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Measuring financial inclusion and its present status in South Asian countries. Evidence from a multidimensional Financial Inclusion Index

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Abstract. *The purpose of this paper is to measure the level of financial inclusion in South Asian countries. A sample of seven South Asian countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Pakistan, and Sri Lanka) for the period 2004 to 2018 is being considered for this study. In order to find out the level of financial inclusion, we have proposed a multidimensional Financial Inclusion Index (FII) for South Asian countries but excluded Nepal because of the non-availability of relevant data. This paper reflects the comparative position of financial inclusion among the countries in South Asia. Overall cross country study evidence that the performance of all South Asia countries in financial inclusion (i.e. Financial Inclusion Index) has been increasing from 2004 to 2018 but interestingly, among seven South Asian countries, India is the only country that performs better with the highest value of FII from 2013 to 2017. Furthermore, the results reveal that all South Asian countries were included in the high financial inclusion category in 2018.*

Keywords: financial services, financial inclusion, Financial Inclusion Index, South Asia.

JEL Classification: D53, O16.

1. Introduction

Financial inclusion (FI) has been recent policy anxiety among policymakers across the countries. Financial inclusion is of greater importance because policymakers have found that it can boost development process by reducing poverty (Cull et al., 2014). Furthermore, financial exclusion can threaten economic growth due to a lack of financial infrastructure (Greenwood and Jovanovic, 1990; Angadi, 2003).

As a result, it is clear that financial inclusion shapes a county's financial structure and helps to increase economic development by ensuring equitable distribution of resources. To add further, the Rangarajan Committee (2008) said that "financial inclusion is no longer an option but a necessity". Financial inclusion does not imply that everybody has a bank account. The definition of financial inclusion lies in a broader context. Raghuram Rajan Committee (2009), defines Financial Inclusion as "the universal access to a wide range of financial services at a reasonable cost. This includes not only banking products, but also other financial services, such as insurance and equity products". Several authors have attempted to measure financial inclusion using different proxy indicators and methods. It is observed that a large number of literature has stressed the role of banking sector indicators in the measurement of financial inclusion.

Numerous literature has been used formal financial services indicators like bank branch, credit and deposit penetration as an vital factors of financial inclusion (Beck et al., 2009; Chattopadhyay, 2011; Sarma and Pais, 2011; Allen et al., 2016; Gupte et al., 2012; CRISIL, 2013). This indicates that the banking sector plays a significant role in achieving higher financial inclusion.

In addition, individual indicators of financial inclusion may be misleading when used to determine the extent of financial inclusion (Sarma, 2008). To avoid such an issue, a comprehensive measure of financial inclusion is needed. Some studies have been found on the measurement of financial inclusion, and their major drawback is that they do not provide a measure of financial inclusion that changes over time. In addition, there are only a few researchers like Gupte et al. (2012), Sarma (2008), and Chattopadhyay (2011) who have measured the Financial Inclusion Index for a single year. As a result, a time-varying financial inclusion calculation is needed.

The rest of the study is prepared as follows:

Section 2 review of literature.

Section 3 explains why the study presents only those countries.

Section 4 presents contribution of the study.

Section 5 presents the causes of financial exclusion in South Asia.

Section 6 presents the status of financial inclusion in South Asian countries.

Section 7 presents the steps for measuring Financial Inclusion Index.

Section 8 presents Data sources and variables.

Results and analysis are presented in Section 9.

Section 10 presents conclusions. Finally, in the last section policy recommendations are offered.

2. Review of literature

2.1. Review of literature on calculation of Financial Inclusion Index (FII)

On the calculation or measurement of FII, some related literature is provided. Honohan (2007) made an early attempt to quantify financial inclusion (FI) by constructing cross-country financial access indices. For a large number of countries, Sarma (2008) suggested a multidimensional index for calculating financial inclusion. Furthermore, several empirical studies have been constructed multidimensional Financial Inclusion Index. For the year 2008-2009, Gupte et al. (2012) used Sarma (2008) formula to measure the Financial Inclusion Index, which included some important variables like outreach, use, and ease of transaction. Sarma (2008, 2012 and 2016) investigated three main determinants of financial inclusion: banking penetration, availability of banking services and banking usage.

A research by Sarma and Paise (2011) looked into the relationship between financial inclusion and human growth. They discovered that high financial inclusion would contribute to human development using data on banking services from 49 countries. As a result, financial inclusion can be described as policy interventions that seek to reduce poverty and increase living standards.

Mehrotra et al. (2009), used different formal financial services variables and calculated a multidimensional FII to compute the level of financial inclusion for sixteen major states of India. After that, they try to investigate the relationship between financial inclusion and economic growth among considered states. They argue that economic growth can be induce by allowing individuals to access various banking products.

CRISIL Incusix (2013) is a non-profit organization that attempted to investigate the extent of financial inclusion (FI) at the national, state, regional and district levels. Financial inclusion indexes were developed by CRISIL Inclusix based on three indicators: branch, deposit and credit penetration. However, Chakravarty and Pal (2013), who used eight measures of financial inclusion, to create an axiomatic approach for calculating the level of financial inclusion. Their empirical findings evidence that banking products plays a vital role for achieving a high level of FI.

Yorulmaz (2013) used three indicators of financial inclusion such as availability, accessibility and usages of banking services to compute financial inclusion in Turkey from 2004 to 2010. He closely followed Sarma (2008) and UNDP methodology to calculate the extent of financial inclusion. The study evidence that high income regions have a better extent of financial inclusion in Turkey. Istanbul has scored the highest rank in FII and categorized as a high financial inclusion (FI) region, whereas mid-east Anatolia has scored the lowest rank in FII, and categorized as a low financial inclusion region. A research was conducted by Laha and Kuri (2014) to assess the extent of financial inclusion in India. They developed two FII, one for demand side data and other for supply side data. The researcher came to a conclusion that there are some major disparities in access to formal financial services in India between rural and urban areas.

