Financial Inclusion in India through Banking Activities over the Time Period 1990-2018

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Abstract

Financial exclusion is treated as an obstacle to sustainable development. In India, over the last few decades, various steps have been taken by the government through several financial institutions, to promote and provide different financial services to the people residing across the country. Our study attempts to measure financial inclusion (FI) year-wise through some banking service indicators (branch penetration, deposit penetration, credit penetration) developed by CRISIL (Credit Rating Information Services of India Limited), which are used in its Inclusix index to measure FI and calculate the scores with the use of the method, 'Max-Min procedure to convert indicators into indices'. Additionally, credit-deposit ratio is considered to assess whether citizens are reaping the benefits from government initiatives towards FI. The analysis is done over the time period 1990-2018, across diverse regions, so as to capture the inclusiveness in financial strategy. The findings show that FI has taken place in terms of availability and access to banking services during the period under study, particularly after FI was formally introduced. However, proper usage of financial services is a long way to go to achieve inclusive growth in remote areas.

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Introduction

Sustainable Development Goals (SDGs), developed by all the United Nation's (UN) Member States in 2015, are a collection of 17 goals to address the serious global challenges we face. SDGs do not identify financial inclusion (FI) as an independent objective, but acknowledge that it is central in achieving many goals such as reduction of poverty and inequality; ensuring well-being and equitable quality education with lifelong learning opportunities; providing access to justice for all by building effective, accountable and inclusive institutions at all levels, etc. Park and Mercado (2015) established that FI has helped in reducing poverty and income inequality significantly in 37 developing Asian economies despite rapid economic expansion in the previous decades. Chibba (2009) suggests that FI is a tool for poverty reduction in promoting inclusive growth to address the Millennium Development Goals (MDGs). Dahiya and Kumar (2020) describe an inclusive financial system as a key to sustainable development of a nation by eliminating or minimising poverty, unequal distribution of income, and dominance of indigenous bankers through studying secondary data empirically for the period 2005-2017 in India. Bank operations have a measurable impact on poverty alleviation and reducing inequality.

In the past, banking services were available only in urban areas of the country. When banking services were extended to rural areas over time, money lenders became strong in the credit market and began to exploit rural citizens by taking advantage of their lack of financial knowledge. It became necessary to extend formal financial services across the country to stop this exploitation. FI strives to remove these barriers that exclude people from participating in the financial sector. Demirguc-kunt and Klapper (2012) revealed that informal borrowing and saving in underdeveloped regions present severe obstacles for growth. Hoda and Terway (2015) addressed credit policy for agriculture in India to support farms in a smart way through rationalising subsidies and investment for inclusive growth starting from 1904, and particularly after nationalisation of commercial banks in 1969.

According to the definition by the Reserve Bank of India (RBI), 'FI is the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as, weaker section and low income groups who are financially excluded, at an affordable cost in a fair and transparent manner by mainstream institutional players.' FI does not only help rural farmers, but also farmers and small vendors in urban areas, agricultural and industrial labourers, people engaged in unorganised sectors, unemployed persons, women, children, old, and physically challenged people. In fact, FI refers to the delivery of financial services to the people of an economy (Chakravarty, 2010). In India, many government agencies and Non Government Organisations (NGOs) have introduced several schemes to work towards FI.

Various indices have been formed and used to measure FI with the growing needs of policy makers. The Alliance for FI Core Set (AFI Core Set) was the first step to establish a common measure of FI where the indicators are meant to measure the fundamental aspects of FI in a standardised way (AFI, 2011). The Core Set Indicators address the two basic dimensions of FI - access and usage of financial services. Access refers to availability of financial services in terms of cost to access, type, and quality of financial services offered. The counterpart of access is exclusion, which may occur due to several limitations such as geographical, socio-economic and opportunity. Access is not synonymous with usage as economic agents might decide not to use accessible financial services due to the reasons stated. The Global Findex Report analyses data of 144 economies to demonstrate the use of financial services by the people. Since 2011, the database is being published every three years. In India, the Inclusix index has been developed by CRISIL (Credit Rating Information Services of India Limited) and was launched by the former Finance Minister, Shri P. Chidambaram on June 25, 2013, to study FI. CRISIL

Inclusix is India's first comprehensive measure of FI in the form of an index, the methodology of which is similar to other global indices used by UNDP (United Nations Development Programme). The index combines three critical indicators of basic financial services - bank branch penetration (BP), deposit penetration (DP) and credit penetration (CP) into one single metric. CP may be in the form of Kisan Credit Card (KCC), General Credit Card (GCC), and Basic Savings Bank Deposit Account (BSBDA). For each of the three indicators, CRISIL evaluates FI at the national/ regional/ state/ district levels. Later, data on life insurance, pension scheme, and micro finance were incorporated in the index. Primarily, FI aims to evaluate the role of three service players - Banks, Micro Finance Institutions (MFI) and Insurers. In our paper, we attempt to measure FI in India in terms of banking activities. It has been well established that the development of banking system stimulates economic growth, and bankers are the custodians and distributors of liquid capital. Maity (2020) reveals that banks need to be financially strong for this purpose. Therefore, performance of the banking sector is crucial to evaluate FI.

Vast literature exists to assess FI through banking activities, initiatives taken by RBI and the government. Iqbal and Sami (2017) state that FI has been treated as a necessary tool in driving away poverty from the country in terms of delivery of banking services to masses including the privileged as well as disadvantaged people at affordable means and conditions. The study examines the impact of FI on growth of the economy over a period of seven years using secondary data from 2007-2008 to 2013-2014, and through multiple regression analysis. Results demonstrate positive and significant impact of the number of bank branches and credit-deposit (C-D) ratio on Gross Domestic Product (GDP) of the country, whereas an insignificant impact has been observed in case of ATM growth on Indian GDP. Garg and Agarwal (2014) examined financial exclusion and inclusion in India over the period 2010-2013 for development of the society through the approaches adopted by banks and initiatives taken by the government. The paper concludes that although enough efforts have been made by stakeholders, they are not yielding the kind of results expected due to conflict of interest among stakeholders. Banks' focus on profitability needs to be addressed by the government since FI is more of social work in the initial years. Further, the study explores innovative products and services, effective regulatory norms, and advanced technology that together can make FI initiative successful. Sahu (2013) assessed the state of FI in India considering regional distribution of financially excluded farmer households using secondary data of 2008. The author also used state-wise secondary data of banking for the period 2011-2012 comprising the number of branches, savings and credit accounts, customers per branch, total amount of deposits and credit to assess FI. The paper estimates FI scores for various states in India following a similar approach used by UNDP, and considering three dimensions -banking penetration: the number of bank accounts as a proportion of the total population; availability of banking services: the number of bank branches per thousand of population, and usage: the volume of credit and deposit as a proportion of the country's GDP. The paper further studies the relationship between FI scores and socio economic variables state-wise. The findings reveal inter-regional discrepancy in FI, which suggest that banks should provide financial literacy programmes and explore FI as business opportunities for the vulnerable groups to achieve economic growth. Development of the rural sector is a prerequisite in this regard.

