

Insurance Inclusion Index: A two-dimensional measurement of International Insurance Inclusiveness

Dr. Sankara Muthu Kumar Sadayan ^{a,*}

^a Assistant Professor, Faculty of Business & Logistics, Bahrain Polytechnic, Kingdom of Bahrain

ARTICLE INFO

Article History

Submitted 24 Jan 2023
Accepted 28 Jan 2023
Available online 22 Feb 2023

JEL Classification

E44, G22, N20, O50

Keywords

Insurance Inclusion Index
Insurance Availability
Insurance Usage

ABSTRACT

Life insurance density and life insurance penetration are normally used as parameters to measure the insurance sector development. However, there is no measurement of insurance inclusion at the international level. The objective of this study is to construct an Insurance Inclusion Index (III) for select countries across the globe using the data from the Financial Access Survey of IMF (Financial Access Survey - IMF data - international monetary fund 2022). The results depict that six countries have a 'very high' insurance inclusion, and four countries have a 'high' insurance inclusion. Seven countries are placed at 'medium' level insurance inclusion. Fourteen countries have a 'low' insurance inclusion, and twenty-seven countries have a 'very low' insurance inclusion. Thus, it is understood that during 2021 out of 58 countries majority of the countries (41) have either low or very low insurance inclusion.

Journal of Insurance and Financial Management

*Corresponding Author:

Sankara.Muthu@polytechnic.bh

Author(s) retain copyright of the submitted paper (Please view the [Copyright Notice](#) of JIFM).



This work is licensed under a [Creative Commons Attribution 4.0 International License](#).

Introduction:

The World Bank Group considers financial inclusion a key enabler to reduce extreme poverty and boost shared prosperity. According to World Bank (Financial Inclusion Overview 2023), financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit, and insurance – delivered responsibly and sustainably. However, the research on financial inclusion was focused on banking inclusion and other financial services such as payments and insurance is ignored. At the international level, life insurance density and life insurance penetration are used as parameters to measure the insurance sector development. However, there is no measurement of insurance inclusion at the international level.

Review of Literature:

According to Queen Maxima of the UN Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA), financial inclusion will remain integral to mitigating the effects of the next pandemic, as well as other crises—including ones of conflict, climate, and gender inequality. Also, the universal access and usage of safe, affordable, and effective financial services were insisted on. However, UNSGSA focuses only on banking services ignoring insurance services. (UNSGSA 2022 Annual Report to the Secretary-General 2022)

As the COVID-19 pandemic wears on, trends in the life insurance industry remain unpredictable. Policy sales have changed substantially, payouts have soared to levels not seen in over a century, and clients have grown more accustomed to personalized digital experiences. As COVID-19 vaccination rates rise and the economic recovery continues, life insurers are embracing new digital practices to meet a new set of customer expectations. (Makda et al., 2022)

A 10-point action plan (Reaching financial equality for women 2021) for governments and businesses to rebuild stronger after COVID-19 has proposed many indicators related to bank accounts, debit cards, credit cards, mobile payments, internet access, etc., however, it does not mention about the insurance services as part of financial inclusion.

One of the findings of the research titled Digital Financial Services for Financial Inclusion (Tan, 2022) shows that financial literacy was found to be important in the usage of financial products such as loans, insurance, and investments.

Public policy measures could be adopted, both from a supply and demand point of view, to promote financial inclusion through microinsurance, breaking down the barriers that curb its development. (MAPFRE Economics, 2020)

Principle 2 (Diversity) of G20 principles for innovative financial inclusion 2012 suggests the implementation of policy approaches that promote competition and provide market-based incentives for the delivery of sustainable financial access and usage of a broad range of affordable services (savings, credit, payments and transfers, insurance) as well as a diversity of service providers. (G20 principles for innovative financial inclusion 2012)

G20 High-Level Policy Guidelines on Digital Financial Inclusion for Youth, Women and SMEs did not mention the need for insurance as one of the financial services in measuring financial inclusion. (2020)

