to bring a vast segment of society into the ambit of basic financial services. Due to this, poor people suffer from lower availability and higher cost of funds which further results in fewer economic activities and exploitation of the poor by money lenders or informal financial service providers.

The status quo of the financial infrastructure in India gave sufficient space for questioning the formal financial institutions functioning in rural areas of the country. Do we have enough formal financial service providers in remote areas? Are the financial products designed as per the requirement of rural communities? Is financial machinery operating as per the aspiration and requirements of rural people? Most of the questions remain unanswered. In reality, many of the commercial banks in rural parts of India exist only to fulfill the Reserve Bank of India's norms or Government norms, rather than to engage themselves in developing and promoting rural businesses. In this regard, it is noteworthy that rural communities often are impoverished by credit facilities from formal financial institutions.

Financial inclusion has been identified as an enabler for 7 of the 17 Sustainable Development Goals by the World Bank. Financial inclusion i.e. access to and use of formal financial sector services has been a key theme in development

economics over the last years Demirguc-Kunt and Klapper [1], Sahay et al. [2].

In India, not only is the progress of financial inclusion behindhand but there exists wide inter-state and inter-region disparity in the expansion of financial infrastructure. It is foremost to comprehend the range to which different states and different regions of the country vary in terms of the level of financial inclusion [3-5]. We have on one hand states and districts located in the southern and northern regions of the nation that are performing well on the grounds of financial inclusion as compared to states of the north-east and western regions, where a significant portion of the nation's population resides and where people do not even have the access to basic financial products [6,7]. Therefore, it is foremost to comprehend the extent to which different regions of the nation vary in terms financial inclusion and simultaneously understand the components that have caused the difference to exist and sustain over a period of time. If we are able to identify the rationale responsible for low financial inclusion, we would definitely be able to adopt certain corrective measures to solve the problem. The present research aims at studying the determinants of financial inclusion region-wise. Further, the study also examines the degree of relationship between financial inclusion and social development variables.

Before improving financial inclusion, it must be measured properly. Measuring financial inclusion is a matter of great concern among policymakers, researchers, and governments. Financial inclusion is a multi-dimensional approach that cannot be measured with a single indicator but is determined by a huge set of indicators. Accessibility is the most important dimension for measuring the level of financial inclusion. However, due to the unavailability of data we are not able to measure access to formal financial services in an extended way. We only have data that can measure physical access. Therefore huge availability of bank branches and ATMs does not necessarily mean that the financial system is inclusive. Therefore usability aspect of financial inclusion in terms of the number of deposit accounts and the number of credit accounts can altogether give a better measure of financial inclusion.

**Table 1. Sarma's index of Financial Inclusion- Dimensions and sub-indicators**

<b>Dimensions of Financial Inclusion</b>	<b>Sub-Indicators</b>
Banking penetration	Number of bank accounts as a proportion of the total population.
Availability of Banking services	Number of bank branches per 1000 population
Usability of Banking services	Amount of deposit as the proportion of country's GDP Amount of Credit as the proportion of country's GDP

Source:- Sarma, M, "Index of Financial Inclusion", Paper No.215, Indian Council for Research on International Economic Relations

The extent of inclusiveness of the formal financial system is less known. Few studies developed a multidimensional index to measure financial inclusion [8-11]. Developing an index or a comprehensive measure is necessary, which can include various dimensions of financial inclusion preferably in a single number. With this objective, Sarma 2008 developed an index of financial inclusion using the UNDP methodology. Sarma made some modifications to the approach adopted by UNDP. Sarma's index received wide acceptance and applause among policymakers and researchers. The index incorporates 3 dimensions of banking detailed in Table 1.

Many studies and research have investigated the parameters of financial inclusion and appropriate measures of financial inclusion at the country and state levels. However, these studies are not enough to understand the inclusiveness of the formal financial systems therefore the present research aims at studying and comparing the determinants of financial inclusion region-wise. Further, the study also examines the degree of relationship between financial inclusion and social development variables district-wise in India.