At the international level, Rahman (2012) demonstrated that the measurement approach developed in the human development literature is also applicable in measuring FI. Following the policy of Central Bank, Malaysia, indicators of FI were identified in the study to monitor the progress with a demand-side survey conducted in 2011. FI index was developed in 2012 in Malaysia. The author considered four dimensions - Convenient accessibility, Take up rate, Responsible usage, and Satisfaction level - to measure FI for promoting growth in Malaysia, and constructed

the index of FI for the general population and low income group separately. The paper concluded that although the promotion of financial services has a positive impact on the overall economy, there is still a need to narrow the gap among different income groups. Spreading FI in the backward regions throws challenges for policymakers as it is linked with financial literacy programmes. Support from all corners of society is needed to ensure development. Wardhono et al. (2016) aimed to describe society's FI in Bondowoso and Jember regencies, and identify the determinants of society's FI in those two regencies from the survey data of Indonesia in 2015. The authors used descriptive statistics and logit model for analysing the data. The result demonstrated considerable FI in those two regencies at the aggregate level due to the availability of sufficient number of banking institutions with financial service facilities. However, a few people still had limited access to financial reach due to low level of financial literacy and insufficient public information. Public access to financial credit facilities was stated to be an important aspect to develop the society. Omar Khayam and Tasneem (2018) attempted to establish that FI in Bangladesh might be successful only when people from excluded regions are brought under formal financial services. Therefore, the paper seeks for a solution to the issue and presents that Unit Banking System may be a probable way to beat financial exclusion. For implementing the system, the paper evaluates the present status, problems, and solution suitable to the economic condition of Bangladesh to address the specific needs without hampering the surroundings.

Research on FI has also been conducted from the global perspective. Sha'ban et al. (2020) have used IMF's (International Monetary Fund) Financial Access Survey data to construct a multidimensional FI index for a global sample of 95 countries over the period 2004-2015 to eradicate poverty. Results show an overall progress in FI during the study period. FI is positively and significantly correlated with GDP per capita, employment, bank competition, human development, government integrity, and internet usage. Raichoudhury (2016) measured FI using data sets of several countries from Financial Access Survey and the index of FI developed by Sarma (2012), which is similar to the approach by UNDP with weights attached to the dimensions. The paper presents an empirical analysis of the relationship between FI and human development across countries. The correlation coefficient between FI index and Human Development Index (HDI) values and ranks were calculated for the year 2013; the result showed a significant positive correlation between the two indices. Most high-income countries showed a high score of FI. Usha and Johnson (2016) focused on the issue of the need for effective financial intermediation for higher economic growth by allocating scarce resources and mobilising savings. The paper examined the extent of growth in FI among countries across the world during 2011-2014 within the framework of national and international standards after a series of policies were implemented. The study considered Global Findex-2015, which provided a detailed analysis of the financial penetration across the world from 2011 to 2014 based on income, gender, age, and region. The correlation between Gross National Income (GNI) and FI indicators was established in the study based on this index. The study also assessed the change in banking penetration for the year 2014 over 2011. The findings revealed the correlation between GNI and ownership of accounts; savings; credit availability; debit card usage, and concluded FI to be the ladder of development of a nation. Rohilla (2017) assessed the global position of India in the context of growth via FI based on secondary data of the year 2010. The study further examined the need for FI, RBI's policy to support FI, and the challenges to achieve the goal. The key parameters taken to judge FI were bank density, ATM density, bank credit to GDP, and bank deposit to GDP. The result shows that India's global standing is not impressive compared to other countries. In order to achieve the goal of FI, banks, NGOs, MFIs, and regulators have to work together. Investment opportunity determined by branch density is considered as an important factor in addition to investment awareness to ensure FI.

In India, a few studies on FI have been done using CRISIL's Inclusix index. Shah and Dubhashi (2015) assessed inclusive growth via FI through banking services, initiatives taken by the government, and RBI. The authors reviewed various papers on FI in India and worldwide, and discussed the limitations of the Global Findex Database. They highlighted the progress in FI in India over the period 2010-2013 using secondary banking data. In addition, the paper discussed the importance of CRISIL's Inclusix index, and assessed FI based on CRISIL's data of 2009-2011 for the entire country and segregating the regions into north, south, east and west. The study concludes that the availability of quality financial services in rural areas is needed for overall economic growth since a large number of people live in rural India and derive their livelihoods locally. In this regard, financial literacy of the poor and technological advancement are extremely important. The study reveals that one of the ways to expand the outreach of banking services in a cost-effective manner could be by forming linkages with MFIs, NGOs and local communities. The study confirms the occurrence of FI during the period under study, but concludes with the need of reshaping and adding new business policies in the Indian banking sector to include the low income group. The study further highlights that at the initial stage, FI might not be profitable for the banking sector, but it is likely to be lucrative in future. Mittal & Shukla (2014) present FI as a systematic effort by the government of India and RBI to provide essential financial services to all, especially the poor. Even after so many years of independence, most poor Indians live in rural areas and are not literate enough to understand different financial services. The paper reviews various schemes initiated by the government, RBI and others to promote FI and examines the status of FI in India as per Census 2001 and 2011 for rural and urban areas separately. The study further discusses the coverage of banking services in India region-wise considering secondary data of 2005 and data of FI developed by CRISIL for the banking sector for the period 2009-2011. The study concludes that the Indian financial system has grown rapidly in the last three decades. However, creating an appropriate credit delivery system and monitoring the productive use of that credit are necessary to reach the poor in remote areas under the mission of FI.

Significance of the study

The above studies indicate the importance of the banking sector and government initiatives to achieve FI and inclusive growth worldwide. India is not an exception to this. In this context, mathematical tools have been used to form several types of indices, statistical tools to analyse secondary data, and econometric tools to determine key factors affecting FI or key indicators of FI affecting economic growth. Studies have been done principally using secondary data and sometimes primary data, may be intertemporal or cross section, and for the whole economy or region-specific. All studies indicate that financial literacy and technological advancement are needed. Development in rural areas is a prerequisite to achieve FI.

The present paper attempts to extend the existing literature to analyse India's performance in achieving FI. The study assesses FI across the entire country and separately for underdeveloped and developed regions over the time period 1990-2018. The paper considers secondary banking data of BP, DP and CP (as used in CRISIL's Inclusix index), and data of credit and deposits to assess FI. Our study differs from the earlier research works in a few aspects. It considers a longer term horizon to assess FI in India than any other previous studies and also considers two distinct time phases - before and after the term 'FI' was coined in India. The study segregates the entire economy into developed and underdeveloped regions to capture FI in the true sense in the prescribed two time phases to formulate further development policies by gaining experience from the past. In addition, the study considers three crucial dimensions of banking services - availability, access and usage - to assess FI. All these dimensions of banking services are equally important to frame government policies to achieve FI in a developing economy with diversified people. The paper further seeks to highlight the role of grassroot level

institutions along with government to empower the marginal population residing especially in remote areas to ensure responsible usage of financial services.

