

MEASUREMENT OF FINANCIAL INCLUSION DISPARITY AMONG INDIAN STATES: AN EMPIRICAL STUDY USING WROCLAW TAXONOMIC METHODOLOGY

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Abstract *Financial inclusion is an essential aspect of economic growth. A well-designed financial system significantly aids in the development of a nation, encourages individuals to save, combats poverty and lessens inequality. Finance inclusion is usually accepted as the primary gauge for the expansion of any economic activity. Therefore, this article aims to provide more exhaustive insight into the performance of financial inclusion at the sub-national level in India. The study has adopted the Wroclaw taxonomic method for developing the composite index of financial inclusion in India, covering the period from 2012 to 2022. The Financial Inclusion Index (FII) is a multi-dimensional phenomenal index that measures many aspects of financial inclusion on a scale from zero to one, where “zero” represents total financial exclusion and “one” means complete financial inclusion in an economy. The results show that Chandigarh is ranked 1st out of the 34 states and UTs with an FII value of 0.09. Bihar has the lowest FII score of 0.75, placing it at 34th in India. The current study will assist the policymakers, government and Reserve Bank of India in formulating policies on financial inclusion in India.*

Keywords: *Disparity, Economic Activity, Financial Inclusion, Poverty, Wroclaw Taxonomic*

INTRODUCTION

Finance inclusion is usually considered the primary gauge for expanding economic activity. There is mounting substantiation that the excluded population, particularly women and poor adults, benefit extensively from financial inclusion. In many nations, policymakers have pinpointed financial inclusion as a major driver for economic empowerment and a way to combat poverty (Ozili, 2021). Financial inclusion is usually defined as the availability and usability of financial services i.e. banking, credit, insurance and savings by all members especially by weaker segments of society (Allen et al., 2016; Ozili, 2018; Garg et al., 2023b). It enables businesses to partake in a formal financial system and empowers them to build assets, manage risks and enhance overall well-being (Demirgüç-Kunt & Klapper, 2012). A healthy and effective financial environment establishes the edifice for economic growth and developmental activities. This point has been amply validated by extensive empirical literature conducted internationally using a variety of

sophisticated approaches by Shaw, 1973; Obstfeld, 1994; Levine, 2002. The availability and accessibility of banking services and a stable network of bank branches are key contributors to a country's expansionary activities and capital formation (Ford & Poret, 1991; Feldstein & Horioka, 1980). The financial system of a country will be robust only when every segment of society has access to the financial system. However, in the case of a developing country like India, It is always challenging for the government and policymakers to provide access and to ensure better utilisation of financial services at the micro or village level. In rural areas, where more than half the population of the country resides, it is always a cumbersome task to connect those people with the formal financial system to ensure inclusive growth in a country as it usually includes population employed in unorganised segments, i.e. primarily marginal farming class, landless labourers, agricultural labourers, urban poor and rural artisans and BPL households which are usually socially excluded or neglected groups. India has the largest unbanked population, which indicates poor access to formal financial

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credit facilities (Garg & Aggarwal, 2014). Therefore, the government of India introduced the “Pradhan Mantri Jan Dhan Yojana” in 2014 to ensure better access to financial services, especially for weaker and less affluent segments of society in India. The major objective of extending banking services and products is to inculcate the habit of saving among people, through which the bank can benefit and provide maximum finance. Financial inclusion has been discussed in the Indian economy for the last few years. In this era of economic liberalisation and globalisation, the benefits of the growth potential must reach the last person in society. The basic premise of inclusive development is to include everyone in the mainstream of economic development so that all people can benefit equally from the benefits of economic development. There are mainly two aspects of inclusive development. One is the high rate of economic growth, which increases the national product, and the second is the sharing of profit from economic development so that the weaker sections get their due share. There was much emphasis on inclusive development during the 11th and 12th Five-Year Plans. Burgess and Pande, 2005 highlighted that women face significant barriers to financial inclusion due to gender-based discrimination, limited mobility and restricted property rights. They identified a lack of infrastructure, low financial literacy, limited access to banking services and inadequate regulatory frameworks as the prominent challenges hindering financial inclusion for them. Similarly, Beck et al., 2007 find that a weak legal framework and poor contract enforcement impede financial inclusion in developing countries. To overcome the challenges and promote financial inclusion, policymakers have implemented a range of interventions and policies. Microfinance institutions, financial literacy programs, agent banking and digital payment systems are some notable strategies recently employed in India. Karlan and Morduch (2010) analyse the impact of microfinance institutions and find that they contribute positively to financial inclusion by providing access to credit and encouraging savings among low-income populations. The Central Bank of India and NABARD has taken numerous initiatives to promote financial inclusion in India through GCC, KCC, SHG, ATM and BC’s model. Moreover, after launching the PMJDY scheme, the most significant changes reflect the performance of financial inclusion in India. Draboo, 2020) found that Jan Dhan Aadhaar Mobile has enormously positively affected the Indian financial system. However, the Introduction of the PMJDY has increased the number of bank accounts by ensuring access to financial services by a weak and less affluent segment of the society. However, most bank accounts seem dormant or not regularly utilised by the account holder, indicating the poor usability of financial services. Therefore, after the inception of the PMJDY, the credit and deposit ratio has stayed the same and the small loan has shown a