Using all the important indicators of financial inclusion such as usage, barriers and access of banking services, Camara and Tuesta (2014) developed a FII by employing two stages PCA approach from 2004 to 2012 in 82 developed and under developed countries. Park and Mercado (2015) followed the methodology of Sarma (2008) for FII for 188 countries from 2004 to 2012. They used five financial inclusion dimensions such as two availability indicators of banking services (ATMs per 1 lakh adults, and bank branches per 1 lakh adults), three usage indicators of banking services. Financial Inclusion Index (FII) was measured individually for demand and supply side indicators of FI by Ambarkhane et al. (2016) and Sethy (2016). Sethy (2016) computed two FII (i.e. FII_S and FII_D). According to his findings, India is classified as having high FI (with demand-side indicators) from 2010 to 2012, but low FI (with supply-side indicators) from 1987 to 1988 and, 1989 to 2009.

Specifically, it can be seen that different studies (e.g. Yorulmaz, 2013; Park and Mercado, 2015; Sethy, 2016; Anwar et al., 2017; Sethy and Goyari, 2018; Prastowo and Putriani 2019; Sethi and Sethy, 2019; Huang and Zhang, 2020; Sethy and Goyari, 2022) used Sarma's multidimensional technique to construct FII. Since this method is similar to the UNDP's method of calculating notable development indicators such as HDI, HPI, and GDI.

Sethi and Sethy (2018) conducted a study on the connection between FI and economic growth in India from 2004 to 2014. Their study followed the UNDP and Sarma (2008) formula for calculating FII. Finally, their study evidence that FI would increase economic growth and also a long run association exists between financial inclusion and economic growth.

Using 49 Islamic banks from 13 countries, Prastowo and Putriani (2019) investigated the role of Islamic banking performance on income inequality from 2010 to 2015, and used depth, access, efficiency and stability indicators of financial institutions. Their study evidence that formal financial services can reduce income inequality. Nguyen (2020) calculated a composite FII to know the degree of financial inclusion in 40 developing nations from 2012 to 2018 and he used two stage of PCA method. Furthermore, using the methodology of Sarma (2008, 2012), a recent study examined the effect of financial inclusion on urban-rural income inequality from 1985 to 2013. Huang and Zhang (2020) confirms that inclusive financial services can reduce urban-rural income inequality.

Overall, literature review shows that there have been a few efforts to construct a multidimensional Financial Inclusion Index (FII) to calculate the level of financial inclusion. However, this raises the argument that these indices are necessary but insufficient for the definition of "Financial inclusion". Each of the above mentioned method for the FII has its own set of merits and demerits. As a result, it is clear that a proper consensus about how to calculate the level of financial inclusion has yet to be achieved. In this study, not only our method of calculating financial inclusion is different, but also selected financial inclusion indicators to calculate FII are different. Furthermore, here our major focus is to calculate a comprehensive multidimensional FII to measure the level of financial inclusion for South Asian countries. From the above literature, measurement of FII is not very comprehensive and not captured some key features of financial inclusion. In light of this, the current study aims to investigate not only the causes of financial exclusion, but also its key characteristics. Finally, this study proposed a comprehensive and new multidimensional FII for South Asian countries.

3. Why only those countries?

By focusing on emerging countries, we cover large growing economies like India to small developing countries like Afghanistan, Bhutan, Pakistan, Bangladesh, Sri Lanka and the Maldives among others. This present study is restricted up to these countries because of the data availability issues of other South Asian Country like Nepal and data availability is a major limitation of this study. Inclusive finance is not a new concept for many of the emerging countries in the world. These South Asian countries have a long history of promoting inclusive banking structures. However, historically, their policies have been on supply side such as nationalization of private banks, imposing interest rate ceiling on credit and offering credit to the private sector at subsidized rates etc.

4. Contribution of the study

This study contributes to the existing literature by calculating multidimensional FII based cross-country data on accessibility, availability, and usage of banking services. Our calculation is based on existing methodology but we are considering more financial inclusion indicators to measure the better level of financial inclusion. Furthermore, this will be used to standardize the level of financial inclusion for merging South Asian countries.

5. Causes of financial exclusion in South Asian countries

The reasons for financial exclusion (as a percentage of adults) in South Asian countries are explained in Table 1. Except for India, the key barrier to financial inclusion in Afghanistan, Bangladesh, Pakistan, Maldives, Bhutan and Sri Lanka is a "lack of money". However, of all the countries in South Asia, Afghanistan has the highest number of people citing "lack of money". The most common reasons for financial exclusion in Bhutan are "no need for financial services" and "Bank is too far away". In contrast to the rest of South Asian countries, the major causes of financial exclusion are "opening account is too expensive", "lack of necessary documents", "Lack of trust in financial institutions", and "Religious reasons'. Furthermore, "Family member already has one bank account" is the leading cause of financial exclusion in the Maldives (for details see Table 1).

Table 1. *Causes of financial exclusion (as a percentage of adults) in South Asian countries*

Reasons	Afghanistan	Bangladesh	Bhutan	India	Maldives	Pakistan	Sri Lanka
Lack of Money	72	40	25.3	11	40	44	23
No need for financial services	2	3	12.5	0	54	4	0
Opening account is too expensive	21	10	2.1	6	11	19	10
Bank is too far away	30	9	30.6	5	8	16	6
Lack of necessary documents	21	9	4.2	5	7	15	4
Lack of trust in financial institutions	20	7	1.4	4	14	13	5
Family member already has one	14	12	29.2	11	46	13	11
Religious reasons	14	3	0.7	1	6	12	2

Note: Here values are in percentage.
Source: Compiled from Global Findex Database 2017.