Research objectives

Keeping in view the several measures already taken by the Indian banking sector to promote FI, the present paper attempts to address the following specific objectives:

1. To examine FI considering the three crucial indicators of banking services developed by CRISIL - BP, DP and CP - for the entire economy as well as segregating developed and underdeveloped regions over the time period 1990-2018, and in the two distinct time phases; before and after the term 'FI' was coined in India.

2. To estimate the scores of FI in terms of the above three banking service indicators over the time period 1990-2018 for the entire economy, and segregating developed and underdeveloped regions.

3. To assess FI in terms of the C-D ratios of banks over the time period 1990-2018 for the entire economy, and segregating developed and underdeveloped regions.

4. To estimate the average scores of FI in terms of banking activities indicated by CRISIL and average values of C-D ratios in the two prescribed time phases for the entire economy, and segregating developed and underdeveloped regions.

In this regard, in the next section, history of FI in India is discussed. Section 5 deals with methodology followed by a section on data analysis and findings. In sections 7, 8 and 9, conclusions, applicability and generalisability, and limitations of the study are presented respectively.

History of FI in India

Past literature indicates that FI was initiated in India when the government (under the British rule) first established Co-operative Society Act in 1904 for rural areas as the banking sector was restricted to urban society then. To extend the Co-operative Society Act to rural India, Maclagan Committee (1915) and Royal Commission of Agriculture in India (1928) were introduced. Later, the RBI Act (1934) set up Agricultural Credit Department within the bank. RBI further introduced All India Rural Credit Survey in 1951 to finance rural India in an efficient way. In 1955, State Bank of India was established. Subsequently, the All India Rural Credit Review Committee adopted the multi-agency approach for better functioning in 1969, and 14 commercial banks were nationalised in the same year. In 1975, Regional Rural Bank was set up, and six more commercial banks were nationalised in 1980. In 1982, RBI took another step towards the development of rural credit policy through the establishment of National Bank for Agricultural and Rural Development (NABARD). KCC Scheme, Self Help Group (SHG)-Bank Linkage Programme, and Special Agricultural Credit Plan (SACP) were introduced in the 1990s. SACP became more active during 2005-2006 as the mechanism was extended to private sector banks along with public sector banks. Another mission was accelerated by the adoption of Doubling of Agricultural Credit Policy (DCAP) over the 3-year period starting from 2003-2004.

India was already progressing towards FI even before the term 'FI' was coined in April, 2005, in the Annual Policy Statement presented by Y. Venugopal Reddy, the then RBI Governor. Mangalam, in Puducherry, was the first village in India where all the households were privileged to reap the benefits of FI. In 2005, GCC was issued to provide credit facilities to low-income groups in rural and semi-urban areas. In the same year, FI measures on a mission mode were started through the launch of no-frills accounts by RBI. In Mangalam village, norms were relaxed for people intending to open an account; intermediaries like business correspondents were introduced by commercial banks; GCC and KCC were issued to promote FI. In the subsequent phase, RBI permitted commercial banks to make use of the services of NGOs, SHGs, MFIs and

other civil society organisations as intermediaries (business correspondents of commercial banks) for providing financial and banking services.

Dr. C. Rangarajan, Government official of India, took a few more initiatives for FI in 2008, by constituting two funds - FI Fund was to meet the cost of development and promotional intervention of FI, and FI Technology Fund was to meet the cost of technology adoption. Each fund would receive Rs. 500 crores to be contributed by the government of India, RBI, and NABARD in the ratio 40:40:20 in a phased manner over five years depending upon utilisation of funds.

In 2010, the no-frill accounts were replaced by the BSBDAs. Later, a number of initiatives were undertaken - Aadhar Card (Unique Identification Number) for Indian Nationals; Swabhiman (to cover the economic distance between rural and urban India); Swabhiman movement, 2011 (to facilitate opening of bank accounts; providing need based credit and remittance facilities; promoting financial literacy in rural India through Business Correspondents); Pradhan Mantri Jan Dhan Yojana, 2014 (to provide financial services to households that have bank accounts).

Methodology

In the present study, to analyse the performance of India towards achieving FI based on secondary data, the entire dataset is divided into two distinct time phases. As the term 'FI' was coined in India in 2005, Phase I and Phase II have been broken up into two time periods - 1990-2004 and 2005-2018 respectively. Further, in the study, rural and semi-urban areas are categorised as underdeveloped region (UR), while urban and metropolitan areas are categorised as developed region (DR).

In the study, banking service indicators (BP, DP, CP) in number in per hundred thousand of population in India have been calculated over the time period 1990-2018 for the entire economy and with UR-DR divide separately. Segregation of data for UR and DR is important as the calculated figures at disaggregative level might help the authorities plan for deliberations of financial services for vulnerable groups. This needy, vulnerable group mostly resides in the UR in a developing country like India.

Further, the rates of change of banking service indicators in per hundred thousand of population are calculated over the same data set, mutually for the entire economy and with UR-DR divide, to judge development in the true sense during the assessment period in India.

To measure FI in India in terms of the three above-mentioned indicators of banking services developed by CRISIL, three separate indices have been formed with respect to each indicator considering the data during 1990-2018 and with the help of the method, 'Max-Min procedure to convert indicators into indices', to get the scores of the three indices separately for each year under the assessment period. The basic formula for converting indicator value (V) into an index score (I) is given by,

$$I = \frac{(V - Min.Value)}{(Max.Value - Min.Value)}$$

In the formula, $Min.Value$ is the minimum admissible value (lower bound) and $Max.Value$ is the maximum admissible value (upper bound). It is a relative index with a scale of 0 to 1, and the score of 1 indicates the ideal state for each of the three indicators. This approach of measuring FI is similar to the approach used by UNDP for computation of some well-known development indices like HDI, GDI (Gender Development Index), HPI (Human Poverty Index), and so on. In the study, equal weightage has been given to each indicator since there is no evidence to indicate that one dimension is more important than the other. Moreover, unlike the case of HDI, there is no consensus so far in the literature on which set of dimensions or attributes is important to measure FI.

Subsequently, the arithmetic mean of the scores of three indices for each year has been calculated to get the overall score of FI for that particular year. In this way, the scores of FI in India have been calculated for the entire time period 1990-2018. Scores have been calculated year-wise for the whole economy and with UR-DR divide separately in the entire assessment period. Higher the index score, higher the rate of FI, and vice versa.

Increase in the number of banking service indicators do not reflect the amount of banking transactions taking place. Hence, the volume (in Rupees) of total credit and deposits of the banking sector have been taken into account and C-D ratios have been calculated over the time period 1990-2018 to understand the effectiveness of FI for the entire economy and with UR-DR divide separately.

