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Factors affecting financial inclusion: A case study of Punjab

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Abstract
This paper attempts to identify the factors affecting financial inclusion in the state of Punjab using a district level Financial Inclusion Index (FII) developed by the author (2017) for the said state. The study has been undertaken by considering literacy rate, degree of urbanization, district gross domestic product and proportion of working population as the main socio-economic determinants of financial inclusion. To identify the important determinants of financial inclusion, the techniques of correlation and step-wise regression have been applied. The district-wise Financial Inclusion Index has been taken as the dependent variable and the selected socio-economic indicators as independent variables to draw conclusions. Among the four variables, except the indicator concerning proportion of working population, the rest all three indicators were found to have significant positive association with the level of financial inclusion. However, urbanization turned out to be the single most important determinant of inter-district variations in financial inclusion in Punjab explaining 53% of the total variations while the three variables together explained 79.2% of the variations in financial inclusion.

Keywords: financial inclusion, urbanization, literacy, gross domestic product, working population

Introduction

Punjab, one of the northernmost states of India, is bordered by the Pakistani province of Punjab to its west, Jammu & Kashmir in the north, Himachal Pradesh in the northeast, Haryana in the south and southeast, and Rajasthan in the southwest. Punjab is also known as the 'Bread Basket of India' and led to first Green Revolution in the country. The state has an area of 50362 sq. km, of which almost 96% is rural and only 4% is urban. About 62.5% of the state's population is rural. As per census 2011, the state had a literacy rate of 75.8%, with male literacy rate at 80.4% and female literacy rate at 70.7%. During the year 2013-14, the state contributed around 3% to India's GDP, measured at constant prices. The state is experiencing a fall in the share of primary as well as secondary sector to the Gross State Value Added (GSVA) which has come down from 30.81% in 2011-12 to 25.84% in 2016-17(Advance) and from 25.40% in 2011-12 to 24.75% in 2016-17(A) respectively. However, the share of tertiary sector which comprises of services sector has increased considerably from 43.79% in 2011-12 to 49.41% in 2016-17(A).

In terms of growth of banking which constitute an important part of the tertiary sector, the state has 6168 offices as against 134858 offices in the country constituting around 4.6% of the total offices. The state contribute about 3% of the total deposits of the country while its share in credit stood at about 2.7% of the total credit as on march 2016. Despite being one of the progressive states in India, it is suffering from presence of glaring disparities especially in terms of financial inclusion. The author developed a comprehensive district-wise composite index of the financial inclusion across the state for the year 2013, incorporating 22 indicators representing three important facets of financial inclusion namely; branches, deposits and credit (Kaur J. 2017) [5] In the study it was found that 12 out of 20 districts constituting 60% of the total districts, fell in the below average category in terms of their level of financial inclusion measured on the basis of their index values. Further, the maximum disparities were found in the indicators pertaining to credit penetration. The present paper is an attempt to identify the factors responsible for these disparities in financial inclusion amongst the districts of the state using the same index developed by author.

Review of Literature

Though many researchers have measured financial inclusion at regional level by incorporating different variables representing different dimensions of inclusive finance, but not much work has been done to identify the various factors associated with the development of financial inclusion. Some of the research work done in this direction has been discussed below:

Nitin Kumar (2012) in his study used six factors, namely population density; average population per bank branch; per capita net state domestic product; credit deposit ratio; the level of industrialization and individual employment status to examine their impact on the level of financial inclusion across different states of India. The author concluded that regional economic conditions of a state greatly influence its level of financial inclusion.

Kuldeep Singh & Anand Singh Kodan (2012) in their study used literacy, employment rate, sex-ratio, per capita net state domestic product and urbanization as the factors of financial inclusion amongst the states of India. The authors found per capita NSDP and urbanization as the two important indicators having significant and positive impact on the level of financial inclusion across different states of India.

Sahu (2013) [12] in her study took per-capita income, literacy, population, branch density, no of SHGs and per capita net state domestic product (PNSDP) as the indicators of financial inclusion and found per capita net state domestic product as a lone indicator having very significant impact on the growth of financial inclusion.

Gupta and Singh (2013) studied the impact of literacy rate on financial inclusion amongst the different states of India. The results showed literacy having insignificant impact on financial inclusion and the authors concluded that literacy rate does not affect the financial inclusion.

