



INCLUSIVE FINANCE INDIA REPORT 2022

The Inclusive Finance India Report is a comprehensive and well-researched account on cumulative progress made in India toward reaching the ambitious goal of universal financial inclusion. The report covers a review of the performance of diverse institutional structures and delivery models in inclusive finance – the commercial banks, Regional Rural Banks, the new specialized banks, non-bank finance companies, self-help groups, microfinance institutions, banking agents, and fintechs.

The report covers the initiatives in digital technology that help overcome last-mile delivery challenges and provides an overview of the new initiatives and breakthroughs in digital financial inclusion. The document tracks the performance of programmes and schemes of the government to promote financial inclusion, as well as contributions and new initiatives of ecosystem players such as investors, large apex institutions, and regulators. This edition of the Report also provides an overview of the initiatives and achievements in specialised areas of green financing and WASH financing that support progress on the climate resilience agenda.

The report aims to inform the policy development process on inclusive finance, highlight the positive impact of various institutions, models and initiatives and identify and highlight policy and practice gaps.

The report is authored by multiple experts and researchers engaged in the financial inclusion landscape. The Inclusive Finance India Report has earned its place as the top reference document on the annual trends and progress of financial inclusion covering a wide-ranging data-based analysis of all streams and models of financial inclusion; a must-have for every stakeholder interested and involved in financial inclusion in India.

INCLUSIVE FINANCE INDIA REPORT 2022



EDITED BY
N. S. Vishwanathan



An ACCESS Publication

Inclusive Finance India Report 2022

Edited by

N. S. Vishwanathan

Copyright © ACCESS Development Services, 2022

All rights reserved. No part of this book may be reproduced or utilised in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage or retrieval system, without permission in writing from the publisher.

First published in 2022 by



Copyright will be with

ACCESS Development Services
22, Ground Floor, Hauz Khas Village
New Delhi 110016

ISBN 978-81-955245-4-9

Disclaimer: The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of ACCESS Development Services.

Financial Inclusion Measurement: Deepening the Evidence

Indradeep Ghosh, Dvara Research & Susan Thomas, XKDR Forum*

9

9.1. INTRODUCTION

Financial inclusion is now a policy objective for national governments around the globe, in both advanced and developing economies. For the latter, in particular, it is seen as offering a pathway for the two objectives of growth and development to become simultaneously possible. There has therefore, been considerable interest in the last 15 years or so, especially in developing countries, to craft policies and regulatory frameworks that would stimulate financial inclusion. At the same time, it has become increasingly evident that some measurement method for tracking the effectiveness of such policies is also required. The task of measuring the extent and impact of financial inclusion has naturally lagged the efforts towards financial inclusion, but when performed properly, this task has the capacity also to shape the efforts themselves. This feedback from measurement to policy and practice is extremely important for financial inclusion to be ultimately a beneficial force in the lives of the poor.

This chapter is primarily intended to introduce the reader to a new measurement method developed by researchers in India working at Dvara Research and XKDR Forum. It begins by briefly recounting the history of financial inclusion efforts in India, and then provides some context for the overall measurement strategy employed by this new method. It then describes the method, and the results from a first attempt at deploying the method. Finally, it lays out some learnings from the measurement exercise and concludes with a brief discussion of the policy implications of this method.

9.2. DEFINING FINANCIAL INCLUSION

In India, financial inclusion has been in the making for more than 70 years. The Reserve Bank of India (RBI) was among the first central banks in the world to recognize the need for financial inclusion, albeit not in those terms (but rather in the context of agricultural finance), at the time of its inception in 1935. During the first 4 decades or so after independence, financial inclusion continued to be an important piece of India's overall development strategy, even if the policy priority was always overtly stated as the eradication of poverty. Several private sector initiatives also emerged during these years, to further the financial inclusion agenda. The 1969 nationalization of India's banking system, the setting up of Regional Rural Banks in the 1970s, the founding of SEWA (Self Employed Women's Association) Cooperative Bank in 1974 (predating the 1983 founding of the new-celebrated Grameen Bank in Bangladesh), and the institution of Chit Funds and the National Bank for Agriculture and Rural Development (NABARD) in 1982 – all exemplify India's advance towards financial inclusion prior to the new millennium.