Graphical representations of the data have been presented for the entire economy as well as segregating UR and DR in different stages to compare and contrast the performance towards achieving FI over time and across regions.

CRISIL's Inclusix index uses parameters that focus only on the number of people who have availed of various financial services, rather than on the amounts deposited or loaned. Therefore, in the study to assess FI, CRISIL's banking service indicators as well as C-D ratios have been considered. The study captures availability as a dimension of banking services through the number of bank branches per hundred thousand of population; access as a dimension of banking services through the number of credit and deposit accounts per hundred thousand of population; and usage as a dimension of banking services through C-D ratios.

Finally, combining the scores of FI determined through CRISIL's criteria and C-D ratios, the study attempts to capture the performance of the banking sector towards achieving FI in India over the period 1990-2018. The study segregates the entire time period into two distinct phases as stated, so as to calculate the average figures of the indicators of FI to augment understanding of the appropriateness of actions to be taken by the authorities to eradicate financial exclusion over time for the whole country and across different regions.

Data analysis and discussion

In this section, we analyse FI in terms of bank-led activities in India over the time period 1990-2018 for the entire economy and with UR-DR divide separately.

Performance of the banking service indicators to assess FI as developed by CRISIL

To address the first objective and discuss FI in terms of banking service indicators developed by CRISIL (BP, DP and CP), calculations have been made for the number of bank branches, deposit accounts, and credit accounts of commercial banks in per hundred thousand of population during the time period 1990-2018 for the entire economy and depicted in Table 1.

Table 1. Indicator values of banking services in per hundred thousand of population for the whole economy over the entire assessment period

Years	Number of bank branches in per hundred thousand of population	Number of deposit accounts in per hundred thousand of population	Number of credit accounts in per hundred thousand of population
1990	6.84	38168.15	6166.42
1991	6.76	39852.09	6950.28
1992	6.66	40663.82	7242.88
1993	6.60	40943.44	6697.84
1994	6.54	41971.05	6308.26
1995	6.47	40463.31	6027.14
1996	6.42	39904.71	5769.04
1997	6.35	39622.24	5556.80
1998	6.30	39238.67	5256.09
1999	6.26	39102.63	5038.74
2000	6.19	39071.02	5145.96
2001	6.13	39816.67	4871.16
2002	6.05	40243.53	5157.61
2003	5.99	40132.39	5352.21
2004	5.95	40469.97	5877.18
2005	5.96	40675.19	6722.75
2006	5.97	41621.93	7330.50
2007	6.08	43880.60	7981.85
2008	6.33	48444.45	8910.94
2009	6.56	54388.46	9037.83
2010	6.90	59538.24	9612.72
2011	7.27	64795.37	9655.69
2012	7.79	71355.06	10339.80
2013	8.32	81594.87	10015.70
2014	9.11	94682.49	10709.30
2015	9.67	109902.70	11009.40
2016	10.08	124281.10	12259.20
2017	10.51	136453.80	12877.40
2018	10.53	141318.90	14562.60

Data source: Calculated by authors

The data of banking service indicators and population have been segregated for UR and DR to capture inclusion in India's growth policy through FI. After calculating the values of the three indicators of banking services in per hundred thousand of population considering UR-DR divide, the data are depicted in Table 2.

Table: 2. Indicator values of banking services in per hundred thousand of population with UR-DR divide over the entire assessment period

Years	Number of bank branches in per hundred thousand of population		Number of deposit accounts in per hundred thousand of population		Number of credit accounts in per hundred thousand of population	
	UR	DR	UR	DR	UR	DR
1990	7.09	6.11	38168.15	62254.28	6745.81	4477.89
1991	7.04	5.95	31285.49	64517.72	7540.96	5249.56
1992	6.93	5.90	32206.01	64756.09	7599.48	6227.08
1993	6.85	5.89	32408.26	64996.44	7270.34	5084.47
1994	6.79	5.84	33018.69	66930.42	6957.75	4497.47
1995	6.55	6.25	30825.14	67049.32	6539.25	4614.56
1996	6.48	6.252	30923.98	64412.93	6217.90	4544.09
1997	6.39	6.236	31055.48	62751.34	5903.67	4620.30
1998	6.32	6.251	31109.78	60951.59	5641.05	4227.83
1999	6.24	6.286	31209.96	59959.70	5169.57	4692.99
2000	6.17	6.25	31398.12	59131.21	5226.67	4934.96
2001	6.09	6.251	32020.75	59945.11	4717.88	5266.92
2002	6.01	6.173	31916.70	61398.44	5124.15	5242.61
2003	5.94	6.1	32026.46	60396.62	5173.07	5800.03
2004	5.88	6.118	32300.08	60566.58	5188.83	7570.41
2005	5.85	6.22	32890.58	59518.29	5859.21	8813.02
2006	5.57	6.935	31824.29	64959.07	6155.59	10129.05
2007	5.62	7.167	34058.95	66900.63	6405.91	11675.55
2008	5.78	7.585	37777.89	73043.95	6873.55	13609.63
2009	5.96	7.926	43704.88	78633.35	6934.67	13810.66
2010	6.24	8.385	48516.52	84150.88	7521.37	14282.94
2011	6.63	8.688	53802.46	88950.58	8005.83	13280.98
2012	7.20	9.063	60439.56	94945.20	8440.48	14444.67
2013	7.85	9.325	71111.58	103868.74	9222.71	11700.64
2014	8.78	9.797	85287.20	114299.34	9980.99	12229.95
2015	9.39	10.24	102033.22	126042.24	10480.36	12094.44
2016	9.83	10.58	118290.26	136344.97	11539.86	13707.66
2017	10.00	11.5	128786.32	151606.33	11912.10	14784.92
2018	10.14	11.3	135677.43	152255.27	12601.06	18365.15

Data source: Calculated by authors

The rate of change is more important than merely the number of banking service indicators to judge the performance of those indicators within a specific time frame. The relative rates of change of the number of bank branches, deposit accounts, and credit accounts in per hundred thousand of population have been calculated for the data set presented in Table 1, for the entire economy and depicted in Table 3.

