Measuring financial inclusion and financial exclusion

Ozili, Peterson K

2021

Measuring financial inclusion and financial exclusion

Peterson K. Ozili

Abstract

Achieving high levels of financial inclusion has been a policy priority for policy makers in many countries as policy makers seek to reduce the level of financial exclusion to low levels. There have also been increased interest in financial inclusion research by academics. This paper proposes some index and ratios of financial inclusion and financial exclusion. The proposed index, measures and ratios are easy to compute and are comparable across countries. Policy makers, analysts and academics will find it useful.

Keywords: Financial inclusion, financial exclusion, poverty, access to finance, index, inclusive growth, development

JEL Classification: G00, G21, O16.

1. Introduction

This paper proposes a number of measures for financial inclusion and financial exclusion. Financial inclusion has received a lot of attention in the financial development literature and in the development economics literature. Financial inclusion has a positive effect for poverty reduction, economic wellbeing and economic development. The literature on financial inclusion and exclusion lacks a comprehensive index that measures the extent of financial inclusion and exclusion across countries. This paper attempt to fill this gap by proposing some index of financial inclusion and exclusion.

An index of financial inclusion will help in identifying and testing several hypotheses relating to financial inclusion in the literature (Sarma, 2008). A comprehensive measure of financial inclusion and exclusion is needed because it aids comparison across countries, regions and communities in order to assess the state of financial inclusion in one country or community compared to other countries and communities. Measuring financial inclusion using a number of indicators makes it easy to identify the relevant factors that determine the level of financial inclusion at a particular time and for a particular group of individuals or households. Using indices to measure the level of financial inclusion can help policy makers and analysts to evaluate and communicate the strengths and weaknesses in the progress of financial inclusion in individual countries.

This study contributes to the financial inclusion literature. It contributes to studies in the financial inclusion literature that develop some indices of financial inclusion. This study adds to this literature by providing a set of unique and easy-to-compute index of financial inclusion and exclusion.

The remainder of the paper is organized as follows. Section 2 presents a discussion on financial inclusion and financial exclusion. Section 3 present some proposed measurement of financial inclusion. Section 4 concludes.

2. Understanding financial inclusion and exclusion

2.1. Financial inclusion

Financial inclusion is the delivery of financial services, including banking services and credit, at an affordable cost to the vast sections of disadvantaged and low-income groups who tend to be excluded (Kelkar, 2010). Financial inclusion involves granting access to, and the provision of, formal financial services to the undeserved population (Ozili, 2018). From a sociology perspective, financial inclusion is considered to be part of the larger issues of social inclusion in a society.

In a financially inclusive society, individuals and households will have unrestrictive access to any type of financial services they want and when they want it (Ozili, 2020). To achieve financial inclusion, some policy makers tend to rely on formal financial institutions, banks, microfinance institutions or Fintech companies to deliver financial products and services to the underserved groups of the population (Birkenmaier et al, 2019; Ozili, 2018; Arslanian and Fischer, 2019).

Financial inclusion can be achieved by increasing financial access in two ways. One, financial inclusion may be achieved by removing existing price and structural barriers that prevent individuals and households from accessing basic financial services at a low cost (Birkenmaier et al, 2019). Two, financial inclusion can be achieved through increased supply of basic financial services when basic financial services are in limited supply (Allen et al, 2012). Combining these two ideas gives us an optimal approach to achieve financial inclusion which is the simultaneous removal of barriers to financial inclusion and increased supply of financial services to the population especially poor households and other excluded groups of the population.