The rest of the paper is organized as follows. Section 2 provides a review of the theoretical and empirical literature on Financial Inclusion and Research gaps. Section 3 describes the methodology adopted for data analysis. The empirical analysis is done in section 4. And finally, section 5 gives concluding remarks and suggestions.

## 2. REVIEW OF LITERATURE

Dahiya & Kumar [12] studies the linkage between economic growth and financial inclusion in India applying Bayesian Vector Autoregressive Model (VAR) from 2005 to 2017. The findings of the research confirm a significant and positive relationship between GDP per capita growth and usage of financial services. Garg & Agarwal [13]

in their study attempts to understand the importance of financial inclusion in the overall development of the economy. the author also highlighted the empowering role of MSME in achieving inclusive growth which will further generate demand for local goods and employment for millions.

Sethy [14] studied how to develop an index that can measure financial inclusion and identify the indicators required for constructing financial inclusion index (FII). The author developed four formulas for the calculation of FII and depending on the value of FII the author categorized states into medium, low and high categories of financial inclusion. The author's computation reveals that the trend line of demand side FII is increasing more than the supply side FII. The author also computed state-wise IFI, with Delhi scoring the highest IFI and Mizoram scoring the lowest. Bag [15] in his research tried to analyze supply side factors of Financial Inclusion state-wise in India. The author has computed the index of financial inclusion based on the UNDP Goal Post Method for all 36 states and Union Territories for the period 2006-2013. Later the author applied Herfindahl- Hirschman Index (HHI) for estimating the level of concentration in the financial availability index. The results of the research reveal that there exists a huge inter-state disparity in the index value of Financial Inclusion with states like Chandigarh, Goa, Delhi, and Kerala being on the top with the highest index values whereas Manipur, Nagaland, Bihar, and Jharkhand scoring the lowest index values.

Paramasivan & Ganeshkumar [16] in their research compared India's position in financial inclusion with other countries of the world and they also showed a glimpse of the progress made in the country in terms of financial inclusion. The author concluded that merely increasing the literacy rate and investment awareness would not work and branch density has a significant impact on financial inclusion.

Sangwan [17] in his work discovered the determinants of financial inclusion. The author used multiple regression models using cross-sectional data of all the States/Regions/UTs for the year 2006 where the dependent variable was the state-wise percentage of adults in terms of saving and credit accounts and the independent variable was branch density, literacy, income, and adults covered under SHGs. The results of the regression revealed that branch density has a positive and significant relationship with the percentage of adults with saving and credit accounts. Nautiyal & Ismail [18] in their research attempts to find out the status of Financial Inclusion in the districts of Uttar Pradesh and Uttarakhand. The author used multiple regression models with a dummy variable to analyze the degree of relationship between socio-economic development variables and financial inclusion in the 2 states. Finally, the research reveals that literacy rate and urbanization are significant factors in determining financial inclusion.

Chhabra [19] attempts to access Financial Inclusion in India and analyzes the patterns and trends of regional disparities across Indian states. Further, the study discusses the relationship between development and financial inclusion taking IFI and HDI of 15 states and 6 UTs. Besides this other socio-development indicators like Employment rate, Sex ratio, and Literacy rate were also used to analyze the degree of relationship between these variables and IFI using a multiple regression model.

## 2.1 Research Gap

The above studies have shown financial inclusion in different states of India and there are also studies that have used different parameters to calculate the index of financial inclusion for different states. To the best of our knowledge and literature reviewed there is no empirical study on financial inclusion at the district level and regional level in India. India is a nation of 1.2 billion people spread across 628 districts. Against this backdrop, the present analysis has made an attempt to analyze the status of financial inclusion in all the regions of India by looking at the various dimensions of financial inclusion. Further, the study analyzes the degree of relationship between financial inclusion and other social development variables at the district level in the country.

## 3. METHODOLOGY

The present study is based on secondary data. The secondary information for the study is collected from the following sources:- CRISIL Inclusix Reports from 2011 to 2016, Reserve Bank of India (Official Website), District Census Handbooks of 2011 for all the districts of the country, India stats (Official Website), Census of India and various research papers and journals. The data is further analyzed using descriptive statistics and multiple regression models. To compare the status of Financial Inclusion in different regions of India, different parameters of financial inclusion are analyzed from 2000 to 2018. The paper considers four basic dimensions of financial inclusion.