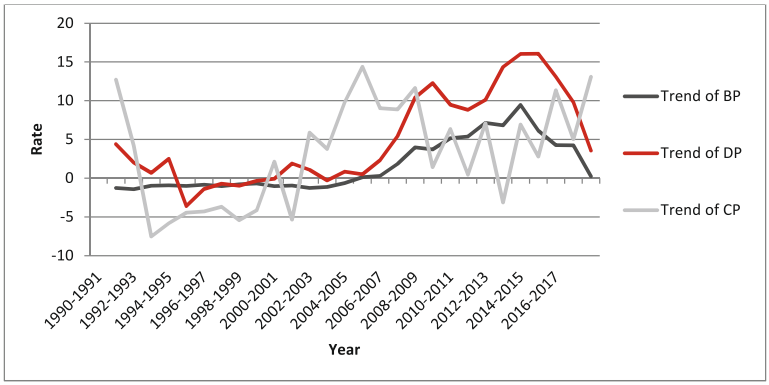
Table 3. Rates of change of the banking service indicators in per hundred thousand of population for the whole economy over the entire assessment period

Time periods	Rates of change in the number of bank branches in per hundred thousand of population	Rates of change in the number of deposit accounts in per hundred thousand of population	Rates of change in the number of credit accounts in per hundred thousand of population
1990-1991	-1.25	4.41	12.71
1991-1992	-1.41	2.04	4.21
1992-1993	-0.98	0.69	-7.53
1993-1994	-0.91	2.51	-5.82
1994-1995	-1.01	-3.59	-4.46
1995-1996	-0.84	-1.38	-4.28
1996-1997	-1.04	-0.71	-3.68
1997-1998	-0.79	-0.97	-5.41
1998-1999	-0.69	-0.35	-4.14
1999-2000	-1.04	-0.08	2.13
2000-2001	-0.95	1.91	-5.34
2001-2002	-1.27	1.07	5.88
2002-2003	-1.13	-0.28	3.77
2003-2004	-0.64	0.84	9.81
2004-2005	0.14	0.51	14.39
2005-2006	0.28	2.33	9.04
2006-2007	1.86	5.43	8.89
2007-2008	3.99	10.40	11.64
2008-2009	3.72	12.30	1.42
2009-2010	5.15	9.47	6.36
2010-2011	5.38	8.83	0.45
2011-2012	7.13	10.10	7.09
2012-2013	6.81	14.40	-3.13
2013-2014	9.45	16.00	6.93
2014-2015	6.14	16.10	2.80
2015-2016	4.27	13.10	11.35
2016-2017	4.25	9.79	5.04
2017-2018	0.24	3.57	13.09

Data source: Calculated by authors

The graphical representation of the data contained in Table 3 is depicted in Figure 1 to demonstrate the trends for the rate of change of the three banking service indicators - BP, DP and CP - in per hundred thousand of population, for the entire economy.

Figure 1. Trends for the rates of change of the three banking service indicators for the whole economy over the entire assessment period



Source: Authors' analysis

From the same logical consideration, estimations have been made for the relative rates of change of the number of bank branches, deposit accounts, and credit accounts in per hundred thousand of population over the data presented in Table 2, with UR-DR divide, to confine the extensive growth policy in India. The estimated figures are depicted in Table 4.

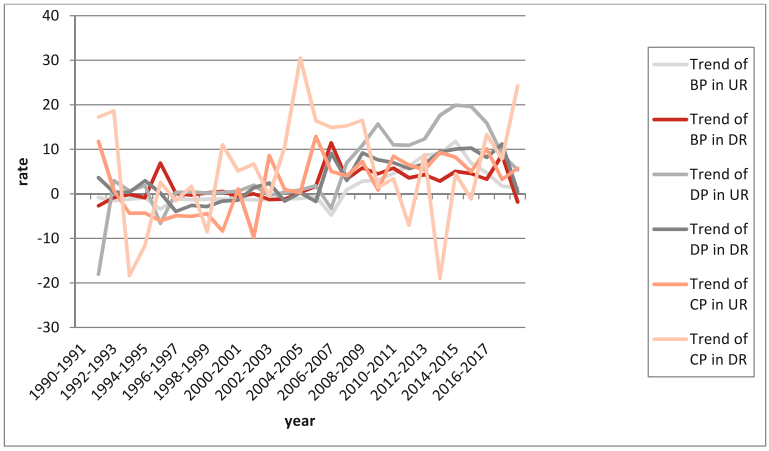
Time periods	Rates of change in the number of bank branches in per hundred thousand of population		Rates of change in the number of deposit accounts in per hundred thousand of population		Rates of change in the number of credit accounts in per hundred thousand of population	
	UR	DR	UR	DR	UR	DR
1990-1991	-0.79	-2.66	-18.03	3.64	11.79	17.23
1991-1992	-1.55	-0.80	2.94	0.37	0.78	18.62
1992-1993	-1.19	-0.15	0.63	0.37	-4.33	-18.35
1993-1994	-0.88	-0.87	1.88	2.98	-4.30	-11.55
1994-1995	-3.44	6.93	-6.64	0.18	-6.02	2.60
1995-1996	-1.15	0.08	0.32	-3.93	-4.91	-1.53
1996-1997	-1.30	-0.26	0.43	-2.58	-5.05	1.68
1997-1998	-1.16	0.25	0.18	-2.87	-4.45	-8.49
1998-1999	-1.15	0.56	0.32	-1.63	-8.36	11.00
1999-2000	-1.22	-0.57	0.60	-1.38	1.11	5.16
2000-2001	-1.33	0.01	1.98	1.38	-9.74	6.73
2001-2002	-1.30	-1.24	-0.33	2.42	8.61	-0.46
2002-2003	-1.11	-1.19	0.34	-1.63	0.96	10.63

Time periods	Rates of change in the number of bank branches in per hundred thousand of population		Rates of change in the number of deposit accounts in per hundred thousand of population		Rates of change in the number of credit accounts in per hundred thousand of population	
	UR	DR	UR	DR	UR	DR
2003-2004	-1.04	0.30	0.85	0.28	0.31	30.52
2004-2005	-0.53	1.67	1.83	-1.73	12.92	16.41
2005-2006	-4.75	11.48	-3.24	9.14	5.06	14.93
2006-2007	0.95	3.35	7.02	2.99	4.07	15.27
2007-2008	2.83	5.84	10.92	9.18	7.30	16.57
2008-2009	3.12	4.49	15.69	7.65	0.89	1.48
2009-2010	4.60	5.79	11.01	7.02	8.46	3.42
2010-2011	6.29	3.61	10.90	5.70	6.44	-7.02
2011-2012	8.67	4.31	12.34	6.74	5.43	8.76
2012-2013	8.99	2.89	17.66	9.40	9.27	-19.00
2013-2014	11.82	5.06	19.93	10.04	8.22	4.52
2014-2015	6.94	4.53	19.63	10.27	5.00	-1.11
2015-2016	4.75	3.28	15.93	8.17	10.11	13.34
2016-2017	1.74	8.78	8.87	11.19	3.23	7.86
2017-2018	1.36	-1.82	5.35	0.43	5.78	24.22

Data source: Calculated by authors

The data in Table 4 have been presented graphically with canvassing the trends for the rates of change of the three banking service indicators in per hundred thousand of population with UR-DR divide in Figure 2.

Figure 2. Trends for the rates of change of the three banking service indicators with UR-DR divide over the entire assessment period



Source: Authors' analysis

From Figures 1 and 2, wide ranges of fluctuations in the rates of change in the number of three banking service indicators for the entire economy and with UR-DR divide have been perceived during the period under study. Therefore, for further analysis, the entire time period has been alienated into two distinct meaningful phases; one is from 1990-1991 to 2004-2005 (before the term 'FI' was coined in India, although it was in practice), and the other one is from 2005-2006 to 2017-2018 (after inclusive growth became a formal goal in India treating FI as one of the means to achieve it). The average values of the rates of change of the three banking service indicators in per hundred thousand of population for the entire economy and with UR-DR divide separately have been calculated in the two distinct time phases. The calculated figures are presented in Table 5.