declining trend. Moreover, numerous duplicate accounts were opened under PMJDY, and this problem has increased over time (Dipa & Rohit, 2018). Similarly, introducing the demonetisation in 2016 withdrew approximately 86% of the cash from circulation in the Indian economy. This has badly affected the financial inclusion in the country in the short run by impacting the level of sales, employment, loan payback, income, education and savings (Kalhan, 2020). World Bank data suggests that women and young people were excluded from the financial inclusion system in the least developed countries of Africa and Asia. Moreover, there is heterogeneity between the countries in the level of per capita income at the sub-national level (Liu & Walheer, 2022).

Moreover, the Indian economy has seen revolutionary changes in its banking system during the last few decades. With the nationalisation of life insurance businesses in 1956, India started its journey towards financial inclusion. Afterwards, the Indian government introduced the nationalised phase of the Indian banking system in India in 1969 and 1980. Moreover, general insurance companies were introduced as public companies in 1972. According to an analysis of the state of financial inclusion in India, numerous initiatives have been launched over the years in the Indian banking system. The Indian banking system has received numerous policy interventions to improve the accessibility and usability of financial services at the micro level. The expansion of the Indian banking system has been discussed in below sub-headings:

Expansion of Branch Network

India’s banking sector has witnessed a substantial expansion of branch networks, especially in rural and semi-urban areas, to promote financial inclusion. According to a report by the RBI, the total number of bank branches in India has increased from around 67,000 in 1991 to over 1.5 lakh (150,000) by March 2021 (RBI, 2021). This expansion has improved access to banking services for individuals and businesses nationwide. There was an extensive increase in the number of bank branches in India from 2011 to 2020, which reflects the expansion and development of the banking sector in the country. The Reserve Bank of India (RBI) has taken numerous initiatives to promote financial inclusion, leading to the establishment of bank branches in previously undeveloped areas. Public sector banks, as well as private sector banks, expanded their branch networks to cater for the growing demand for banking services. The growth rate during these years was notable. However, from 2016 to 2020, the expansion of bank branches continued, albeit at a relatively slower pace compared to the earlier years. The RBI has focused on strengthening the existing banking infrastructure and promoting digital banking channels in the

country. Efforts are made to enhance the reach of banking services through adopting technology, including establishing banking correspondents, mobile banking units and online banking platforms by RBI.

Expansion of Banking Penetration Services

The penetration of banking services in India has also grown significantly. As per the World bank, the number of account holders in India increased from 35% of the adult population in 2011 to 80% in 2017 (WTO). This growth can be attributed to various initiatives such as Jan Dhan Yojana, which aimed at providing every household with access to a bank account. Between 2011 and 2014, they witnessed healthy growth in bank deposits in India. The Indian economy was expanding, and people had more disposable income to save and invest. In 2014, the Indian government initiated various measures to promote financial inclusion and banking penetration, such as the Pradhan Mantri Jan Dhan Yojana (PMJDY). These initiatives aimed to increase the number of bank accounts and encourage deposit mobilisation.

As a result, the bank deposits continued to grow during this period, although the growth rate may have experienced some moderation. The deposits expanded at a considerable rate during these years. However, in November 2016, the Indian government implemented a demonetisation exercise invalidating high-value currency notes from circulation. This move temporarily impacted bank deposits as people deposited their old currency notes into their bank accounts. Consequently, there was a surge in bank deposits during this period. Bank deposits in India continued to grow during this period, but the growth rate experienced some fluctuations. Factors such as changes in interest rates, economic reforms and various policy measures implemented by the RBI and the government influenced the growth rate.

Additionally, adopting the Goods and Services Tax (GST) in 2017 also impacted the financial system (Garg et al., 2023a). An expansion of credit availability has accompanied the growth of the banking sector in India. The RBI's priority sector lending guidelines require banks to allocate a percentage to priority sectors such as agriculture, small-scale industries and microenterprises. This move aims to promote financial inclusion by ensuring that underserved sectors of the economy have access to credit facilities. By allocating a portion of their lending to these sectors, banks can contribute to the growth and development of the sectors, which, in turn, can drive economic growth and reduce poverty. The guidelines have been instrumental in driving financial inclusion in the country, and banks have consistently worked towards meeting these targets. Over the years, credit

facilities have become more accessible, enabling individuals and businesses to meet their financial needs and contribute to economic growth. The bank credit growth rate was around 17.7% in 2011–12 and 6.1% in 2019-20. The adoption of digital technologies has revolutionised the banking sector in India. The introduction of online banking, mobile banking and digital payment systems has enhanced convenience and accessibility for customers. The launch of the Unified Payments Interface in 2016 has played a pivotal role in boosting digital payments and seamless fund transfers from one bank to another. According to the National Payments Corporation of India, UPI transactions crossed 6 billion in India in May 2021.