- a) Branch penetration (BP)
- b) Credit penetration (CP)
- c) Deposit penetration (DP)
- d) Credit-Deposit Ratio

The proportion of credit utilized to the deposit mobilized popularly called Credit-Deposit Ratio (C-D Ratio) has come into the picture as one of the parameters to examine the performances of banks. The C-D Ratio gives an indication of the health of the banking structure. It is simply a ratio of how much a bank lends out of the deposits it has mobilized, where a low ratio indicates that banks are not making full use of their resources and a high ratio indicates more reliance on deposits for lending.

$$\text{C-D Ratio} = \frac{\text{Total Advances}}{\text{Total Deposits}} \times 100$$

The policy persuaded by the banks naturally resulted in the disposal of surplus mobilized in other areas irrespective of the origin. As a result, the developed and developing areas attracted investment of larger funds by banks, provoking regional imbalances in the use of funds. Therefore C-D Ratio is calculated in two ways one is as per place of sanction and the other one is as per place of utilization. C-D Ratio as per sanction reveals the credit sanctioned in a particular region, which does not mean that the amount is also utilized in that particular region. The credit can be deployed in other regions also. Whereas the C-D Ratio as per utilization means credit utilized in a particular region. When the C-D Ratio as per utilization exceeds the C-D Ratio as per sanction it means that the credit sanctioned by the banks in that region is not only

utilized but some outside fund has also come from other regions.

In the present study, India has been divided into six regions on the basis of the number of districts in each of the six regions. As our data series consists of 628 observations for a single time period, a cross-sectional approach is used for the analysis. In a cross-sectional framework, the relation between IFI score and other social development variables such as literacy rate, urbanization, and population are analyzed using multiple regression models and dummy variables Chhabra [14]; Sangwan [12]. The data on all three social development variables – literacy rate, population, and urbanization is taken from District Census Handbook (2011) for all the districts. Further, the data on the index of financial inclusion of all the districts for the year 2011 is taken from the CRISIL Inclusix report. The multiple regression equation explains the relation between more than two variables and is used to predict the dependent variable.

Thus, the Empirical model for the study is given below:-

$$\text{LOG } (\text{IFI}_i) = \alpha_0 + \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \alpha_5 D_5 + \beta_1 \text{LOG}(LR_i) + \beta_2 \text{LOG}(UR_i) + \beta_3 \text{LOG}(POP_i) + \varepsilon_i$$

Where for  $i = 1, 2, \dots, N$  and  $\varepsilon_i$  is disturbance term,  $\alpha_0$  is constant

$D_1$  is the dummy variable for districts of Northern Region

$D_2$  is the dummy variable for districts of North-East Region

$D_3$  is the dummy variable for districts of Eastern Region

$D_4$  is the dummy variable for districts of Western Region

$D_5$  is the dummy variable for districts of Southern Region

IFI is Index for Financial Inclusion, which is the dependent variable

LR is Literacy Rate

UR is Urbanization

POP is Population

In the above regression equation, IFI is the dependent variable whereas LR, UR, POP are independent variables,  $\alpha_0$  is the intercept which is the benchmark category 0, representing districts of the central region.  $D_1$  is representing districts of the northern region,  $D_2$  is representing districts of the northeast region,  $D_3$  is representing districts of the eastern region,  $D_4$  is representing districts of the western region and

$D_5$  is representing districts of the southern region.  $\beta_1, \beta_2$ , and  $\beta_3$  are parameters to be estimated from the secondary data and  $\varepsilon_i$  is the disturbance term following classical OLS assumptions of mean 0 and variance constant. The independent variables literacy Rate and urbanization in the above model are expected to have a significant and positive impact on financial inclusion for all the districts whereas for population, it is expected to have a negative influence on financial inclusion score.