Table 5. Average values of the rates of change of the three banking service indicators in per hundred thousand of population in the two distinct time phases with variants of regions

Variants for assessing FI	Variants of regions	Time periods	
		1990-1991 to 2004-2005	2005-2006 to 2017-2018
Average values of rates of change of the number of bank branches in per hundred thousand of population	Entire economy	-0.92	4.51
	UR	-1.28	4.41
	DR	0.14	4.74
Average values of rates of change of the number of deposit accounts in per hundred thousand of population	Entire economy	**0.44**	**10.13**
	UR	**-0.85**	**11.69**
	DR	**-0.28**	**7.53**
Average values of rates of change of	Entire economy	**0.82**	**6.23**
	UR	**-0.71**	**6.10**
	DR	**5.35**	**6.40**

Data source: Calculated by authors

Table 5 demonstrates that though the average values of the rate of change of the number of bank branches in per hundred thousand of population have moderately increased in the second phase of FI, the average values of the rate of change of the number of deposit accounts in per hundred thousand of population have marked considerable increase in the second phase compared to the first phase for the whole economy and with UR-DR divide as well. Moreover, higher average value of the rate of change of the number of deposit accounts in per hundred thousand of population in UR as compared to DR in the second phase reflects the success of the authority in spreading FI in terms of availability and access to financial services. In case of CP, in the first phase of FI, the data show that DR already had a moderate sum of credit facility, but this facility was poor in UR. CP at a remarkable rate has been perceived in the second phase of FI in India for the entire economy and for UR as well, which may also be considered as the policies being successful in ensuring equitable distribution and justice in terms of availability and access to financial services.

However, availability and access to banking services are not sufficient to judge FI. Responsible usage of financial capital is equally important since it enables people to make long term investment decisions, participate in productive activities accordingly, and cope with unexpected short-term economic shocks.

6.2. Estimation of the scores of FI following CRISIL

To address the second objective to measure the scores of FI year-wise considering the data of the three banking service indicators - BP, DP and CP- in per hundred thousand of population for the entire economy presented in Table 1, the method, 'Max-Min procedure to convert indicators into indices' has been used over the time period 1990-2018. The year-wise indices scores are depicted in Table 6.

Table 6. Scores of FI in terms of the three banking service indicators for the whole economy over the entire assessment period

Years	BP	DP	CP
1990	0.20	0.00	0.13
1991	0.18	0.02	0.22
1992	0.16	0.02	0.25
1993	0.14	0.03	0.19
1994	0.13	0.04	0.15
1995	0.11	0.02	0.12
1996	0.10	0.02	0.09
1997	0.09	0.01	0.07
1998	0.08	0.01	0.04
1999	0.07	0.01	0.02
2000	0.05	0.01	0.03
2001	0.04	0.02	**0.00**
2002	0.02	0.02	0.03
2003	0.01	0.02	0.05
2004	**0.00**	0.02	0.10
2005	0.00	0.02	0.19
2006	0.01	0.03	0.25
2007	0.03	0.06	0.32
2008	0.08	0.10	0.42
2009	0.13	0.16	0.43
2010	0.21	0.21	0.49
2011	0.29	0.26	0.49
2012	0.40	0.32	0.56
2013	0.52	0.42	0.53
2014	0.69	0.55	0.60
2015	0.81	0.70	0.63
2016	0.90	0.84	0.76
2017	0.99	0.95	0.83
2018	**1.00**	**1.00**	**1.00**

Data source: Calculated by authors

The scores of FI have also been calculated year-wise for the data of the three banking services indicators - BP, DP and CP - in per hundred thousand of population with UR-DR divide over the data presented in Table 2, during the time period 1990-2018. Similar to Table 6, these scores are depicted in Table 7.

Table 7. Scores of FI in terms of the three banking service indicators with UR-DR divide over the entire assessment period

Years	BP		DP		CP	
1990	0.33	0.05	0.07	0.03	0.26	0.02
1991	0.32	0.02	0.00	0.06	0.36	0.07
1992	0.30	0.01	0.01	0.06	0.37	0.14
1993	0.28	0.01	0.02	0.06	0.32	0.06
1994	0.27	**0.00**	0.02	0.08	0.28	0.02
1995	0.22	0.07	**0.00**	0.09	0.23	0.03
1996	0.20	0.07	0.00	0.06	0.19	0.02
1997	0.18	0.07	0.00	0.04	0.15	0.03
1998	0.16	0.07	0.00	0.02	0.12	**0.00**
1999	0.15	0.08	0.00	0.01	0.06	0.03
2000	0.13	0.07	0.01	**0.00**	0.06	0.05
2001	0.11	0.07	0.01	0.01	**0.00**	0.07
2002	0.10	0.06	0.01	0.02	0.05	0.07
2003	0.08	0.05	0.01	0.01	0.06	0.11
2004	0.07	0.05	0.01	0.02	0.06	0.24
2005	0.06	0.07	0.02	0.00	0.14	0.32
2006	**0.00**	0.19	0.01	0.06	0.18	0.42
2007	0.01	0.23	0.03	0.08	0.21	0.53
2008	0.05	0.31	0.07	0.15	0.27	0.66
2009	0.09	0.37	0.12	0.21	0.28	0.68
2010	0.15	0.45	0.17	0.27	0.36	0.71
2011	0.23	0.50	0.22	0.32	0.42	0.64
2012	0.36	0.57	0.28	0.39	0.47	0.72
2013	0.50	0.62	0.38	0.48	0.57	0.53
2014	0.70	0.70	0.52	0.59	0.67	0.57
2015	0.84	0.78	0.68	0.72	0.73	0.56
2016	0.93	0.84	0.83	0.83	0.87	0.67
2017	0.97	**1.00**	0.93	0.99	0.91	0.75
2018	**1.00**	0.96	**1.00**	**1.00**	**1.00**	**1.00**

Data source: Calculated by authors

While calculating the scores of FI year-wise from the data at aggregate level, there remains the possibility of over or under estimation which may seem inappropriate in case of backward regions. Therefore, scoring of FI separately for UR and DR seems to be a more objective method of analysis.

The scores of FI in overall banking services for a particular year is calculated by taking arithmetic mean of the scores of the three indicators and putting equal weightage for all indicators giving each equal importance as stated earlier. Accordingly, the scores of FI for the three banking service indicators over the data presented in Table 6 have been calculated during the time period 1990-2018 for the entire economy and depicted in Table 8.