2.2. Financial exclusion

Leyshon and Thrift (1995) define financial exclusion as those processes that serve to prevent certain social groups and individuals from gaining access to the formal financial system. Sinclair (2001) suggest that financial exclusion means the inability to access necessary financial services in an appropriate form. Carbo et al (2005) defined financial exclusion as the inability of some societal groups to access the financial system. Kempson et al (2004) identified six common

reasons for financial exclusion. They are: identity requirements, terms and conditions of bank accounts, bank charges, physical access to bank branches, psychological and cultural influences and ease of use of banking services. Chakraborty (2010) suggest that financial exclusion is caused by demand-side and supply-side barriers to financial inclusion. Exclusion from the financial sector may be caused by lack of access, market conditions, prices, marketing or self-exclusion in response to negative experiences or perceptions (Ozili, 2018; Sarma 2008). Financially exclusion may also be caused by religious belief that are hostile to the use of financial technology in everyday life (Ozili, 2018). Although zero-level financial exclusion is desirable, in reality, it is impossible to achieve a zero-level financial exclusion because some individuals will voluntary opt-out from participating in the formal financial sector.

2.3. The literature on financial inclusion index

Some studies attempt to develop some measures of financial inclusion. Sarma (2008) proposed an index of financial inclusion (IFI). The proposed IFI captures information on various dimensions of financial inclusion in a single number ranging between 0 and 1, where '0' denotes complete financial exclusion and '1' indicates full financial inclusion in a country. Camara and Tuesta (2014) developed a composite index for financial inclusion and used demand-side and supply-side information to measure the extent of financial inclusion at country level. Amidžic et al (2014) developed a composite index based on factor analysis. They derived a weighting methodology whose absence has been the most persistent of the criticisms of previous indices. Goel and Sharma (2017) developed an index to measure the extent of financial inclusion using indicators of the levels of access and usage of financial services. Ambarkhane et al (2016) developed measures of financial inclusion based on demand, supply and infrastructure indicators of financial inclusion. They used the indicator to measure financial inclusion in Indian states.

3. Financial Inclusion indices and measurement

3.1. Rate of financial inclusion (RFI) index

The RFI index is a macro-level measure of financial inclusion for countries. It measures the growth in financial inclusion by taking into account the size of the population and the size of the financial sector using a broad range of financial sector size and population indicators. The RFI index is risk-sensitive and is sensitive to fluctuating economic conditions. For instance, the RFI index may be negative during bad economic times because the size of the financial sector might shrink in bad times, leading to negative growth in the financial sector while the population size continues to increase even in bad times. A negative RFI index would signal increasing financial exclusion or lower levels of financial inclusion. This expectation is intuitive because in bad times, households and many individuals tend to exit the formal sector either by closing their formal accounts or by taking away their money from financial institutions, preferring to keep their money elsewhere, which leads to a contraction in the size of the financial sector (e.g., a decrease in the size of total deposits); thereby, reducing the level of financial inclusion. On the other hand, the RFI index may be positive in good economic times because the size of the financial sector increases in good years, leading to positive growth in the financial sector while the population size continues to increase. This expectation is also intuitive because, in good times, households and many individuals keep their deposits in banks and engage in larger volume of transactions leading to higher levels of financial intermediation, which leads to an expansion in the size of the financial sector. An important indicator of the size of the financial sector is the financial system deposit to GDP ratio since it captures the total number of deposits brought into the financial system by individuals, households and businesses as a proportion of gross domestic product (GDP).

One approach to measure RFI index is the percentage change approach. Under this approach, the rate of financial inclusion (RFI) index is the ratio of the change in the size of the financial sector to the change in the size of the population multiplied by 100. The size of the financial sector can be measured using a number of indices: the financial system deposits to GDP ratio, bank deposits to GDP ratio, and M2 to GDP ratio – and data for financial sector size can be obtained from the global financial development indicators of the World Bank.

$$RFI\ index\ =\ (Change\ in\ financial\ sector\ size\ /\ Population\ growth\ rate)\ *\ 100$$

$$RFI\ =\ [(F2-F1)/F1]\ /\ (P2-P1)/P1]\ *\ 100$$

A second approach to measure the RFI index is the logarithmic growth rate approach. Under this approach, the rate of financial inclusion (RFI) index is the ratio of change in the size of the financial sector to the logarithmic change in population size. The 'change in size of the financial sector' is the size of financial sector in the current year (F2) minus the size of financial sector in the previous year or in a given base year (F1) which is equivalent to F2 – F1. On the other hand, 'logarithmic change in population size' is the logarithm of population size in the current year (log P2) minus the logarithm of population size in a given base year (log P1) which is equivalent to log (P2 – P1). Population size can be divided into the size of the rural population and the size of the urban population.

