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ACCESS TO FINANCE: AN EMPIRICAL ANALYSIS

Abstract

Financial access is gradually being recognised as an important input to economic development. Using World Bank (2007) database, this study measures the extent of financial access in developed and developing countries. Further, it develops a new socio-economic development index which incorporates financial access. It then compares socio-economic development of various countries as shown by HDI alone, and by the new index incorporating financial access. The results of the study show that Spain ranks highest in terms of financial access followed by Belgium, Malta and South Korea. In addition, the ranking of countries in terms of HDI changes if financial access is taken into account.

Keywords: Financial Access, HDI, economic development, developing countries

1. Introduction

Access to finance, including access to various financial products and services such as bank accounts, bank credit, savings products, remittances and payment services, insurance services, home mortgage and financial advisory services, is gradually being recognised as a significant aspect of economic development. It can be defined as "availability of a supply of reasonable quality financial services at reasonable costs, where reasonable quality and reasonable cost have to be defined relative to some objective standard, with costs reflecting all pecuniary and nonpecuniary costs" (Claessens 2006, p.210). It can also be defined as the "absence of price and non-price barriers" (Demirguc-Kunt & Levine, 2008a). Access to finance has also been suggested as a tool for achieving various Millennium Development Goals (MDGs) as increased incomes of households as a consequence of increased financial access enables increased expenditure on health, nutrition and education and thus improves well-being of the households and assists in the achievement of MDGs (Beck & De La Torre 2006; Claessens & Feijen, 2007).[1]

At the individual level, access to finance leads to the creation of equal opportunities to all groups of people and enables their smooth integration into the national economy. It enables them to manage their cash flows and payments; raise standard of living; lower their transaction costs compared to those in the informal sector; reduces vulnerability to risks; and enables acquisition of assets. Low access, on the other hand, leads to increased income inequalities, poverty, and low growth rates. Beck, Demirguc-Kunt et al. (2009, p.120) observed that, "without inclusive financial systems, poor

[1] This view is in sharp contrast to the stance of earlier studies which stressed that finance is important for economic growth only and achieving efficient resource allocation and profitability are the sole objectives of the financial system (Caprio and Hanohan, 2001).

individuals and small enterprises need to rely on their personal wealth or internal resources to invest in their education, become entrepreneurs, or take advantage of promising growth opportunities."

Overall, the direct effects of access to finance for the poor are security, income and asset building effects. It serves as social protection as the financial sector through its products - savings, credit and insurance assists in crisis mitigation. The ability to insure poor against shocks leads to maintaining consumption and protection of the poor; income effect takes place through access to credit enabling asset building and increased incomes; and availability of insurance products allows increase in the productive activities. Income effect will also take place with the availability of low cost payment and remittance transfer services of the formal banking system (Imoden 2005). The positive indirect effect of access to financial services is through increased expenditure on health, education, maternal and child health, empowerment and human development. Thus access to finance and inclusive financial system which includes all groups of people, poor as well as middle class, has been advocated to reduce inequalities and poverty; acquire capital, enhance income and manage risks in the developing countries (World Bank, 2008).[2]

Access to formal finance matters for both rich and poor alike (more to the poor) as was shown in Collins, Morduch, Rutherford & Ruthven (2009). Collins et al. (2009) showed money management of selected households across three countries, Bangladesh, India and South Africa and used financial diaries to record their cash flows. The study also showed how people, even though poor, used a diversified portfolio of savings, credit and insurance, mostly through informal sources (family, friends, neighbours, landlord, moneylender, microfinance institutions) to help strategically manage their income irregularities, create usefully large sums of money for household and livelihood purposes and cope with risks.

Access to finance also eases the external financing constraint that prevents firms' expansion. It allows firms to increase investment, operate on a larger scale and removes entry barriers thereby also leading to expansion of the market, employment opportunities and increased economic growth (Claessens 2006; Kumar, Beck, Campos, & Chattopadhyay, 2005).

Further, it also varies across countries based on their stages of economic development. In developed countries only small groups of people may be financially excluded, whereas in developing countries only small groups of people have financial access. Moreover, the reasons for financial exclusion in developed countries could be social exclusion (for example homelessness) or lack of financial

[2] It, however, remains unclear what is the impact of financial sector on income distribution and whether it is more important to promote efficiency in the financial sector or expand access or both.

literacy or poverty. In developing countries, financial exclusion co-exists with other basic deprivations such as absence of drinking water facilities; education; health; and infrastructure like roads and electricity (Peachey & Rae 2004). However, there is ambiguity around measurement of the level of financial services accessible to people in different countries and despite a large developing literature on financial access, a single measure of financial inclusion in different countries does not exist.[3]

Furthermore, although, a huge body of literature exists on finance-growth relationship (for instance, see King and Levine, 1993; Levine, 1997; Demirguc-Kunt & Levine, 2008a), yet finance is seldom considered as one of the indicators of economic development, unlike other universally accepted indicators such as Gross Domestic Product per capita, life expectancy and adult literacy rate all included in the Human Development Index (HDI). We believe that incorporating financial access as an indicator of economic development presents a holistic picture of development. The idea here is that different levels of financial access can indicate how well developed the country is. The inclusion of finance as an indicator of development is also crucial as functionally its access enables entrepreneurial activities, reduction in poverty, human development and is therefore a key ingredient to economic growth and development (Zaman, Izhar et al. 2012). Also following Sen's capabilities approach (1999), higher human development without access to financial services to the population is meaningless, if people are unable to use their skills for pursuing their aspirations.