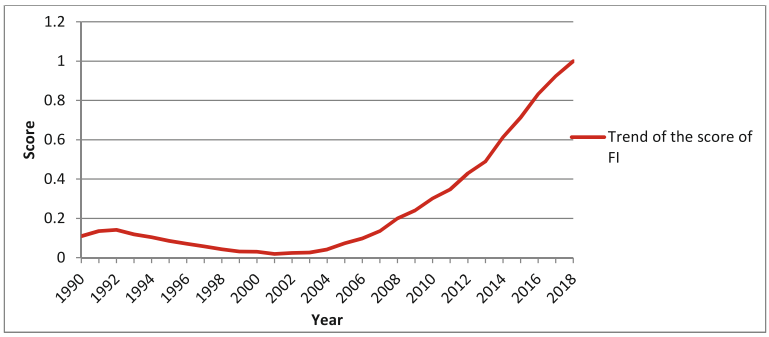
Table 8. Scores of FI in overall banking services for the whole economy over the entire assessment period

Years	Scores of FI
1990	0.11
1991	0.14
1992	0.14
1993	0.12
1994	0.10
1995	0.09
1996	0.07
1997	0.06
1998	0.04
1999	0.03
2000	0.03
2001	0.02
2002	0.02
2003	0.03
2004	0.04
2005	0.07
2006	0.10
2007	0.14
2008	0.20
2009	0.24
2010	0.30
2011	0.35
2012	0.43
2013	0.49
2014	0.61
2015	0.71
2016	0.83
2017	0.93
2018	1.00

Data source: Calculated by authors

The trend of the progress of FI in banking services for the entire economy during the time period 1990-2018 is shown in Figure 3.

Figure 3. Trend of FI for the whole economy over the entire assessment period



Source: Authors' analysis

Figure 3 demonstrates a sharp increase in the scores of FI in India from 2003 onwards. The scores of FI in overall banking services with UR-DR divide have been calculated over the data presented in Table 7, following the same procedure as for the entire economy, during the time period 1990-2018 and depicted in Table 9.

Table 9. Scores of FI in overall banking services with UR-DR divide over the entire assessment period

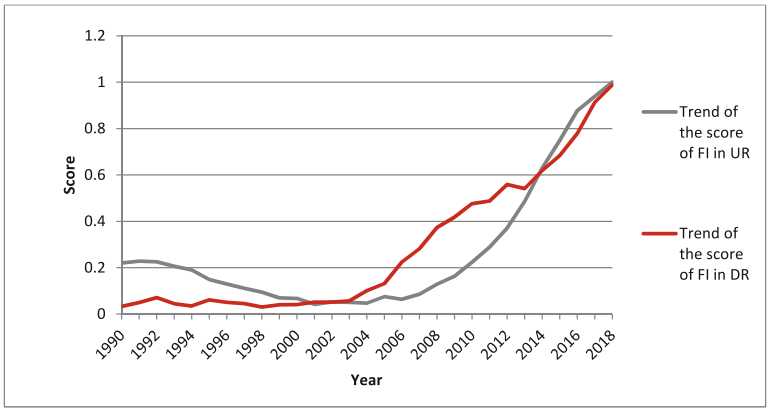
Years	Scores of FI	
	UR	DR
1990	0.22	0.03
1991	0.23	0.05
1992	0.23	0.07
1993	0.21	0.04
1994	0.19	0.03
1995	0.15	0.06
1996	0.13	0.05
1997	0.11	0.05
1998	0.09	0.03
1999	0.07	0.04
2000	0.07	0.04
2001	0.04	0.05
2002	0.05	0.05
2003	0.05	0.06
2004	0.05	0.10
2005	0.08	0.13
2006	0.06	0.22
2007	0.09	0.28
2008	0.13	0.37

Years	Scores of FI	
	UR	DR
2009	0.16	0.42
2010	0.22	0.48
2011	0.29	0.49
2012	0.37	0.56
2013	0.49	0.54
2014	0.63	0.62
2015	0.75	0.68
2016	0.88	0.78
2017	0.94	0.91
2018	1.00	0.99

Data source: Calculated by authors

The data contained in Table 9 have been presented graphically showing trends of the progress of FI in terms of banking services with UR-DR divide during the time period 1990-2018 in Figure 4.

Figure 4. Trends of FI with UR-DR divide over the entire assessment period



Source: Authors' analysis

From Figure 4, it is apparent that from 2002-2003 onwards, the scores of FI have increased remarkably in India across the country irrespective of whether the region is developed or underdeveloped. According to CRISIL, if the score of FI (in percentage) is greater than 55, it shows a high rate of FI. Similarly, the scores between 40.1 and 55.0 show above-average rate of FI; the scores between 25.0 and 40.0 show below-average rate of FI, and the scores less than 25 show low rate of FI.

Following CRISIL's criteria and considering 1990 as the base year, the study comes to the conclusion that in India up to 2009, the rate of FI was low; during 2010-2011, the rate of FI was below-average; during 2012-2013, the rate of FI was above-average; after that, the economy witnessed a high and continuously increasing rate of FI. Further, the study reveals high rates of FI in UR and DR from 2014 and 2012 onwards respectively in India.

Assessment of FI through C-D ratios

C-D ratio indicates how much a bank lends out of the deposits it has mobilised, after compulsorily parking in government securities and as cash reserve with the RBI. Higher C-D ratio ensures more reliance on deposits for lending, and vice-versa.

The mere increase in the numbers of bank branches or people having deposits and credit accounts in banks during a time frame cannot reflect a complete picture of progress in FI via banking operations solely, until and unless the responses of the actual beneficiaries are noted. Public and private financial institutions may promote and provide different financial services to people over time and people may also be eager to enrol themselves to avail the facilities, but the success of FI highly depends on the actual amount of banking transactions taking place across different regions within a specific time frame. Therefore, the amounts (in rupees) of total deposits and credit of the banking sector and the C-D ratios have been taken into account additionally to assess the operations of the banking system while targeting FI. To address the third objective, therefore, C-D ratios of the entire economy have been calculated during the time period 1990-2018 and depicted in Table 10.

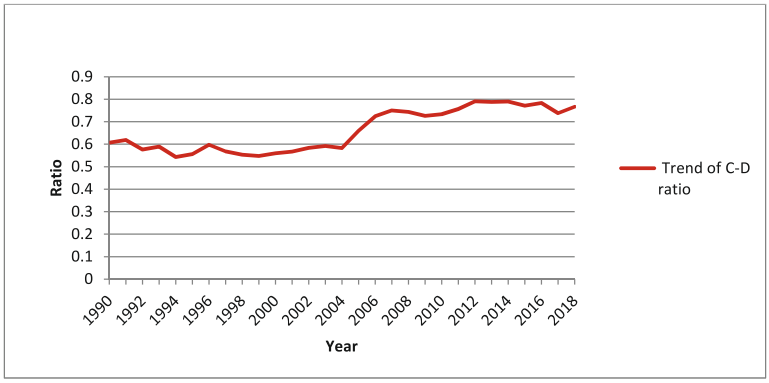
Table 10. C-D ratios for the whole economy over the entire assessment period

Years	C-D ratios
1990	0.61
1991	0.62
1992	0.58
1993	0.59
1994	0.54
1995	0.56
1996	0.60
1997	0.57
1998	0.55
1999	0.55
2000	0.56
2001	0.57
2002	0.58
2003	0.59
2004	0.58
2005	0.66
2006	0.72
2007	0.75
2008	0.74
2009	0.73
2010	0.73
2011	0.76
2012	0.79
2013	0.79
2014	0.79
2015	0.77
2016	0.78
2017	0.74
2018	0.77

Data source: Calculated by authors

The trend for the C-D ratio of the entire economy is depicted in Figure 5.