On the basis of regression analysis, the following set of hypotheses has been tested:

1.  $H_0$ : There is no significant difference in the level of financial inclusion among the six regions of India.  
 $H_1$ : There is a significant difference in the level of financial inclusion among the six regions of India.
2.  $H_0$ : There is no significant relationship between financial inclusion (IFI) and independent variables, namely Literacy rate, urbanization, and population  
 $H_1$ : There is a significant relationship between financial inclusion (IFI) and independent variables, namely Literacy rate, urbanization, and population

## 4. RESULTS AND DISCUSSION

### 4.1 Descriptive Analysis

Financial Development is considered essential for achieving economic growth. In India, the formal financial system is dominated by banks. There are many parameters that can be used to measure the level of financial inclusion in the regions and states of India. One such parameter is the number of reporting offices of Scheduled Commercial Banks and Regional rural bank branches operating in an area. Table 2 below gives information on the number of offices of scheduled commercial banks and regional rural bank branches operating in all the regions of India from 2000 to 2018. The table shows a sluggish increase in branch penetration from 2000 to 2010 and a tremendous hike from 2010 onwards. This increase is possibly due to the initiatives taken by the government since financial inclusion first featured in 2005. Thereafter, the Reserve Bank of India and NABARD have been initiating multi-pronged policies including all types of banking and nonbank financial institutions for enforcing the outreach of financial services to all sections of

the population in the country. Besides the increase in bank branches, the table also shows a huge inter-region disparity where the south region has the highest number of branches of commercial banks and regional rural banks followed by the north and central region whereas the northeast region has the lowest number of branches. It is clearly depicted from the table that among all the regions states lying in the northeast region have the lowest number of commercial banks and regional rural banks and also where all regions have shown a huge increase from 2010 onwards north-east region still lags behind.

Financial Inclusion is not limited merely to the opening of bank accounts; it also includes the provision of all financial services like deposit and credit. Credit penetration and deposit penetration measure the usability aspect of financial services. An inclusive financial system should be utilized as much as possible by its users therefore the size of the bank credit and bank deposit is used as a measure of usability aspect. Tables 3 and 4 provide insight into the credit penetration and deposit penetration in all the regions of the nation from 2000 to 2018. Table 3 shows credit penetration, where states located in the southern region have the highest amount of credit penetration or credit accounts. This indicates the widespread presence of credit culture in the states of the south region through formal financial institutions. Whereas the northeast region has the lowest amount of credit penetration showing low credit culture in the northeast states followed by the east and north region of India. The widest regional disparity in credit penetration continues in all the years with

the south region being way ahead of all the other regions. Branch penetration and credit penetration are currently highly focused in large cities of the south region and need to be extended to other regions as well. It is important to deepen credit penetration in other regions to improve the overall financial score of the country.

Table 4 shows Deposit penetration or the number of deposit accounts in all regions of India from 2000 to 2018 where states in the southern region has the highest amount of deposit penetration followed by central and east regions. One thing to note here is that deposit penetration has shown a huge increase from 2005 onwards, especially in the year 2015. The reason for the increase in deposit penetration is the introduction of various schemes and policies by RBI like No-frills accounts, Basic Savings Bank Deposit accounts, etc. from 2005 onwards. One such initiative of the Government is the introduction of the Pradhan Mantri Jan Dhan Yojana (PMJDY) scheme which is considered to be the prime driver for high growth in deposit penetration. PMJDY is one of the biggest initiatives toward financial inclusion in the whole world. Prime Minister Shree Narendra Modi on 15 August 2014 announced this scheme and it was officially launched on August 28, 2014. The scheme got a certificate from the Guinness book of world records for opening the highest number of bank accounts within one week as a part of the financial inclusion campaign. PMJDY has led to the opening of millions of deposit accounts all around the nation. The table also depicts that the northeast region has the lowest number of deposit accounts indicating the failure of PMJDY and other initiatives in the northeast states.