The GPFII describes digital financial inclusion broadly as "the use of digital financial services to advance financial inclusion." The term "digital financial services" (DFS) covers the whole set of financial products and services, including payments, remittances, transfers, savings, credit, insurance, securities, financial planning and account statements. (G20 Financial Inclusion Action Plan 2020)

Shen et al., (2022) constructed a multidimensional financial inclusion index which incorporates life and non-life insurance indicators for 79 countries for the year 2019. The findings of this study indicate the lack of contribution of the insurance spectrum of financial services to financial inclusion.

Based on the above reviews, one could understand the importance of studying the insurance sector in financial inclusion. Earlier studies have attempted to measure financial inclusion taking banking indicators alone. However, Priyanka et al., (2021) incorporate the insurance sector indicators as well.

In the above context, there is a need to construct an Insurance Inclusion Index to measure the extent of insurance inclusion across the globe. An attempt has been made in this research to develop Global Insurance Inclusion Index.

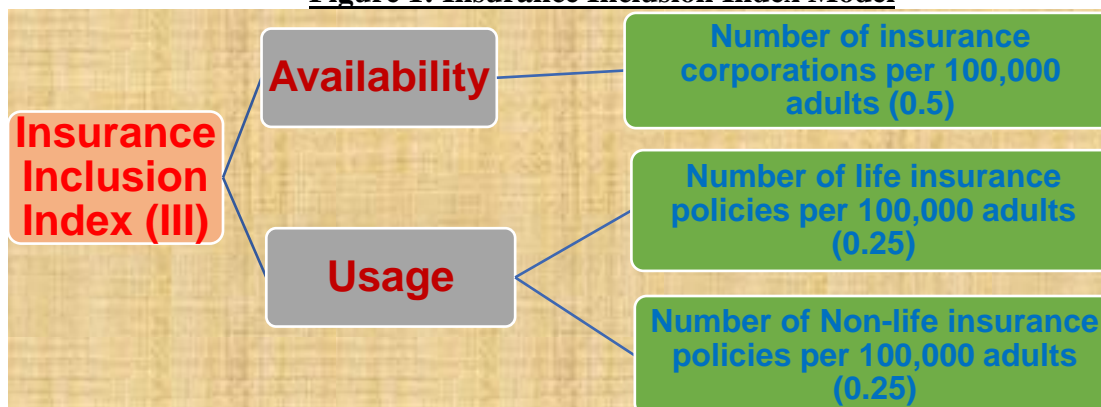
Methodology:

The objective of this study is to construct an Insurance Inclusion Index for various countries across the globe using the data from the Financial Access Survey of International Monetary Fund (2022). A two-dimensional index is calculated using the following indicators of insurance inclusion:

- Number of insurance corporations per 100,000 adults (Availability Dimension)
- Number of life insurance policies per 1,000 adults (Usage Dimension)
- Number of Non-life insurance policies per 1,000 adults (Usage Dimension)

Figure 1 depicts Insurance Inclusion Index Model, which shows how the researcher arrives at Insurance Inclusion Index using the availability and usage dimensions.

Figure 1: Insurance Inclusion Index Model



Computation of the Insurance Inclusion Index (III):

The approach for the computation of the Insurance Inclusion Index (III) is similar to that used by UNDP for the computation of the Human Development Index (HDI). The proposed III is computed by first computing a dimension index for each dimension of financial inclusion.

