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INDEX OF FINANCIAL INCLUSION: AN EMPIRICAL EVIDENCE FROM INDIAN STATES AND OTHER COUNTRIES

Dr. S. Saravanan,

Assistant Professor in Commerce, Department of CS & AF, Hindusthan College of Arts & Science, Combatore-28

Dr.B.Karthikeyan ,

Assistant Professor in Commerce, Department of IT & BI, Hindusthan College of Arts & Science, Combatore-28

Dr.S.Poornima,

Assistant Professor in Commerce, Department of IT & BI, Hindusthan College of Arts & Science, Combatore-28

Dr.R.Maheswar,

Assistant Professor in Commerce, Department of IT & BI, Hindusthan College of Arts & Science, Combatore-28

Dr.Matilda Rozario

Assistant Professor in Commerce, Department of Commerce, Hindusthan College of Arts & Science, Combatore-28

ABSTRACT

The goal of financial inclusion is to provide vulnerable populations with timely, sufficient, and reasonably priced access to financial services and credit when needed. The primary source of secondary data used in this study is information from bank branches, ATMs, deposits, loans, microcredit accounts (RBI), micro-insurance (Insurance Regulatory and Development Authority of India, or IRDA), SHGs (National Bank of Agriculture and Rural Development), and the total number of loans. On what it is based. Data for indicators and measurements are primarily sourced from NGOs (as well as numerous research reports and websites), with the sources including MOSPI, the Economic Survey of India, CSO, NSSO, the IMF, and the World Bank. A high human development index is also observed in the states that rank highest in financial inclusion: Tamil Nadu, Kerala, Maharashtra, Karnataka, and Punjab. States ranking among the lowest on the financial inclusion index, such as Assam, Bihar, Orissa, Uttar Pradesh, Jharkhand, and Madhya Pradesh, also do poorly on the human development index. State-by-state comparison reveals that while Maharashtra, Andhra Pradesh, Punjab, Uttarakhand, and Odisha have high levels of financial inclusion, Kerala, Tamil Nadu, and Karnataka have low levels. The Ministry of Finance and the Reserve Bank of India have been leading the charge in advancing financial inclusion on behalf of the Indian government. Only twenty-one of the

twenty-eight states in which the India Human Development Report computed the HDI could be used to study the relationship between IFI and HDI.

Keywords: Financial Inclusion, Human Development Index, Index of Financial Inclusion, Vulnerable Groups.

Introduction

Financial inclusion is a process to ensure the ease of access, availability, and usage of the formal financial system for all members of an economy. The Government Committee on Financial Inclusion defines financial inclusion as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups at an affordable cost. The task of the Task Force was to define an appropriate measurement in order to assess the extent of how inclusive a financial system is. Such a measurement was first proposed by Sarma in 2008. The IFI is a composite index, meaning it includes more than one dimension. This study has been responded to extensively with a variety of mathematical approaches to compute IFI recommended by different researchers, including the participation of ADB. Sarma (2008) developed a multidimensional index of financial inclusion. - (IFI). This index includes information on three dimensions of financial inclusion, namely accessibility, availability, and usage of banking services. The IFI is computed in a manner that captures information on banking penetration, availability of banking services, and usage of the banking system. The author applies a multidimensional approach to measure IFI, which is analogous to the method of the United Nations Development Programme in calculating development indices such as the HDI, the HPI, and the GDI. The approach of Sarma (2008) is divided into two parts. The first is to compute the level of each indicator, which is called multidimensional index.The second step is to aggregate these indices using the normalized inverse of Euclidean distance formula. This is the distance from the IFI point to the ideal point where all indicators are maximum. - In a multidimensional space. However, in her later research in 2012 and 2016, those indicators are supposed to be unequally important to financial inclusion. The weights are attached to the indicators and therefore make a slight change to the formulas. As stated in the research, the dimension of access is weighted 1; availability is 0.5, and usage is 0.5.