6. Present status of financial inclusion indicators in South Asian countries

In developing countries policy makers have been concerned about an inclusive financial system.

In addition, we need better financial inclusion policies which improves income and increase savings allowing the earlier unbanked population to invest in basic requirements such as health care, education, food, and growing their business in South Asian countries. Furthermore, financial inclusion is a necessary condition for sustainable development.

This study presents graphically an overview of financial inclusion indicators such as availability, accessibility and usage indicators from 2004 to 2018 in seven South Asian countries. The figures below indicate the level of financial inclusion in South Asian countries.

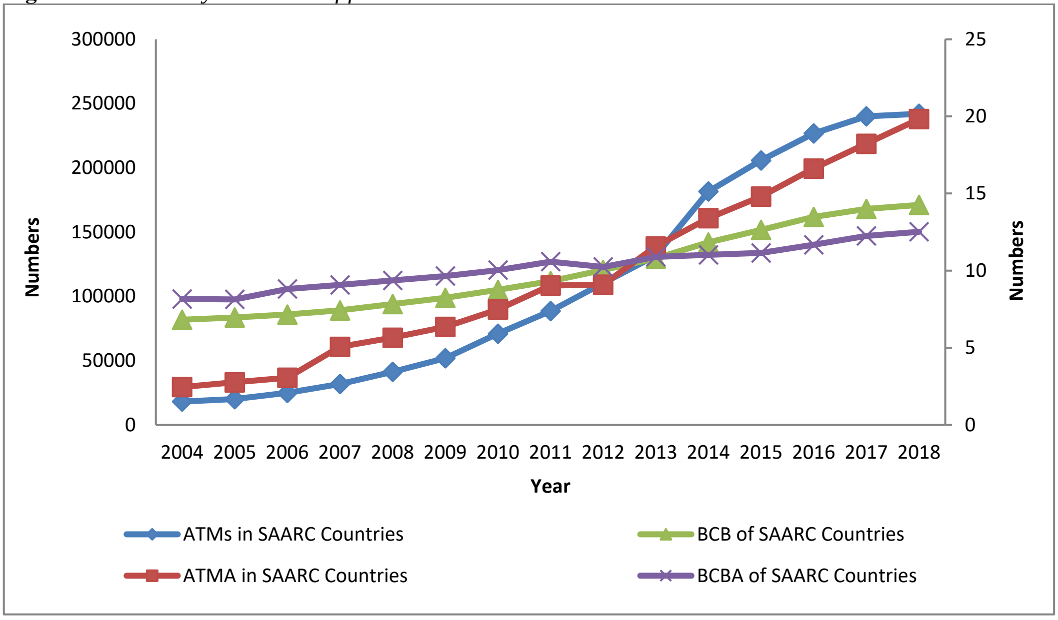
Figure 1 reveals that all the availability indicators of financial inclusion are increasing over time, especially number of ATMs and number of ATMs per 1 lakh adults in South Asian countries.

Figure 2 indicates that accessibility indicators of financial inclusion are increasing from 2004 to 2018, but the growth rate of the number of ATMs per 1000 Km^2 is higher in comparison to branches of commercial banks per 1000 km^2.

Similarly, the usage indicators of financial inclusion are all increasing over time, as shown in Figure 3.

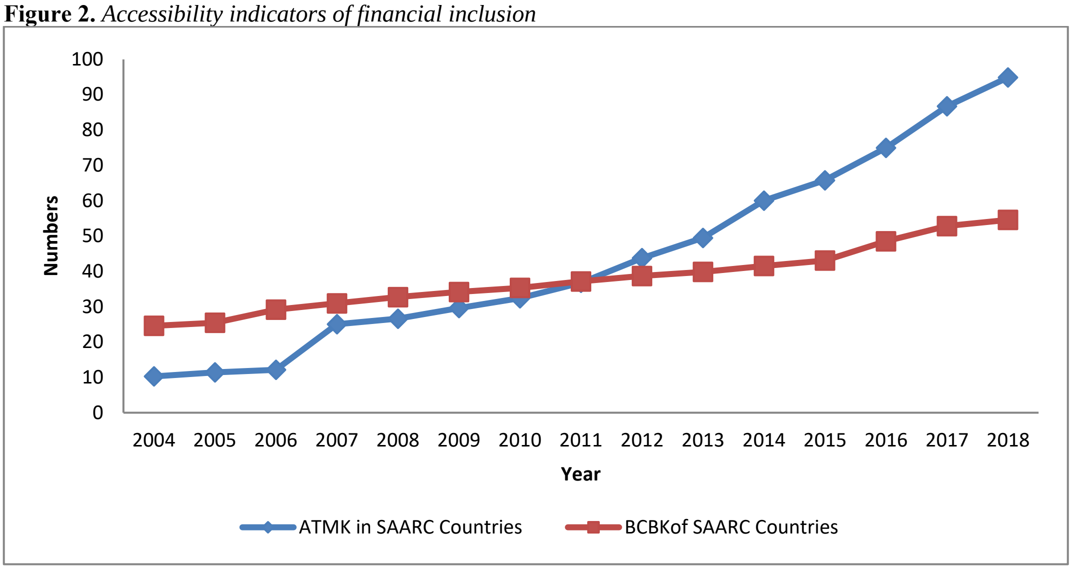
Therefore, these three figures indicate that availability, accessibility, and usage indicators of financial inclusion are increasing from 2004 to 2018 justifying some recent financial inclusion programs and policies taken by the South Asian Government (for details see Figure 1, Figure 2 and Figure 3).