None of these efforts, however, occasioned the advent of the phrase “financial inclusion”. That phrase was introduced to the lexicon of development policy in 2003 in a speech by Kofi Annan (Annan 2003), the 7th Secretary General of the United Nations. It quickly found its way into the Indian policymaker's playbook, showing up for the first time in a 2005 speech by Y.V. Reddy, the Governor of the RBI. He defined financial inclusion as “the

* The authors thank Natasha D'cruze, Geetika Palta, and Misha Sharma for their assistance in drafting this chapter. The authors acknowledge the contributions of Sukanta Kumar Sahoo, Ravi Parmar and Muhammed Raneef from Climate Change Vertical, Farm Sector Development Department, NABARD.

process of ensuring access to appropriate financial products and services needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost in a fair and transparent manner by mainstream institutional players.” (Reddy 2005).

In the same year, the Report of the Internal Group to Examine Issues relating to Rural Credit and Microfinance (often referred to as the Khan Committee) announced that banks could open “no frills” accounts for customers that wished to hold zero/low balances. This was followed by the appointment of the Rangarajan Committee (headed by C. Rangarajan, former RBI Governor) to examine the state of financial exclusion in the country, and the Rajan Committee (headed by Raghuram Rajan, who later became RBI Governor), to suggest comprehensive financial sector reforms. The 2008 report by the first committee concluded that the poor had been largely marginalised and excluded from the organised financial sector, and that governments and banks would have to work together to bring about financial inclusion for all. The 2009 report by the second committee included a chapter, *Broadening Access to Finance*, that underscored the need for developing a broad-based, inclusive financial sector.

In 2011, the central government launched the *Swabhiman Yojana*, where the first word means self-respect, and the second one project. The scheme focused on carting banking services to rural areas. In 2014, the central government refashioned the *Swabhiman Yojana* into a new scheme entitled *Pradhan Mantri Jan Dhan Yojana (PMJDY)* (Prime Minister’s Project for People’s Wealth). The PMJDY focused on providing universal access to banking facilities, which included basic bank accounts for savings and remittances, a RuPay debit card (the name deriving from the Indian currency, the ‘rupee’), insurance, and a financial literacy program, as well as other offerings such as an overdraft facility and pension schemes. As of this writing, the central government continues to drive a financial inclusion agenda that heavily leans on a state-of-the-art public digital infrastructure. Digital and financial inclusion are now joined at the hip, as it were.

An interesting arc traversed in this long history of financial development is the growing importance of the Indian state as an enabler of markets, especially in the last decade and a half, via the creation of digital public goods such as the Aadhaar ID system. These markets have become steadily populated by for-profit social enterprises, contributing to a thriving startup culture backed by so-called social impact investors. There is now an increased urgency to demonstrate outcomes in

the form of social impact. In turn, this is leading to the development of new measurement paradigms that are not only tools of accountability wielded by investors over the heads of their investee companies but also critical for policymakers and regulators to monitor the state of financialisation and its effects on the poor, and to thereby decide on further policy and regulatory actions.

It is to this emerging stream of measurement paradigms that the work of Dvara Research and XKDR Forum, described in this chapter, is a contribution. The next section lays out the broader context for the DR-XKDR method, and the section after that describes the method itself and some preliminary results from its application.

9.3. AN INPUTS/OUTPUTS/OUTCOMES APPROACH

In the early days of measuring financial inclusion, crude macro-economic proxies were used, such as M2 (cash, demand and time deposits) as a percentage of GDP. Later, more systematic data collection began, but such efforts remained anchored to activity in the banking sector, recording the number of bank accounts or bank branches, the number of ATMs, and the aggregate amount of bank deposits. Such measures, however, tend to overstate the extent of financial inclusion (Gupta and Sharma 2021). The RBI also recognises this, as evidenced by the insistence of its policy documents (e.g., RBI 2019) on expanding access to a suite of financial products and services, not only to bank accounts. Yet, access alone is not enough. The usage of those financial products and services, and ultimately, the outcomes that users experience in their financial lives on account of such usage, are also meaningful indicators of financial inclusion. This is acknowledged by the widely cited Global Findex Database, which, despite its focus on bank accounts, nevertheless publishes usage and outcomes data as well (with the outcomes data being included only in the latest edition).

