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Research on Financial Inclusion: An Evidence gap Map Approach

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Abstract

In this article, we collected more than 100 papers from Google scholar search engine, which have minimum citation criteria. Our prime objective is to find out the research gap on financial inclusion and the associations with other macroeconomic areas. In this paper using evidence gap map approach we exhibits that there have been very few works on financial inclusion and economic opportunities, especially financial inclusion and inequalities in opportunities and rural development by enhancing economic facilities. Furthermore, this study also shows very little amount of work have been done on three banking era; before bank nationalisation, social banking experience and financial sector liberalisation..i.e.; comparative analysis among these time periods. There have been very scanty of works on the effects of various dimensions in the above-mentioned era of banking system in India. In our study, we have found very few amount of works on industrial sector's contribution on accessibility, availability and usage of banking services. Recently the most popular scheme UPI has not been found in many financial inclusion literature. These are the lacking area where we can explore our research.

KEYWORDS: Evidence gap map approach, Financial inclusion index, Google scholar

INTRODUCTION

There are two core functions that a financial inclusion system should perform and fulfil for every household and individual. Economic growth & Inequality reduction.

In principal financial inclusion does not mean by opening a bank account; rather getting other banking facilities at an affordable cost. These functions of financial inclusion should remain stable across different context and backgrounds like rural - urban, rich - poor, educated and uneducated, advanced and developing economics. The main goal of the government since millennium development goals is to include all citizens under the ambit of formal financial system. The main focus is to reduce inequality and provide an economic opportunity; that is gender, health, education loan and all other facilities at an affordable cost.

A financially included people or person has much better access to get economic opportunities. We have divided our literature into three sections, in section I, we have discussed the meaning and definitions of financial inclusion, the definition, objectives and components of evidence gap map approach. In section II we have explored the methodology of evidence gap map approach. In section III, we have portrayed the conclusions and limitations of the evidence gap map approach.

Section-I

EXISTING FINANCIAL INCLUSION FRAME WORK

Globally there are multiple researchers working towards developing a multidimensional understanding for the role and impact of financial inclusion in the lives of individual and household in enabling economic opportunities. Frameworks are available that have attempted to conceptualize, define, as well as create threshold for measuring financial inclusion for household or individual. All these frameworks are not similar in nature, some of these used loans as indicator others credit to GDP per capita and so on.

Various studies have been conducted trying to find out Index of Financial Inclusion (IFI), which is first proposed by Sharma (2008). As financial inclusion is contributed from different dimensions, IFI is also a composite index

The measurement by Sharma (2008) was one of the most popular-used by later research. According to this study, there were three dimensions composing IFI of a country: access, available, and usage. Each dimension was represented by various indicators. The author applied a multidimensional approach to measure IFI, which was analogous to the method of United Nations Development Programme (UNDP) in calculating development indices such as the HDI, the HPI, and the GDI. In that study, Sharma (2008) did not consider different weights for each indicator. However, in his later research in 2012 and 2016, those indicators were supposed to be unequally important to financial inclusion. As stated in the research, the dimension of access was weighted 1; availability is 0.5, and 0.5 for usage.

Amidic et al. (2014) proposed a five-step process of common Factor Analysis (FA) to determine IFI. There were four indicators used in this research: the number of ATMs/1,000 km2, the number of branches of depository corporations (ODCs)/1,000 km2, the number of household depositors with ODCs/1,000 adults, and the number of household borrowers with ODCs/1,000 adults. Second, they used FA to group these indicators into appropriate dimensions, making sure the theoretical classification is statistically confirmed. The third step is to assign proper weights to each indicator as well as each dimension, which emphasises the different importance among the indicators and between two dimensions. Weights were derived from FA model in the previous stage. Then, the authors constructed the formula to compute the two dimensions, and the fifth step finalised the form of the aggregator to compute the IFI using weighted geometric mean rather than arithmetic average.

A different technique was introduced by Camera and Tuesday (2014) adopting Principal Component Analysis (PCA) to form IFI. The authors started with the estimation of three unobserved dimensions (they call them "sub- indices") – usage, access, and barriers. Every of these dimensions consist of a number of indicators, whose roles were explainable variables in the equations to estimate the three dimensions. Then, also through an equation, these dimensions are used as causal variables to estimate overall IFI. In both stages, the authors applied PCA to estimate dependent variables (dimensions and IFI in the first and second stage, respectively). Weight (or parameter) assigned to each indicator and dimension was inferred from available data using PCA, thus, excluded subjectivity arising from the authors' judgement.