Literature Review

Data Analysis One of the first attempts to measure financial markets across countries was made by **Beck et al. (2006)**. The authors create new indicators of banking risk for three types of banking services: deposits, loans and payments (availability, affordability and convenience). Combining these factors to measure progress in technological development across countries can be difficult. **Selma, M. Pace J (2008)** conducted a study to determine the relationship between accounting and human development. While developing the India Financial Inclusion and Inclusive Growth Index, he discovered that financial inclusion can lead to human development. Therefore, inclusive finance can be said to be a policy that can reduce poverty and improve living environments. He added that high incomes can lead to serious financial disruption. **Mehrotra et al (2009)** developed the Financial Inclusion Index (FII) to measure the level of financial inclusion and find the relationship between financial inclusion and economic growth. Their argument is that it is beneficial for people to keep their money in the bank when they receive banking services. This helps ensure a multiplier effect, i.e. inclusive growth, leading to high growth rates. **Chakravarty and Pal (2010)** recently proposed a matrix for accounting measurement. In an approach called axiomatic, they considered data from Beck and his colleagues. (2007) reported that eight financial indicators were included. They have two jobs. In the first step, we calculated the economic level by income group for 21 countries, including India. They said banking services also play an important role in achieving high levels of financial inclusion. Between 1991 and 2001, many states had low levels of state-level accounting. **Laha and Kuri (2011)** conducted a study using two accounting methods to assess the level of accounting in India. The study concluded based on its findings that there is a large gap in financial inclusion between rural and urban areas in India. Given the importance of financial services demand and supply relationships, this study suggests that there are common supply and demand relationships that are widely used to drive inclusive financial strategies in India. **Chattopadhyay (2011)** studied accounting performance in West Bengal (WB). For this purpose, he compared the performance of the World Bank with other states in India and then conducted a study on some areas of the World Bank's activities. When comparing indicators, the World Bank scores low on financial inclusion. In the accounting survey, Maharashtra scored highest in accounting. It is believed that the accounting from 2005 to 2006 was not successful. Regional studies show that financial inclusion is not spreading faster in all rural areas. Loans continue to be issued in rural areas. **Chapter (2012)** uses new data to examine the impact of accounting in India. The Financial Intelligence Unit (FII) was created after identifying the inadequacy of existing research. As a result, accounting was found to have improved from 2008 to 2009. Comparing Sharma's results, he concluded that accounting standards had declined over the same period. **Yorulmaz (2013)** used three accounting dimensions to evaluate the contribution of accounting in Turkey. He used a similar method to Sharma's method to calculate FII. As you can see from the results, higher-income regions performed better on the index. In other words, **Trkiye's** higher income groups have greater access to banking services. Istanbul received the highest FII score among Turkish regions, while East Central Anatolia received the lowest score in terms of affordability. Piñeyro **(2013)** examined financial inclusion rates in 32 Mexican states and municipalities. A major survey found that about 36% of the city's residents are financially included, while 29% remain unenclosed. A positive relationship was also found between education and financial inclusion, and some correlations were also found between poverty and financial inclusion. That's why the Mexican government must promote fair economic growth and equality to benefit those not included in the process, he said. **Thakkar (2014)** analyzed India's accounting level among BRICS countries, and this study also aimed to analyze India's accounting level compared to other emerging markets. His research is based on six principles related to demand: The study found that among the BRICS countries, India's financial participation is significantly low.

Objectives

1. To identify the Indicators of Financial Inclusion in India

2. To Analyse the FII and HDI of India and across the different countries.

Research design

Source of variables

This study mainly uses secondary data on various variables such as bank branches, ATMs, deposits, loans, microcredit accounts (RBI), micro-insurance (Insurance Regulatory and Development Authority of India (IRDA)), SHGs (NABARD), and number of loans. It is based on. NGOs (various research reports and websites) are the sources of data for indicators and measurements mainly from MOSPI, Economic Survey of India, CSO, NSSO, IMF and World Bank.