$$\text{The } di = wi \frac{Ai - mi}{Mi - mi}$$

where

w_i = weight attached to the dimension i , $0 \leq w_i \leq 1$

A_i = actual value of dimension i

m_i = lower limit on the value of dimension i ,

M_i = upper limit on the value of dimension i ,

In measuring a country's level of insurance inclusion, the important factor is the location of the achievement point X vis-à-vis the worst point O and the ideal point W. If the distance between X and O is larger, it indicates higher insurance inclusion and if the distance between X and W is smaller. A larger distance between X and O would indicate higher insurance inclusion. And the smaller distance between X and W would indicate higher insurance inclusion. If two countries have their achievement points at the same distance from W but different distances from O, then the country with a higher distance from O is considered better. However, if they have the same distance from O but different distances from W, then the country with less distance from W is considered better. Thus, while developing a measure of insurance inclusion, both these distances were considered. The III is a number that lies between 0 and 1 and is monotonically increasing, i.e., a higher level of insurance inclusion indicates a higher value of the index. Thus, first X1 (distance between X and O) was computed followed by X2 (inverse distance between X and W) and then take a simple average of X1 and X2 to compute IFI, the final index. (Mandira, 2012)

The exact formulae are given below:

$$X1 = \frac{\sqrt{d1^2 + d2^2 + dn^2}}{\sqrt{w1^2 + w2^2 + wn^2}}$$

$$X2 = 1 - \frac{\sqrt{(w1 - d1)^2 + (w2 - d2)^2 + (wn - dn)^2}}{\sqrt{(w1^2 + w2^2 + wn^2)}}$$

$$IFI = \frac{1}{2} [X1 + X2]$$

As mentioned in the methodology, the III is two-dimensional. The availability of insurance services (dimension 1) was measured with the number of insurance corporations per 100,000 adults. The usage of insurance services (dimension 2) was measured with the number of life insurance policies per 100,000 adults and the number of non-life insurance policies per 100,000 adults. Since the Financial Access Survey (FAS) provided the number of life and non-life insurance policies per 1,000 adults, the data was converted for every 100,000 adults. Dimension 1 and dimension 2 were allotted the weightage of 0.5 each in the III. The Insurance Inclusion Index (III) of 65 countries is computed for five years, i.e., 2017 – 2021. However, only 58 countries were ranked according to III in 2021. The main limitation of this III is that most of the developed countries were excluded since there is no data available for them.

Results and Discussion:

Table 1 depicts the Insurance Inclusion Index (III) for 65 countries during 2017 – 2021. There is a mixed trend during 2017 – 2021 for most of the countries. However, there are 28 countries whose III increased and 34 countries whose III is decreased during the same period. Of the 65 countries, 7 have shown an increase in the III during all five years. They are Chile, China, P.R.: Mainland, Georgia, Korea, Poland, Thailand and Trinidad & Tobago. 9 countries showed an increased III during all years except one. They are Egypt, Eswatini, Guinea, Honduras, Latvia, Mexico, Pakistan, Saudi Arabia, and Serbia. South Africa is the only country which recorded 6 times increase in the III between 2017 and 2021. Especially, there is a steep hype of III from 0.097 in 2019 to 0.504 in 2020.