Overall, in this study we examine financial access in both developed and developing countries.[4] Our study using a multiple indicator and multi-dimensional approach to cover as many dimensions of access as possible, builds financial access index for different countries. It further develops economic development index including financial access as one of the indicators of economic development, for all the countries. Subsequently, it compares economic development of the countries as shown by HDI alone, and the modified human development index which incorporates financial access. We have not come across any study which has defined economic development in a similar way. Although Montenegro (2004) challenges the existing definition of economic development and has defined it as an outcome of two indicators: GDP per capita, and income distribution. Yet, his study does not include finance and its access as an indicator of development.

[3]This could be, perhaps, due to several dimensions involved of financial access, some of which may be immeasurable, leading to incomplete models of financial access.

[4] Although the term developed and developing is quite often used in common language to place countries into certain groups based on their stages of development, the criteria used is often not very clear. The World Bank's World Development Report divides the countries according to income level. Thus based on their per capita income economies are divided into low income, $975 or less; lower middle income, $976 - $3,855; upper middle income, $3,856 - $11,905; and high income, $11,906 or more. This classification is vague and does not reveal clearly the level of development of the countries.

In building the financial access index, our study, however, does not take into account recent technological innovations in the financial sector for instance, mobile banking and agent banking due to data limitations. A number of studies have emerged in the recent years on mobile banking and multiple uses to which the mobile phones are being put into in many countries to increase financial services (Alleman & Rappoport, 2010; Anderson, 2010; Beck et al., 2010; Becirovic, Bajramovic et al. 2011). Some of the advantages are saving in travel costs; increased security; anytime anywhere access unconstrained by the office hours of a bank branch and increased ability to plan future financial needs (Becirovic, Bajramovic et al. 2011). Mobile banking has not only led to increase in access to financial services to unbanked and underbanked people, but has also boosted the image of banks as 'innovative bank' (Weber & Darbellay 2010). The case of M-Pesa in Kenya; increased usage of mobile services to expand remittances payments in Philippines, and Indonesia are some of the successful examples of mobile banking. The emergence of M-Pesa has led to sharp increase in transaction services (mainly for remittance payments) of the formal financial service providers from 15% in 2006 to 45.2 % in 2009 (Beck et al., 2010). Systematic quantitative cross-country data on mobile banking is, however, currently lacking. Also, among the countries having experimented with such innovations only few such as, M-Pesa in Kenya; Brazil (agent banking); and Philippines (Smart money) are well-known.

The results of our study show that among all the countries financial access is highest in Spain followed by Belgium, Malta and South Korea. Further, our Economic Development Index or modified HDI (that is, including financial access) indicates change in countries' ranking as shown in UNDP's HDI due to their differences in their level of financial development.

The contribution of our study to the literature is two fold: firstly, it contributes to the literature on financial access in general. Although a huge body of literature exists on finance-growth relationship, not many empirical studies exist in the area of financial access, perhaps due to lack of data on many access variables at the country level. This study uses recently available database from World Bank (2007) to build financial access index for a large number of countries. Secondly, the study in a novel approach suggests that besides other indicators of economic development, finance also should be considered as one of the indicators of development. To this end, the study develops modified HDI which incorporates financial access. Rest of the paper is organised as follows. Sections 2 and 3 spell out the variables covered and methodology employed to compute financial access index for the two groups of countries. Section 4 shows the results of the study. Section 5 concludes.

2. A Discussion on Variables

Dimensions of access to finance

Ideally one should take all possible dimensions into consideration for arriving at a comprehensive picture on the inclusive financial system across the countries. In the existing literature, different dimensions of access to finance have been easy physical access, flexibility, and reliability (Beck, Demirgüç-Kunt & Honohan, 2009; Fernando 2007; Sophastienphong & Kulathunga, 2008).[5] Sophastienphong and Kulathunga (2008) in their study on south Asian financial development take six indicators of banking access into account. These are demographic bank and ATM penetration (branches/ATM per 100,000 population); deposit and loan account per 1000 people; branches/ATM per 1000 square km. (geographic branches/ATM per 1000 sq.km). The three dimensions of an inclusive financial system in Sarma (2008) were banking penetration (number of bank accounts as proportion of total population); availability of banking services (number of bank branches per 1000 population); usage dimension (bank credit and bank deposit as percentage of GDP).

Other dimensions could be that of gender; access by less privileged people such as disabled and low caste; regional dimension; rural-urban population; and access to finance by certain occupations. Within the cost dimension, costs incurred (besides the ones considered in our study) such as those involved in travelling to a bank branch also need to be taken into account (World Bank 2008). Due to poor roads and transport access such costs tend to be high in the poor and less developed areas. Also rural poor may have to forgo a day's wage to visit bank branches (Singhal & Duggal, 2002). These are, however, not considered in our study due to non-availability of data. Furthermore as mentioned earlier, we also do not take mobile banking into account due to data limitations on a cross-country basis. Although there have been significant efforts across the countries in mobile banking, particularly in developing countries, yet consistent data at the country level is not available.