Studies	Indicators
Sharma (2008)	Bank accounts (% of the total population); Number of bank branches/1,000 people; The volume of credit and deposit (% of GDP).
Chakra arty and Pal (2010)	Number of bank branches/1,000 km2; Number of bank branches/100,000 people; Number of bank ATMs/1,000 km2; Number of bank ATMs/100,000 people; Number of loans/1,000 people; Average size of loans to GDP per capita; Number of deposits/1,000 people; Average size of deposits to GDP per capita.
Sharma (2012)	Deposit accounts/1,000 adults; Number of (deposit) bank branches and ATMs/100,000 adults; The total deposit and credit from deposit banks (% of GDP).
Amidic et al. (2014)	Number of ATMs/1,000 km2; Number of branches of ODCs/1,000 km2; Number of household depositors with ODCs/1,000 adults; Number of household borrowers with ODCs/1,000 adults.
Camera and Tuesday (2014)	Number of people using at least one formal financial service; Distance, lack of the necessary documentation, affordability and lack of trust; Number of ATMs/100,000 adults; Number of commercial bank branches/100,000 adults; Number of ATMs/1,000 km2; Number of commercial bank branches/1,000 km2.

Park and Mercado (2015)	Number of ATMs/100,000 adults; Number of commercial bank branches/100,000 adults; Borrowers from commercial banks/1,000 adults; Depositors with commercial banks/1,000 adults; Domestic credit-to-GDP ratio.
Sharma (2016)	Deposit accounts/1,000 adults from commercial banks, credit unions, cooperative banks, microfinance institutions; Number of registered "mobile money accounts"/1,000 adults; Number of bank branches, registered mobile money service providers, and ATMs/100,000 adults; Volume of credit to the private sector; Deposits mobilized from the private sector (% of GDP).
Park and Mercado (2018)	% of the adult population with financial accounts to total population; % of the adult population with credit and debit cards; Number of commercial bank branches/100,000 adults; Number of ATMs/100,000 adults; The share of the adult population who borrowed and saved from a financial institution; - The domestic credit-to-GDP ratio.

In their research, Park and Mercado (2018) combined the methods that had been recommended by Sarma (2008) and Camara and Tuesta (2014). In the first stage, the authors replicated the formula of Sarma (2008) to compute the achievement level of each indicator. Like Sarma (2008), they group the indicators into three dimensions: access, available, and usage, and expand to more indicators. However, in the second stage, they followed the two-step PCA approach by Camara and Tuesta (2014) to synthesise the three dimensions from indicators, and estimated IFI from these dimensions.

FINANCIAL INCLUSION –AN EVIDENCE GAP MAP APPROACH

The purpose of research is to provide reliable and trustworthy evidence on any subject of interest for the furtherance of society's interests, through its use to support decisions by governments and citizens. This is a mutually beneficial process wherein the users of research recognize the various types of evidence available on a specific topic or theme and simultaneously there is an increase in effort to produce evidence that can assist in informed decision making. However, the growth in production of evidence poses a few challenges. Firstly, how do we ensure that decision makers can avail evidence in a certain field that may be scattered across various databases, journals, books and websites? Secondly, for a non-technical audience, how do we ensure that useful evidence is available in a user-friendly format? Thirdly, once the evidence is identified, what would be a good method to identify gaps that may need to be prioritized for research and policy-making purposes?

An Evidence Gap Map (EGM) is a toolset that can effectively solve these challenges. EGMs aim is to make existing research available to various stakeholders and ensures that new research is based on existing evidence or the lack of it. These maps can be used to visualize information across various themes and topics. In general, EGMs have been used to capture systematic reviews and randomized controlled based intervention impact studies on a specific topic. However, this can be extended to capture studies based on other methodologies like qualitative studies, empirical and quasi- experimental studies, and studies based on natural experiments and mixed methods.

BROADLY EGMS ARE CREATED TO FULFIL THE FOLLOWING OBJECTIVES

(I) To provide a user-friendly and intuitive map of strategic evidence in a topic/area that assists in identifying where there is existing evidence.

(II) To identify gaps in research which can then aid is deciding future research priorities.

Taking inspiration from various maps developed by the International Initiative for Impact Evaluation, we extended this concept to develop an EGM on research related to financial inclusion in India and created a visual tool called the Financial Well-being Evidence Gap Map.