Table 1: Insurance Inclusion Index (III) during 2017 - 2021

#	Countries	2017	2018	2019	2020	2021
1	Angola	0.044	0.041	0.036	0.033	0.036
2	Argentina	0.315	0.313	0.325	0.324	0.342
3	Bangladesh	0.068	0.067	0.066	0.064	0.064
4	Barbados	0.948	0.950	0.942	0.942	0.000
5	Bhutan	0.149	0.160	0.193	0.148	0.147
6	Bosnia and Herzegovina	0.382	0.392	0.410	0.405	0.430
7	Brunei Darussalam	0.965	0.956	0.946	0.951	0.945
8	Cabo Verde	0.152	0.152	0.152	0.151	0.151
9	Cameroon	0.073	0.076	0.071	0.072	0.000
10	Chile	0.374	0.382	0.389	0.395	0.477
11	China,P.R.:Macao	0.947	0.942	0.942	0.935	0.935
12	China,P.R.: Mainland	0.338	0.430	0.446	0.447	0.452
13	Colombia	0.472	0.391	0.263	0.272	0.274
14	Republic of Congo	0.028	0.028	0.029	0.026	0.026
15	Costa Rica	0.219	0.222	0.226	0.196	0.195
16	Cyprus	0.895	0.867	0.878	0.889	0.890
17	Egypt	0.104	0.106	0.110	0.132	0.125
18	Eswatini	0.351	0.410	0.553	0.617	0.522
19	Fiji	0.425	0.404	0.397	0.389	0.386
20	Georgia	0.273	0.289	0.309	0.326	0.345
21	Ghana	0.077	0.235	0.226	0.219	0.059
22	Guinea	0.042	0.044	0.046	0.051	0.049
23	Honduras	0.049	0.052	0.055	0.055	0.053
24	Hungary	0.365	0.353	0.358	0.359	0.365
25	India	0.167	0.167	0.167	0.168	0.166
26	Jordan	0.132	0.127	0.127	NA	0.117
27	Kazakhstan	0.127	0.123	0.135	0.137	0.161
28	Korea	0.660	0.661	0.664	0.666	0.669
29	Latvia	0.307	0.317	0.353	0.353	0.375
30	Lebanon	0.322	0.319	0.244	NA	0.000
31	Lesotho	0.271	0.262	0.299	0.324	0.338
32	Madagascar	NA	0.000	0.012	0.012	0.011
33	Malawi	0.035	0.035	0.034	0.037	0.034
34	Maldives	0.338	0.331	0.330	0.313	0.319
35	Mauritius	0.695	0.692	0.663	0.661	0.659

36	Mexico	0.118	0.122	0.133	0.155	0.028
37	Moldova	0.206	0.211	0.195	0.167	0.173
38	Montenegro	0.536	0.503	0.504	0.494	0.498
39	Myanmar	0.209	0.225	0.231	0.000	0.000
40	Nicaragua	0.061	0.063	0.064	0.057	0.055
41	North Macedonia	0.317	0.321	0.331	0.299	0.327
42	Pakistan	0.055	0.062	0.076	0.067	0.093
43	Poland	0.359	0.367	0.378	0.382	0.389
44	Portugal	0.660	0.658	0.649	0.647	0.646
45	Romania	0.186	0.190	0.195	0.203	0.188
46	Russian Federation	0.219	0.225	0.222	0.212	0.000
47	Rwanda	0.070	0.067	0.054	0.059	0.067
48	Samoa	0.836	0.812	0.809	0.805	0.803
49	São Tomé and Príncipe	0.408	0.408	NA	0.000	0.000
50	Saudi Arabia	0.065	0.065	0.074	0.077	0.082
51	Serbia	0.250	0.264	0.285	0.261	0.289
52	Seychelles	0.905	0.869	0.869	0.881	0.816
53	Solomon Islands	0.199	0.196	0.191	0.244	0.000
54	South Africa	0.079	0.102	0.097	0.504	0.508
55	Suriname	0.766	0.759	0.761	0.758	0.753
56	Thailand	0.322	0.325	0.331	0.339	0.341
57	Trinidad and Tobago	0.839	0.840	0.840	0.844	0.853
58	Tunisia	0.108	0.111	0.106	0.107	0.113
59	Turkey	0.202	0.207	0.216	0.204	0.214
60	Ukraine	0.595	0.606	0.597	0.512	0.506
61	United Arab Emirates	0.296	0.297	0.293	0.283	0.307
62	Uzbekistan	0.076	0.079	0.083	0.082	0.090
63	West Bank and Gaza	0.094	0.092	0.089	0.088	0.101
64	Zambia	0.112	0.082	0.078	0.078	0.078
65	Zimbabwe	0.200	0.169	0.234	0.226	0.152

In Table 2, countries are ranked according to their Insurance Inclusion Index in 2021. Brunei Darussalam is ranked first with an III of 0.945 in 2021. It's a tiny nation in Asia with less than half a million population and that might be the reason for the higher achievement of III. China, P.R.: Macao is ranked 2nd with an III of 0.935, followed by Cyprus (0.890), Trinidad and Tobago (0.853) and Seychelles (0.816). Madagascar is ranked last with an III of 0.011. Republic of Congo, Mexico, Malawi and Angola also have the lowest III of 0.026, 0.028, 0.034 and 0.036 respectively.