In recent years, lack of financial literacy has also been cited as the major reason for financial exclusion, particularly in the developing countries (OECD, World Bank et al., 2009). A number of measures are being taken by different countries to improve financial knowledge of their citizens. There is, however, no single formal indicator to judge financial literacy of people, unlike literacy rate which is easily available to assess the country's literacy level. Our study is, therefore, unable to take this dimension too into account while building financial access index.

[5] De La Torre, A., J. C. Gozzi, et al. (2007) expressing concern on the emerging policy issues yet to be tackled by the policy makers regarding financial sector development noted lack of finance to the small scale firms, stock market development; and pension system. Yet they did not discuss the issues relating to access to finance.

Overall, in our study, based on the data availability, we consider how many people does the financial system cover- geographically and demographically (physical access or outreach dimension); how easy is it to undertake financial transactions (ease dimension); administrative difficulties (procedures dimension) and how much does it cost (cost dimension).

Our choice of different dimensions is an improvement over the existing literature, particularly Sarma (2008), in three respects. First, we consider multiple indicator approach in contrast to a single indicator for each dimension in Sarma (2008). Second, Sarma (2008) does not consider the time taken (ease of transactions) and transaction costs. Our study is an improvement in this respect. Third, instead of considering actual usage of financial services (for instance bank credit and bank deposit as used in Sarma's study, we focus on access (availability) to financial services. A number of studies have highlighted the difference between use and access of financial services (Claessens 2006; World Bank 2008). While usage refers to the actual current users of financial services, access, on the other hand, is a much broader concept and refers to the availability of financial services and includes current consumers as well as those not using financial services, whether voluntary or involuntary. Usage dimension will only indicate the current users of the financial services and leaves out the non-users who may be facing barriers to access. Table 1 provides a list of all the variables considered in our study.

Table 1: Variables Used in the Study

Outreach	Ease	Procedures	Cost
Geographic branch penetration (number of branches per 1000 sq km)	Minimum amount to be maintained in checking account	Number of documents to open checking account	Fees consumer loan (% of minimum loan amount)
Demographic branch penetration (number of branches per 100,000 people)	Minimum amount to be maintained in savings account	Number of documents to open savings account	Fees mortgage loan (% of minimum loan amount)
Geographic ATM penetration (number of ATMs per 1000 sq km)	Minimum amount to open savings account	Location to open deposit accounts	Cost to transfer funds internationally (% of $250)
	Minimum amount to open checking account		Amount of fees for using ATM cards (% of $100)
	Minimum amount of consumer loan		
	Minimum amount of mortgage loan		

Physical access or outreach (Dimension I), that is, presence of bank branches is often considered the most important source of access to finance in the developing countries (Mas 2011). Despite the notion of branchless banking and availability of ATM machines, yet easy access to a brick and mortar bank branch staffed with people is still very important in the less developed areas. Also easy access to bank branches, as Porter (1966) pointed out, develops banking habits which lead to

increased savings and investment, improve the efficiency of allocation of capital, and increase the ability of monetary authorities to stabilise the economy. Lewis (1955, p.229) also argued:

> Experience shows that the amount of saving depends partly on how widespread these facilities (i.e. savings institutions) are: if they are pushed right under the individual's nose---people save more than if the nearest saving institution is some distance away.

In our study, outreach (comprising three variables), both in geographic and demographic terms, constitutes an important dimension of access to finance. As mentioned earlier, branchless banking has not been included in our study due to lack of consistent cross-country data. The other three dimensions considered are ease of transactions (six variables), procedures involved (three variables) and cost of transactions (four variables). Data for the four dimensions have been taken from World Bank database (2007).

Economic Development

Different studies have used a mix of indicators to measure level of development across the countries. Human Development Index (HDI), Human Poverty Index (HPI), Gender Development Index (GDI) and Gender Empowerment Measure (GEM) constructed by UNDP provide a diverse picture of economic development. For instance, HDI is a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living. It emphasises that a monetary measure such as, income alone is not an adequate criterion to assess well-being and development of human beings. After all, the country consists of people and, therefore, to assess whether it is economically developed or not, development of human beings would be an appropriate indicator. HDI which includes non-monetary indicators that is, life expectancy and education, besides per capita income is more reflective of the country's development level in a broader sense and is, therefore, more suited for our purpose.[6]

In our study we, therefore, consider HDI to be an appropriate indicator of economic development which presents country's income level as well as its level of human development. Other reasons for considering HDI as a proxy for development are based on its popularity in the literature as it is widely regarded as a precise and simple measure of development, easy availability and near universality of data.[7] Including financial access index as built by us in HDI (which we term as

[6] Some studies have, however, criticised HDI on the grounds of using arbitrary weights (for instance, see Chowdhary, 1991; McGillivray, 1991; Nubler, 1995; Sagar & Najam, 1997).

[7] For instance, in the latest Human Development Report for 2012 data on 187 countries were made available.

modified HDI or Economic Development Index) gives a holistic picture of country's development levels.

