Research Article

DETERMINANTS ACCELERATING GLOBAL FINANCIAL INCLUSION INDEX

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A R T I C L E I N F O	A B S T R A C T
	One of the main development agenda of IMF from 2015 was to put financial inclusion as a key objective for UN Member Countries. Financial inclusion is delivery of financial services to vast section of vulnerable group at affordable cost. Many countries are taking the financial Inclusion as their formal target as a step to develop their economy and its growth. Digitalization has tremendous potential to accelerate progress towards financial inclusion and countries are amplifying investment in Digitalization in order to reap benefits of financial inclusion innovation but there are other determinants impacting the Global Financial inclusion. The main of study is find the key determinants which's has increased the scores of financial inclusion into 21 different countries reflecting political, economic, and geographic diversity. An attempt was made to study, interpret and analyze data from Brookings Financial and Digital Inclusion Project (FDIP) 2017 in panel data for different countries for three consecutive years with perspective to find determinants accelerating on Global Financial Inclusion

INTRODUCTION

In today's era, large number of people who are falling in the low income group, are managing their financial needs without even having any access to bank's saving account, debit cards etc. They are earning low, saving little, managing borrowings and their day to day activities, but being in informal financial system which is risky and sometimes unpredictable. Being included in the financial system helps people to cope up with these problems and is referred to as Financial Inclusion.Thus, financial inclusion means providing financial services to vulnerable group i.e. weaker section and low income group at affordable cost in a transparent manner.

"*Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost.*" *Rangarajan Committee Report, 2008*

Financial Inclusion is the, 'process of availing a range of required financial services, at a fair price, at the right place, form & time, through formal means and without any form of discrimination to the populace' (Kalunda, 2014). Financial Inclusion is, 'the process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy' (Sarma & Pais, 2008).

Broadly speaking, financial inclusion means individuals and businesses have access to useful and affordable financial

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products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way. Policymakers all over the world are exploring different ways to include financial excluded sector in the financial system.

The most significant effect of financial inclusion is that the entire national financial system is benefitted by greater inclusion, especially when promoted in the wider context of economic inclusion. India, a growing economy, has special significance of financial inclusion as it brings large segment of the productive sectors of economy under formal financial network and could unleash their creative capacities besides augmenting domestic demand on a sustainable basis driven by income and consumption growth from such sectors. Financial inclusion efforts do have multiplier effect on the economy as a whole through higher savings pooled from the vast segment of the bottom of the pyramid (BOP) population by providing access to formal savings arrangement resulting in expansion in credit and investment by banks. Deeper engagements of the BOP /under-banked population in the economy through the formal financial system could lead to improvement of their financial conditions & living standards, alleviation of the poverty, enabling them to create financial assets, generate income and build resilience to meet macro-economic & livelihood shocks (Khan, 2012). It encourages bringing un-banked customers into financial mainstream. All this would results in escalating the economic development of the country.

From the above literature review, it has shown a positive impact of financial inclusion on growth of the economy and HDI. Digitalization is going to have a positive impact on the

financial inclusion. The suggestions would be helpful to policymakers to increase the advent to financial inclusion in country.

ADB is committed to assist its developing member countries in the development of digital financial services to assist the wider population and small businesses to benefit from its multiplier effect."– Bambang Susantono Vice–President, Asian Development Bank

Objectives

1. To study and analyze the determinants of global financial inclusion index by cross country study
2. 2 To analyze and predict the most influencing determinants of global financial inclusion index by cross country study

To fulfill above objective that is to advance financial inclusion following key questions have to answer 1. Do country commitments help in progress toward financial inclusion? 2) To what extent do mobile digitization help to penetrate; and 3) how does proper legal, policy, and regulatory approaches promote financial inclusion?