Thus, the Indian banking system has seen a tremendous phase of policy interventions to increase financial inclusion in India by increasing the reach of financial products and services to the unserved section of society. Meanwhile, few studies have critically examined the disparity of the financial inclusion index (FII) among Indian states. Hardly any study has adopted the Wroclaw Taxonomic methodology for evaluating the disparity among Indian states in the FII in India. Therefore, the current study has tried to construct the FII from 2012 to 2022 due to these numerous policy interventions in India. The Wroclaw Taxonomic methodology is a popular methodology for developing the FII especially at the international level. Therefore, this study explores financial inclusion in India at the sub-national level by incorporating Wroclaw Taxonomic Method.

LITERATURE REVIEW

Financial inclusion plays a pivotal role in poverty reduction, economic stability and inclusive growth in an economy. Akileng et al., 2018 reported that financial innovation and literacy play an essential role in enhancing financial inclusion among households in Uganda. There is so much potential inside a financially literate household that it can make all its decisions effectively and better understand innovations in financial products. Anwar et al., 2017 developed the FII based on the IMF data and Global Findex database to measure the extent of financial inclusion within six nations in South Asia. They found that India and Bhutan have much better rankings in the financial inclusion index. At the same time, Pakistan and Afghanistan need to catch up due to poor access and usage of the formal financial system in their countries. Rani, 2022 assessed the gender gap in account ownership in South Asian countries based on the global findex database. The finding showed that in South Asian countries, women have less account ownership than men, and this gender disparity gap in formal account ownership is growing over time. Ananth and Oncu, 2013 explored that

formal financial institutions fall short of the needs of people with low incomes, particularly in rural areas. However, with the support of the banking industry, it is easier to achieve financial inclusion for people experiencing poverty. The study concluded that the banking industry should be crucial in boosting financial inclusion, particularly in the public sector. Kumar, 2013 explains that branch networks have a favourable effect on financial inclusion by using data from 29 states and UTs ranging from 1995 to 2008.

Meanwhile, supply-side inclusive measures, i.e., branch network development, also favour enhancing banking activity. However, penetration indicators are falling short of the population growth rate; therefore, the system faces pressure from the demand side. The result shows that employee base and industrialisation level both positively impact penetration indicators. Similarly, Sharma and Kukreja, 2013 contended that financial inclusion is essential to improve India's competitive standing at the global level. Moreover, it was explored that financial inclusion incontestably contributes to society's economic and social advancement. To get to the intended results, India has a long journey to cover up. Narwal, 2013 observed that farmers doing land labour or lower-level jobs do not have any bank accounts. Gwalani and Parkhi, 2014 explored that numerous steps have been taken to attain the goal of financial inclusion at the universal level. However, India is a diverse nation requiring more creative models and steps to increase the financial inclusion drive.

Similarly, Poonam and Chaudhry (2016) observed that Indian states have improved their FII from 2001 to 2014. However, despite all of this progress in the financial inclusion index, there is a need to make regular efforts to persuade rural people to use essential banking services, but all efforts seem ineffective. Despite India's massive proliferation of bank branches, many people still need to be included in the formal financial system (Mahadeva, 2008). Joseph and Varghese (2014) examine the effect of financial inclusion on the growth of the Indian economy using bank growth rates in terms of branch count, debit card and credit card usage. The results explain that debit card usage increased significantly throughout the period, but the number of people with access to the goods and services provided by the banking system decreased. Ravikumar, 2013 observed that banking is a primary driver for financial inclusion and inclusive growth. However, a large segment of the population is still outside the purview of the formal financial process, which indicates a high poverty and inequality level in the country.

Similarly, Tom and Krishnan, 2021 explored that Economic growth and financial inclusion depend on public acceptance

of technology. Thus, various studies have adopted diverse methodologies for studying the FII at national and sub-national levels. However, hardly any study has applied the Wroclaw Taxonomic methodology for developing the FII for Indian states. Therefore, the current study tries to enrich the available literature by developing the FII for Indian states at the sub-national level using the Wroclaw Taxonomic methodology.

RESEARCH METHODOLOGY

Sample of the Study

The total population of the study incorporates 28 states and 8 Union Territories (UTs hereafter) for developing the FII at the sub-national level in India using the Wroclaw Taxonomic methodology. However, the study has included 34 Indian states and UTs for the current study. The study has excluded Daman & Diu, Telangana and Ladakh for the current study because these states/UTs have been merged or demerged during the study's sample period. The Daman and Diu merged with Dadra and Nagar Haveli in 2020. Therefore, for this UT, the data is not available for 2022.