It may be pointed out that we do not distinguish between input or outcome indicators in developing our modified economic development index. Our choice of HDI as a proxy for economic development, as stated above, is guided solely by its breadth in terms of coverage of indicators, easy availability and coverage of countries. Within HDI, studies have shown that both health and education indicators can be either inputs or outcomes of development. For example, improved health and better nutrition may result in higher productivity contributing to economic growth and development, which could further lead to increased incomes initiating higher investment in health (Strauss & Thomas 1998). Similarly, financial access could be an input or outcome to development as well, for instance financial sector reforms aimed on improving access will lead to better credit availability leading to higher economic growth and development which in turn may lead to demand for financial services and increased financial development. Also, there may be close relationships between all these indicators as for instance, poor financial development with implications for low incomes may limit health investment.

3. Methodology

Following Sarma (2008), we build a single composite financial access index using four dimensions. Thus for each dimension we have *n* number of variables*:*

$$D_i = X_1, X_2, X_3 \ldots X_n \quad \ldots\ldots (1)$$

For each variable we compute D_i using the following formula:

$$d_i = \frac{A_i - m_i}{M_i - m_i} \quad \ldots\ldots (2)$$

where:

A_i = Actual value of X_1
m_i = minimum value of X_1
M_i = maximum value of X_1

This is broadly in alignment with the methodology used by UNDP in the construction of HDI and other UNDP indices. The minimum and maximum values, termed as 'goalposts' (UNDP, 2009), are the minimum and maximum value of each variable in different countries. For instance, among 97countries data for which was made available in the World Bank database, the minimum number

of bank branches geographically per 1000 sq kilometre was 0.11 each in Namibia and Botswana and the maximum number of bank branches was 636.07 in Singapore. Regarding financial access index, unlike HDI taking a fixed value is not appropriate, and as Sarma (2008, p.11) points out "difficult to fix what should be the minimum/maximum for any dimension of financial inclusion." Furthermore, it provides a better picture of the relative index of financial inclusion and is not a static but a dynamic concept.

Further, $D_iI = (d_{i1} + d_{i2} + d_{i3} \ldots d_n)/n$ …… (3)

We further assign weights to each dimension based on the factor loadings arrived at by using the commonly used statistical technique of Principal Components Analysis (PCA) (Klasen 2000). Using weights helps in identifying which dimension of financial access index is actually more important for analytical and policy purposes. The three approaches used by the studies generally to determine weights are data driven (primarily statistical methods), normative (using equal or arbitrary weights or expert opinion) and hybrid one, a combination of both data driven and normative approach (Decancq and Lugo 2013).[8] In our study we employ data driven technique of PCA to summarise several variables (as discussed earlier) and to narrow down our choice of variables to significant components. This is also done to reduce the dataset to a more manageable size and to reduce the problem of multicollinearity. Statistical techniques such as PCA also avoid the problem of generating equal or arbitrary weights and thus are more precise and reduce subjectivity associated with selecting weights arbitrarily.

Overall, the Financial Access Index (FAI) is derived as follows:

$$FAI = D_iI*w_i / D_iII*w_{ii} + D_{ii}III*w_{iii} + D_iIV*w_{iv} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

where w_i, w_{ii}, w_{iii} and w_{iv} are the weights attached to four dimensions that is, outreach, ease, procedures and cost of transactions. The weights based on the factor loadings arrived at by using

[8] Each of these approaches however, has its own advantages and disadvantages. For details see Decancq and Lugo (2013).

PCA are shown in Table 2. Outreach and procedures clearly score much higher than ease and cost involved in carrying out the financial transactions.[9]

Table 2: Factor loadings

Dimensions	Factor Loadings
Outreach	0.333
Ease	0.166
Procedures	0.333
Cost	0.250

Source: Author's calculations.

Although following a similar approach to Sarma (2008) in computing dimensional values, our methodology differs in the way the dimensional indices are combined to arrive at the final index. While Sarma (2008) arrives at the Index of Financial Inclusion (as the study calls it) based on the distance from the ideal, our study takes into account different properties of each dimension in the index. Also, unlike HDI which assigns equal weight to each variable in the index, we rigorously assign weights to different dimensions using the technique of PCA.

Data on all four dimensions of financial access are available only for 16 developed and 44 developing countries. Data for outreach alone, however, is available for 70 emerging and developing economies and 27 developed countries. We, therefore, compute two series of FAI one, which covers all the four dimensions and is comprehensive in nature; the other measures financial outreach in 97 developed and developing economies and ranks them accordingly. Data is drawn from the World Bank database on access to financial services (World Bank, 2007). These, however, relate to commercial banks only.

Further, to build modified Economic Development Index, we consider HDI (computed by UNDP) as our variable. The three pillars of HDI for each country are:

$D_i+D_{ii}+D_{iii}$ ……. (1)

Thus,

HDI = 1/3(life expectancy index) + 1/3 (education index) + 1/3 (GDP index) …. (2)

[9]The importance of each dimension can, however, vary across the countries for instance in Tanzania outreach matters, while in Sierra Leone high costs in banking transactions result in high financial exclusion (Allen, Demirguc-Kunt et al. 2012).

where life expectancy index (D_i), education index (D_{ii}) and GDP index (D_{iii}). HDI is the simple average of three dimension indices as shown above (see UNDP 2009).[10] HDI figures as provided by UNDP are modified in our analysis to include financial access as well. Thus, we add financial access index as calculated by us and subsequently average out the indices as is done in the calculation of HDI. We call the resulting figures as Economic Development Index (or modified HDI) and compare the ranking of countries based on HDI alone and modified HDI which includes financial access.