Dimensions of Financial Inclusion / Financial Exclusion

The institutions (Global and National) and individuals provided a range of definitions on the concepts of Financial Inclusion and Financial Exclusion. These explanations were briefly given in a tabular form to highlight the different dimensions of the above two concepts. The World Bank Report (2008) itself acknowledged the fact that it is difficult to define and measure **"access"** because this term has many dimensions.

FINANCIAL INCLUSION / EXCLUSION: THE CONCEPTUAL FRAMEWORK

Institution/Author	Definition	Indicators
ADB (2000)	Providing a variety of financial services such as deposits, loans, payments, remittances and insurance to poor and low-income families and their members Micro Business/Enterprise.	Deposits, loans, payment services, money transfer and insurance.
Stephen P. Sinclair (2001)	Financial exclusion: The inability to access necessary financial services in an appropriate form. Exclusion can come about as a result of problems with access, conditions, prices, marketing or self-exclusion in response to negative experiences or perceptions.	Basic banking services covering money transmission, credit, insurance, debt and debt assistance, long-term savings and financial literacy.
Chant Link and Associates, Australia (2004)	Financial exclusion: Lack of access by certain consumers to appropriate low cost, fair and safe financial products and services from mainstream providers. Financial exclusion applies to lower income consumers and/or those in financial hardship.	Deposit accounts, direct investments, home loans, credit cards, personal loans and insurance services.
Treasury Committee, House of Commons, UK (2004)	Financial Inclusion: Ability of individuals to access Appropriate financial products and services.	Affordable credit and savings to everyone in the society and access to financial advice.
Scottish Government (2005)	Access for individuals to appropriate financial products and services. Having the capacity, skills, knowledge and understanding to make the best use of those products and services.	Access to products and services, and capacity, skills, knowledge and understanding.

United Nations (2006 b)	A financial system thatprovides 'access' to credit for all 'bankable' people and firms, to insurance for all insurable people and firms and to savings and payments services for everyone. Inclusive finance does not require that everyone who is eligible use each of the services, but they should be able to choose to use them if desired.	A fair level of access to credit, insurance, savings, payment services.
Report of the Committee on Financial Inclusion in India (Chairman: C.Rangarajan) (2008)	The process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost.	Existence of access to financial services and provision of timely and adequate credit.
World Bank (2008)	Access to financial services implies an absence of price and non- price barriers in the use of financial services.	Having a smooth access to financial services such as deposit, credit, payments, insurance.
Raghuram G. Rajan Committee (2015)	Financial Inclusion: To universal access to a wide range of financial services at a reasonable cost. These include not only banking products but also other financial services such as insurance and equity products.	Bank accounts for savings and transactional purposes, low cost credit for productive, personal and other purposes, financial advisory services, insurance facilities (life and non-life).

Source: NABARD

Different Researchers and their Coverage in Proposed Index

SI No	Author Name	Variable Used	Coverage in Proposed Index
1	Honohan (2005)	1. Payments 2. Savings mobilization 3. Monitoring of uses of funds and 4. Transforming Risk	• 'Number of transactions per account' covers both transactions pertaining to deposits mobilized as well as payments made. • Banks and NBFCs monitor utilization of funds lent by them except for consumption credit. Indirectly included in number of credit accounts in demand dimension. • Insurance.
2	Beck, Kunt and Peria (2007)	1. Access and possibility of use and 2. Actual use.	• Supply dimension and • Demand dimension
3	The Consultative Group to Assist the Poor (2009)	1. Savings 2. Payments 3. Credit and 4. Delivery	• Number of deposit accounts and number of transactions per account taken in demand dimension. • Number of accounts and average amount lent per account. • 'Number of credit accounts' in demand dimension. The second feature is indicated by average amount of credit per account.