It is becoming common, therefore, to think about financial inclusion in terms of all three aspects – inputs or access to financial products and services, outputs or the usage of those products and services, and impacts or outcomes associated with such usage. This last component, namely impacts or outcomes, is a recent addition to the measurement canon. It is typically referred to as financial well-being, which the United Nations Secretary-General’s Special Advocate for Inclusive Finance for Development (UNSGSA) defines as the extent to which a person or family can smoothly manage their current financial obligations and have

confidence in their financial future (Gubbins et al. 2021). Sometimes also called financial health, financial well-being has evolved in definition since its origins at the St. Louis Fed's Center for Household Financial Stability (Emmons and Noeth 2014). An account of this history is beyond the scope of this chapter (see Dasgupta and Palta 2021 for a comprehensive review of the concept and its history), but it is important to note that as the understanding of financial well-being has matured, so too has the realisation dawned that financial inclusion alone cannot ensure financial well-being. Rather, many enabling factors have been identified as critical, such as properly designed and delivered social protection and employment policies (Gubbins et al. 2021). The existence of these factors limits the burden that one can reasonably place on the inputs and outputs dimensions of financial inclusion for guaranteeing traction on the outcomes dimension.

One important nuance in the inputs/outputs/outcomes approach to measuring financial inclusion is whether the reckoning is happening at the level of the individual or at the level of the household. The difference is non-trivial. Whereas economic theory is methodologically individualistic, financial decisions are often made within a household for the household, and the household is, if anything, a social unit. An emerging field of research is beginning to stress the importance of this distinction (Campbell 2006), and yet empirical work documenting the spread and depth of retail finance continues to mostly work with individual-level data. This is because household-level data is not widely available.

In India, however, there are periodic surveys that record economic activity at the household level – such as the National Sample Survey Organization's All India Debt & Investment Survey (decennial, since 1971-72), the People Research on India's Consumer Economy's ICE 360 Degree Survey (conducted in 2014 and 2016), the National Council of Applied Economic Research's India Human Development Survey (conducted in 2004-05 and 2011-12), the Center for Monitoring the Indian Economy's Consumer Pyramids Household Survey (conducted thrice a year since 2014), and the FinMark Trust's FinScope Survey (conducted in 2015). These surveys cover the inputs dimension of financial inclusion insofar as they all record ownership of bank accounts and, in some instances, ownership of other financial products and services also – and access is recorded at the household-level. Only the last of these, record any usage information, and such information is confined to bank account usage. The CMIE's CPHS data can be used to infer usage, since ownership data is collected in a panel form – but such inferences come with significant measurement error. None of

the abovementioned efforts records any information on the outcomes dimension. This is not surprising as standardised measures of financial well-being are only now beginning to appear through the efforts of such organisations as the UNSGSA and the Center for Financial Health at the United Nations Capital Development Fund.

There is one measurement method that currently produces data on inputs, outputs and outcomes, and that is the World Bank's Global Findex Survey (conducted globally every 3-4 years since 2011). However, in this instance, the unit of measurement is not the household but the individual, and the field of financial instruments does not extend much beyond bank accounts. We will have more to say about this method in the next section when we compare it to the DR-XKDR method, and therefore it is to this latter method that we turn next.

9.4. THE DVARA RESEARCH-XKDR FORUM METHOD

As with most measurement methods, the DR-XKDR method works with a survey instrument. One of the unique aspects of this instrument is that it asks questions of an individual respondent, but the questions are framed to elicit household-level information. In particular, the respondent is asked about the inputs, outputs and outcomes dimensions of financial inclusion for the household, as well as questions about the household's characteristics, such as each member's age, marital status, type of occupation, level of education, etc. and whether any member of the household has migrated.

On the assets side of the household's balance sheet, a full range of asset groupings is considered, and the list is presented in Table 9.1 below.

Table 9.1. Asset Groupings

Asset Group	Assets
Transactional accounts	Savings bank account or post-office savings account, etc.
Risk-free assets	Fixed and recurring deposits, National Savings Certificate, Kisan Vikas Patra or post-office time deposit account, etc.
Risky assets	Listed shares, mutual funds, or gold ETFs, etc.
Old-age income support schemes	PMVVS, NOAPS, NWPS, NDPS, APY, NPS, PPF, EPF, or Senior Citizens Savings Scheme (SCSS) by post offices, etc.
Life and health insurance	Life insurance (such as Term Life Policy, Whole Life Policy, Endowment Policy, ULIP, or Money Back Plan), health or medical insurance, accident insurance, etc.
General insurance	Shop, cattle and livestock, crop insurance, etc.

The inputs dimension is measured as participation in each of the above asset groupings if at least one member of the household owns at least one instrument in the grouping. For each of the six groupings, then, a household is given a score of 1 if any instrument in the grouping is owned by any household member and 0 otherwise. The inputs score for the household is then calculated as the simple average of the six binary scores and, by construction, therefore, produces a number between 0 and 1 – a higher score signalling greater access.