COMPONENTS OF FINANCIAL INCLUSION EVIDENCE GAP MAP

Economic development feature:-

The main feature of financial inclusion is economic development. This category capture mainly objective aspect related to the use of financial inclusion. In this subcategory we include evidence of economic growth, poverty reduction, economic opportunities, non agriculture productivity, income inequality reduction, occupational structure.

Informational feature:-

The informational feature of financial inclusion includes product literacy aspect of finance. In this subcategory we include financial literacy, education and financial deepening.

Functional feature:-

The functional feature involved the movement of finance across time, space and states of the world. Broadly the sub categories include all outcomes that are related to the core functions of finance as well as the real world effects of finance. In this subcategory we include loan /credit, human development, monetary stability, mobile banking, government DBT.

Emotional feature:-

Beyond the core functional, informational and economic developmental features of financial inclusion, there are couple of factors that contribute to financial inclusion of customers. This category aims to capture some of the subjective aspect related to the use of finance. In this subcategory, we include women employment and trust. The various sub-categories are summarized in table 2 below:

	Sub-categories
Economic development feature	Economic growth Occupational structure Poverty Reduction Non Agricultural Productivity Economic opportunities
Informational feature	Financial Literacy and education Financial deepening
Functional feature	Human Development Monetary Stability Loan/ credit Mobile Banking Government DBT
Emotional feature	Woman/DA employment Trust

Section-II

METHODOLOGY

The process of creating the financial inclusion EGM involved careful selection of 100 papers that satisfied a combination of filters. We limited our search to a 100 for creating the first version of this EGM. We excluded papers that had less than a benchmark number of minimum citations in order to make sure our process was not exclusionary from the perspective of selecting only well- studied cited papers. To create the EGM, we used the following two methods:

a) We undertook a systemic process of identifying papers using the advanced search tool on Google Scholar Search Engine. The Google Scholar Search Engine is widely used to conduct searches on academic and scholarly literature. We used the search engine to generate papers using a filter that is a combination of keywords, location (only India) and experiment. Our list of keywords consists of indicators that have contextual relevance to financial inclusion. For instance, to identify papers on financial inclusion in India, we used the search text input "Financial inclusion + India" and timeline. We limited our search to studies that were based in India in order to get a thorough understanding of the native financial inclusion literature landscape.

b) We referred to scholarly work by a chosen list of academicians across diverse disciplines. We created a repository of globally acclaimed and relevant academicians and non- academicians with peer-reviewed publications in top tier journals. Since financial inclusion as an area of research cuts across various academic fields, we selected those publications of these researchers that were in fields of specialization including that of household finance, development and growth theory, public policy, financial market research and behavioural economics. To narrow down our search we used a filter that was a combination of author name, location and timeline in the advanced search functionality of the Google Scholar search engine. Simultaneously we also selected papers from the personal websites of academicians that satisfied our filters.

METHODOLOGY FOR FILLING UP THE EVIDENCE GAP MAP

For each paper, we captured the objective of the study, details of the 'cause' or 'intervention' under evaluation, the 'effects of the cause' or the 'effect of the intervention', and the underlying variables under study. This information was used to create and populate the EGM framework. The EGM is a matrix that comprises of a range of rows mapping to specific columns. The rows of the framework represent both inherent features of end-users as well as institutional and/or policy-based interventions, while the columns cover the effects studied spread across the four dimensions of financial inclusion.

To clarify further, the rows of the EGM framework capture both causes and interventions. For our purposes, a cause is an inherent feature of the population under consideration. For example, a study conducted by Sharma (2011) examined the effect on income inequality reduction and Human development caused by the financial inclusion. An intervention on the other hand is introduced in an experimental setting to test its effect on specific segment of population. For example a study conducted by in rural South India, they found bank account (i.e., banking penetration facilitated poverty reduction and economic growth. In his paper he showed that self help groups promoted economic opportunities.

The rows have been grouped into three categories: I) Household, ii) Sector and iii) policy. The columns have been grouped into four categories I) Economic development feature ii) Informational feature iii) Functional feature and IV) Emotional feature.

Please note that typically for each subcategory there is only one point of evidence from each paper. However, there can be instances where a single paper may have more than one point of evidence under the same subcategory. For example, a paper by Akudugu, M. A. (2013) had three points of evidence under the sub category 'Location/ Region, Caste, Gender' examining both-Household.