Literature Review

Early works by a Schumpeter (1912) and Hicks (1969) found that financial development causes economic growth. However, Robinson (1952) and Levine (1997) argue that economic growth promotes financial development. According to the studies of Robinson (1952) and Levine (1997), economic growth creates demand and the automatic response of the financial system for this demand causes development on the financial system.

Murari & Didwania (2010) denotes it as a delivery of financial services at an affordable cost to the vast sections of the disadvantaged and low-income groups including households, enterprises, SMEs, traders. The various financial services include credit, savings, insurance and payments & remittance facilities.

Kuri & Laha (2011) said it is a process of bringing the weaker and vulnerable sections of society within the ambit of the organized financial system. It creates conditions for access to timely & adequate credit and other financial services by vulnerable groups, such as weaker sections and low income groups at affordable cost.

Bagli & Dutta (2012) said it is situation where people have connection with the formal financial institutions through holding savings bank account, credit account, insurance policy etc. It may help the person to have affordable access to financial services like formal savings, credit, payments, insurance and remittance.

According to Paramasivan & Ganeshkumar (2013), it is a way of easy access to formal financial services or systems and their usage by all members of the economy financial inclusion is a powerful tool to achieve inclusive growth. Financial inclusion is the process of ensuring access to appropriate financial products and services needed by vulnerable groups such as economically & socially weaker sections and low income groups at an affordable cost in a fair & transparent manner by formal financial institutions.

Sadhan Kumar (2011) worked out an Index on financial inclusion (IFI) based on three variables namely penetration (number of adults having bank account), availability of banking services (number of bank branches per 1000 population) and usage (measured as outstanding credit and deposit). The results indicate that Kerala, Maharashtra and Karnataka has achieved high financial inclusion, while Tamil Nadu, Punjab, A.P, H.P, Sikkim, and Haryana identified as a group of medium financial inclusion.

RESEARCH METHODOLOGY

Data taken for study is secondary data and is extracted from FDIP 2017 report which is generated by the Brookings Financial and Digital Inclusion Project (FDIP), which began in the summer of 2014, was to provide policymakers, private sector entities, representatives of nongovernmental organizations, and the public with information that can help improve financial inclusion in their respective countries and beyond. The first annual FDIP report and scorecard, published in August 2015 and then on continual basis, which examined key questions surrounding ways to advance financial inclusion, including Do country commitments make a difference in progress toward financial inclusion?; 2) To what extent do mobile and other digital technologies advance financial inclusion?; and 3) What legal, policy, and regulatory approaches promote financial inclusion?

21 countries were selected for study are Afghanistan, Bangladesh, Brazil, Chile, Colombia, Ethiopia, India, Indonesia, Kenya, Malawi, Mexico, Nigeria, Pakistan, Peru, the Philippines, Rwanda, South Africa, Tanzania, Turkey, Uganda, and Zambia. The rationale for selecting these countries was that all of them have made recent commitments to financial inclusion and they reflect political, economic, and geographic diversity.

Dependent Variable of study is Scorecard the approach is to assess the penetration level of financial inclusion and the usage of financial services with respect to four dimensions such as country commitment, mobile capacity, regulatory environment, and adoption of traditional as well as digital financial services.

Independent variables taken for study are

Country Commitment (CC): In country commitment, a role of regulatory policy and supervisory strategies are considered to assess the robust financial ecosystem. It also takes into account strategies for financial education and consumer protection designed to promote financial inclusion.

Mobile capacity (MC): The mobile capacity indicates the existence of opportunities for easy adoption of mobile money and other digital financial services that leverage mobile infrastructure.

Regulatory environment (RE): In regulatory environment, the engagement level of regulators with private sector representatives and other financial inclusion stakeholders is taken into account. Regulatory adjustments are particularly time-intensive to develop and implement. However, several countries have made progress toward fostering a more enabling regulatory environment

Adoption (Ad): Adoption percentage of technology,regulatory and other factor due to financial inclusion score increases.