**Table 2. Number of offices of commercial banks and regional rural banks region-wise**

Years	North	North-East	East	Central	West	South
2000	12615	2580	15511	18193	11498	21126
2005	13177	2467	15285	17795	11661	21341
2010	17131	2937	18021	21991	14546	27637
2015	26594	4123	25135	31833	21160	41109
2018	29052	4714	27217	34721	22667	44804

Source: Bank Branch Statistics report accessed from RBI website

**Table 3. Region-wise number of credit accounts**

Years	North	North-East	East	Central	West	South
2000	6474801	1300379	9813343	8929913	6938975	20912986
2005	8009913	1375485	10164985	11703261	11892303	34004847
2010	11135922	2255958	13087661	15415163	29076052	47677126
2015	14909185	3299465	16908155	20064326	24185241	64873264
2018	19935539	5723960	26697820	25837793	36855557	81926431

Source: Basic Statistical Return (BSR) Reports accessed from RBI website

Among all the regions states like Kerala, Andhra Pradesh, Karnataka and Tamil Nadu of the South region continue to lead in all the parameters of financial inclusion in all the years, and states like Assam, Manipur, Meghalaya, and Arunachal Pradesh of the North-East region continues to be on the lowest platform in all the parameters in all the years showing the success of the initiatives in developed states.

After the banking, deposit and credit penetration in India let us have a look on credit and deposit ratio of all the regions of the nation. The massive increase in branch expansion cannot immediately impact the rural economy. Deposit mobilization is the key variable for financial development. Deposits are considered raw materials for commercial banks. The higher the mobilization of deposits by banks greater the scope for distribution of such deposits for the purpose of productive investments in favor of those who are in need which is called credit allocation. Therefore credit and deposits are considered vital for the financial development of the economy.

C-D Ratio, both as per place of sanction and place of the utilization of all the six regions are presented below. Table 5 and 6 gives information on the C-D ratio (as per place of sanction) and C-D ratio (as per place of utilization). From the table, it is clear that among all the regions, the western and southern regions are leading in both the dimensions in all the years whereas the north-east region is again on the lowest score. The table reveals that the C-D ratio of 90.5 (as per sanction) and the C-D ratio of 93.2 (as per utilization) for the south region in 2018 signifies the disposal of outside funds from other regions. This is not only the case with the south in fact all the other regions except the western region have a higher C-D ratio (as per utilization) than the C-D ratio (as per sanction) which indicates a

regional imbalance of funds in the country. For the western region, the C-D ratio (as per sanction) is 98.3 and (as per utilization) is 90 which signifies that the states in the western region are not making full utilization of funds in that region.

The descriptive statistics for all four variables in all the six regions are presented in Table 7. The mean value of IFI in northern districts is 42.81 with a maximum value of 78.10 and a minimum value is 18.20. In the case of the districts of the eastern region, the mean value of IFI is 29.93 with a maximum value of 75.10 and a minimum value of 16.50. Further, the mean value of IFI in western region districts is 37.11 with a maximum value of 81.30 and a minimum value of 16.20. In the case of central region districts, the mean value of IFI is 32.24 with a maximum value of 64.30 and a minimum value of 12.60. The mean value of IFI in the districts of the northeast region is 25.60 with a maximum value of 66 and a minimum value of 5.50. Further, the mean value of IFI in southern region districts is 61.72 with a maximum value of 96.20 and a minimum value of 36.20. It shows that the level of financial inclusion is highest in the districts of the south region and lowest in the districts of the northeast region. Looking at the standard deviation of IFI of all the regions, the results reveal the standard deviation of 14.74 in the north, 9.98 in the east, 13.17 in the west, 9.85 in the central, 12.26 in the north-east and 13.02 in the south. This indicates that the level of variability in terms of financial inclusion is more in the districts of the north, west, and south region and lowest in the districts of the central and east regions.

Similarly, the descriptive statistic of the other three socio-economic variable literacy rate, population, and urbanization is presented in the Table 7.