How to read the Financial Inclusion Evidence Gap Map:-

Step-I: Once the FI-EGM webpage loads, the user is guided through a series of steps on various aspects of the FI-EGM webpage. We encourage the user to read through all the steps before using the map for a better understanding of the map content and layout.

Step-II: Once done with step 1, the user can hover over populated cells to explore various combinations of intervention/ causes (rows) and effect/outcomes (columns). Each populated cell at the intersection of row and column is clickable and leads the user to a pop-up that shows the corresponding academic paper (with the link to the paper) and the corresponding variable under consideration.

Step-III: The user can narrow the search according to her research interests using multiple filters like citation key, methodology, cause/intervention, effect/outcome, location and journal title.

Step-IV: The user can access a downloadable version of the FI-EGM that also contains links to the papers included in the FI-EGM. In case the user wishes to recommend a paper to be included in the FI-EGM, she can do so by filing the Recommend Paper section.

The FI-EGM is colour-coded where the colour indicates the volume of evidence available at the intersection of a specific cause/ intervention (row) and outcomes(columns).

11+ points of evidence: -A cell in the EGM is indicative of high availability of evidence at the intersection of a specific row and column.

Ex: There is sufficient number of studies under taken to examine the effect of economic growth by banking penetration.

6 to 10 points of evidence: -A cell in the EGM is indicative of low availability of evidence at the intersection of a specific row and column.

Ex: There have been a moderate number of studies to understand the impact of ICT and digital banking on economic growth.

Up to 5 point of evidence: -A cell in the EGM is indicative of low availability of evidence at the intersection of a specific row and column.

Ex: Under functional feature the impact of SHGs.

No evidence: -A cell in the EGM is indicative of absence of any evidence at the interaction of a specific row and column.

Ex: Under Emotional feature the impact of safety nets.

The four points category indicates the volume of evidence at an aggregate level. On a subcategory level, the volume of evidence within each subcategory may reduce, leading to a change in category. For example, in the EGM, there is high availability of evidences on the effect of poverty reduction on the Economic development feature of financial inclusion and this is indicated in the high point category. We have seen on expansion of the functional feature, the subcategories will reflect moderate, low or no evidence under loan/credit, mobile banking subcategories. Our bucketing of whether up to 5 points for evidence is low, whether 6 to 10 points is moderate, and whether 11 or more points is high, is a subjective one. While more evidence on any theme is always welcome, our primary intention in this EGM is to discover the gaps in evidence to aid future research priorities.

EVIDENCE GAP MAP **Dimension of** **Financial Inclusion**	Effects and Outcomes	**Economic development feature**	Economic growth	Poverty Reduction	Economic Opportunities	Non Agri. Productivity	Income inequality reduction	Occupational structure	**Informational feature**	Financial Literacy and education	Financial deepening	**Functional feature**	Loan/ credit	Human development	Monetary Stability	Mobile Banking	Government DBT	**Emotional feature**	Woman/DA employment	Trust
Cause and interventions																				
Household		85	49	15	0	3	16	2	9	3	6	26	10	8	8	0		2	1	1
Gender		2	2						1		1	1	1					0		
Education		1	1						0			0						0		
consumption		0							0			0						0		
Banking Penetration		36	21	10			5		2	1	1	8		5	3			0		
Useage of Banking product		44	23	5		3	11	2	4	2	2	16	9	3	4			2	1	1
Location/ Region		2	2						1		1	1			1			0		
Caste		0							1		1	0						0		
Land holding		0							0			0						0		
Household income		0							0			0						0		
Policy		19	14	3	1	1			2	1	1	4		1	2	1		0		
Safty nets		4	3	1					1		1	0						0		
Bank Branch expansion		7	5	1		1			1	1		2		1	1			0		
ICT and Digital banking		7	6	1					0			2			1	1		0		

Three Banking era		1			1				0			0						0		
Social Pension Scheme		0							0			0						0		
Subsidise to small loans		0							0			0						0		
Sector		6	3		3				3	1	2	4	3			1		0		
Self Help Group		1			1				1		1	1				1		0		
Micro Finance		5	3		2				1		1	1	1					0		
Industrial sector		0							1	1		1	1					0		
RRB		0							0			1	1					0		

****Financial inclusion evidence Gap Map**

Illustrations of process of populating FI -EGM map from academic papers:

Household characteristics:

Paper: Financial inclusion and economic growth in OIC countries.