4. Results

Table 3 shows that among all the countries, including both developed and developing, financial access is highest in Spain, followed by Belgium, Malta and South Korea. The regional breakdown indicates that other than the sub-Saharan African countries, financial access in the South Asia region is poor and countries such as Pakistan and Nepal rank low in the index. In Nepal the ease of using financial system and outreach is very poor and costs too, are high in the country (Table 3). Noting lack of access to finance and huge demand for finance in South Asia, Fernando (2007, p.9) emphasised that:

--- closing the huge gap between the demand for financial services from low-income households and its supply from the formal and semiformal sources in both quantitative and qualitative terms may be considered one of the biggest development challenges facing most developing countries in Asia and other regions.

[10] The technical note showing the workings of Human Development Index and other indices are available at http://hdr.undp.org/en/media/HDR_20072008_EN_Technical1.pdf

Table 3: Financial Access Index

Countries	Outreach (D_iI)	Ease (D_iII)	Procedures (D-111)	Cost (D_iIV)	FAI	Ranking in FAI
Spain	0.478	0.009	0.060	0.124	1.000	1
Belgium	0.511	0.007	0.293	0.015	0.546	2
Malta	0.770	0.028	0.535	0.082	0.416	3
Korea, Rep. of	0.418	0.006	0.273	0.109	0.384	4
Japan	0.350	0.002	0.218	0.174	0.329	5
Italy	0.366	0.004	0.296	0.114	0.314	6
Germany	0.379	0.008	0.404	0.065	0.274	7
France	0.246	0.001	0.230	0.095	0.269	8
Denmark	0.220	0.000	0.265	0.108	0.209	9
Israel	0.136	0.001	0.168	0.117	0.175	10
Hungary	0.148	0.010	0.297	0.130	0.122	11
Greece	0.157	0.016	0.256	0.235	0.117	12
Lebanon	0.185	0.166	0.335	0.169	0.111	13
Czech Republic	0.069	0.015	0.147	0.078	0.106	14
United Kingdom	0.178	0.006	0.516	0.163	0.091	15
Croatia	0.120	0.018	0.462	0.091	0.073	16
Slovak Republic	0.068	0.011	0.252	0.085	0.069	17
Slovenia	0.054	0.008	0.215	0.075	0.065	18
Bulgaria	0.071	0.025	0.283	0.118	0.061	19
Australia	0.105	0.004	0.623	0.121	0.048	20
Romania	0.067	0.019	0.229	0.326	0.045	21
Sri Lanka	0.048	0.052	0.261	0.124	0.042	22
Trinidad and Tobago	0.089	0.014	0.640	0.086	0.041	23
Thailand	0.046	0.054	0.279	0.094	0.040	24
India	0.061	0.062	0.444	0.112	0.036	25
Poland	0.052	0.003	0.335	0.226	0.034	26
Jordan	0.043	0.094	0.324	0.098	0.032	27
Philippines	0.055	0.207	0.457	0.120	0.028	28
Argentina	0.036	0.024	0.385	0.077	0.026	29
Turkey	0.047	0.015	0.515	0.128	0.025	30
Brazil	0.055	0.012	0.489	0.389	0.023	31
Bangladesh	0.057	0.124	0.800	0.029	0.021	32
Indonesia	0.041	0.055	0.598	0.085	0.019	33
Colombia	0.035	0.031	0.440	0.191	0.019	34
Mexico	0.035	0.030	0.454	0.177	0.019	35
Egypt	0.014	0.002	0.240	0.008	0.019	36
Uruguay	0.033	0.044	0.485	0.119	0.018	37
Belarus	0.019	0.001	0.320	0.052	0.017	38
Lithuania	0.023	0.013	0.334	0.130	0.017	39
Armenia	0.033	0.126	0.391	0.255	0.017	40
Dominican Republic	0.049	0.024	0.516	0.612	0.016	41
Pakistan	0.024	0.104	0.428	0.055	0.015	42
Chile	0.037	0.025	0.597	0.282	0.015	43
Bosnia and Herzegovina	0.018	0.041	0.358	0.094	0.013	44
South Africa	0.026	0.016	0.612	0.149	0.012	45
Venezuela	0.018	0.018	0.425	0.154	0.011	46
Iran	0.031	0.005	0.621	0.498	0.010	47
Peru	0.015	0.039	0.358	0.225	0.009	48
China	0.008	0.008	0.333	0.037	0.008	49
Georgia	0.012	0.133	0.383	0.127	0.007	50
Albania	0.010	0.105	0.283	0.330	0.005	51
Zimbabwe	0.012	0.016	0.773	0.142	0.004	52
Nigeria	0.009	0.273	0.566	0.219	0.003	53
Ghana	0.008	0.239	0.620	0.257	0.003	54
Bolivia	0.004	0.176	0.409	0.291	0.002	55
Nepal	0.007	0.975	0.762	0.119	0.002	56
Zambia	0.004	0.038	0.685	0.085	0.002	57
Uganda	0.001	0.307	0.606	0.058	0.001	58
Madagascar	0.001	0.177	0.472	0.170	0.000	59
Ethiopia	0.000	0.202	0.493	0.033	0.000	60

Notes: Outreach has been worked out on the basis 3 variables; ease of transaction takes 6 indicators into account; Procedures based on 3 variables and cost considers 4 indicators. Outreach is higher as the figure increases; Ease is lesser as the figure increases; procedural and bureaucratic difficulties are higher as the figure increases and higher costs are obviously reflected in higher figures. In Column 5 higher values reflect better financial access and vice versa.