Similarly, the Indian government created Telangana as a new state in June 2014. Therefore, due to the absence of data for 2012, this state has been merged into Andhra Pradesh (as Telangana was created as a new state by demerging from Andhra Pradesh). Similarly, Ladakh was created as a new UT in India in October 2019. Therefore, the data for this UT is not available for 2012. Therefore, to cover the whole population for the analysis, the current study has merged/demerged the states/UTs with their earlier states/UTs.

Similarly, the data has been compiled from the handbook of statistics on the Indian economy and the Statistical Abstract of Haryana from 2012 to 2022. Similarly, the data on the projected population for the Indian states and the country have been collected from the official report of the "Unique Identification Authority of India" published by the government of India. Thus, the study has finally developed a composite index of financial inclusion based on the Wroclaw taxonomic method to measure the disparity between the Indian states and union territories. The study has used the period from 2012 to 2022. This time frame has been considered due to the adoption of numerous policies and interventions in India, as discussed under subheadings 1.1 and 1.2. The study has excluded the current year due to the non-availability of the data.

Indicators for Measurement of Financial Inclusion Index

The basic form for measuring financial inclusion is financial services provided by a country’s banking system. Therefore, this study has included three indicators to develop the FII for India at the sub-national level. These have been discussed below:

Deposit Indicator (X1)

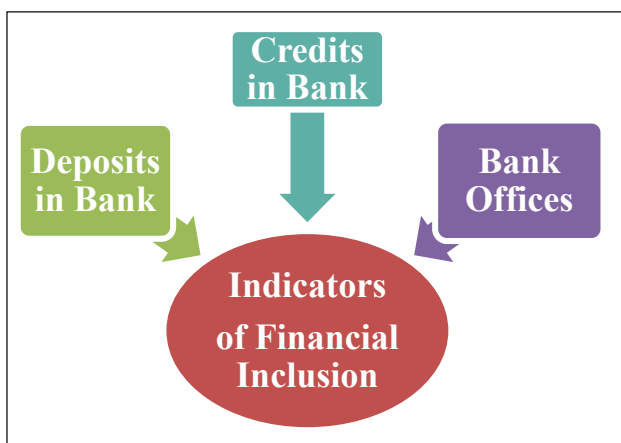
The total deposit of commercial banks is used to measure the extent of savings and services the bank provides in each state. The value of this indicator is estimated by demographic deposit penetration, i.e. total deposit per 100,000 populations. The higher value will represent a high level of inclusion of financial services in a particular state.

Branch Indicators (X2, X3)

The number of bank branches in a commercial bank has been used to measure the population’s access to financial services. Bank branch penetration is estimated based on geographic and demographic terms i.e. bank branches per 1000 km. and 100000 population. This indicator is also expected to have a positive relationship with financial inclusion.

Credit Indicator (X4)

Credit in commercial banks is the symbol of loan capacity and the power of credit creation, whereby a higher credit ratio is a good indicator of progress. The value of the credit indicator is estimated by demographic terms, i.e. total credit per 100,000 population.



Source: Financial Inclusion Indicators.

Fig. 1

Wroclaw Taxonomic Methodology for Development of Financial Inclusion Index

Forming the FII is a multi-dimensional process, and it is impossible to compute it using a single indicator. So, developing a composite index of financial inclusion using diverse financial inclusion indicators is necessary. There are numerous methods, i.e. aggregation method, principal component analysis, monetary index, ratio index, ranking method and multiple factor analysis for developing the index by considering the impact of many indicators. However, most of these methods are encumbered with their limitations. The Wroclaw taxonomy is a method that was initially developed at the University of Wroclaw and has become very popular in Italy with time, especially for measuring the progress of economic and social indicators. It was propounded by Florek, Steinhaus, Tukaszewicz and Zubrzycki in 1952 and is based on simple principles. The benchmark is the smallest distance from the “ideal” unit with the best performance on all considered metrics. After calculating the (Euclidean) distances of all units via “ideal”, we can generate a list in which various units are ordered in proportion to their distance from the optimal situation. This has included the following steps for finally formulating the FII for Indian states:

- First, develop a data matrix [Xij] in which i = 1, 2, 3, 4, 5.....n (number of units) and j = 1, 2, 3, 4, 5....., k (numbers of indicators). Then, the [Xij] matrix is converted into [Zij] as follows:

$$[Zij] = \frac{Xij - Xj}{Sj} \tag{1}$$

Where Zij = matrix of standardised indicators,
 Sj = standard deviation of the jth indicator and
 Xj = mean of the jth indicator.