$$RFI\ index=\ Change\ in\ financial\ sector\ size\ /\ logarithmic\ change\ in\ population\ size$$

$$RFI\ =\ \Delta F\ /\ \log(\Delta P)\ =\ (F2-F1)\ /\ log\ (P2-P1)$$

Let's take an example. Assume that India's population was 751 million in 2016 and 850 million in 2017, and the size of India's financial sector - measured by the financial system deposits to GDP ratio - was 64.9 and 66.1 in 2016 and 2017, respectively. The rate of financial inclusion (RFI) index for India in 2017 will be 14.02% using the percentage change approach, and 0.15 using the logarithmic approach, as shown below:

Method 1: Percentage change approach

$$RFI\ =\ (Change\ in\ financial\ sector\ size\ /\ Change\ in\ population\ size)\ *\ 100$$

$$RFI\ =\ [(F2-F1)/F1]\ /\ (P2-P1)/P1]\ *\ 100$$

Growth in financial sector size (%) = (66.1 - 64.9) / 64.9 = 0.0185

Change in population size (%) = (850m - 751m) / 751m = 99m / 751m = 0.132

India's RFI index = 0.0185 / 0.132 = 0.1402 = 14.02%

Method 2: using logarithmic approach

$$RFI = Change\ in\ financial\ sector\ size\ /\ logarithmic\ change\ in\ population\ size$$

$$RFI = \Delta F\ /\ \log(\Delta P) = (F2 - F1)\ /\ log\ (P2 - P1)$$

India's RFI = (66.1 - 64.9) / log (850m – 751m)

= 1.2 / (log 99m) = 1.2 / 7.99 = 0.15

3.2. Rural financial inclusion rate (RFIR) index

The rural financial inclusion rate (RFIR) index measures the rural financial inclusion rate by taking into account the size of the rural population and the size of the financial sector. RFIR index is the ratio of the change in the size of the financial sector to change in the size of the rural population. Where change in rural population size is the rural population size in the current year (RP2) minus rural population size in a given base year (RP1) which is equivalent to RP2 – RP1. The change in size of the financial sector is the size of the financial sector in the current year (F2) minus the size of financial sector in a given base year (F1) which is equivalent to F2 – F1.

Method 1: Percentage change approach

$$RFIR = (Change\ in\ financial\ sector\ size\ /\ Change\ in\ rural\ population\ size) * 100$$

$$RFIR = \Delta F\ /\ \Delta RP = [(F2 - F1)/F1]\ /\ (RP2 - RP1)/RP1] * 100$$

Alternatively, RFIR can be measured as the ratio of the change in the size of the financial sector to the logarithmic change in the size of the rural population. Where logarithmic change in rural population size is the logarithm of rural population size in the current year (RP2) minus the logarithm of rural population size in a given base year (RP1) which is equivalent to log (RP2 – RP1). The change in size of the financial sector is the size of financial sector in the current year (F2) minus the size of financial sector in a given base year (F1) which is equivalent to F2 – F1.

Method 2: Logarithmic growth rate approach:

$$RFIR = (Change\ in\ financial\ sector\ size\ /\ logarithmic\ change\ in\ rural\ population\ size)$$

$$RFIR = \Delta F / log\ (\Delta RP) = [(F2 - F1)] / log(RP2 - RP1)]$$

3.3. Urban financial inclusion rate (UFIR) index

Urban financial inclusion rate (UFIR) index measures the urban financial inclusion rate by taking into account the size of the urban population and the size of the financial sector. The UFIR index is the ratio of the change in the size of the financial sector to the change in the size of the urban population.