**Table 4. Region-wise number of deposit accounts**

Years	North	North-East	East	Central	West	South
2000	72553079	10390729	70884238	85224883	65740258	108021481
2005	80726570	10341971	73953040	92309899	79661041	129800010
2010	129921157	18126666	114861959	150994367	114659703	206305289
2015	211816683	38432313	242920667	307069833	236006719	403646068
2018	286196977	58849669	367405161	415288389	299111170	484652222

Source: Basic Statistical Return (BSR) Reports accessed from RBI website

**Table 5. Region-wise Credit-Deposit Ratio (As per place of Sanction)**

Years	North	North-East	East	Central	West	South
2000	51.1	28.1	37	33.9	75.4	66.2
2005	59.5	35	45.5	40.8	83.5	78.1
2010	74.4	35.5	50.8	47.3	79.1	92.7
2015	88.5	34.5	46.5	48.3	87.1	89.9
2018	78.1	39.3	41.6	47.9	98.3	90.5

Source: *Indiastat.com*

**Table 6. Region-wise Credit-Deposit ratio (As per place of Utilization)**

Years	North	North-East	East	Central	West	South
2000	49.6	30.6	37.2	36.8	74.6	66.8
2005	62.2	44.6	50.4	45.8	71.8	83.9
2010	74.9	39.1	53.5	51	74.7	94.8
2015	91.8	35.2	48.4	51.3	80.9	92.4
2018	81.9	41	44.1	50.5	90	93.2

Source: *Indiastat.com*

## 4.2 Econometric Analysis

Table 8 represents the results of the regression analysis. The table reveals the F-statistic, which explores the overall significance of the independent variables on the dependent variable. The value of the F-statistic in our model is 137.76 and is statistically significant. The coefficient of determination or R- the square is 0.64 or 64.14 percent, which means 64 percent variation in IFI (dependent variable) is explained by the explanatory variables.

The study is a regional analysis of all the six regions (North, East, West, Central, North-East, and South) of the country. Dummy-1 is for districts in the northern region, Dummy-2 for districts in the northeast region, Dummy-3 for eastern region districts, Dummy-4 for districts in the western region, and Dummy-5 for districts in the southern region. The coefficient of Dummy-1 and Dummy-5 is significant and positive indicating that the level of financial inclusion is high in the districts of the north and south regions as compared to the benchmark category region i.e. central region. The coefficient of Dummy-2 and Dummy-4 is significant but negative showing a low level of financial inclusion in the districts of the northeast and western region as compared to the benchmark category. The above analysis shows that districts located in the north and south are more financially developed as compared to districts located in the central region. Whereas districts of the northeast and

west are less financially developed than districts of the central region, indicating a low level of financial inclusion in the districts of the northeast and western region of the country. Therefore, the null hypothesis "There is no significant difference in the level of financial inclusion among the six regions of India" in this case is rejected.

The result shows that the coefficient of literacy rate is positive and significant having a t-value of 13.03. The result of the research reveals that a 1 percent increase in literacy rate leads to an increase in IFI by 0.99 percent. Therefore, the null hypothesis "Literacy rate does not influence financial inclusion" is rejected and we can say that literacy rate has a positive impact on financial inclusion implying that the higher the adult literacy rate higher will be the index of financial inclusion. Urbanization or the proportion of the urban population is found to be significant and positively related to financial inclusion. The study reveals that the coefficient of urbanization is positive and significant with a t value of 7.57. Therefore, the null hypothesis in this case "Urbanization does not have any impact on financial inclusion" is rejected. The results of the study indicate that a 1 percent increase in urbanization leads to an increase in IFI by 0.13. In other words, the higher the urbanization higher will be IFI. The "Population" variable in the study is found to be insignificant indicating no relationship between population and index of financial inclusion.

**Table 7. Descriptive statistics of all six regions**

<b>North</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	42.81	70.90	1444162	25.29
Maximum	78.10	88.15	16753235	98.60
Minimum	18.20	54.08	31564	0.00
Standard deviation	14.74	9.20	1750962	19.21
Number of observations	110	110	110	110
<b>East</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	29.93	67.93	2343598	17.07
Maximum	75.10	89.13	10009781	100
Minimum	16.50	46.43	36842.00	0
Standard deviation	9.98	10.41	1841900	16.06
Number of Observations	118	118	118	118
<b>West</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	37.11	79.45	2649387	35.23
Maximum	81.30	89.91	11060148	100
Minimum	16.20	58.80	52074	9.00
Standard deviation	13.17	6.56	2155472	21.91
Number of observations	66	66	66	66
<b>Central</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	32.24	68.07	2025499	21.50
Maximum	64.30	84.25	5954391	80.90
Minimum	12.60	11.60	139820.0	3.40
Standard deviation	9.85	9.80	1228670	14.91
Number of observations	148	148	148	148
<b>North-East</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	25.60	74.42	550746.5	20.94
Maximum	66	97.91	2823768	82.70
Minimum	5.50	48.75	8004	1.29
Standard deviation	12.26	10.62	571295.5	16.74
Number of observations	82	82	82	82
<b>South</b>	<b>IFI</b>	<b>Literacy</b>	<b>Population</b>	<b>Urbanization</b>
Mean	61.72	77.29	2503718	38.92
Maximum	96.20	97.87	9621551	100
Minimum	36.20	51.83	41816	3.86
Standard deviation	13.02	10.80	1579662	22.54
Number of observations	104	104	104	104