Data Analysis and Interpretation

Correlation Matrix

Correlation coefficients, using the observations 1:01 - 2:39
5% critical value (two-tailed) = 0.2227 for n = 78

	Score	CC	MC	RE	Ad
Score	1	0.6678	0.5549	0.4229	0.7648
CC		1	0.1709	0.533	0.2142
MC			1	0.2558	0.2907
RE				1	-0.1644
Ad					1

In the correlation matrix we can find that CC and AD is highly correlated to penetration of financial inclusion among almost all countries whereas the regulatory norms have minimum effects on penetration of financial inclusion.
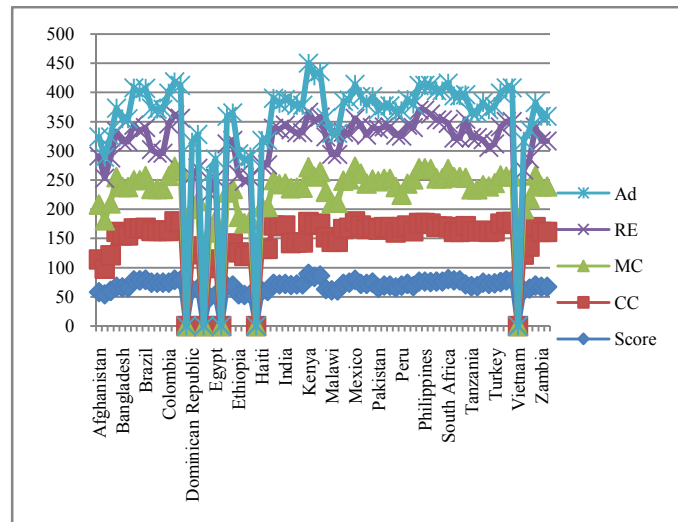

**Fig** Determinants Accelerating Global Financial Inclusion Index

This above graph indicates with increase in CC,RE and MC , AD has increased due to which financial inclusion score are also increasing .Countries like Dominician Rublic , Eypt, El Salvador ,Haiti ,Vietnam has very low CC,RE , MC , AD so it has low financial inclusion scores. This countries need to develop its penetration level by working on the determinants impacting it. Kenya has leading scores as all other factor improving penetration is positively showing increasing trend.

Panel Regression Models

Particulars	Panel Regression Models Dependent variables :Scores (Financial inclusion penetration)					
	Pooled Regression Model		**Fixed Effect Model**		**Random Effect Model**	
const	0.404102		−3.31654		0.404102	
CC	0.185315	***	0.206869	***	0.185315	***
MC	0.178162	***	0.0750749	**	0.178162	***
RE	0.212387	***	0.226418	***	0.212387	***
Ad	0.423780	***	0.605004	***	0.423780	***
R-squared	0.988825		0.836449		0.875114	
Adjusted R-squared	0.988168		0.836449		0.875114	
P-value(F)	1.51e-65		1.37e-38 +		1.37e-38 +	
Durbin-Watson	1.306996		1.636360		1.636360	
rho	−0.098224		−0.292749		−0.292749	
Breusch-Pagan test	p-value =0.00331709		So Random effect model has to be selected			
Hausman test	p-value = 3.45469e-008		**So Fixed Effect Model has to be selected**			