The instrument also asks questions about the household's liabilities, such as the sources of debt and the number of formal loans held. However, the inputs dimension does not incorporate the liabilities dimension at all. This is due to the multi-faceted nature of the household debt, in terms of source (formal as well as informal), maturity (short term versus long term) and purpose (consumption versus investment). There is a structural difference between credit-based financial instruments, i.e., liabilities, which borrow from future consumption, and other financial instruments, i.e., assets, which push present consumption out to a future date. Given this important difference, the DR-XKDR method has chosen to leave the liabilities side of the balance sheet out of the reckoning for the inputs dimension (and treats this as a matter for future research), even though debt information for the household is collected by the survey instrument.

Like the inputs score, the outputs score also focuses on the six asset groupings and measures the frequency with which the household (any member) uses each of the groupings (any instrument) that it owns. For each grouping, the household receives a score of 0 if the last use was more than a year ago (amounting to no usage), 0.5 if the use frequency is once in 3-12 months (amounting to passive usage), and 1 if the use frequency is once or more in 3 months (amounting to active usage). The outputs score is then computed as a simple average of these six numbers and, by construction, therefore, produces a number between 0 and 1 – a higher score signalling greater usage.

The outcomes score is constructed from the respondent's answers to questions about five dimensions of financial well-being. These are as follows.

- **Day-to-day functioning:** This dimension records the household's ability to meet basic needs, pay its bills and rent on time, the source of funds for such expenses (whether regular income or savings, borrowings, etc.), and whether the household's incomes exceed its expenditures or not.

- **Borrowing:** This dimension captures whether the household faces difficulties in managing its debt payments and whether it was contacted by the lender to make repayments after these became past due.
- **Resilience:** This dimension records whether there exists a buffer of savings that the household can tap into in case of an emergency, how fast it would be able to raise emergency funds and how they might cope in the absence of ready liquid funds.
- **Planning:** This dimension captures information about how the household plans for long-term goals, particularly whether it is saving for retirement or old age.
- **Confidence:** This dimension records the confidence that the respondent feels in the household's financial future, given its present financial portfolio. It measures not just the respondent's confidence (on behalf of the household) in existing instruments but also whether any member of the household has had negative experiences with financial service providers or financial products and services, as well as the respondent's sense of financial stability (for the household) based on the amount of savings the household has and how manageable the respondent believes the household's debt is.

The outcomes score is the simple average of fifteen variables, of which five are either 0 or 1, and ten are ordered but nevertheless chosen to fall between 0 and 1. By construction, the outcomes score lies between 0 and 1 – a higher score signalling greater financial well-being. Sub-component scores are also computed for each of the five dimensions of financial well-being, and a higher score for a particular dimension indicates greater well-being along that dimension.

The DR-XKDR method involves partnering with financial service providers (FSPs) to deploy the survey instrument in small samples of their customers and adopts a learn-as-you-go approach, analysing the data collected with an eye toward tweaking the survey questions if needed before deploying them again with a new FSP. There is also the presumption that FSPs will themselves be interested in learning about their customers in this way, and that in time, they will become socialised to following this approach in their regular measurement exercises as well as in the manner in which they report their activities to investors and other stakeholders.

The DR-XKDR method differs quite significantly from other contemporary state-of-the-art methods

for measuring financial inclusion. One such method is the World Bank's Global Findex method, which focuses on individuals rather than households, does not consider a full range of asset instruments, and prefers a large nationally representative survey every few years over a smaller scale DR-XKDR-like approach. Furthermore, there is no attempt in the Findex approach to resolving its survey responses to scores for the three dimensions of financial inclusion. This means that the Findex approach cannot properly relate each of the dimensions to the other two in a quantitative sense. The DR-XKDR approach is able to do this and learn from such an exercise.

9.5. AN ILLUSTRATION OF THE DVARA RESEARCH-XKDR FORUM METHOD'S DEPLOYMENT

The first run of the DR-XKDR method was executed in July and August of 2021 with 210 customers (representing 210 distinct households) of an FSP partner, in the states of Tamil Nadu and Chhattisgarh. Table 9.2 describes some summary statistics for these households.

