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Financial Inclusion And Inequality In Opportunities In India: A Panel Data Analysis

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Abstract

This paper examines the interstate variation in the level of financial inclusion in India and special emphasis has been given to find out the variation in the level of inequality in opportunity in india. This paper also examines the association between financial inclusion and inequality in opportunity. This. The principal component analysis has been used for calculating the index of financial inclusion index and Disimilarity index has been used to capture the inequality in opportunity index india. Finally panel data has been used find out the association between financial inclusion and inequality in opportunities. We have found that income and education inequality has been reduced as an area become financially included.

Keywords: Financial inclusion index, economic opportunity index, Fixed Effect, Random Effect

Introduction

Since the early 1990s, banking reform has facilitated the growth of private-sector banks. Certain segments of society do not have access to adequate low-cost, fair, and safe financial products and services from mainstream providers. A key goal of financial inclusion is to ensure that all individuals have access to appropriate financial assistance and understand and can use it. The concept of financial inclusion does not solely refer to opening up a savings account. It implies creating awareness about financial products, providing advice and education on money management, and offering debt counseling, among other things. Much research work has been done on this topic as it is an essential government tool for rural development. Rural people get their MGNREGA salaries and other government subsidies to their bank accounts through DBT. By

enabling everyone to participate fully in the formal financial system, financial inclusion benefits individuals, the commercial enterprises serving them, and society as a whole (mckinsey and Company, 2010). Financial inclusion is characterized by a high level of penetration of the banking system, a bank account, insurance, and easy access to credit at an affordable cost (Thoat 2010). The Nobel committee gave substantial weight to the objectives of financial inclusion by awarding Prof. Md. Yunus in 2006, and his Gramin Bank The Nobel Prize. The expansion of financial services is conditioned upon the level of economic development, especially on rural development, which influences both demand for and supply of financial services (Hurley and Shaw, 1955; Cameron, 2003). A developed financial system promotes growth in the real sector of the economy, which ultimately widens the horizon of economic opportunities available across the entire spectrum of the population, including the vulnerable section of society. Financial development facilitates the creation of an environment for better access to economic opportunities for the wider population, including the vulnerable areas of the community. However, to ensure equal access, it is necessary to strengthen human capability to reduce economic opportunities which influence rural development.

We know that financial inclusion enhances the economic opportunities. In society, all segments of the population are not getting adequate. Using the Dissimilarity index we estimated the inequalities of education, health and income from 2001 to 2019 for 31 states of India. In this section, we will explore the association between financial Inclusion and inequality of opportunities using panel data analysis. The health index, education index and income index data are collected from the global data lab. The health index is made of life expectations at birth; while education Index is made of two indicators namely average years of education of the adult population 25 years of age and Expected years of education. Finally, the income index is made of the natural logarithm of GDP. In our study, we have incorporated 31 States from 2001 to 2021. The dependent variable is the FI index, while the Inequality of opportunity in the Income index, Health index and education index are the independent variables. We have a balanced panel data set for the data, as mentioned earlier. After importing the data in STATA 14 statistical software, we conducted ordinary lease square, whether pooled OLS or random effect model is better suited in our study; for that, we have made Brush pagan Lagrange multiplayer test. We have concluded that pooled ordinary least squares are inferior to the random effect model.

Objective of the study:

Under this backdrop, this paper intends to explore the following objectives:

(i) To find out the interstate variation in level of financial inclusion in India during 2001-19.

(ii) To find out the association between Financial Inclusion and Economic Inequalities.

In order to make the paper more convenient, it is divided into five sections. Section I discuses the data and methodology, while section II examines the interstate variation in the level of financial inclusion. In Section

III we have explored the association between financial inclusion and inequality in opportunity. In section IV appease with conclusion.

Section-I

Data Sources and Methodology:

We have taken the secondary data from RBI basic statistic returns from 2001 to 2019 across the state level. In the case of district level, we have taken data base from 2011 to 2021 in West Bengal.

Principal Component Analysis:

- We have used UNDP methodology for constructing index FII using PCA. Here we have classified the financial inclusion index into three categories if the value is greater than .50 we have considered a high level, if it lies between .20 to .50 it is considered a medium level; while the financial inclusion index value is lower than .20 then it is considered as lower level of financial inclusion.(S.K Chattopadhaya, 2008).

Panal Data Regression:

- In our study, we have incorporated 18 States from 2012 to 2016. The dependent variable is the FI index, while GDP per capita, per 100 mobile users, and per 100 internet connectivity, social expenditure, H.S enrollment, number of factories, female passed class X, road length and capital expenditure are the independent variables.

  We have a balanced panel data set for the panel data analysis, as mentioned earlier. After importing the data in statistical software, we conducted an ordinary lease square, whether pooled OLS or random effect model is better suited to our study; for that, we made a Brush pagan Lagrange multiplayer test. We have concluded that pooled ordinary least squares are inferior to the random effect model.

  We have found that calculated Chi-square is greater than tabulated Chi-square values, so random effect models are appropriate for our study. However, we have considered 18 states, so state-specific effects might be present in our result. To check the heterogeneity in our data among different states, we have employed the Hausman test to check whether the fixed or random effect is better. We have accepted the null hypothesis that random effect is more appropriate than fixed effect. The logic behind the acceptance is to state a specific effect is captured in the disturbance term, not by intercepts.

  The same methodology has been applied in the second set of variables.