Source: Computed from World Bank (2007).

On the proximate reasons why access to finance varies across the countries, per capita income has been found to be an important indicator (Demirguc-Kunt, 2010). Figure 1 also shows that financial access is, by and large, higher in countries with high per capita income.

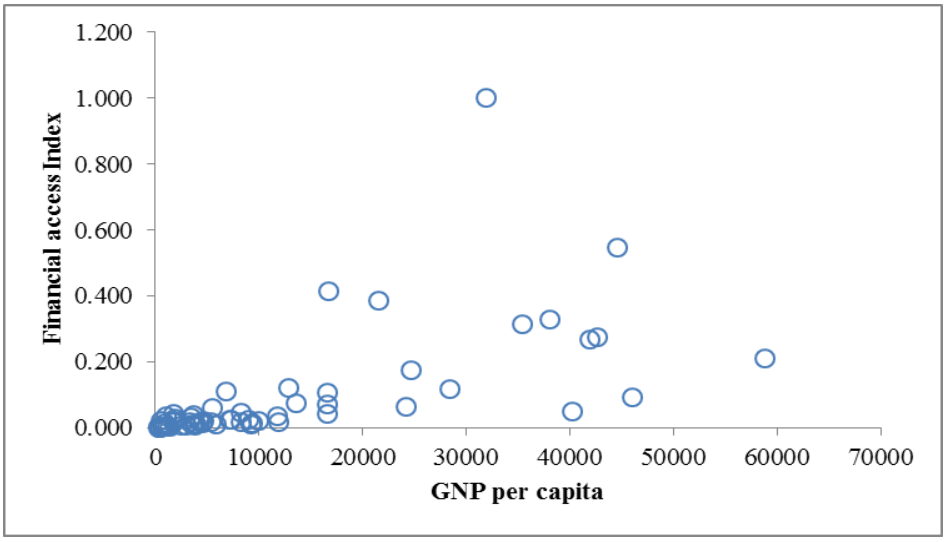

Figure 1: Financial Access and GNP per capita

Source: Based on World Bank Development Indicators Online database and Table 2.

The correlation coefficient between the financial access index and per capita income is positive at 0.62. However, the direction of causality is not clear, whether higher access to financial services and better developed financial systems leads to increase in growth and income or vice versa. Yet, theoretically studies have shown that "the services provided by the financial system exert a first-order impact on long-run economic growth" (Demirguc-Kunt & Levine, 2008b, p.2). Demirguc-Kunt and Levine, (2008b, p.2) further observed that,"…better-functioning financial systems ease the external financing constraints that impede firm and industrial expansion. Thus, one channel through which financial development matters for growth is by easing the ability of financially constrained firms to access external capital and expand."

As pointed out earlier in our study, data for outreach dimension is available for a large number of countries. Table 4a and 4b show access to finance in terms of outreach for developed and developing economies.

Table 4a: Access to Finance in terms of Outreach in Emerging and Developing Countries

Countries	Outreach (Di-I)	Ranking	Countries	Outreach (Di-I)	Ranking
Bahrain	0.8232	1	West Bank and Gaza	0.1016	37
Lebanon	0.4973	2	Azerbaijan	0.0805	38
Mauritius	0.4797	3	South Africa	0.0800	39
Hungary	0.4496	4	Pakistan	0.0751	40
Croatia	0.3600	5	Fiji	0.0740	41
Belize	0.2619	6	Saudi Arabia	0.0622	42
Trinidad and Tobago	0.2283	7	Belarus	0.0607	43
Estonia	0.2114	8	Lithuania	0.0588	44
Bulgaria	0.2111	9	Venezuela	0.0567	45
Romania	0.2071	10	Bosnia and Herzegovina	0.0542	46
India	0.1889	11	Kyrgyz Republic	0.0511	47
Brazil	0.1816	12	Namibia	0.0489	48
Guatemala	0.1727	13	Peru	0.0484	49
Panama	0.1696	14	Egypt	0.0456	50
Bangladesh	0.1661	15	Botswana	0.0405	51
Philippines	0.1593	16	Georgia	0.0391	52
Kuwait	0.1536	17	Zimbabwe	0.0380	53
Malaysia	0.1457	18	Nicaragua	0.0335	54
Poland	0.1448	19	Guyana	0.0327	55
Sri Lanka	0.1409	20	Nigeria	0.0302	56
Costa Rica	0.1406	21	Albania	0.0294	57
Jordan	0.1364	22	Ghana	0.0263	58
Turkey	0.1363	23	Kazakhstan	0.0251	59
El Salvador	0.1293	24	Nepal	0.0228	60
Thailand	0.1278	25	Russia	0.0227	61
Indonesia	0.1276	26	Papua New Guinea	0.0224	62
Dominican Republic	0.1271	27	China	0.0217	63
Argentina	0.1206	28	Bolivia	0.0139	64
Ecuador	0.1206	29	Zambia	0.0136	65
Chile	0.1183	30	Honduras	0.0074	66
Colombia	0.1137	31	Uganda	0.0038	67
Uruguay	0.1115	32	Madagascar	0.0032	68
Armenia	0.1078	33	Tanzania	0.0022	69
Mexico	0.1072	34	Ethiopia	0.0006	70
Slovenia	0.1063	35			
Iran	0.1042	36			

Source: Computed from World Bank (2007).