Figure 1. *Availability indicators of financial inclusion*



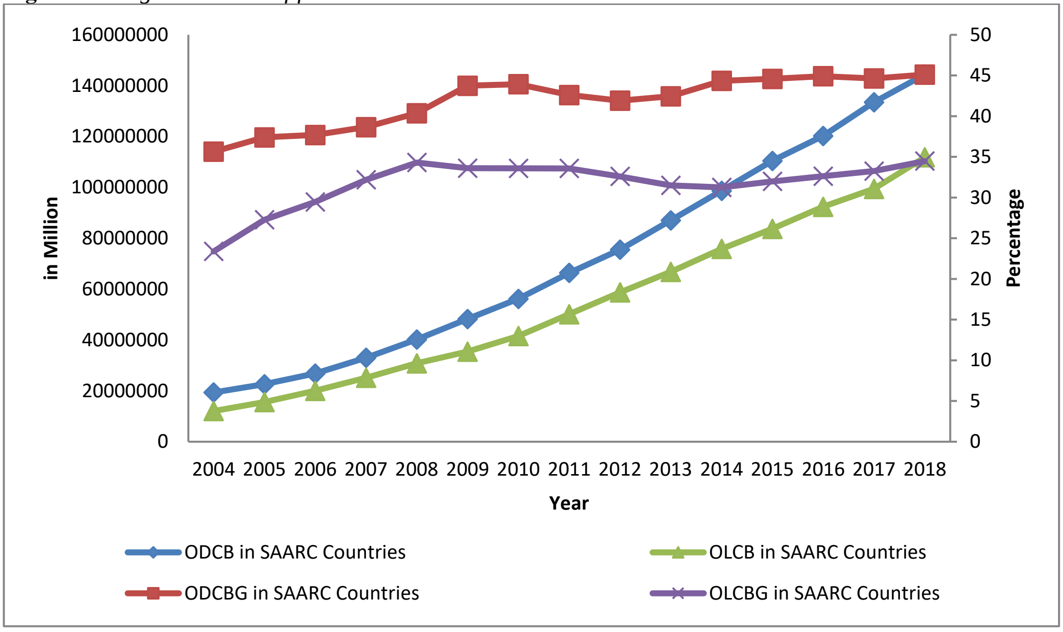
Note: ATMs = Number of Automated Teller Machines (ATMs), ATMA = Number of ATMs per 1 lakh adults, BCB = Number of commercial bank branches, BCBA = Number of commercial bank branches per 1 lakh adults
Source: IMF, FAS data.

Figure 2. *Accessibility indicators of financial inclusion*



Note: ATMK = Number of ATMs per 1000Km^2, BCBK = Branches of commercial banks per 1000 Km^2
Source: IMF, FAS data.

Figure 3. *Usage indicators of financial inclusion*



Note: ODCB = Outstanding deposits with commercial banks, ODCBG = Outstanding deposit with commercial banks (% of GDP), OLCB = Outstanding loan with commercial banks, OLCBG = Outstanding loan with commercial banks (% of GDP)
Source: IMF, FAS data.

7. Measurement of financial inclusion (FI) for South Asian countries

This study developed a multidimensional Financial Inclusion Index (FII) that takes into account different financial services indicators. Furthermore, FII is computed from 2004 to 2018 to take into account the dynamic changes in financial inclusion. This problem can be addressed by constructing a comprehensive FII. As Sarma (2008) correctly points out, using a single indicator to measure a county's level of financial inclusion can be misleading. As a result, in order to avoid the issue of uncertainty, this study includes several important indicators in the calculation of FII. We used 10 indicators of financial inclusion, but due to data constraints, some important indicators were left out of the index calculation.

7.1. Calculating Financial Inclusion Index (FII)

This study used the UNDP method and Sarma's (2015) method for calculating FII. UNDP method has been used in the past to calculate HDI, GDI, and HPI etc. The advantage of using this method it allows the incorporation of multiple dimensions of financial inclusion (FI). This study FII is explained below.

Step 1: *To construct an index, this study is first calculating a dimension index for every dimension of financial inclusion. We first define* d_i*:*

$$d_i = w_i * \frac{A_i - m_i}{M_i - m_i}$$

Where, A_i is the actual value of dimension i; m_i represents the minimum value of dimension i; M_i is the maximum value of dimension i; d_i is the dimensions of financial inclusion i, w_i is the weight (equal weighting approach).

The worst point (0) and the ideal point (1) are necessary for constructing a FII for states and countries. If the distance between X and 0 is larger, it indicates higher financial inclusion; likewise, if the distance between X and 0 is smaller, it indicates lower financial inclusion.

Step 2: *In the second step, we calculate X_1 based on d_i and W_i as below*:

$$X_1 = \frac{\sqrt{d_1^2 + d_2^2 + d_3^2 + \ \dots\dots\dots + d_n^2}}{\sqrt{w_1^2 + w_2^2 + w_3^2 + \ \dots\dots\dots + w_n^2}}$$

Step 3: *In the second step, we calculate X_2 based on d_i and W_i as below*:

$$X_2 = 1 - \frac{\sqrt{(w_1 - d_1)^2 + (w_2 - d_2)^2 + (w_3 - d_3)^2 + \ \dots\dots\dots + (w_n - d_n)^2}}{\sqrt{w_1^2 + w_2^2 + w_3^2 + \ \dots\dots\dots + w_n^2}}$$

Step 4: *In the fourth step, we calculate the FII based on X_1 and X_2 as below:*

$$FII = \frac{1}{2}\,(X_1 + X_2)$$

Step (2), when X_1 value is high, it indicates a greater expansion in financial inclusion. Step (4) measures the overall financial inclusion, which is the mean of X_1 and X_2 (derived from Steps 2 and 3). A country will be classified into three categories based on its FII value (Sethy, 2016; Goel and Sharma, 2017).