Figure 5. Trend of C-D ratio of the whole economy over the entire assessment period



Source: Authors' analysis

Figure 5 reveals a fluctuating increasing trend of the C-D ratio for the whole economy during the entire assessment period. Further, C-D ratios with UR-DR divide have been calculated during the time period 1990-2018 to assess the development in India and are depicted in Table 11.

Table 11. C-D ratios with UR-DR divide over the entire assessment period

Years	C-D ratios	
	UR	DR
1990	0.69	0.56
1991	0.66	0.60
1992	0.61	0.56
1993	0.59	0.59
1994	0.51	0.56
1995	0.53	0.57
1996	0.52	0.64
1997	0.47	0.62
1998	0.47	0.60
1999	0.46	0.60
2000	0.44	0.62
2001	0.43	0.64
2002	0.48	0.64
2003	0.50	0.64
2004	0.49	0.63
2005	0.60	0.69
2006	0.71	0.73
2007	0.74	0.75
2008	0.79	0.73

Years	C-D ratios	
	UR	DR
2009	0.70	0.74
2010	0.73	0.74
2011	0.70	0.77
2012	0.69	0.82
2013	0.73	0.81
2014	0.67	0.83
2015	0.65	0.81
2016	0.67	0.82
2017	0.61	0.78
2018	0.68	0.80

Data source: Calculated by authors

The trends for the C-D ratios with UR-DR divide are depicted in Figure 6.

Figure 6. Trends of C-D ratios with UR-DR divide over the entire assessment period

Source: Authors' analysis

In Figure 6, an increasing trend with slight fluctuations has been perceived for DR over the entire assessment period for the C-D ratio; whereas for UR, in the initial phase, the trend of C-D ratio was perceived as declining over time. Subsequently in 2005, it showed a sudden hike and reached its peak in 2008. After that and up till 2018, C-D ratio in UR has been perceived as following a declining trend with fluctuations around the mean value of 0.68.

Assessment of FI in terms of banking service activities indicated by CRISIL and C-D ratios in the two distinct time phases

To address the fourth objective, estimates have been made to get the average scores of FI for banking service activities indicated by CRISIL and average values of C-D ratio as indications of FI. The values have been calculated in the two prescribed time phases for the entire economy and with UR-DR divide. Therefore, combining the sub sections 6.2 and 6.3, Table 12 has been constructed.

Table 12. Average scores of FI in terms of banking activities following CRISIL and average values of C-D ratios in the two distinct time phases with variants of regions

Variants of assessing FI	Variants of regions	Time periods	
		1990-2004	2005-2018
Average scores of FI in terms of banking activities indicated by CRISIL	For the entire economy	0.07	0.46
	For UR	0.13	0.43
	For DR	0.05	0.53
Average values of C-D ratios	For the entire economy	0.58	0.75
	For UR	0.52	0.69
	For DR	0.60	0.77

Data source: Calculated by authors

Table 12 reveals that FI has increased at a significant rate in India in the second phase irrespective of the regions, whether developed or underdeveloped. FI has been perceived in terms of creation of several new accounts to avail different banking facilities, and the actual amount of transactions recorded. Transactions recorded in the banking sector reveal the real beneficiaries after accounts have been opened while aiming to increase FI, and investment boosts economic growth. However, one of the biggest challenges for the banking sector in India is mounting non-performing assets (NPAs), which is responsible for erosion in the quality of bank assets. The main reason for NPAs could be attributed to the types and patterns of lending. Gaur and Mohapatra (2019) have compared NPAs in priority and non-priority sectors with respect to private and public sector banks in India, using secondary data during the period 2012 -2017, and came to the conclusion that better management is needed for loan disbursal to ensure adherence to scheduled repayments.

Conclusions

The study has attempted to assess FI in India over the extended time horizon of 1990-2018, and in two distinct time phases, before and after the term 'FI' was coined. The study is performed for the entire economy and with UR-DR divide in the prescribed period to assess FI policy. This has been done to compare and contrast the study results for better policies in future, which makes the study unique. The scores of FI in UR show improvement in terms of availability and access to banking services since the year 2014. However, in terms of usage of financial services, UR shows under-performance compared to DR during the studied time period, except for the initial few years and the year 2008. In the initial years, credits were provided by the government to the vulnerable groups in UR to use for productive purposes. Therefore, though FI has taken place at a striking rate following CRISIL's criteria of measurement over the entire study period, it is in a dismal state for UR as the resource poor and uneducated people have failed to reap the benefits. Therefore, the reach of FI has remained less than desired.

FI targets many of the SDGs to achieve a better and more sustainable future for all. It is likely that added expansion, modernisation and simplification of the banking sector, and financial awareness of the masses might ensure FI in India. An inclusive financial system helps people avail loans for multiple purposes, save for the future, manage risk through diversifying across investment avenues, and cover risk through various insurance products. This helps to mobilise savings and raise purchasing power of the mass population, which, in turn, could reduce poverty and inequality in income

distribution. Further, in any emergency situation like pandemic or war, FI helps to boost economic growth by acting as a stabiliser. Low and middle income groups can take advantage of digital financial services as the outcomes of FI like mobile money, net banking facilities, etc. which are the same as those offered to upper class society. At the time when emergency situations increase, unequal access to digital infrastructure might pose serious threats to sustenance of the masses. Hence, for contingency planning as well as for wealth creation, FI could play a central role to stabilise the economy and ensure well-being.

Applicability and generalisability of the study

This kind of study could be useful in developing countries with people having diverse socio-economic profiles and where government attempts to promote and provide several financial services to the masses. However, lack of literacy in remote areas often becomes an obstacle. Government policies should be oriented in the direction of empowering the people from the bottom of the pyramid, through MFIs or NGOs, to make markets function better. Availability and accessibility of financial services are not only important factors for financial inclusiveness, but responsible usage plays a vital role in this regard.

Limitations

Although the study covers the extended time period, from 1990 to 2018, to assess FI in India through bank-led initiatives suggested by CRISIL and C-D ratio, limitations of the study are rooted in much more in-depth analysis incorporating the other banking service indicators like ATM service, pension scheme, etc. to assess FI. Analysing account ownership and availability of the lines of credit are also important. Evaluation of the operations of MFIs and insurance along with the banking sector are likely to capture FI more effectively.

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