Dissimilarity Index:

- We have used the D index for calculating inequalities in Income, health and education. Furthermore, we have also used this methodology for both our primary and secondary analysis. The United Nations developed the D index to measure inequality in opportunities in various fields in the world. It is mainly used for finding out the inequalities between Men and Women, different social and religious groups, and Poorer and Richer Populance in any country for having any particular kind of opportunities (Income). The formula is:

$$\mathbf{D} = \frac{1}{2nX}\sum_{i=1}^{n} \left| (\mathbf{x_i} - \mathbf{X}) \right|;$$

Where D stands for Dissimilarity Index, X is the average services of any factors or mean of those factors received by households, n is the total number of individuals received, and x_i is the actual service gets by the families. The value of the D index lies between 0 and 1; here 0 indicates that no inequality while 1 indicates full inequality. This calculation has been done on an Excel software package.

Section-II

Interstate Variation in the level of financial inclusion:

From the above table, we have found that from 2001 to 2006 Arunachal Pradesh, west Bengal, Gujrat, Manipur, Chandigarh, Uttar Pradesh, Bihar, Assam and Rajasthan deteriorated the level of financial inclusion; while the rest of the states have improved in terms of financial inclusion index. From 2006-2011, we have observed that Punjab, Kerela, Mizoram, Himachal Pradesh, Goa, Delhi, Jammu Kasmir, Maharashtra, West Bengal, Gujrat, Jharkhand, Bihar, Meghalaya, Delhi decreased the level of financial inclusion during this period. Other states improved their financial inclusion index during the same period. From 2011-16, we have found that Manipur, Bihar, Puducherry and Goa improved the financial inclusion index and the other states deteriorated in terms of the level of the financial inclusion index. In 2016-19, we explored that Puducherry, Goa, Nagaland and Andra Pradesh deteriorated in terms of the level of financial inclusion and the rest of the states improved in terms of financial inclusion.

Overall from 2001-2019, we have found that only four states namely Nagaland, Andaman & Nicobar, Andra Pradesh and Chandigarh deteriorated in terms of financial inclusion and other states improved in terms of financial inclusion.

Section-III

Inequality of opportunities and Financial Inclusion:

The persistent of inequality in opportunities is a common phenomenon in Indian Economy. Financial inclusion creates the condition for enhancing economic opportunities and reduces economic inequality. Using Panel data regression an attempt has been made in this section to examine role of financial inclusion in reducing economic inequality.

The Stata 14 software has been used to identify appropriate model in panel regression. As we have found that calculated Chi-square is greater than tabulated Chi-square values, so random effect models are appropriate for our study. However, we have considered 31 states; so, a state-specific effect might be present in our result. For checking the heterogeneity in our data among different states, we have employed the Hausman test for model specification about the RE or FE model. We have accepted the null hypothesis which states that random effect is more appropriate than fixed effect. The logic behind the acceptance is to state a specific effect is captured in the disturbance term, not by intercepts.

Table 1: BP LM test and Hausman test

Tests	Chi-square	Prob>chi square
BP LM test	4137.04	0
Hausman Test	1.63	0.6531

Source: Authors' calculation

The regression is given below:

$$FII_{13}=\alpha_{13}+\beta_{13}Eduinequalityopportunity+\beta_{13}Helinequalityopportunity+\beta_{14}Incinequalityopportunity+\mu_{11}\text{---------- (1)}$$

Where FII_{11}stands for FI index

Eduinequalityopportunity = Inequality in opportunity in education

Helinequalityopportunity = Inequality in opportunity in Health

Incinequalityopportunity = Inequality in opportunity in Income

μ_{11}= The Disterbence term.

Table 2: Random effect model

Random-effects	Observations = 589	
Panel ID	Groups = 31	
R-square:	Each group observation:	
Within the group = 0.1378	minimum = 19	
Between the group = 0.5986	average = 19.0	
overall the group= 0.4583	maximum = 19	
	P Value	
Wald chi-square(3) = 55.6	0.000	
FII |	Coef.	P>|z|
Eduinequalityopportunity	-.3554822	0.030
Helinequalityopportunity	.4713404	0.127
Incinequalityopportunity	-.1454951	0.004
_cons	.231706	0.000

Source: Author's calculation

In the above panel result we have found that as the equality between males and females in education reduces, the financial inclusion improves. Especially if the education inequality reduces .3554822 units the financial inclusion improves by 1 unit.

Similarly, in the case of income inequality, we found that as income inequality between men and female falls the financial inclusion improves, that is, if incoming equality falls by .1454951 the financial inclusion improves by one unit.

Most interestingly we haven't found any significance in the case of health in equality.

Section-IV

Conclusion

From our above study we have found that during this period, the difference between the level of financial inclusion between the highest ranking state and the lowest ranking state is almost the same or even increases as time passes by. The southwestern states are ranked at the top of the table. In contrast, Northeastern states are consistently lower in the table: the probable cause may be geographical location and lack of education of their residents. The central states are more or less in the middle regarding the financial inclusion index. Over the period, Tripura, Sikkim, Haryana, Tamil Nadu, Karnataka and Punjab improved in terms of financial

inclusion. In contrast, states like Nagaland, Andaman & Nicobar Island, Andhra Pradesh, and Chandigarh had negative improvements.

In the above discussion we have found that incoming equality and education inequality are negatively related to financial inclusion; while health inequality doesn't have any significant association with financial inclusion. Due to the unavailability of data, we cannot conduct any further kind of inequality analysis using dissimilarity indexes like caste-based or ethnic-based.

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