Method 1: Percentage change approach

$$UFIR = (Change\ in\ financial\ sector\ size\ /\ Change\ in\ urban\ population\ size) * 100$$

$$UFIR = \Delta F / \Delta UP = [(F2 - F1)/F1] / (UP2 - UP1)/UP1] * 100$$

Alternatively, UFIR index measures the ratio of the change in the size of the financial sector to the logarithmic change in the size of the urban population.

Method 2: Logarithmic approach

$$UFIR = \Delta F / log\ (\Delta UP) = [(F2 - F1)/F1] / log\ (UP2 - UP1)$$

3.4. The financially included population

This index measures the number of households or individuals in the formal financial sector. This includes all individuals and households that have access to, and use, basic financial services for consumption, education and healthcare expenditure as well as for savings. The formula for determining the financially included population is the rate of financial inclusion (RFI) multiplied by the size of the population, as shown below:

$$Financially\ included\ population = current\ RFI * total\ population\ size$$

Where RFI is the rate of financial inclusion (derived in section 3.1)

3.5. The financially excluded population

This index measures the number of people outside the formal financial sector. This includes all individuals and households that do not have access to or use basic financial services for consumption, education and healthcare expenditure as well as for savings. The formula for determining the financially excluded population is given as:

$$Financially\ excluded\ population\ (FEP) = Total\ population\ size - Financially\ included\ population$$

Or,

Financially excluded population (FEP) = current rate of financial exclusion (RFE) * total population size

Where the 'current rate of financial exclusion (RFE)' is defined as 1 minus the current rate of financial inclusion (RFI) derived using the percentage change approach, that is:

$$RFE = (1 - RFI)$$

3.6. Voluntary financial exclusion rate

Voluntary financial exclusion is the willful and deliberate refusal to participate in the formal financial sector by households and individuals. Individuals may exit the formal financial sector for many reasons such as a general lack of interest in financial institutions, religious beliefs, dissatisfaction arising from one's past experience in the financial sector, lack of trust in banks, etc. Most of the reasons for voluntary financial exclusion cannot be measured arithmetically except for a few. One meaningful way to determine the number of people who are voluntarily excluded from the population is to determine the voluntary financial exclusion (VFE) ratio.

A proxy index to capture 'voluntary financial exclusion' (VFE) is the ratio of the number of formal accounts closed by account owners compared to the total number of formal accounts in the

financial sector, where the total number of formal account refers to the total number of formal account ownership in a defined period of time. Closed formal accounts refer to all formal accounts that were closed by the account owner across all financial institutions in the financial sector during a period of time but it excludes all formal accounts that were closed by financial institutions for legal and regulatory reasons. The voluntary financial exclusion ratio can be expressed as:

$$= \textit{the number of closed formal accounts by account owners} \; / \; \textit{total number of formal accounts in the financial sector}$$

3.7. Forced financial exclusion ratio

The forced financial exclusion ratio (FFER) measures the number of formal accounts that were closed by financial institutions in the financial sector for legal and/or regulatory reasons relative to the total number of formal accounts in the financial sector during a period of time. This is intuitive and easy to understand because regulators and law enforcement have the power to instruct financial institutions to close bank accounts whose account activity are deemed to be suspicious, unethical, questionable, fraudulent or illegal. The owner of such accounts may be temporarily or permanently excluded from the financial sector when their accounts are used as conduits for fraud, suspicious or illegal transactions.

$$\textit{FFER ratio} = \textit{the number of forced closed accounts} \; / \; \textit{total number of formal accounts in the financial sector}$$

3.8. Financial access ratio

The financial access ratio (FAR) broadly measures the extent to which households have access to account ownership in the banks or financial institutions nearest to them or in their immediate communities. It identifies the proportion of households that own or hold a bank account or other formal accounts in a geographical area where bank branches may be limited or in excess supply.