$0.6 < FII \le 1$	High financial inclusion (HFI)
$0.4 < FII \le 0.6$	Medium financial inclusion (MFI)
$0 < FII \le 0.4$	Low financial inclusion (LFI)

8. Data sources and variables

8.1. Dimensions of Financial Inclusion (FI)

Various indicators of access to banking services might be simple physical access, flexibility and reliability (Beck et al., 2009; Sarma, 2008). In addition, all financial inclusion indicators should be considered in order to present a complete image of the inclusive banking system across countries. Due to data availability limitations, maximum studies are unable to achieve this goal. However, to confirm that the financial system is inclusive, we considered 10 financial inclusion indicators, such as Availability, Accessibility, and Usage of the banking services. Here, this study calculates FII considering the supply side indicators. The supply side indicators of financial inclusion consist of 10 indicators. All the data are taken from the IMF's FAS. For an absolute measure of financial inclusion of selective South Asian countries like Afghanistan, Bangladesh, Bhutan, India, Maldives, Pakistan, and Sri Lanka, the study period is spanning from 2004 to 2018.

Dimensions of some important variables used in the study are described below.

(i) Availability of banking services
In this study we have used availability indicators like number of bank branches per 1 lakh population (demographic branch penetration), ATMs per 1 lakh Adults, number of ATMs and branches of commercial banks (Sophastienphong and Kulathunga, 2008).

(ii) Accessibility of the banking services
Shortage of financial resources is a key factor in income inequality and lower economic growth (World Bank Report, 2010). In addition, access to banking services helps in the reduction of income inequality, thus directly increasing income and decreasing the vulnerability of the poor. In this study specifically, we include indicators for accessibility such as: ATMs per 1000 Km^2 (Geographic ATMs penetration) and Branches of Commercial Bank per 1000 Km^2 (Geographic branch penetration).

(iii) Usage of the banking services
In a financial inclusion system, instead of a bank account, the use of different numbers of financial services plays an important role. So *usage of the banking services* dimension is inspired by the idea of "unbanked or "marginally banked" people. Here, we divided this dimension into two parts such as: *Credit penetration* and *Deposit penetration*.

Table 2. *List of indicators for constructing Financial Inclusion Index (FII)*

Availability Dimensions	Accessibility Dimensions	Usage Dimensions
Demographic Branch Penetration: (1) Number of bank branches per 1 lakh Adults	**Geographic ATM Penetration:** (5) Number of ATMs per 1000 Km^2	**Credit Penetration:** (7) Outstanding loans with Commercial Banks
(2) Branches of Commercial Bank		(8) Outstanding loans with Commercial Banks (% of GDP)
Demographic ATM Penetration: (3) ATMs per 1 lakh Adults	**Geographic Branch Penetration:** (6) Branches of Commercial Bank per 1000 Km^2	**Deposit Penetration:** (9) Outstanding deposits with Commercial Banks
(4) Number of ATMs		(10) Outstanding deposits with Commercial Banks (% of GDP)

Source: Financial Access Survey (FAS), IMF 2018.

9. Results and analysis

Table 3. *Trend of Financial Inclusion Index (FII) in South Asian countries from 2004 to 2018*

Year	Value of FII in South Asian countries						
	Afghanistan	Bangladesh	Bhutan	India	Maldives	Pakistan	Sri Lanka
2004	0 **(7)**	0.0061 **(4)**	0.0793 **(3)**	0.0025 **(6)**	0.0033 **(5)**	0.2391 **(1)**	0.1335 **(2)**
2005	0.0797 **(4)**	0.0468 **(6)**	0.0510 **(5)**	0.0466 **(7)**	0.1672 **(3)**	0.2949 **(1)**	0.1805 **(2)**
2006	0.1921 **(4)**	0.0897 **(6)**	0.0739 **(7)**	0.0950 **(5)**	0.2202 **(3)**	0.2561 **(2)**	0.2679 **(1)**
2007	0.3114 **(3)**	0.1028 **(6)**	0.0619 **(7)**	0.1688 **(5)**	0.3973 **(1)**	0.3259 **(2)**	0.3038 **(4)**
2008	0.4421 **(1)**	0.1583 **(6)**	0.1551 **(7)**	0.2651 **(5)**	0.4403 **(2)**	0.3436 **(3)**	0.3063 **(4)**

Year	Value of FII in South Asian countries						
	Afghanistan	Bangladesh	Bhutan	India	Maldives	Pakistan	Sri Lanka
2009	0.5828 **(1)**	0.2350 **(7)**	0.2728 **(6)**	0.3205 **(4)**	0.4695 **(2)**	0.2879 **(5)**	0.3611 **(3)**
2010	0.6473 **(1)**	0.3528 **(6)**	0.3775 **(4)**	0.3547 **(5)**	0.4732 **(2)**	0.3019 **(7)**	0.3832 **(3)**
2011	0.5579 **(1)**	0.4747 **(3)**	0.4516 **(5)**	0.4369 **(6)**	0.4688 **(4)**	0.2979 **(7)**	0.4967 **(2)**
2012	0.5567 **(1)**	0.5357 **(3)**	0.2928 **(7)**	0.5147 **(4)**	0.4503 **(5)**	0.3702 **(6)**	0.5397 **(2)**
2013	0.5998 **(2)**	0.5899 **(3)**	0.4856 **(5)**	0.6017 **(1)**	0.4599 **(6)**	0.4467 **(7)**	0.5849 **(4)**
2014	0.6196 **(4)**	0.6797 **(2)**	0.5386 **(5)**	0.7508 **(1)**	0.5154 **(6)**	0.5089 **(7)**	0.6275 **(3)**
2015	0.6555 **(4)**	0.7685 **(2)**	0.5659 **(6)**	0.8380 **(1)**	0.5425 **(7)**	0.5787 **(5)**	0.7237 **(3)**
2016	0.6772 **(5)**	0.8397 **(2)**	0.6572 **(7)**	0.9010 **(1)**	0.6637 **(6)**	0.6851 **(4)**	0.8162 **(3)**
2017	0.7082 **(7)**	0.9056 **(2)**	0.8035 **(4)**	0.9344 **(1)**	0.7659 **(5)**	0.7247 **(6)**	0.9016 **(3)**
2018	0.7914 **(6)**	0.9394 **(3)**	0.9549 **(2)**	0.9249 **(4)**	0.7820 **(7)**	0.8639 **(5)**	1 **(1)**