			• Number of small borrowal accounts as a better indicator. • Number of deposit, credit accounts and transactions in demand dimension.
4	Sarma, (2010)	1. Penetration 2. Availability and 3. Usage	• Supply dimension (Number of bank branches, Number of ATMs etc.) • Demand dimension as number of accounts.
5	Arora, (2010)	1. Outreach 2. Ease and 3. Cost	. • 'Ease' and 'Cost' evaluated by the researchers are, • number of documents required to open an account, • Minimum balance to be maintained and cost of services. • Since these will vary from bank to bank and in the expanded definition service to service. • These cannot be standardized and therefore, are not considered directly. These will get covered indirectly in demand dimension because more the ease or lesser the cost, will result into more number of accounts and vice a versa.
7	Gupte, Venkataramani and Gupta (2012)	1. Penetration 2. Availability 3. Usage 4. Ease and 5. Cost.	All the variables are covered as discussed above.
8	Kunt and Klapper (2012)	1. Formal accounts (a. the mechanics of the use,b. purpose, c. barriers and d. alternatives to formal accounts. 2. Savings behavior (a. use of accounts, b. use of community-based savings methods and c. the prevalence of Savings goals). 3. Sources of borrowing, purposes of borrowing, and use of credit cards and 4. Use of insurance products.	Demand dimension as accounts with Banks and NBFCs. 1. (a) i.e. 'mechanics of the use' is covered under indicators in demand side covering banks, ATMs and number of mobile users for banking. 1. (b) 'purpose' is covered as indicators pertaining to deposit, credit, pension schemes and remittances are included. 1. (c) is covered as already discussed above in ease and cost variables. 1. (d) 'alternatives to formal account' is included as it talks about mobile money, which is part of supply dimension in proposed index. 2. (a) is covered in indicators pertaining to number of accounts and number of transactions. 2. (b) is covered in S.H.Gs in demand dimension. 2. (c) 'prevalence of savings goals': When an account is opened, the objective of the consumer may either be to use it for consumption or production. Either way, financial inclusion has taken place. In this back ground measurement of 'prevalence of saving goals becomes redundant.

			• Number of borrowing channels such as Banks and NBFCs. The variable 'Purpose of borrowings' is dropped as borrowing for consumption as well as productive purposes by the poor cover the purpose of financial inclusion. The variable 'use of credit cards' is dropped, since credit cards are used by the people who are already financially included. • Supply as well as demand dimensions.
9	Yorulmz (2013)	1. Access 2. Availability and 3. Usage	• Supply dimension. • Demand dimension.
10	Credit Rating and Information System of Indian Ltd. (CRISIL) (2013)	1. Branch penetration 2. Credit penetration 3. Deposit penetration	• Supply dimension. • Demand dimension.
11	Rahman, (2013)	1. Convenient Accessibility 2. Take Up Rate 3. Responsible Usage 4. Satisfaction level	• Indicator of speed rather than extent of financial inclusion, hence it is dropped. • Number of irresponsible usage is negligible especially in respect of small accounts. • 'satisfaction level' is related to individual while proposed index is for a specific area or region. Moreover, 'satisfaction' is experienced only after availing the service, so it is post-inclusion phenomenon. Hence not considered.

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Relationship between IFI and HDI in Countries

Below table shows that index of financial inclusion index and human development index in the different countries. It is measurement of financial inclusion compare to other countries like Belgium, Denmark, Greece, Norway, France and Human Development Index is like countries Norway, Belgium, Austria, Denmark etc.,

Index of Financial Inclusion and Human Development Index, 2012

S. No	Country	Index of Financial Inclusion (IFI)		Human Development Index (HDI)	
		Value	Rank	Value	Rank
1	Albania	0.079	43	0.784	23
2	Argentina	0.148	35	0.863	10
3	Armenia	0.041	40	0.768	27
4	Austria	0.953	17	0.944	3
5	Bangladesh	0.117	39	0.53	44
6	Belgium	0.908	2	0.945	2
7	Bolivia	0.064	45	0.692	38
8	Bosnia & Herzegovina	0.163	33	0.8	18
9	Brazil	0.283	21	0.792	20
10	Bulgaria	0.413	14	0.816	14
11	Chile	0.404	15	0.859	11