The financial access ratio can be narrowly defined as the ratio of households that own or hold a bank account to the total number of available bank branches in the geographical area. A high financial access ratio (FAR) implies greater financial access and greater financial inclusion while a low ratio implies low financial access and low financial inclusion. The FAR ratio is expressed as:

$$FAR = account\ ownership\ by\ households\ (log) \\ / \ total\ number\ of\ available\ bank\ branches$$

For example, assume that the number of households (or individuals) that own a bank account in Nevada in the United States in 2018 was 897,507 and only four banks – HSBS, Wells Fargo, Bank of America and Citi – operated in Nevada in 2018. Each of the banks had 7, 9, 11 and 6 branches, respectively. Using the above information only, the financial access ratio (FAR) for Nevada will be:

$$FAR = log\ (number\ of\ households\ that\ own\ an\ account) \\ / \ total\ number\ of\ available\ bank\ branches$$

FAR = log 897,507 / (7+9+11+6) = 5.95 / 23 = 0.2587 = 0.26

An interesting feature of the FAR ratio is that the FAR ratio cannot be increased simply by increasing the value of denominator. Higher values of the FAR ratio can be achieved either by (i) increasing the number of account owners, or (ii) through the simultaneous reduction in the denominator and increase in the numerator. This is intuitive because it suggests that greater 'access to finance' or greater financial access is not achieved by increasing the number of bank branches but rather it would require reducing the number of branches and a preference for other non-bank channels to deliver financial services to a larger number of households and individuals.

3.9. Account usage ratio

Account usage ratio measures the frequency of formal account usage by households or individuals over a defined period of time usually a year. It captures the average number of formal account activity in a year. Formal account activity includes all account inflows and outflows as well as individuals' account balance checking activity. The account usage ratio is measured as the

number of account activity divided by 365 days in a year. A high account usage ratio (FAR) implies greater financial inclusion.

$$AUR = number\ of\ bank\ account\ activity\ /\ 365\ days$$

3.10. Account inactivity ratio

Some scholars argue that bringing people into the financial sector is not a major problem (Mader and Sabrow, 2019; Ozili, 2020). Rather the bigger problem emerges when individuals and households in the financial sector choose to become inactive users of basic financial services, and the inactivity they create is detrimental to the goals of financial inclusion and is detrimental for the economy (Ozili, 2020). In light of this, it is important to develop an indicator, the 'account inactivity ratio' (AIR), that capture the level of account inactivity in the formal financial sector. This ratio measures the number of dormant or inactive formal accounts in the financial sector relative to the total number of formal accounts in the financial sector. A low 'account inactivity ratio' is desirable and beneficial for financial inclusion while a high 'account inactivity ratio' is undesirable and detrimental for financial inclusion.

$$AIR = number\ of\ dormant\ formal\ accounts\ /\ total\ number\ of\ formal\ accounts$$

4. Methodology

In this section, I use available data to test the accuracy and validity of some of the index in section 3. Data for population size and data for financial sector size (financial system deposits to GDP ratio) were collected from the World bank database. Also, when computing the logarithmic transformation for the 'change in population size (ΔP)' time series data, some observations with negative values will be indeterminate because the logarithm of negative numbers cannot be determined, and the countries whose reported data were affected by this problem were excluded from the analyses. Finally, the rate of financial inclusion (RFI) was computed in Table 1 using available data.

5. Results

5.1. Rate of financial inclusion (RFI)

The result for the rate of financial inclusion is reported in table 1. Countries with the top 10 RFI index using the percentage change approach are: Georgia, France, Mauritius, China, Zimbabwe, Czech Republic, Lesotho, Brazil, Denmark and Ecuador while countries with low RFI index are Poland, U.S., Haiti, Rwanda, Ghana, India and Kenya. Under the logarithmic approach, countries with the top 10 RFI index using the growth rate approach are: Zimbabwe, Georgia, Ecuador, Mauritania, Mauritius, Lesotho, Peru, China, Brazil and Egypt while the countries with the lowest RFI ranking are United states, Kenya, Poland, Rwanda and Haiti.