Source: Authors' calculation

**Table 8. Result of multiple regression with dependent variable: Log (IFI)**

<b>Variable</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>t-statistic</b>	<b>Prob.</b>
C	-1.122485	0.352296	-3.186200	0.0015
LOG(Literacy)	0.993083	0.076176	13.03671	0.0000
LOG(Population)	0.0000418	0.012408	0.003368	0.9973
LOG(Urbanization)	0.131285	0.017337	7.572591	0.0000
D-1	0.187771	0.035106	5.348678	0.0000
D-2	-0.394142	0.043643	-9.030982	0.0000
D-3	-0.036517	0.034183	-1.068283	0.2858
D-4	-0.103900	0.042254	-2.458929	0.0142
D-5	0.456169	0.036828	12.38642	0.0000
R-squared	0.641472	Mean Dependent Variable		3.543018
Adjusted R-squared	0.636816	S.D. Dependent Variable		0.452240
S.E of Regression	0.272541	Akaike info criterion		0.252241
Sum squared residual	45.75565	Schwarz criterion		0.316144
Log likelihood	-69.82523	Hannan-Quinn criterion		0.277072
F-statistic	137.7673	Durbin-Watson Statistic		1.332873
Prob (F-statistic)	0.0000	Number of Observations		628

Source: Authors' calculation

## 5. CONCLUSION AND RECOMMENDATION

The study concludes that though there is an increase in Branch penetration, Credit penetration, and Deposit penetration in all the years in all the six regions, the remarkable increase could be seen from 2010 onwards because of the various programs and schemes launched by the Government and RBI. The study also highlights huge disparities in all the parameters of financial inclusion, which imply that states like Kerala, Karnataka, Tamil Nadu, and Andhra Pradesh located in the southern region of the country have the highest number of bank branches, credit accounts, and deposit accounts and are showing progress in the index values of financial inclusion as well. It not only leads overall but also leads among all the six regions of the country. On the contrary, there are also states like Arunachal Pradesh, Mizoram, Assam, and Nagaland in the north-east region which have the lowest score in all the parameters of financial inclusion implying that the states are suffering from a severe lack of banking outlets for providing different financial services and also suffering from an acute deficiency of suitable financial services which are necessary for financial inclusion. Among the other regions of the country north, east and west have been performing progressively in all the years but states like Uttar Pradesh and Chattisgarh of the central region seem to perform average in all the parameters. The paper also shows up the least progress of credit penetration as compared to branch penetration and deposit penetration in all the regions except the south. Only states in the south region have high credit culture rest all the regions are performing below average in credit penetration indicating the need to increase credit penetration in all the other regions.

The findings of the study also show that financial inclusion and other social development indicators like urbanization and literacy rate are significant and positively related. Literacy rate and urbanization significantly predict or explore financial inclusion whereas the population is found to be insignificant. In other words, regions with high literacy rates and high urbanization are more likely to be financially developed.

Further, to financially include the majority of the people, the foremost step is to bring them in touch with basic financial products. Government must give priority first to increasing the number of bank branches. Incorporation of branchless

banking through user-friendly technology may faster the outreach of financial services with lower expenditure but this could be effective only if the majority of the population comes in touch with basic education as well as basic financial education. Besides this more empirical research must be encouraged to identify the reasons for low financial inclusion at the micro level.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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