- The value of [Zij] indicates the best value of each indicator; let Zoj denote it. The value of Zoj will be either maximum or minimum, depending upon the nature of the indicator of financial inclusion.

$$Pij = (Zij - Zoj)^2 \tag{2}$$

Pij = pattern of development

Zoj = The best value of the indicator.

$$Ci = [\sum_{j=1}^k Pi / (CVj)]^{1/2} \tag{3}$$

Where CVj = coefficient of variation of jth indicator in Xij

$$Di = Ci / C \tag{4}$$

Where:

Di = composite index

$$C = \text{Mean}(C_i) + 3 * S.D.(C_i)$$

D_i indicates the single value of all four indicators. The D_i value ranges between 0 and 1, where the value closest to 0 indicates a greater level of financial inclusion, and the value closest to 1 indicates a lower level of financial inclusion. 0 indicates full financial inclusion. Furthermore, 1 indicates complete financial exclusion. Table 1 shows the dimensions and indicators of financial inclusion. The index is based on two dimensions and three indicators. Usage is the first dimension, measured by commercial banks' deposits and credit. The second dimension is access, measured by the number of bank branches of commercial banks.

Table 1: Dimensions of Financial Inclusion

Sr. No.	Dimensions	Indicators
1.	Usage (D1)	$X1 = (\text{Total deposits in commercial banks} * 100000) / \text{total populations}$
2.	Access (D2)	$X2 = (\text{Total commercial bank branches} * 100000) / \text{total populations}$ $X3 = (\text{Total commercial bank branches} * 1000) / \text{total areas}$
3.	Usage (D3)	$X4 = (\text{total credits} * 100000) / \text{total populations}$

Source Author's compilation.

Criteria and Categorisation of Stages of Development

The study has highlighted a total of four stages of development based on the value of D_i . These stages are the high-value, high-middle, low-middle and low levels. If the value of FII is less than or equal to (MEAN-S.D.), it indicates the high-level development stage of financial inclusion. If the FII value is greater than or equal to (MEAN+S.D.), it

shows a low development stage. Further, if the FII value exists between (MEAN) and (MEAN+S.D.), it means the inclusion of financial services is in the low-middle level development stage. Similarly, if the value of FII lies between (MEAN) and (MEAN-S.D.), then financial inclusion is on a high-middle level (Ohaln, 2013; Shee & Maiti, 2017).

Table 2: Criteria for Stage of Development

Stages	Category	Evaluation Criteria
I.	High	$\text{FII value} \leq \text{Mean} - \text{S.D.}$
II.	High-Middle	$\text{FII value between (Mean) and (Mean - S.D.)}$
III.	Low-Middle	$\text{FII value between (Mean) and (Mean + S.D.)}$
IV.	Low	$\text{FII value} \geq \text{Mean} + \text{S.D.}$

Source: Author's compilation.

RESULT AND DISCUSSION

According to the RBI's "Report on Trend and Progress of Banking in India 2019-20," the FII for India stood at 53.9 in 2019. This composite index considers various dimensions of financial inclusion, such as branch penetration, deposit accounts, credit penetration, insurance penetration and digital transactions. The index of financial inclusion is calculated every year. However, India needs to catch up in financial inclusion scores, which is currently a matter of worry for the government and policymakers. The index is developed for all states and helps find the weak financial inclusion areas. This index will help policymakers improve the financial inclusion status in India and make effective policies. Table 3 shows the value of the different financial inclusion indicators in India. There were 35 states and UTs in India in 2012, but data were available for only 34 UTs and states.

Table 3: Financial Inclusion Index of India in 2012

Name of State	X1	X2	X3	X4	FII	Ranking	Stages
Chandigarh	0.11	0.05	0.00	0.00	0.04	1	1 st
Delhi	0.00	10.66	1.31	0.10	0.31	2	1 st
Goa	2.32	0.00	7.83	7.62	0.38	3	1 st
Lakshadweep	9.24	8.88	6.55	10.08	0.53	4	2 nd
Punjab	11.18	12.41	8.11	8.46	0.57	5	2 nd
Himachal Pradesh	11.63	10.86	8.46	9.79	0.57	6	2 nd
Kerala	11.33	13.27	7.89	8.67	0.57	7	2 nd
Puducherry	11.22	14.96	6.80	8.75	0.58	8	2 nd
Sikkim	10.98	13.81	8.50	9.81	0.59	9	2 nd
Maharashtra	6.91	22.78	8.40	5.47	0.59	10	2 nd
Uttarakhand	11.60	14.06	8.43	9.87	0.59	11	2 nd
Karnataka	10.87	17.83	8.37	8.57	0.60	12	3 rd