Table 1: Rate of financial inclusion (RFI) across selected countries

s/n	Country name	ΔP	Log (ΔP)	ΔF	RFI (method 1)	Rank #1	RFI (method 2)	Rank (#2)
1	Afghanistan	0.0258	5.9606	0.0456	1.7704	18	0.0076	12
2	Australia	0.0169	5.6137	-0.0825	-4.8616	41	-0.0147	26
3	Austria	0.0069	4.7846	0.0181	2.6082	14	0.0038	16
4	Brazil	0.0081	6.2229	0.0512	6.3277	8	0.0082	11
5	Chile	0.0143	5.4172	-0.0493	-3.439	40	-0.0091	30
6	China	0.0056	6.8881	0.0754	13.459	4	0.0109	9
7	Colombia	0.0151	5.8631	-0.0498	-3.2882	39	-0.0085	32
8	Czech Republic	0.0026	4.4487	0.0276	10.3920	6	0.0062	14
9	Denmark	0.0065	4.5678	0.0323	5.0079	9	0.0071	13
10	Dominican Republic	0.0111	5.0621	0.0168	1.5224	20	0.0033	18
11	Ecuador	0.0178	5.4687	0.0851	4.7725	10	0.0155	3
12	Egypt	0.0211	6.3001	0.0873	4.1320	12	0.0138	5
13	Finland	0.0023	4.1109	0.0050	2.1317	16	0.0012	23
14	France	0.00008	3.7304	0.0332	413.1386	2	0.0089	10
15	Georgia	0.00013	2.6981	0.0556	415.417	1	0.0206	2
16	Ghana	0.0225	5.8058	-0.033	-1.4698	31	-0.0056	34
17	Haiti	0.0131	5.1534	-0.0038	-0.2951	28	-0.0007	37
18	Iceland	0.0237	3.9009	-0.0522	-2.1985	36	-0.0134	27
19	India	0.0106	7.1507	-0.0171	-1.6020	32	-0.0023	36
20	Indonesia	0.0118	6.4901	-0.0022	-0.1847	26	-0.0003	37
21	Iraq	0.0257	5.9741	-0.0819	-3.1831	38	-0.0137	26
22	Israel	0.0195	5.2234	0.0328	1.6760	19	0.0062	14
23	Kenya	0.0238	6.0681	-0.0410	-1.7227	33	-0.0067	33
24	Korea, Rep.	0.0043	5.3433	0.0091	2.1326	15	0.0017	22

25	Kuwait	0.0251	4.9966	-0.048	-1.9143	34	-0.0096	30
26	Lebanon	0.0150	5.0032	0.0055	0.3713	24	0.0011	24
27	Lesotho	0.0079	4.2151	0.0554	7.0076	7	0.0131	7
28	Mauritania	0.0285	5.0756	0.0755	2.6436	13	0.0148	4
29	Mauritius	0.0009	3.0569	0.0404	44.8406	3	0.0132	6
30	Namibia	0.0188	4.6489	0.0129	0.6855	21	0.0027	19
31	New Zealand	0.0214	5.0031	0.0121	0.5651	23	0.0024	20
32	Pakistan	0.0209	6.6304	0.0139	0.6633	22	0.0021	21
33	Peru	0.0167	5.7145	0.0748	4.4679	11	0.0131	7
34	Philippines	0.0146	6.1787	0.0305	2.0995	17	0.0049	17
35	Poland	0.0001	3.6756	-0.0012	-9.2835	42	-0.0003	37
36	Qatar	0.0265	4.8472	-0.0246	-0.9299	30	-0.0051	34
37	Russian Federation	0.0011	5.1885	-0.0488	-45.7156	43	-0.0094	31
38	Rwanda	0.0267	5.4943	-0.0213	-0.7983	29	-0.0038	35
39	Saudi Arabia	0.0202	5.8173	-0.0591	-2.9222	37	-0.0101	29
40	South Sudan	0.0072	4.8935	-0.3073	-42.5555	44	-0.0628	25
41	Uganda	0.0382	6.1804	0.01514	0.3962	25	0.0024	19
42	United States	0.0064	6.3172	-0.0017	-0.2733	27	-0.0003	37
43	Zambia	0.0299	5.6903	-0.0598	-1.9993	35	-0.0105	28
44	Zimbabwe	0.0147	5.3146	0.17189	11.6874	5	0.03234	1