The above table shows that among the Sub-Sahara African countries, Mauritius ranks fairly high (3rd among 70 countries), followed by South Africa (39) and Namibia (48). It also shows that small countries with high density of population rank high in the outreach and yet Brazil, a large country but with low population density, ranks twelfth among the emerging and developing countries. This, however, does not take into account the role of agent banking in Brazil. The branchless banking has made huge strides in Brazil, not captured in the data above. In Brazil banks operate 149,507 banking correspondent agents in every municipality of the country (McKay & Pickens 2010; CGAP 2010). Bill payments (mostly in the urban areas) comprise most of the volumes of transactions (Kumar et al. 2005). This banking model has not only led to increased financial inclusion but has also increased profits for the agents as 73 per cent of the agents report increase in the non-agent business due to increased foot traffic (CGAP 2010).

Within the South Asia region, India at 11 ranks above other countries followed by Bangladesh (15) and Sri Lanka (20). The population per bank branch has come down significantly in India from 64 branches per thousand population in 1969 to 12 branches per thousand population as at end March 2012.[11] It may be mentioned that some form of branchless banking also exists in India, Philippines and Indonesia. Yet, due to the absence of consistent reliable data this is not included in our analysis. Rest all the countries have a poor outreach of the banking system.

Among the developed economies, Singapore tops the list followed by Spain, Malta and Belgium (Table 4b).

Table 4b: Financial Access (Outreach) in Developed Economies

Countries	Outreach - Di	Ranking in Outreach
Singapore	0.6984	1
Spain	0.3878	2
Malta	0.3594	3
Belgium	0.3089	4
Germany	0.2513	5
Italy	0.2511	6
Netherlands	0.2330	7
Austria	0.2255	8
Portugal	0.2248	9
Switzerland	0.1856	10
France	0.1845	11
Denmark	0.1643	12
Canada	0.1600	13
Korea, Rep. of	0.1358	14
Greece	0.1255	15
Norway	0.1222	16
United States	0.1173	17
Australia	0.1044	18
Japan	0.1030	19
United Kingdom	0.1006	20
New Zealand	0.1006	21
Ireland	0.0919	22
Israel	0.0840	23
Sweden	0.0791	24
Finland	0.0697	25
Czech Republic	0.0497	26
Slovak Republic	0.0457	27

Source: Computed from World Bank (2007).

We also attempted to compute financial access index covering non-bank financial institutions (that is, cooperatives, state financial institutions and microfinance) based on CGAP (2009) database. However, among the emerging and developing economies except for Peru, Mexico and Zimbabwe, data for rest of the countries on all the three non-banking institutions is not available. For instance, data for microfinance is not available separately for India as Self Help Groups (SHGs) are linked to

[11] In the Indian context although government owned banks have been much maligned for their poor and inefficient lending decisions and inefficiencies, yet their achievements in spreading banking network far and wide, and in improving access has not been much acknowledged. Burgess and Pande (2003) have shown that bank branching in India has led to improvements in income redistribution and poverty reduction.

the banks.[12] We therefore, decide not to report the results of such an exercise. Even for the developed countries, data is available only for few countries on all such institutions. We therefore, do not report the results here in this study.[13]

As stated earlier, an overall objective of the study was to build economic development index which among other indicators includes financial access too. This, we believe, would present a holistic picture of economic development. UNDP's HDI is often used by the researchers as an indicator of level of economic development of the countries. HDI provides a precise figure on the level of development of the country; is easy and simple to compute; and is comparable across the countries. The ranking of the countries in HDI and modified HDI (including financial access) is shown in Table 5.

As can be seen from the table, ranking of the countries changes if financial access (FAI) is incorporated in HDI. For instance, Belgium which ranks sixth in HDI (based on our re-estimation of HDI ranks) ranks second in modified HDI reflecting the level of financial access. Some other deviations from HDI are Australia which ranks very high in HDI, however, performs slightly lower in the modified HDI. Interestingly, we observed close correlation (0.95) between the two indices for the middle 20 countries (ranking 21 to 40 in modified HDI) and also close correlation (0.94) between the bottom 20 countries (rank 41 to 60 in modified HDI). However, this was lower (0.73) for those ranking in the top 20 in our modified HDI reflecting differences between HDI and financial access.

[12] The model of microfinance followed in India is mostly through the SHG-Bank linkage programme, wherein the non-governmental organisations which exist for rural development, women, child health etc., and microfinance is one of their activities, form the self-help groups and assist the groups in accessing credit from the banks.

[13] Based on the limited data available for developed economies from CGAP (2009) on cooperatives and state financial institutions, our results indicate that Spain once again tops the list followed by Germany, South Korea, Canada, Australia and Greece.