Table 2: Insurance Inclusion Index - 2021

Rank	Countries	Index
1	Brunei Darussalam	0.945
2	China,P.R.:Macao	0.935
3	Cyprus	0.890
4	Trinidad and Tobago	0.853
5	Seychelles	0.816
6	Samoa	0.803
7	Suriname	0.753
8	Korea	0.669
9	Mauritius	0.659
10	Portugal	0.646
11	Eswatini	0.522
12	South Africa	0.508
13	Ukraine	0.506
14	Montenegro	0.498
15	Chile	0.477
16	China,P.R.: Mainland	0.452
17	Bosnia and Herzegovina	0.430
18	Poland	0.389
19	Fiji	0.386
20	Latvia	0.375
21	Hungary	0.365
22	Georgia	0.345
23	Argentina	0.342
24	Thailand	0.341
25	Lesotho	0.338
26	North Macedonia	0.327
27	Maldives	0.319
28	United Arab Emirates	0.307
29	Serbia	0.289
30	Colombia	0.274
31	Turkey	0.214
32	Costa Rica	0.195
33	Romania	0.188
34	Moldova	0.173
35	India	0.166
36	Kazakhstan	0.161
37	Zimbabwe	0.152
38	Cabo Verde	0.151
39	Bhutan	0.147
40	Egypt	0.125
41	Jordan	0.117
42	Tunisia	0.113
43	West Bank and Gaza	0.101
44	Pakistan	0.093
45	Uzbekistan	0.090
46	Saudi Arabia	0.082

47	Zambia	0.078
48	Rwanda	0.067
49	Bangladesh	0.064
50	Ghana	0.059
51	Nicaragua	0.055
52	Honduras	0.053
53	Guinea	0.049
54	Angola	0.036
55	Malawi	0.034
56	Mexico	0.028
57	Republic of Congo	0.026
58	Madagascar	0.011

Among the top ten countries, three are from Asia, and two each are from Europe, Africa and South America. One country in Oceania. Among the bottom ten countries, six countries are from Africa, and two countries are from Central America. One country each from North America and Asia. No country from Europe, South America or Oceania is in the bottom ten countries.

Table 3: Top-10 & Bottom-10 Countries

Top-10 Countries			Bottom-10 Countries		
Rank	Country	III	Rank	Country	III
1	Brunei Darussalam	0.945	49	Bangladesh	0.064
2	China,P.R.:Macao	0.935	50	Ghana	0.059
3	Cyprus	0.890	51	Nicaragua	0.055
4	Trinidad and Tobago	0.853	52	Honduras	0.053
5	Seychelles	0.816	53	Guinea	0.049
6	Samoa	0.803	54	Angola	0.036
7	Suriname	0.753	55	Malawi	0.034
8	Korea	0.669	56	Mexico	0.028
9	Mauritius	0.659	57	Republic of Congo	0.026
10	Portugal	0.646	58	Madagascar	0.011

Table 4 exhibits the number of countries at different levels of insurance inclusion. As shown in Table 4, six countries with III of 0.800 & above are placed at a 'very high' level of insurance inclusion and four countries with III between 0.600 and 0.800 are placed at a 'high' level of insurance inclusion. Seven countries are at a 'medium' level as far as insurance inclusion is concerned with III between 0.400 and 0.600. Out of 58 countries ranked during 2021 fourteen countries are at a 'low' level and twenty-seven countries are at a 'very low level of insurance inclusion. Thus, it is understood that most of the countries (41) have either low or very low insurance inclusion.