ΔP = percentage change in population size from 2016 to 2017 [i.e. $P_{2017} – P_{2016}) / P_{2016}$].
Log (ΔP) = Log ($P_{2017} - P_{2016}$) = logarithmic change in population size.
ΔF = percentage change in financial sector size from 2017 to 2016 [i.e. ($F_{2017} – F_{2016}$) / F1].
P_{2017} = population size in 2017
P_{2016} = population size in 2016
Population size and financial sector size data were obtained from World bank database.
Financial sector size (F) was measured using the financial system deposits to GDP ratio in the global financial development indicators
Method 1 = the percentage change approach
Method 2 = the logarithmic approach

5.2. The financially included population

The financially included population is calculated as the current rate of financial inclusion multiplied by population size. The result is reported in table 2. The positive values in column C of table 2 represents the number of population members that are included in the financial sector while negative values in column C of table 2 represent the number of population members that are excluded in the financial sector. As can be observed, countries like Zimbabwe, Philippines, France, China and Brazil have a larger financially included population compared to other

countries with positive values, while South Sudan, Russia, Kenya, Iraq, India and Colombia have a larger financially excluded population compared to other countries with negative values.

Table 2: Determining the financially included population

Country Name	Population (year-2017)	RFI (method 2)	Financial included Population
	A	B	C (C= A*B)
Afghanistan	36,296,400	0.007666	278,263
Australia	24,601,860	-0.01471	-361,935
Austria	8,797,566	0.0038	33,428
Brazil	207,833,831	0.008241	1,712,697
Chile	18,470,439	-0.00911	-168,311
China	1,386,395,000	0.010956	15,188,652
Colombia	48,901,066	-0.0085	-415,429
Czech Republic	10,594,438	0.006213	65,828
Denmark	5,764,980	0.007076	40,793
Dominican Republic	10,513,131	0.003337	35,087
Ecuador	16,785,361	0.015571	261,372
Egypt, Arab Rep.	96,442,593	0.013858	1,336,461
Finland	5,508,214	0.001218	6,710
France	66,865,144	0.008905	595,425
Georgia	3,728,004	0.020611	76,839
Ghana	29,121,471	-0.00568	-165,543
Haiti	10,982,366	-0.00075	-8,262
Iceland	343,400	-0.01338	-4,593
India	1,338,658,835	-0.00239	-3,203,813
Indonesia	264,645,886	-0.00034	-89,064
Iraq	37,552,781	-0.01371	-514,915
Israel	8,713,300	0.006281	54,731
Kenya	50,221,473	-0.00677	-340,024
Korea, Rep.	51,466,201	0.001717	88,382
Kuwait	4,056,097	-0.00961	-38,968
Lebanon	6,811,873	0.001114	7,590
Lesotho	2,091,412	0.013148	27,498
Mauritania	4,282,574	0.014891	63,773
Mauritius	1,264,613	0.013235	16,737
Namibia	2,402,603	0.002787	6,695
New Zealand	4,793,900	0.002424	11,620
Pakistan	207,896,686	0.002098	436,115
Peru	31,444,297	0.013103	411,999
Philippines	105,173,264	0.004947	520,335

Poland	37,974,826	-0.00032	-11,970
Qatar	2,724,724	-0.00508	-13,854
Russian Federation	144,496,740	-0.00942	-1,361,374
Rwanda	11,980,937	-0.00389	-46,564
Saudi Arabia	33,099,147	-0.01017	-336,496
South Sudan	10,910,759	-0.06282	-685,381
Uganda	41,162,465	0.00245	100,847
United States	325,147,121	-0.00028	-90,395
Zambia	16,853,688	-0.01052	-177,383
Zimbabwe	14,236,745	0.032344	460,473