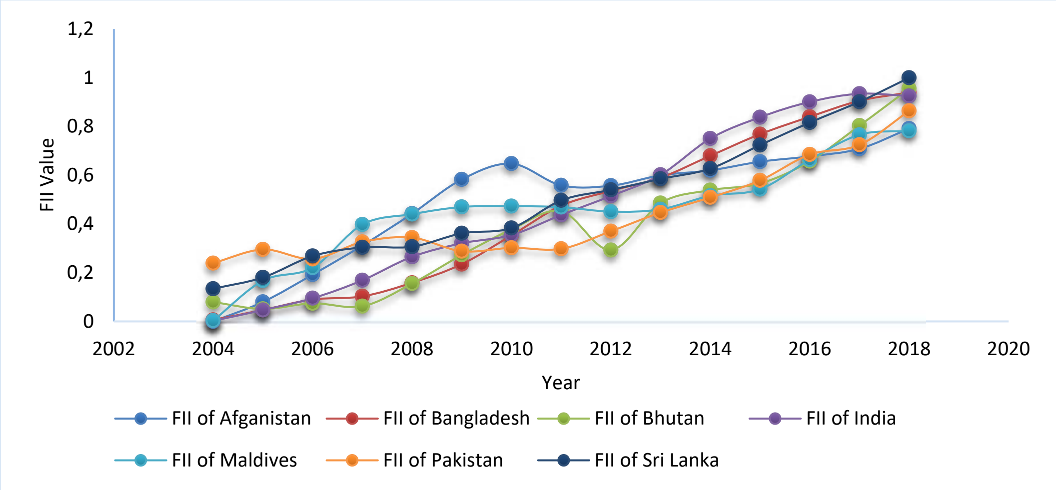
Note: Ranks of the countries are given in the parenthesis.
Source*:* Authors calculation.

For seven South Asian countries, data on financial inclusion dimensions such as Availability, Accessibility, and Usage was used. The Financial Inclusion Index (FII) values from 2004-2018 computed for South Asia countries are presented in Table 3. Results show that, there has been increasing the performance of financial inclusion in South Asian countries from 2004 to 2018. But among seven South Asia countries, Afghanistan, Bangladesh, India and Sri Lanka are better performers than others. It is interesting to note that among all South Asia countries, India is the only country that performs better with the highest value of FII from 2013 to 2017.

This result indicates that, there has been the number of important financial inclusion initiatives such as PMJDY, PMMY, Credit Enhancement Guarantee Scheme (CEGS) for Schedule Casts (SCs), Mobile Banking, Financial literacy programmes, new SHGs framework and Post office savings bank, etc. taken by the Govt. of India and RBI. In addition, in the group of seven South Asia countries, Sri Lanka (1, First Rank) leads with the highest value of FII followed by Bhutan (0.9549, 2nd Rank), Bangladesh (0.9394, 3rd Rank), India (0.9249, 4th Rank), Pakistan (0.8639, 5th Rank), Afghanistan (0.7914, 6th Rank) and Maldives (0.7820, 7th Rank) in 2018.

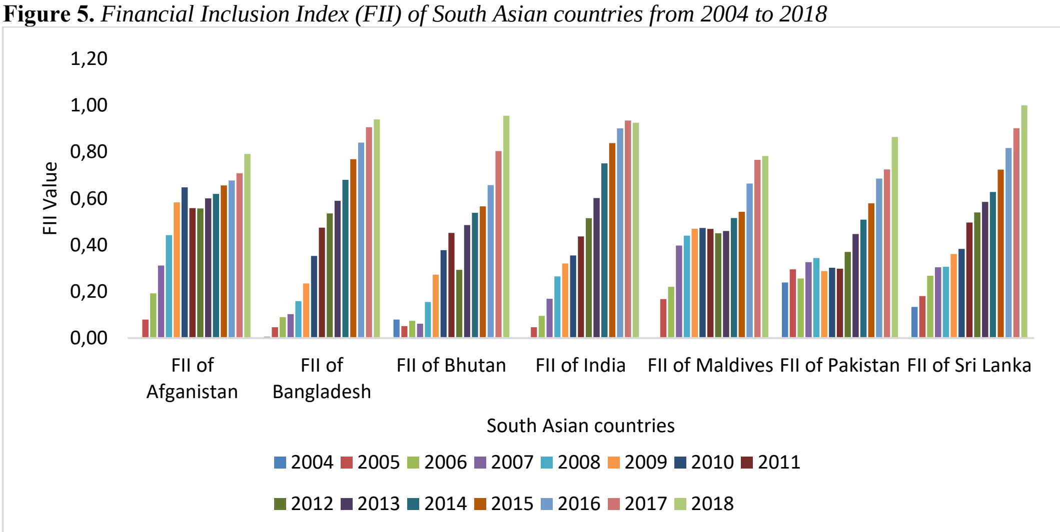
Despite of different ranks of South Asia countries, finally, all countries are included in the full financial inclusion or high FI category in 2018 due to the different financial inclusion strategies in South Asia countries.