Name of State	X1	X2	X3	X4	FII	Ranking	Stages
Dadra & Nagar Haveli	11.24	16.51	7.98	10.10	0.60	13	3 rd
Haryana	11.49	17.48	8.21	8.67	0.60	14	3 rd
Tamil Nadu	11.64	19.49	8.26	7.84	0.61	15	3 rd
Andaman & Nicobar Islands	11.82	17.26	8.54	9.82	0.61	16	3 rd
Andhra Pradesh	12.61	20.65	8.41	8.69	0.63	17	3 rd
Gujarat	11.98	21.74	8.42	9.15	0.64	18	3 rd
Mizoram	13.30	20.23	8.54	10.26	0.65	19	3 rd
Jammu & Kashmir	12.68	21.13	8.54	10.18	0.65	20	3 rd
Meghalaya	12.85	23.74	8.51	10.36	0.66	21	3 rd
Odisha	13.39	23.88	8.46	10.16	0.67	22	3 rd
West Bengal	12.60	26.10	8.21	9.57	0.67	23	3 rd
Arunachal Pradesh	12.54	25.57	8.57	10.35	0.67	24	3 rd
Tripura	13.49	24.80	8.43	10.40	0.67	25	3 rd
Rajasthan	13.94	25.10	8.49	9.87	0.68	26	3 rd
Jharkhand	13.61	26.16	8.42	10.40	0.68	27	3 rd
Madhya Pradesh	13.87	26.15	8.49	10.21	0.68	28	3 rd
Chhattisgarh	13.60	26.80	8.51	10.14	0.69	29	3 rd
Uttar Pradesh	13.97	27.17	8.30	10.38	0.69	30	3 rd
Nagaland	13.45	28.27	8.54	10.45	0.70	31	3 rd
Assam	13.99	28.65	8.46	10.45	0.70	32	3 rd
Bihar	14.57	30.15	8.31	10.65	0.71	33	3 rd
Manipur	14.50	32.46	8.55	10.62	0.73	34	3 rd
\hat{X}					0.60		
Σ					0.13		

Source: Compiled by the author.

In Table 3, Chandigarh marks a minimum value of 0.04 in the FII and ranks first in India. Conversely, Manipur state scored a maximum value of 0.73 and acquired the 34th rank in India. The value of Chandigarh UT shows high financial inclusion, and the Manipur state value shows the lowest

financial inclusion. Similarly, Goa, Delhi and Lakshadweep get second, third and fourth ranks in India.

Table 4 shows the value of states in the FII index with their rank. Out of 34 states, Chandigarh has shown a minimum value of 0.09, while Bihar attained a maximum value of 0.75.

Table 4: Financial Inclusion Index of India in 2022

Name of State	X1	X2	X3	X4	FII	Ranking	Stages
Chandigarh	0	1.14	0	0.01	0.09	1	1 st
Goa	0.71	0	8.16	8.67	0.36	2	1 st
Delhi	0.01	17.39	1.09	0	0.37	3	1 st
Lakshadweep	10.34	3.93	6	13.65	0.5	4	2 nd
Sikkim	10.25	9.56	8.87	11.36	0.54	5	2 nd
Punjab	10.81	12.72	8.38	10.69	0.56	6	2 nd
Himachal Pradesh	10.85	11.48	8.84	12.15	0.56	7	2 nd
Kerala	10.05	15.79	8.18	9.83	0.57	8	2 nd
Puducherry	11.27	19.12	6.63	10.41	0.59	9	2 nd
Karnataka	9.41	20.22	8.72	9.37	0.59	10	2 nd
Uttarakhand	11.18	15.94	8.79	12	0.59	11	2 nd

Name of State	X1	X2	X3	X4	FII	Ranking	Stages
Andaman & Nicobar Islands	10.77	17.46	8.94	10.99	0.59	12	2 nd
Dadra & Nagar Haveli	9.4	20.45	8.03	10.3	0.59	13	2 nd
Tamil Nadu	11.65	20.68	8.55	8.76	0.6	14	2 nd
Maharashtra	7	28.99	8.77	6.73	0.61	15	3 rd
Haryana	15.51	18.03	8.44	9.56	0.61	16	3 rd
Mizoram	13.21	17.33	8.93	12.39	0.62	17	3 rd
Andhra Pradesh	12.98	22.93	8.76	9.34	0.63	18	3 rd
Gujarat	12.18	26.48	8.77	10.2	0.65	19	3 rd
Jammu & Kashmir	13.04	23.88	8.94	12.04	0.65	20	3 rd
Tripura	14.52	22.85	8.72	13.01	0.66	21	3 rd
Arunachal Pradesh	11.22	28.44	8.97	12.77	0.67	22	3 rd
Odisha	13.71	26.71	8.82	12.68	0.67	23	3 rd
Meghalaya	13.97	28.49	8.9	13.18	0.69	24	3 rd
West Bengal	13.54	31.08	8.48	12.4	0.69	25	3 rd
Rajasthan	14.96	30.6	8.87	12.13	0.7	26	3 rd
Chhattisgarh	14.96	31.04	8.88	12.48	0.7	27	3 rd
Madhya Pradesh	15.25	33.24	8.87	12.65	0.72	28	3 rd
Jharkhand	14.67	33.93	8.79	13.38	0.72	29	3 rd
Assam	15.53	33.24	8.8	13.24	0.72	30	3 rd
Nagaland	14.98	33.99	8.93	13.17	0.72	31	3 rd
Uttar Pradesh	15.25	34.94	8.63	13.22	0.73	32	3 rd
Manipur	16.01	36.4	8.93	13.18	0.74	33	3 rd
Bihar	16.36	38.28	8.6	13.7	0.75	34	4 th
\hat{X}					0.61		
Σ					0.13		