6. Conclusion

This paper proposed some index of financial inclusion. The proposed indexes were developed to facilitate cross-country comparison and to rank the level of financial inclusion and exclusion across countries. The indexes in this paper can help policymakers in designing better financial inclusion policies and can provide feedback and insight to policy makers to improve current financial inclusion policies. The study has some limitations. The biggest advantage of a financial inclusion index is also its greatest weakness. A financial inclusion index sometimes ignores the bigger picture by reducing a complex set of behavioural patterns in finance to a single number. For instance, a country that enjoys greater access to finance may witness a large number of inactive account users in the formal financial sector despite having greater access to financial services. Therefore, many financial inclusion index may not communicate the bigger picture to policy makers and analysts. Secondly, different countries may adopt different financial inclusion policies which are designed and implemented to deal with the unique problems facing each country, and this may render financial inclusion indexes ineffective for cross-country comparison. Thirdly, most financial inclusion index often identifies and explain the relationships between past information which policy makers may not be interested in. Policy makers and analysts may be more interested in current and future information on financial inclusion. Finally, the methodology used to derive the financial inclusion indexes is often not standardized. The recommendation to policy makers is for policy makers to consider using a wide range of alternative indexes in measuring the level of financial inclusion.

Reference

Allen, F., Demirguc-Kunt, A., Klapper, L., & Peria, M. S. M. (2012). The foundations of financial inclusion: Understanding ownership and use of formal accounts. The World Bank.

Ambarkhane, D., Singh, A. S., & Venkataramani, B. (2016). Measuring financial inclusion of Indian states. International Journal of Rural Management, 12(1), 72-100.

Amidžic, G., Massara, A., & Mialou, A. (2014). Assessing countries' financial inclusion standing: A new composite index.

Arslanian, H., & Fischer, F. (2019). Financial Innovation and Inclusion. In The Future of Finance (pp. 81-86). Palgrave Macmillan, Cham.

Birkenmaier, J., Despard, M., Friedline, T., & Huang, J. (2019). Financial inclusion and financial access. In Encyclopedia of Social Work.

Camara, N., & Tuesta, D. (2014). Measuring financial inclusion: A muldimensional index. BBVA Research Paper, (14/26).

Carbo S., Gardener E.P., Molyneux P., 2005. Financial Exclusion. Palgrave MacMillan

Chakrabarty, K.C. (2010). Deputy Governor, Reserve Bank of India at the National Finance Conclave 2010, organised by KIIT University, Bhubaneswar

Goel, S., & Sharma, R. (2017). Developing a financial inclusion index for India. Procedia computer science, 122, 949-956.

Kempson, E., Atikinson, A. & Pilley, O. (2004). Policy level response to financial exclusion in developed economies: Lessons for developing countries, Report of Personal Finance Research Centre, University of Bristol.

Kelkar, V. (2010). Financial inclusion for inclusive growth. ASCI Journal of management, 39(1), 55-68.

Leyshon, T., 1995. "Geographies of financial exclusion: financial abandonment in Britain and the United States", Transactions of the Institute of British Geographers New Series, 20, pp.312–41

Mader, P., & Sabrow, S. (2019, January). All Myth and Ceremony? Examining the Causes and Logic of the Mission Shift in Microfinance from Microenterprise Credit to Financial Inclusion. In Forum for Social Economics (Vol. 48, No. 1, pp. 22-48). Routledge.

Ozili, P. K. (2020). Financial Inclusion Research Around the World: A Review. Forum for Social Economics.

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review, 18(4), 329-340.

Sarma, M. (2008). Index of financial inclusion (No. 215). Working paper.

Sinclair S. P., 2001. “Financial exclusion: An introductory survey”, Report of Centre for Research in Socially Inclusive Services, Heriot-Watt University, Edinburgh.