Figure 4. *Financial Inclusion Index (FII) of South Asian countries from 2004 to 2018*



Source: Authors calculation.

Figure 5. *Financial Inclusion Index (FII) of South Asian countries from 2004 to 2018*



Source: Authors calculation.

This study investigated the level of financial inclusion in South Asian countries. The above Figures 4 and 5, revealed that the overall performance of FII in South Asian countries has been tremendously increasing from 2004 to 2018. Here the study considered only seven South Asia countries except Nepal due to the availability of banking services data. The results of this study evidence that among all seven South Asia countries, the value of FII varies between 0 in the case of Afghanistan and 0.239 in the case of Pakistan in 2004. The value of FII varies between 0.292 in the case of Bhutan and 0.556 in the case of Afghanistan in 2012. Interestingly, the results indicate that the performance in the case of access to financial services in Afghanistan, Bhutan and Maldives were decreasing and on the other side countries like Bangladesh, India, Pakistan and Sri Lanka were increasing may be due to some major government initiatives in 2012. In addition to, the value of FII is highest in Sri Lanka (1), followed by Bhutan (0.954), Bangladesh (0.939), India (0.924), Pakistan (0.863), Afghanistan (0.791) and Maldives (0.782) in 2018. Here, all the South Asia country included in the category of full financial inclusion.

Overall, this figure indicates that access to formal financial services (or FII) are increasing over time, which indicates some recent government initiatives in South Asia such as: National Financial Inclusion Strategy in 2016 (Afghanistan), established Financial Inclusion Department in 2015 (Bangladesh), Financial Literacy programme (Bhutan), Pradhan Mantri Jan Dhan Yojana (India), Mobile Phone Banking Projects in 2005 (Maldives), National Financial Inclusion Strategy in 2015 (Pakistan) and Postal Banking Services (Sri Lanka) etc.

9.1. Category of South Asian countries in Financial Inclusion Index (FII) from 2004 to 2018

Table 4. *High Financial Inclusion category of South Asian countries*

Countries	Year	Value of FII	FII Range	Category
Afghanistan	2017	0.7082	(0.6 < FII ≤ 1)	High Financial Inclusion (HFI)
	2018	0.7914		
Bangladesh	2015	0.7685		
	2016	0.8397		
	2017	0.9056		
	2018	0.9394		
Bhutan	2017	0.8035		
	2018	0.9549		
India	2014	0.7508		
	2015	0.8380		
	2016	0.9010		
	2017	0.9344		
	2018	0.9249		
Maldives	2017	0.7659		
	2018	0.7820		
Pakistan	2017	0.7247		
	2018	0.8639		
Sri Lanka	2015	0.7237		
	2016	0.8162		
	2017	0.9016		
	2018	1		

Source: Authors calculation.

Table 5. *Medium financial inclusion category of South Asian countries*

Countries	Year	Value of FII	FII Range	Category
Afghanistan	2009	0.5828	(0.4 < FII ≤ 0.6)	Medium Financial Inclusion (MFI)
	2010	0.6473		
	2011	0.5579		
	2012	0.5567		
	2013	0.5998		
	2014	0.6196		
	2015	0.6555		
	2016	0.6772		
Bangladesh	2012	0.5357		
	2013	0.5899		
	2014	0.6797		
Bhutan	2014	0.5386		
	2015	0.5659		
	2016	0.6572		

Countries	Year	Value of FII	FII Range	Category
India	2012	0.5147		
	2013	0.6017		
Maldives	2014	0.5154		
	2015	0.5425		
	2016	0.6637		
Pakistan	2014	0.5089		
	2015	0.5787		
	2016	0.6851		
Sri Lanka	2012	0.5397		
	2013	0.5849		
	2014	0.6275		

Source: Authors calculation.

Table 6. *Low financial inclusion category of South Asian countries*

Countries	Year	Value of FII	FII Range	Category
Afghanistan	2004	0	**(0 < FII ≤ 0.4)**	**Low Financial Inclusion** (LFI)
	2005	0.0797		
	2006	0.1921		
	2007	0.3114		
	2008	0.4421		
Bangladesh	2004	0.0061		
	2005	0.0468		
	2006	0.0897		
	2007	0.1028		
	2008	0.1583		
	2009	0.2350		
	2010	0.3528		
	2011	0.4747		
Bhutan	2004	0.0793		
	2005	0.0510		
	2006	0.0739		
	2007	0.0619		
	2008	0.1551		
	2009	0.2728		
	2010	0.3775		
	2011	0.4516		
	2012	0.2928		
	2013	0.4856		
India	2004	0.0025		
	2005	0.0466		
	2006	0.0950		
	2007	0.1688		
	2008	0.2651		
	2009	0.3205		
	2010	0.3547		
	2011	0.4369		
Maldives	2004	0.0033		
	2005	0.1672		
	2006	0.2202		
	2007	0.3973		
	2008	0.4403		
	2009	0.4695		
	2010	0.4732		
	2011	0.4688		
	2012	0.4503		
	2013	0.4599		
Pakistan	2004	0.2391		
	2005	0.2949		
	2006	0.2561		
	2007	0.3259		

Countries	Year	Value of FII	FII Range	Category
	2008	0.3436		
	2009	0.2879		
	2010	0.3019		
	2011	0.2979		
	2012	0.3702		
	2013	0.4467		
Sri Lanka	2004	0.1335		
	2005	0.1805		
	2006	0.2679		
	2007	0.3038		
	2008	0.3063		
	2009	0.3611		
	2010	0.3832		
	2011	0.4967		

Source: Authors calculation.