In Table 9.2 for each survey respondent, 'Physical asset ownership' is a ratio representing how many of six assets are owned by the household (from among real estate, livestock, car, two-wheeler, bicycle, and tractor), while 'Technology exposure' is a variable indicating ownership of a smartphone and access to network and internet.

The analysis of this data finds an average inputs score for these households of 0.22 (translating into ownership of 1-2 asset groupings), an average outputs score of 0.21 (indicating active usage of 1 asset grouping), and an average outcomes score of 0.54 (indicating high levels of financial well-being on two or three of the five dimensions). The sub-component scores were particularly low for the resilience (0.35) and planning (0.16) dimensions, and only 0.50 for the day-to-day functioning dimension. While these numbers may not mean much in themselves, they will acquire significance in comparison with similar numbers constructed from further rounds of the survey with other FSPs. These rounds are underway, and the data are yet to be fully collected and analysed.

The data collected from the first run supports an econometric analysis using regressions to understand the correlates of the inputs, outputs and outcomes dimensions of financial inclusion, after controlling for household characteristics. Tables 9.3 and 9.4 report these regression results. In these tables, three additional variables are constructed for

Table 9.2. Summary Statistics

Variable	Mean
Monthly income	₹16,662
Monthly expenditure	₹14,365
Physical asset ownership	0.43
Technology exposure	0.78
Household size	4.53
Occupation:	
Casual Labor in Agriculture	8.0%
Casual Labor in Non-Agriculture	7.0%
Regular wage/salary earning	24.4%
Self-employed in Agriculture	17.9%
Self-employed in Non-Agriculture	22.9%
Unemployed	19.9%
Education:	
None	18.9%
Pre-primary (up to 1st standard)	0.5%
2nd to 5th standard	11.4%
6th to 9th standard	16.4%
Completed 10th standard	23.9%
Completed 12th standard	15.4%
Completed diploma/certificate course	1.0%
Completed graduation	10.9%
Completed post-graduate and above	1.5%

Table 9.3. How the Scores Interact With Socio-Economic Features¹

	Inputs Score	Outputs Score	Outcomes Score
Monthly Income	-0.003	-0.004	0.018*
Technology Exposure	0.005	0.018	0.038
Household Size	-0.001	-0.004	-0.008
Physical Infrastructure	0.005	0.002	0.048
Digital Infrastructure	0.033*	0.037*	0.084***
Digital Infra Usage	0.028	0.050*	-0.029
Physical Asset Ownership	0.117***	0.095*	0.254***
Constant	0.159***	0.155***	0.353***
Observations	192	192	192
Adjusted R-sq	0.018	0.033	0.149

use on the right-hand side of the regressions: physical infrastructure (a binary variable indicating whether a household has a cash-in-cash-out touchpoint within 15 minutes of walking distance), digital infrastructure (a binary variable indicating the availability of digital payments at merchants in the vicinity of the household), and digital infrastructure

Table 9.4. How the Scores Interact With Each Other²

	Outputs Score	Outcomes Score
Inputs Score	0.969***	0.679***
Outputs Score	N/A	-0.447*
Monthly Income	-0.001	0.019**
Technology Exposure	0.013*	0.043*
Household Size	-0.003*	-0.009
Physical Infrastructure	-0.003	0.045
Digital Infrastructure	0.005	0.078***
Digital Infra Usage	0.023**	-0.026
Physical Asset Ownership	-0.018	0.218***
Constant	0.001	0.314***
Observations	192	192
Adjusted R-sq	0.868	0.187

usage (ratio indicating which of five modes of digital payments – transfer money, pay bills, pay merchants, receive a salary, receive government transfers – are used by any member of the household).

In Table 9.3, it is observed that higher levels of physical asset ownership and access to digital infrastructure are associated (in a statistically significant sense) with greater access to financial assets (i.e., a higher inputs score), greater usage of financial assets (i.e., a higher outputs score) and higher levels of financial well-being (i.e., a higher outcomes score). The associations of these conditioning variables are strongest for the outcomes score, with the coefficients being statistically significant at the 1% level. In Table 9.4, it is observed that once the inputs and outputs scores are included, by turn and as appropriate, on the right-hand side of two of the regressions in Table 9.3, then a higher level of financial well-being is positively and strongly associated with greater participation. However, financial well-being is negatively associated with greater usage. This is a puzzle. This could be partly because simple frequency measures of usage do not adequately capture the outputs dimension properly. In reality, there can be other features about the household that are not observed but drive both the observation about their financial participation, usage and well-being. In an attempt to better capture this possibility, the survey instrument has been slightly revised for its future iterations. This illustrates the value of a learn-as-you-go approach in such measurement work.