Nandru, Anand and Rentala (2016) attempted to identify the factors of financial inclusion amongst the southern states of India using Index of Financial Inclusion (IFI) developed by CRISIL. For their work, the authors used five indicators namely branch penetration, size of population, gender ratio, deposit to credit penetration ratio and literacy rate. Except literacy rate, the authors found all the variables having significant impact on financial inclusion amongst the selected states.

Sathiyan and Panda (2016) examined the pattern, progress, and determinants of financial inclusion in India during the post-reform period for Indian states for the years 2001 and 2011. The results revealed positive association between the increase in the number of bank accounts availed by households with the factors such as the number of bank branches, population dependency per branch, and industry concentration in the state. The authors suggested that effective implementation of the financial literacy programs and leveraging existing bank branches will go a long way in achieving greater financial inclusion.

Need and Objectives of the Study

It is seen from the above review of literature, that different authors have chosen different factors affecting the financial inclusion level to reach at a conclusion. However, most of these studies have been carried out at state level. Since presence of large intra-state disparities is also posing a great challenge to the government in promoting inclusive growth so it was thought pertinent to study the factors affecting level of financial inclusion amongst the districts of a particular state i.e. Punjab. The identification of these factors would be of great help in formulation of future policies at the state level.

Data Base and Methodology

The study covers 20 districts of the state and uses the FII developed by the author herself (Kaur J, 2017) [5] as a dependent variable. For the present analysis, the following four independent variables have been considered to study their impact on the level of financial inclusion:

1. Literacy Rate (LR): It is represented by the ratio of literate population of a district to the total population of the same district. The indicator has been chosen as it expected that higher literacy rate means more awareness about financial services resulting into higher banking habits.
2. District Gross Domestic Product (GDP): it is the measure of economic output of a region and represents the standard of living of that region. The higher value of GDP means more economic resources at the disposal of the people and more developed financial sector.
3. Degree of Urbanization (UR): It is taken to be the proportion of urban population of a district to total population. It is generally stated that the urbanization process leads to the growth of various infrastructural facilities as well as helps in promoting entrepreneurship and industrial growth. So high rate of urbanization is expected to give a boost to the financial sector resulting in higher level of financial inclusion in that area.
4. Proportion of working population (WP): The indicator is represented by the ratio of number of main workers in a district to the total population of the district. The higher the proportion of a working population in a region better will be the economic conditions of the people in that region and more developed will be the financial sector.

So in the present study, the above four variables have been taken to be the representative variables affecting financial inclusion levels across different districts of Punjab state. Moreover, the availability of data was another major consideration in the selection of these variables.

Statistical Techniques

To analyze the association between FII and the selected socio-economic indicators, the statistical techniques of correlation and step-wise regressions have been applied. Though there are various methods of calculating correlation but the two most commonly methods used in research are Pearson and Spearman coefficient of correlations. In this study Pearson correlation technique has been used to measure the degree of relationship between the dependent variable represented by FII and the four independent variables discussed above. In the same way there are various methods of regression analysis, such as stepwise regression, enter method, backward and forward method, but for this study stepwise method of regression has been used to identify the important sources of variations in financial inclusion level among districts of Punjab.

Findings of the Study

The results of the Pearson Correlation test applied between FII and socio-economic indicators represented by Literacy Rate (LR), Proportion of Working Population (WP), Degree of Urbanization (UR) and the Gross Domestic Product (GDP) of each district are given in Table 1. It is seen from the table that the level of financial inclusion in districts is not significantly related to the proportion of working population of that area and the association between the two was found to be negative. Whether the negative association between the two is due to presence of disguised unemployment in agriculture sector or due to declining share of agriculture sector in GDP, calls for another study (Punjab's economy is basically based on agriculture sector). However, rest of the three indicators are found to be significantly and positively correlated with the level of financial inclusion.

Table 2 depicts the results of variables entered under the step-wise regression. It is seen from the table that out of the three indicators, Urbanization is the first variable entering into the list and thus turned out to be the most important indicator explaining variations in financial inclusion, followed by Literacy Rate and GDP. Under the stepwise regression, the variables enter the list in their order of importance.