Table 7. *Category of South Asian countries in Financial Inclusion Index (FII) for 2004, 2011 and 2018*

Country	2004		2011		2018	
	FII (Rank)	Category	FII (Rank)	Category	FII (Rank)	Category
Afghanistan	0 **(7)**	Low Financial Inclusion	0.557 **(1)**	Medium Financial Inclusion	0.791 **(6)**	High Financial Inclusion
Bangladesh	0.006 **(4)**	Low Financial Inclusion	0.474 **(3)**	Low Financial Inclusion	0.939 **(3)**	High Financial Inclusion
Bhutan	0.079 **(3)**	Low Financial Inclusion	0.451 **(5)**	Low Financial Inclusion	0.954 **(2)**	High Financial Inclusion
India	0.002 **(6)**	Low Financial Inclusion	0.436 **(6)**	Low Financial Inclusion	0.924 **(4)**	High Financial Inclusion
Maldives	0.003 **(5)**	Low Financial Inclusion	0.468 **(4)**	Low Financial Inclusion	0.782 **(7)**	High Financial Inclusion
Pakistan	0.239 **(1)**	Low Financial Inclusion	0.297 **(7)**	Low Financial Inclusion	0.863 **(5)**	High Financial Inclusion
Sri Lanka	0.133 **(2)**	Low Financial Inclusion	0.496 **(2)**	Low Financial Inclusion	1 **(1)**	High Financial Inclusion

Notes: Ranks of the countries are given in the parenthesis.
Source: Authors calculation.

HFI = $0.6 < \text{FII} \leq 1$, MFI = $0.4 < \text{FII} \leq 0.6$, LFI = $0 < \text{FII} \leq 0.4$, FII = Financial Inclusion Index

Based on their Financial Inclusion Index (FII) values, countries are divided into three categories.

High financial inclusion (HFI) countries are categorized as those having FII values varies between 0.6 and 1. Medium financial inclusion (MFI) countries are those having FII values varies between 0.4 and 0.6. Low financial inclusion (LFI) countries have FII values of less than 0.4.

From the above Table 7, it indicates that, all the South Asian countries were included in the low financial inclusion category because the value of FII varies between 0 and 0.4 in 2004. Similarly, six SAARC countries like Bangladesh, Bhutan, India, Maldives, Pakistan, and Sri Lanka were included in low FI because the values of FII varies between 0 to 0.4 but except country like Afghanistan which was included in medium FI because the value of FII varies between 0.4 to 0.6 in 2011. All the South Asia countries performed better and were included in the high financial inclusion category in 2018 (for details see Tables 4, 5 and 6).

Table 7 also indicates that, out of seven South Asia countries, levels of financial inclusion, as measured by Financial Inclusion Index (FII), varied from as low (0) for Afghanistan (seventh rank) to as high (0.239) for Pakistan (first rank) in 2004. The FII values vary from as low (0.297) for Pakistan (seventh rank) to as high (0.557) for Afghanistan (first rank) in 2011. Similarly, the FII values vary from as low (0.782) for Maldives (seventh rank) to as high (1) for Sri Lanka (first rank) in 2018. But here out of seven South Asia countries, Sri Lanka is the only country that maintains consistent performance on financial inclusion. In addition, the result also indicates that all the South Asia countries were included in the high financial inclusion category in 2018.

Overall cross-country evidence suggests that the performance of all South Asia countries on financial inclusion (i.e. Financial Inclusion Index) has been increasing from 2004 to 2018 (for details see Table 4). This is primarily due to some recent financial inclusion initiatives taken by the Government of South Asia countries such as: National Financial Inclusion Strategy in 2016 (Afghanistan), established Financial Inclusion Department in 2015 (Bangladesh), Financial Literacy programme (Bhutan), Pradhan Mantri Jan Dhan Yojana (India), Mobile Phone Banking Projects in 2005 (Maldives), National Financial Inclusion Strategy in 2015 (Pakistan) and Postal Banking Services (Sri Lanka), etc.

10. Conclusion

In this study, we have proposed a Financial Inclusion Index (FII) – a multidimensional measure for South Asian countries but excluding Nepal because of the non-availability of relevant data. FII can be used to measure the level of financial inclusion across different countries and to monitor the development of those countries over time.

FII calculation is based on the available data from 2004 to 2018 presented in this study. We are unable to include many indicators of an inclusive financial system in our present index due to a lack of relevant data like affordability, mobile banking, timeliness, and quality of the banking services.

Analytical results indicate that all the financial inclusion dimensions like Availability, Accessibility and Usage of formal financial services have been drastically increasing in South Asian countries. Overall cross-country evidence suggests that the performance of all the South Asian countries on financial inclusion (i.e. Financial Inclusion Index) has been increasing from 2004 to 2018 but it is interesting to note that among seven South Asian countries, India is the only country that performs better with the highest value of FII from 2013 to 2017. In addition, the result also indicates that all the South Asian countries were included in the high financial inclusion category in 2018, explaining some recent financial inclusion initiatives taken by the South Asian governments. The study also explains the benefits of financial inclusion and the most common reasons for financial exclusion in South Asian countries.

11. Policy implication

The calculation of such an index is useful to shed some light on the determinants of financial inclusion as well as its contribution to economic growth, poverty, inequality, financial stability, and effective monetary policy. Also, this research believes that desegregated information on the different dimensions will be useful for policy recommendations. Efforts in such direction yield relevant improvements in the analysis of financial inclusion's causes and consequences. This study further can be extended to incorporate some socio-economic determinants in their analysis to understand the linkage of the determinants to financial inclusion.

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