12	Colombia	0.229	26	0.79	21
13	Czech Republic	0.525	10	0.885	9
14	Denmark	0.906	3	0.943	4
15	Dominican Republic	0.253	23	0.751	33
16	Ecuador	0.177	30	0.765	29
17	El Salvador	0.213	28	0.729	35
18	France	0.702	6	0.942	5
19	Greece	0.763	5	0.921	8
20	Guatemala	0.227	27	0.673	40
21	Guyana	0.252	24	0.725	36
22	Honduras	0.148	36	0.683	39
23	India	0.198	29	0.611	42
24	Iran I.R.	0.527	9	0.746	34
25	Italy	0.439	12	0.94	6
26	Jordan	0.298	20	0.76	31
27	Kenya	0.105	41	0.491	49
28	Lebanon	0.265	22	0.774	26
29	Lithuania	0.333	18	0.857	12
30	Madagascar	0.009	49	0.509	46
31	Malaysia	0.53	8	0.805	17
32	Mexico	0.145	37	0.821	13
33	Namibia	0.234	25	0.626	41
34	Nicaragua	0.076	44	0.698	37
35	Norway	0.595	7	0.965	1
36	Pakistan	0.113	40	0.539	43
37	Papua New Guinea	0.057	46	0.523	45
38	Peru	0.125	38	0.767	28
39	Philippines	0.67	32	0.763	30
40	Romania	0.315	19	0.805	16
41	Russia	0.424	13	0.797	19
42	Saudi Arabia	0.151	34	0.777	25
43	Spain	0.784	4	0.938	7
44	Thailand	0.514	11	0.784	24
45	Trinidad and Tobago	0.354	17	0.809	15
46	Turkey	0.387	16	0.757	32
47	Uganda	0.021	48	0.502	47
48	Venezuela	0.176	31	0.784	22
49	Zimbabwe	0.096	42	0.491	48

Relationship between IFI and HDI in India

A comparison of index of financial inclusion (IFI) with human development index (HDI) for 15 Indian states has been presented along with their ranks. Human Development Index for the states has been taken from India Human Development Report 2018.

Human Development Index in India, 2018

S.No	States	Index of Financial Inclusion		Human Development Index	
		Value	Rank	Value	Rank
1	Andhra Pradesh	0.316	8	0.416	10
2	Assam	0.023	15	0.386	14
3	Bihar	0.083	14	0.367	15
4	Gujarat	0.42	6	0.479	6
5	Haryana	0.402	7	0.509	5
6	Karnataka	0.562	3	0.478	7
7	Kerala	0.753	2	0.638	1
8	Madhya Pradesh	0.128	13	0.394	12
9	Maharashtra	0.465	5	0.523	4
10	Orissa	0.159	12	0.404	11
11	Punjab	0.754	1	0.537	2
12	Rajasthan	0.181	10	0.424	9
13	Tamil Nadu	0.522	4	0.531	3
14	Uttar Pradesh	0.165	11	0.388	13
15	West Bengal	0.244	9	0.472	8

The states of Punjab, Kerala, Maharashtra, Karnataka and Tamil Nadu which rank the best in financial inclusion are also found to have high human development index. Furthermore, the states of Assam, Bihar, Orissa, Uttar Pradesh, Jharkhand, and Madhya Pradesh which are among the lowest on index of financial inclusion perform poorly on human development index as well.

On one hand, states such as Maharashtra, Jammu and Kashmir, Gujarat and Assam have relatively higher levels of human development as compared to their levels of financial inclusion. On the other hand, there are states such as Haryana, West Bengal, Uttarakhand and Uttar Pradesh that perform relatively better in financial inclusion than in human development.