Table 1: Correlation between FII and Socio-Economic Indicators

		FII	LR	WP	UR	GDP
FII	Pearson Correlation	1	.694(**)	-.104	.730(**)	.703(**)
	Sig. (2-tailed)		.001	.662	.000	.001
	N	20	20	20	20	20
LR	Pearson Correlation	.694(**)	1	-.541(*)	.435	.354
	Sig. (2-tailed)	.001		.014	.055	.126
	N	20	20	20	20	20
WP	Pearson Correlation	-.104	-.541(*)	1	.201	.032
	Sig. (2-tailed)	.662	.014		.396	.894
	N	20	20	20	20	20
UR	Pearson Correlation	.730(**)	.435	.201	1	.574(**)
	Sig. (2-tailed)	.000	.055	.396		.008
	N	20	20	20	20	20
GDP	Pearson Correlation	.703(**)	.354	.032	.574(**)	1
	Sig. (2-tailed)	.001	.126	.894	.008	
	N	20	20	20	20	20

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 2: Variables Entered/Removed (a)

Model	Variables Entered	Variables Removed	Method
1	UR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	LR	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	GDP	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a) Dependent Variable: FII

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.730(a)	.533	.507	4.57222
2	.842(b)	.708	.674	3.72042
3	.890(c)	.792	.753	3.23486

a) Predictors: (Constant), UR

b) Predictors: (Constant), UR, LR

c) Predictors: (Constant), UR, LR, GDP

Urbanization is the first variable to enter and alone explained 53.3% (R Square) of the variations in financial inclusion in districts of Punjab as depicted by Table 3: Model Summary (Model 1). Then, the next to enter is Literacy Rate and both these variables together explained 70.8% of the variations. Last one to enter is Gross Domestic Product and the three variables collectively explained 79.2% of the variations in inter-districts disparities in financial inclusion in Punjab state (Model 3).

The *F*-ratio in the Table 4: ANOVA table (see below) gives the results as to whether the overall regression model is a good fit for the data or not. The table shows that the independent variables statistically significantly predict the dependent variable, F (3, 16) = 20.35, $p < .0005$ (i.e., the regression model is a good fit of the data). Further, it is seen from Table 5 (Coefficients Table) that all independent variable coefficients are statistically significantly different from 0 (zero) as p<.05(Refer Sig. column) and the predictors added statistically significantly to the model.

Table 4: ANOVA (d)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	429.991	1	429.991	20.569	.000(a)
	Residual	376.294	18	20.905		
	Total	806.285	19			
2	Regression	570.979	2	285.489	20.626	.000(b)
	Residual	235.306	17	13.842		
	Total	806.285	19			
3	Regression	638.856	3	212.952	20.350	.000(c)
	Residual	167.429	16	10.464		
	Total	806.285	19			

a) Predictors: (Constant), UR

b) Predictors: (Constant), UR, LR

c) Predictors: (Constant), UR, LR, GDP

d) Dependent Variable: FII

Table 5: Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	37.605	2.918		12.888	.000
	UR	.365	.080	.730	4.535	.000
2	(Constant)	7.566	9.707		.779	.446
	UR	.264	.073	.528	3.631	.002
	LR	.442	.138	.464	3.192	.005
3	(Constant)	10.256	8.506		1.206	.245
	UR	.171	.073	.343	2.349	.032
	LR	.398	.122	.418	3.274	.005
	GDP	.000	.000	.358	2.547	.022

a) Dependent Variable: FII

Table 6: Excluded Variables (d)

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	LR	.464(a)	3.192	.005	.612	.811
	WP	-.261(a)	-1.666	.114	-.375	.960
	GDP	.423(a)	2.425	.027	.507	.671
2	WP	.087(b)	.446	.661	.111	.472
	GDP	.358(b)	2.547	.022	.537	.657
3	WP	.089(c)	.526	.607	.135	.472

a) Predictors in the Model: (Constant), UR
b) Predictors in the Model: (Constant), UR, LR
c) Predictors in the Model: (Constant), UR, LR, GDP
d) Dependent Variable: FII

Conclusions and Policy Implications

The study found that among the socio-economic factors affecting FII, urbanization turned out to be the single most important factor contributing to the financial inclusion level of districts of Punjab. Literacy rate and GDP have also been found to be associated statistically significantly with financial inclusion and turned out to be important predictors of the regression model but their contribution is not as high as that of the urbanization which alone accounted for 53% of the variations in financial inclusions amongst the districts of Punjab. The three variables together explained about 79% of the variations. The high positive correlation between urbanization and financial inclusion index depicts that banks are still urban oriented. Merely opening of branches in unbanked areas and opening of accounts will not lead to financial inclusion rather it is the access to finance which is needed to promote financial inclusion and in terms of this indicator state has performed very poorly. So vigorous efforts are required to promote financial inclusion and check the inter-district disparities.

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