Table 4: Insurance Inclusion Level- 2021

Insurance Inclusion Range	Level of Insurance Inclusion	No. of Countries	Percentage
0.800 & above	Very High	6	10%
0.600 – 0.800	High	4	7%
0.400 – 0.600	Medium	7	12%
0.200 – 0.400	Low	14	24%
0.200 & below	Very Low	27	47%
Total		58	100%

Conclusion:

The multidimensional financial inclusion index constructed by Shen et al., (2022) reveals higher financial inclusion in high-income countries in the Europe region vis-à-vis that of medium-income countries from the Asian and African regions. The results of the current study on the insurance inclusion index differ from the above results. Among the top ten countries, three are from Asia, two each from Europe, Africa and South America and one country is from Oceania. Even though a multi-dimensional financial inclusion index (Shen et al., 2022) is constructed including life and non-life insurance indicators, a unique measurement of insurance inclusion, i.e. Insurance Inclusion Index (III) is required to measure the level of insurance inclusion across the globe.

References:

- Economics, M. A. P. F. R. E. (2020). Financial inclusion in insurance. *Madrid: MAPFRE Economics*.
- Financial Access Survey*. International Monetary Fund. (2022, October 5). Retrieved October 8, 2022, from <https://www.imf.org/en/Data>
- G20 Principles for Innovative Financial Inclusion*. The Alliance For Financial Inclusion. (2012, June 5). Retrieved November 9, 2022, from <https://www.afi-global.org/publications/g20-principles-for-innovative-financial-inclusion/>
- G20 high-level policy guidelines on Digital Financial Inclusion for youth, women and SMEs*. Global Partnership for Financial Inclusion (GPFI) . (n.d.). Retrieved November 9, 2022, from <https://www.gpfi.org/publications/g20-high-level-policy-guidelines-digital-financial-inclusion-youth-women-and-smes#:~:text=The%20G20%20High%2DLevel%20Policy,services%20in%20order%20to%20reach>
- G20 2020 Financial Inclusion Action Plan*. Global Partnership for Financial Inclusion (GPFI) . (2020, October). Retrieved November 9, 2022, from <https://www.gpfi.org/publications/g20-2020-financial-inclusion-action-plan#:~:text=The%20GPFI%20reaffirms%20the%20G20,living%20in%20remote%20rural%20areas>
- Imran , M., Peter, P., & Scott , C. (2022, May 31). *How covid-19 changed the life insurance industry*. BDO Alliance USA . Retrieved November 9, 2022, from <https://www.bdo.com/insights/industries/insurance/how-covid-19-changed-the-life-insurance-industry>

- Reaching financial equality for women.* Better Than Cash Alliance. (2021, March 8). Retrieved November 9, 2022, from <https://www.betterthancash.org/explore-resources/reaching-financial-equality-for-women>
- Roy, P., & Patro, B. (2021). Measuring Financial Inclusion in India—An Index considering Banking and Insurance Indicators. In *Interdisciplinary Research in Technology and Management* (pp. 32-38). CRC Press.
- Sarma, M. (2012). Index of Financial Inclusion—A measure of financial sector inclusiveness. *Centre for International Trade and Development, School of International Studies Working Paper Jawaharlal Nehru University. Delhi, India.*
- Tan, M. (2022, October 12) *Digital Financial Services for Financial Inclusion.* Financial Education Network (FEN)'s National Financial Literacy Symposium 2022 (NFLS2022),” in. Kuala Lumpur, Malaysia: Tech for Good Institute.
- Unsgsa.org. (2022, September 21). *UNSGSA 2022 annual report to the Secretary-General.* United Nations | UNSGSA Queen Máxima. Retrieved November 9, 2022, from <https://www.unsgsa.org/publications/unsgsa-2022-annual-report-secretary-general>
- Yap, S., Lee, H. S., & Liew, P. X. (2022, July). The integration of life and non-life insurance in financial inclusion index. In *Proceedings of Economics and Finance Conferences* (No. 13015540). International Institute of Social and Economic Sciences.