Source: Compiled by author.

The result indicates that Chandigarh got position 1st with a value of 0.09, and Goa gained second rank with a value of 0.36. There were 36 states and union territories in India in 2022. However, we have taken data only from 34 states and UTs of India.

Table 5: Comparative Analysis of FII for the Years 2012 and 2022

Name of States	2012			2022		
	FII	Ranking	Stages	FII	Ranking	Stages
Chandigarh	0.04	1	1 st	0.09	1	1 st
Delhi	0.31	2	1 st	0.37	3	1 st
Goa	0.38	3	1 st	0.36	2	1 st
Lakshadweep	0.53	4	2 nd	0.5	4	2 nd
Punjab	0.57	5	2 nd	0.56	6	2 nd
Himachal Pradesh	0.57	6	2 nd	0.56	7	2 nd
Kerala	0.57	7	2 nd	0.57	8	2 nd
Puducherry	0.58	8	2 nd	0.59	9	2 nd
Sikkim	0.59	9	2 nd	0.54	5	2 nd
Maharashtra	0.59	10	2 nd	0.61	15	3 rd
Uttarakhand	0.59	11	2 nd	0.59	11	2 nd
Karnataka	0.60	12	3 rd	0.59	10	2 nd

Name of States	2012			2022		
	FII	Ranking	Stages	FII	Ranking	Stages
Dadra & Nagar Haveli	0.60	13	3 rd	0.59	13	2 nd
Haryana	0.60	14	3 rd	0.61	16	3 rd
Tamil Nadu	0.61	15	3 rd	0.6	14	2 nd
Andaman & Nicobar Islands	0.61	16	3 rd	0.59	12	2 nd
Andhra Pradesh	0.63	17	3 rd	0.63	18	3 rd
Gujarat	0.64	18	3 rd	0.65	19	3 rd
Mizoram	0.65	19	3 rd	0.62	17	3 rd
Jammu & Kashmir	0.65	20	3 rd	0.65	20	3 rd
Meghalaya	0.66	21	3 rd	0.69	24	3 rd
Odisha	0.67	22	3 rd	0.67	23	3 rd
West Bengal	0.67	23	3 rd	0.69	25	3 rd
Arunachal Pradesh	0.67	24	3 rd	0.67	22	3 rd
Tripura	0.67	25	3 rd	0.66	21	3 rd
Rajasthan	0.68	26	3 rd	0.7	26	3 rd
Jharkhand	0.68	27	3 rd	0.72	29	3 rd
Madhya Pradesh	0.68	28	3 rd	0.72	28	3 rd
Chhattisgarh	0.69	29	3 rd	0.7	27	3 rd
Uttar Pradesh	0.69	30	3 rd	0.73	32	3 rd
Nagaland	0.70	31	3 rd	0.72	31	3 rd
Assam	0.70	32	3 rd	0.72	30	3 rd
Bihar	0.71	33	3 rd	0.75	34	4 th
Manipur	0.73	34	3 rd	0.74	33	3 rd
\hat{X}	0.60			0.61		
Σ	0.13			0.13		

Source: Author’s Compilation.

Table 5 compares all Indian states’ financial inclusion indices for 2012 and 2022 and each state’s ranking and developmental stage. Chandigarh’s FII value was at its lowest in 2012 (0.04) but increased to 0.09 by 2022. In both the

years 2012 and 2022, Chandigarh is ranked first. Manipur’s maximum FII value in 2012 was 0.73, but Bihar’s maximum FII value in 2022 was 0.75. Manipur had the lowest ranking in 2012, and Bihar had the lowest in 2022.

Table 6: Different Stages of Development

Stages	Categories	Criteria	Value of FII		No. of States	
			2012	2022	2012	2022
I.	High	FII Value \leq MEAN-S.D.	0.47	0.48	3	3
II.	High Middle	FII Value Between (MEAN) AND (MEAN-S.D.)	0.60-0.47	0.61-0.48	8	11
III.	Low Middle	FII Value Between (MEAN) AND (MEAN+S.D.)	0.60-0.74	0.61-0.74	23	19
IV.	Low	FII Value \geq MEAN+S.D.	0.74	0.74	0	1

Source: Author’s compilation.