Q-Q plot for Financial Incluison
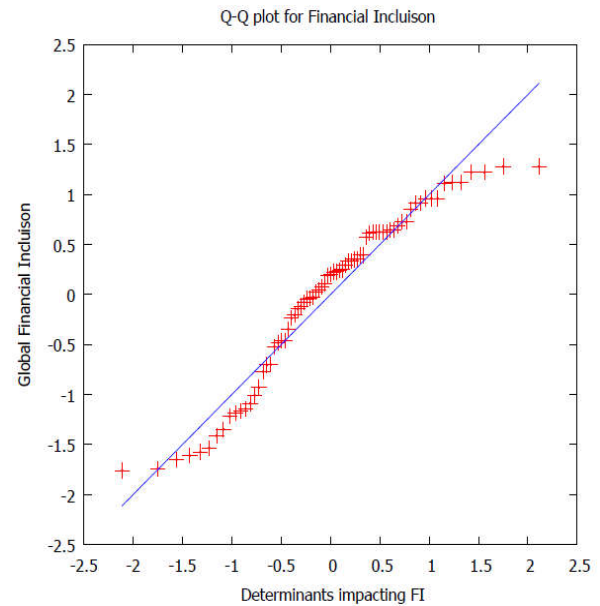
Panel Regression model for Determinants Impacting financial Inclusion
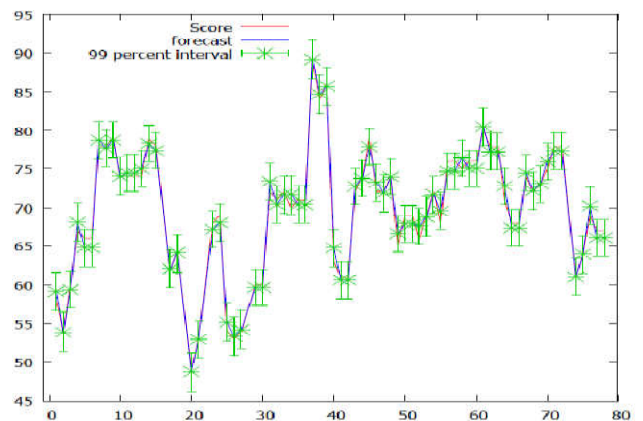
Predication of penetration of financial inclusion (scores) in 21 countries

This above Q-Q plot indicates Light tailed distribution for normality test A light tail means side of the distribution produces outliers at a reduced rate than expected with a normal distribution. So this indicates that model is prefect panel regression model as it has cleared normality test. Selected determinants are prefect repressor of the dependent variable

In above panel regression model table, of Impact on Determinants on financial Inclusion Breusch-Pagan test was found significant so RE Model was selected and Hausman test was significant so FE Model was selected. So Fixed Effect Panel Regression Model for Impact of Determinants on financial Inclusion:

Annex

Model 1: Pooled OLS, using 73 observations
Included 26 cross-sectional units
Time-series length: minimum 2, maximum 3
Dependent variable: Score

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.404102	1.05904	0.3816	0.7040	
CC	0.185315	0.00946727	19.57	<0.0001	***
MC	0.178162	0.0113409	15.71	<0.0001	***
RE	0.212387	0.0117154	18.13	<0.0001	***
Ad	0.423780	0.00927918	45.67	<0.0001	***

Mean dependent var	69.82192	S.D. dependent var	8.104084
Sum squared resid	52.84189	S.E. of regression	0.881525
R-squared	0.988825	Adjusted R-squared	0.988168
F(4, 68)	1504.286	P-value(F)	1.51e-65
Log-likelihood	−91.78735	Akaike criterion	193.5747
Schwarz criterion	205.0270	Hannan-Quinn	198.1386
rho	−0.098224	Durbin-Watson	1.306996

Model 2: Fixed-effects, using 73 observations
Included 26 cross-sectional units
Time-series length: minimum 2, maximum 3
Dependent variable: Score

	Coefficient	Std. Error	t-ratio	p-value	
const	−3.31654	5.20539	−0.6371	0.5274	
CC	0.206869	0.0407025	5.082	<0.0001	***
MC	0.0750749	0.0286044	2.625	0.0120	**
RE	0.226418	0.0319169	7.094	<0.0001	***
Ad	0.605004	0.0731027	8.276	<0.0001	***

Mean dependent var	69.82192	S.D. dependent var	8.104084
Sum squared resid	30.47499	S.E. of regression	0.841855
LSDV R-squared	0.993555	Within R-squared	0.836449
LSDV F(29, 43)	228.5911	P-value(F)	1.37e-38
Log-likelihood	−71.69782	Akaike criterion	203.3956
Schwarz criterion	272.1094	Hannan-Quinn	230.7793
rho	−0.292749	Durbin-Watson	1.636360