Table 5: Ranking of Countries in Modified HDI

Countries	Modified HDI*	HDI Value	Rank in HDI@	Rank in Modified HDI
Spain	0.966	0.955	4	1
Belgium	0.851	0.953	6	2
Korea, Rep. of	0.813	0.937	11	3
Japan	0.796	0.960	3	4
Italy	0.787	0.951	7	5
Germany	0.784	0.947	8	6
Malta	0.780	0.902	15	7
Denmark	0.778	0.955	5	8
France	0.776	0.961	2	9
Israel	0.745	0.935	12	10
Australia	0.740	0.970	1	11
Greece	0.736	0.942	10	12
United Kingdom	0.733	0.947	9	13
Slovenia	0.728	0.929	13	14
Czech Republic	0.704	0.903	14	15
Hungary	0.690	0.879	18	16
Slovak Republic	0.677	0.880	16	17
Croatia	0.671	0.871	20	18
Poland	0.669	0.880	17	19
Chile	0.662	0.878	19	20
Lithuania	0.657	0.870	21	21
Argentina	0.656	0.866	22	22
Uruguay	0.653	0.865	23	23
Mexico	0.645	0.854	24	24
Bulgaria	0.645	0.840	26	25
Romania	0.639	0.837	27	26
Trinidad and Tobago	0.638	0.837	28	27
Venezuela	0.636	0.844	25	28
Lebanon	0.630	0.803	36	29
Belarus	0.623	0.826	29	30
Brazil	0.615	0.813	31	31
Albania	0.615	0.818	30	32
Bosnia and Herzegovina	0.612	0.812	32	33
Turkey	0.611	0.806	34	34
Colombia	0.610	0.807	33	35
Peru	0.607	0.806	35	36
Armenia	0.603	0.798	37	37
Thailand	0.598	0.783	38	38
Iran	0.589	0.782	39	39
Dominican Republic	0.587	0.777	41	40
Jordan	0.585	0.770	43	41
Georgia	0.585	0.778	40	42
China	0.581	0.772	42	43
Sri Lanka	0.579	0.759	44	44
Philippines	0.570	0.751	45	45
Indonesia	0.555	0.734	46	46
Bolivia	0.548	0.729	47	47
Egypt	0.532	0.703	48	48
South Africa	0.515	0.683	49	49
Nigeria	0.484	0.511	57	50
India	0.468	0.612	50	51
Pakistan	0.433	0.572	51	52
Nepal	0.415	0.553	52	53
Bangladesh	0.412	0.543	53	54
Madagascar	0.408	0.543	54	55
Ghana	0.395	0.526	55	56
Uganda	0.385	0.514	56	57
Zimbabwe	0.366			58
Zambia	0.361	0.481	58	59
Ethiopia	0.311	0.414	59	60

Notes: *: Modified HDI is the average of life expectancy index, education index, GDP index and financial access index. @: HDI values are obtained from UNDP's Human Development Report. However, HDI rank differs here from the rank allotted in UNDP as we re-estimated the ranks based on our limited sample of countries. For Zimbabwe, UNDP reports data only for Life Expectancy and Education and not for GDP and overall HDI value. In our study we take average of Life expectancy index value, education value and financial access index value for Zimbabwe and compute modified HDI accordingly.

Source: UNDP (2009) and World Bank (2007).

5. Conclusion

The access dimension of finance is gradually being recognised as an important issue in economic development. Emphasis on financial development in the literature and various measures taken by the policymakers to develop financial system are unproductive unless finance is accessible to all and barriers to access are removed. In this study, we examined financial access in a large number of countries, both developed and developing. The large selection of countries at different stages of development enabled us to have a broad comparative perspective and understand financial access in different countries.

Despite a growing literature on financial access, a single measure of financial inclusion in different countries does not exist. Our study, therefore, using a multiple indicator and multi-dimensional approach to cover as many dimensions of access as possible, builds financial access index for the countries. The dimensions covered in our study relate to outreach, ease, procedures and cost of transactions. In contrast to a single indicator in each dimension adopted by Sarma (2008), our study covers as many possible indicators for each dimension in order to present a more accurate and comprehensive picture of access to finance. Our results show that Spain ranks highest among all the countries in financial access followed by Belgium and Malta.

Further, although a number of indices have been developed, which incorporate various facets of economic development, yet finance has not been included as one of the indicators despite its recognition as an important contributor to growth and development. Our study, in a novel approach, incorporated financial access in a new economic development index and showed that the ranking of countries changes from that shown by HDI alone, thus highlighting inter-country differences in financial development. This also indicated that adopting a more comprehensive and broader approach to development, which includes finance as well as other indicators, would provide a better picture of a country's development levels. It would also lead to sharper focus on financial development including access to finance.

The study is, however, not without its limitations. Although many possible variables are included in the compilation of index, due to data limitations it still does not take into account rural/urban variables; gender; and people with disabilities, and other costs incurred such as travel costs associated with banking, particularly in the less developed regions and rural areas. It also does not consider mobile banking due to non-availability of data across the countries. Also as the financial access index has been computed from the survey database, time series data on many of the indicators are not available. Furthermore, the results need to be interpreted with caution as the

ranking of countries is relative in nature, and data for many countries particularly developed ones such as United States is lacking on several dimensions. The future endeavours in this regard will, therefore, need to extend the coverage further and to address the limitations identified.

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