Table 6 shows the expansion of financial inclusion across all Indian states. The data indicate that for 2012 and 2022, the minimum FII value was 0.47 and 0.48, and the maximum was 0.74. In 2012 and 2022, three states were in the top tier; the high middle group increased from eight in 2012 to eleven in 2022. In the low-middle group in 2012 and 2022, there

were 23 and 19, respectively and only one state in the low group in 2022. The outcome demonstrates a more significant disparity between the high and low groups. Chandigarh, Delhi and Goa benefit most from the geographical pattern of expansion of financial inclusion, although eastern states are far behind in this area.

Table 7: Categories and Stages of States

Categories	Stages	States (2012)	States (2022)
High	I.	Chandigarh, Goa, Delhi	Chandigarh, Delhi, Goa
High Middle	II.	Lakshadweep, Himachal Pradesh, Punjab, Kerala, Puducherry, Sikkim, Maharashtra, Uttarakhand,	Lakshadweep, Sikkim, Dadra & Nagar Haveli, Punjab, Himachal Pradesh, Kerala, Puducherry, Uttarakhand, Karnataka, Andaman & Nicobar Islands, Tamil Nadu.
Low Middle	III.	Karnataka, Haryana, Andaman & Nicobar Islands, Tamil Nadu, Dadra & Nagar Haveli, Andhra Pradesh, Gujarat, Mizoram, Jammu and Kashmir, Meghalaya, Odisha, West Bengal, Tripura, Arunachal Pradesh, Rajasthan, Madhya Pradesh, Jharkhand, Chhattisgarh, Uttar Pradesh, Nagaland, Assam, Manipur, Bihar	Maharashtra, Haryana, Mizoram, Andhra Pradesh, Jammu and Kashmir, Gujarat, Tripura, Arunachal Pradesh, Odisha, Meghalaya, West Bengal, Rajasthan, Chhattisgarh, Madhya Pradesh, Jharkhand, Assam, Nagaland, Uttar Pradesh, Manipur.
Low	IV.	-	Bihar

Source: Author compilation.

Policy Implications

This study will act as a pathway for the state and central government in framing policies on financial inclusion in India. Similarly, this study will also assist the policymakers, academicians and RBI in framing appropriate policies on financial inclusion in India for serving the unserved segments of the society. As the first study using Wroclaw taxonomic methodology for framing the FII at the sub-national level in India, the findings of the study will assist the policymakers in identifying the states which are being highly financially excluded. The identification of financially excluded states will assist the policymakers, RBI and government in diagnosing the major problem for financial exclusion of these states and devising the appropriate policies and strategies accordingly. Thus, this study will help the government and RBI in identifying the states that are vastly suffering from the problem of financial exclusion and will help them in taking corrective steps to reduce the same in India. Moreover, the findings of the study explicates that the government should establish and enforce regulations that promote the growth of inclusive financial services, ensuring that they are accessible and affordable to all segments of the population. Moreover, the government, banking infrastructure and central bank of India will try to invest more in physical and digital infrastructure to expand access to banking services, particularly in underserved areas, by promoting the development of branches, ATMs and mobile banking solutions. Similarly, the focal area of the banking system should not only to increase the access of banking services to unserved segments of the society, but also to ensure regular and sustainable usage of these financial services by these segments of the society. Thus, the findings will serve as a valuable resource for financial institutions, policymakers and development organisations

to design targeted interventions and policies to promote inclusive growth and financial inclusion at the sub-national level in India.

CONCLUSION

The accessibility and availability of financing significantly influence the nation's economic progress. During the depression phase, access to financial services enables low-income people to defend themselves. The availability of banking services promotes economic expansion, raising the degree of financial inclusion. The cornerstone of any country's inclusive growth is financial inclusion. A nation can experience more significant economic growth if all community segments have accessibility and sufficient access to money. An effective financial system moves money from one sector to another, which contributes to the nation's economic expansion. The study aims to enrich the available literature by offering an in-depth analysis of India's FII at the sub-national level. The result explicates that with the highest FII score in 2022, Chandigarh occupies the first place, followed by Goa, Delhi, Lakshadweep, Himachal Pradesh and Punjab. Chandigarh is ranked 1st out of the 34 states and UTs with an FII value of 0.09. Bihar has the lowest FII score of 0.75, placing it at 34th in India. A developing nation, i.e. India, may achieve an inclusive growth target by ensuring the availability and accessibility of the weaker or rural population with the banking system through financial inclusion. The result indicates that some states, i.e. Bihar, Manipur, Uttar Pradesh, Nagaland, Assam and Jharkhand, still need to improve financial inclusion levels in India. Therefore, the government and the policymakers need to devolve their plans accordingly to ensure inclusive financial inclusion among different states in India.

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