Joint test on named regressors -
Test statistic: F(4, 43) = 54.9788
with p-value = P(F(4, 43) > 54.9788) = 2.35461e-016

Test for differing group intercepts -
Null hypothesis: The groups have a common intercept
Test statistic: F(25, 43) = 1.26238
with p-value = P(F(25, 43) > 1.26238) = 0.24583

Model 3: Random-effects (GLS), using 73 observations
Included 26 cross-sectional units
Time-series length: minimum 2, maximum 3
Dependent variable: Score

	Coefficient	Std. Error	z	p-value	
const	0.404102	1.05904	0.3816	0.7028	
CC	0.185315	0.00946727	19.57	<0.0001	***
MC	0.178162	0.0113409	15.71	<0.0001	***
RE	0.212387	0.0117154	18.13	<0.0001	***
Ad	0.423780	0.00927918	45.67	<0.0001	***

Mean dependent var	69.82192	S.D. dependent var	8.104084
Sum squared resid	52.84189	S.E. of regression	0.875114
Log-likelihood	−91.78735	Akaike criterion	193.5747
Schwarz criterion	205.0270	Hannan-Quinn	198.1386
rho	−0.292749	Durbin-Watson	1.636360

'Between' variance = 0
'Within' variance = 0.708721
mean theta = 0
Joint test on named regressors -
Asymptotic test statistic: Chi-square(4) = 6017.14
with p-value = 0

Breusch-Pagan test -
Null hypothesis: Variance of the unit-specific error = 0
Asymptotic test statistic: Chi-square(1) = 8.6243
with p-value = 0.00331709

Hausman test -
Null hypothesis: GLS estimates are consistent
Asymptotic test statistic: Chi-square(4) = 40.4734
with p-value = 3.45469e-008

All above panel regression model indicates that all the determinants CC, RE, MC and AD strong positive significant relation with Scores (financial Inclusion).All the panel model

are good fit model The value of R-Squared is 0.83 in this model which shows that 83 % variation in the dependant variable is described by the independent variables and 17 % variation is not explained by the independent variables. Adjusted R Square value is indicator of generalizability, which is adjusted for the number of variables included in the regression equation. This is used to estimate the expected shrinkage in R Square that would not generalize to the population because model is over-fitted to the data set by including too many independent variables. If the adjusted R Square value is much lower than the R Square value, it is an indication that our regression equation may be over-fitted to the sample and of limited generalizability. But in this model the Adjusted R square is 0.83 which is very to the value of R-Squared 0.83 which indicates that samples are not over fitted and there is no problem generalizability. These values are very close, anticipating minimal shrinkage based on this indicator.

The value of Durbin Watson is 1.63 which shows that there is no possibility of autocorrelation in residuals. The model is good fit as p value (F) is 0.000 which indicates the variation in dependent variable is explained by independent variables. So by above analysis, model can be interpreted as fit model for defining the Impact of determinants variable on financial inclusion penetration (scores).

CONCLUSION

Financial inclusion enables improved and better sustainable economic and social development of the country. Financial inclusion is the access to and use of formal financial services by household and firms. The study worked on determinants of financial inclusion. Even though these 21 countries had wide diversity in terms of political, geographical, financial but still the determinants impacting the financial inclusion score in almost all countries were similar . So IMF, World bank,and respective country governments, banks and other should work on the development of this above determinant so to acceralte the financial inclusion index

Further Scope of Study

a. Testing relationship between financial inclusion and other variables.
b. Measuring the impact of index of financial inclusion on human development index.
c. Measuring the progress of financial inclusion over time for India and cross countries.
d. Measuring the contribution of Digitalization on the financial inclusion country wise

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