Authors: Kim, D. W., Yu, J. S., & Hassan, M. K. (2018).

This paper examines the relationship between financial inclusion and economic growth in Organization of Islamic Cooperation (OIC) countries. We map this cause and effect in the in the FI-EGM in the following manner.

(I) Cause Category (row) - Household- Banking Penetration

Effect Category (column)- Economic development feature- Economic growth.

(ii) Cause Category (row) - Household- Usage of banking product.

Effect Category (column) - Economic development feature- Economic growth.

(III) Cause Category (row) - Policy- Bank Branch expansion.

Effect Category (column) - Economic development feature- Economic growth.

Policy based intervention:

Paper: ICT, financial inclusion, and growth: Evidence from African countries.

Authors: Andrianaivo, M., & Kpodar, K. (2011)

This paper studies the impact of information and communication technologies (ICT), especially mobile phone rollout, on economic growth in a sample of African countries from 1988 to 2007. Further, they investigated whether financial inclusion is one of the channels through which ICT influenced economic growth. Therefore, the details of this paper can be mapped in the FI-EGM as:

Cause Category (row)-Policy- ICT and digital banking

Effect Category (column)- Economic development feature- Economic growth

Sector based intervention:

Paper: Financial inclusion, gender dimension, and economic impact on poor households

Authors: Swamy, V. (2014).

The Author examined the question: “In the context of gender dimension what is the evidence of the impact of the financial inclusion programs on poor households represented by women relative to that represented by men?” By constructing a good counterfactual and comparison group, we employ the difference-in-difference estimator approach with Panel Least Squares and Generalized Methods of Moments using standard errors for a robust analysis. Therefore, the details of this paper can be mapped in the FI-EGM as:

Cause Category (row)- Sector- Micro Finance.

Effect Category (column)- Economic development feature- Economic growth

Section -III

CONCLUSION

Identifying a gap from the FI– EGM:

EGMs are useful for identifying gaps in existing research, and this can aid in deciding future research priorities. In the FI-EGM, gaps can be in the form of absence of or low points of evidence available from academic literature for a specific dimension of financial inclusion through our project, we observed that most of the evidence clustered within Economic development dimension(85 points of evidence). This was followed by the Functional dimension (26 points of evidence). Even within the Economic development dimension, we found a concentration of evidence in outcomes related Economic growth, poverty reduction, and income inequality reduction. However, some of the noteworthy gaps within the Economic development dimension and Functional dimension are –

a) Lack of evidence for Economic opportunities by low-income households across contingent states of the India. Economic opportunities are the main function of finance, is a dimension that requires more attention from the perspective of poor families.

b) As intervention, lack of evidence have also seen in the three banking era in India (mainly before nationalisation, social banking experience, and financial sector liberalization) and its effect on different dimensions.

c) Very few works have been done on mobile banking (specially unified payment interface) and financial inclusion. As digital payment becomes very popular and every month new customers are using this payment rapidly. More works can be done in this area.

d) There has been very limited work on how industrial sector affects on different dimensions of financial inclusion.

Limitations of the Financial Inclusion Evidence Gap Map and Future Scope:

The Financial Inclusion Evidence Gap Map report is an attempt towards creating a comprehensive collection of relevant academic research mapped into a matrix format designed to reflect gaps in contemporary research evidence. The map serves as a toolkit that can support multiple stakeholders in identifying and addressing research gaps pertinent to financial inclusion of low-income households.

The evidence gap maps developed by 3ie provide critical appraisals that reflect the strength or weakness of the results found in the papers included in the map. However, the financial inclusion EGM does not provide critical appraisals or confidence ratings of findings from the papers. This EGM is therefore limited and only provides an overview of comprehensive thematic evidence on various features of financial inclusion.

Unlike the evidence gap maps developed by 3ie and the UNICEFxv, the Financial Inclusion EGM does not indicate the strength/robustness of effects.

In the short listing of papers, we limited our search to studies that were based in India in order to get a thorough understanding of the native financial inclusion literature landscape. Also for the current version of the EGM we considered only 100 papers. This is not an exhaustive list and serves as the starting point to understand the landscape of Financial Well-being literature. However, this will be a growing body of work, and we hope to update the EGM semi annually to reflect this.

In the future we may extend our scope and include academic work conducted in other countries with similar socioeconomic household level contexts as India's. We will also attempt to include publicly available data sources corresponding to the papers included in our EGM.

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