The states of Karnataka, Andhra Pradesh, Himachal Pradesh, Odisha and Rajasthan do not demonstrate a consistent relationship between IFI and HDI. Karnataka, Andhra Pradesh and Odisha have relatively higher index of financial inclusion when compared to their corresponding levels of human development. On the contrary, Himachal Pradesh and Rajasthan display better levels of human development than financial inclusion.

Financial Inclusion in India

The Financial Inclusion in India (FII) for the state j is measured by the normalized inverse Educlidean distance of the point ($D_{1j,}$ $D_{2j,}$ D_{3j}) from the ideal point (1,1,1).

$$\text{FIIj} = 1\text{-}\ (1-d1j)+(1-d2j)+(1-d3j)^{2}$$

Score points

Attempt has been made to find different levels of financial inclusion by adopting the following criteria.

$0.500 \leq FII \leq 1.00$ → High Financial Inclusion

$0.300 \leq FII \leq 0.500$ → Medium Financial Inclusion

$0.00 \leq FII \leq 0.300$ → Low Financial Inclusion

The indices of financial inclusion of 18 major states computed by using the data for three dimensions, viz., availability, access and usage are presented in table

Financial Inclusion Index of Differences States in India

State	D_1 (Availability index)	D_2 (Access index)	D_3 (Usage index)	FII	Level of financial inclusion
Kerala	1.000	0.562	0.351	0.548	High
TamilNadu	0.466	0.744	0.426	0.524	High
Karnataka	0.453	0.565	0.504	0.505	High
Maharashtra	0.270	0.574	0.737	0.489	Medium
Andhra Pradesh	0.320	0.734	0.476	0.481	Medium
Punjab	0.789	0.392	0.213	0.413	Medium
Uttarkhand	0.493	0.419	0.181	0.351	Medium
Odisha	0.198	0.350	0.428	0.319	Medium
West Bengal	0.349	0.229	0.331	0.301	Medium
Haryana	0.527	0.335	0.082	0.291	Low
Gujarat	0.279	0.235	0.123	0.210	Low
Uttar Pradesh	0.232	0.194	0.180	0.202	Low
Assam	0.084	0.209	0.286	0.189	Low
Rajasthan	0.132	0.165	0.144	0.147	Low
Jharkhand	0.156	0.125	0.143	0.141	Low
Madhya Pradesh	0.123	0.124	0.177	0.141	Low
Chhattisgarh	0.067	0.117	0.136	0.106	Low
Bihar	0.166	0.013	0.127	0.099	Low

Source: Human Development Index (HDI)

It is revealed that the states like Kerala, TamilNadu and Karnataka have high level of financial inclusion, while states like Maharashtra, Andhra Pradesh, Punjab, Uttarakhand, Odisha and West Bengal have medium level of financial inclusion. The rest states have low level of financial inclusion. It is interesting to observe that Haryana and Gujarat, which are high income states, have low level of financial inclusion. On the other hand, Odisha, a low income state, has medium level of financial inclusion.

Conclusion

It computed that state-wise and region-wise Index of Financial Inclusion for India. With the help of the constructed IFI, we have been able to examine the extent of financial inclusion across different Indian states and regions. Goa, Punjab and Kerala were the top three ranked states on the index of financial inclusion. States such as Goa, Punjab, Kerala and Tamil Nadu which were high on IFI were found to be doing well on HDI as well. Furthermore, the states of Madhya Pradesh, Chhattisgarh and Bihar which performed poorly on financial inclusion, ranked low on human development index as well. Till now, the cause of promoting financial inclusion has majorly been the responsibility of Reserve Bank of India and Ministry of Finance, Government of India. The relationship between IFI and HDI could be investigated for only 21 states out of a total of 28 states as the HDI for only 21 major states was computed in the India Human Development Report 2018.

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