9.5.1. A Comparison of the DR-XKDR and the Findex Measures

Even though the Findex approach makes it difficult to resolve its data into indices for each of the input-output-outcome dimensions, the DR-XKDR researchers performed such an exercise after making several assumptions that would render the two resolution methods roughly comparable to one another (i.e., in terms of how one aggregates up from data points collected at the individual level for each country to an index number for that country). The full details of this exercise are beyond the scope of this chapter, but it is possible to review the main findings while noting the obvious caveats in such a preliminary and first-pass comparison of numbers from two very different kinds of survey approaches. Just as the DR-XKDR survey data produces an average score on the inputs, outputs and outcomes dimensions for the surveyed households, so also the Findex survey data produces (by the DR-XKDR resolution method) an average score on the inputs, outputs and outcomes dimensions for the surveyed countries – and these are 0.71, 0.45 and 0.42 respectively – and for India in particular – and these are 0.78, 0.19 and 0.30 respectively.

It is noted that the Findex India inputs score is higher than the Findex World inputs score, and this is explained by the Findex approach's focus on bank account ownership. In this area India is known to be a better-than-average performer in the world. Equally, the Findex India outputs score is much lower than the Findex World outputs score, and it corroborates the well-known fact that while bank account ownership in India is widespread, most of these accounts are dormant. The consistency in the comparisons between the Findex India and the Findex World scores on the inputs and outputs dimensions validates the measures emerging from the DR-XKDR method of resolving the Findex country variables into indices. There is some difference between the Findex India inputs score and the DR-XKDR India inputs score: this difference may be attributed once again to the dominance of bank account ownership in the Findex measure versus the coverage of a much wider spread of asset instruments in the DR-XKDR measure. In addition, the DR-XKDR measure has a focus on low-income households, where the success of financial inclusion has mostly been a bank accounts story on the assets side and a credit story on the liabilities side.

In addition to the above explanations for why the DR-XKDR method and the Findex method yield different results, it is also likely that the former

method's choice of states and the socioeconomic status of households within them (as described in Table 9.2) plays a role in the DR-XKDR calculations, relative to the Findex method which surveys a much broader sample that is more representative of the Indian population. This possibility will be taken up for closer study in future work.

9.6. FACTS AND LEARNINGS

Any policy initiative is a combination of an objective followed by implementation. It is, therefore, obvious that the success of such initiatives critically benefits from measurement. In part, measurement helps to validate or invalidate the premise that drives the policy, but more importantly, it also functions as a calibration and feedback mechanism, using which the implementation of the initiative can be continuously tweaked for improvement. A well-known example from India is the Pratham ASER measurement, which was influential in changing policy thinking about elementary education in India by performing the first outcomes measurement of education and monitoring this measure in subsequent years as well. Such structured measurement is particularly important in high-growth economies such as India, where the ecosystem and environment are rapidly changing, and in the domain of financial inclusion, which is a complex interplay of customers with heterogeneous circumstances and preferences, and a financial sector with similarly heterogeneous compulsions.

The difficulties in establishing such a framework for financial inclusion are evident from the fact that measures of financial inclusion are still evolving even in the global literature. Thus far, measures of financial inclusion have aimed to capture the *growth* of financial participation. The premise of financial inclusion as being beneficial – having a positive consequence for – to consumers of finance still awaits to be widely established. For example, the Findex report provides rich evidence that there are linkages between participation across financial products (for example, that with accounts comes higher usage of digital services or that there is a higher propensity to save with digital payments). But evidence about the *consequence* of financial participation is sparse and limited to small sample studies of growth in savings of individuals in a few countries, with a particular focus on women.

The evidence presented in the previous section, and in other research undertaken by the DR-XKDR researchers, shows that household financial choices do go beyond the bank account, whether in state-

level aggregates (Gupta and Sharma 2021) or at the level of households (Palta et al. 2022). Since the method is applied at the household level, the measures allow for the analysis of the consequences of household participation and usage on the household's well-being. This is ongoing work. As the method is applied to a wider set of customers and across years, the measures from this method will provide more robust evidence of the consequences of financial inclusion.

The two limitations of the present work that need to be addressed are as follows: first, the outcomes measure is a household's perception of its well-being, rather than a tangible measure of its resilience to disruptions and shocks. An ideal measurement method would include both the household's perception as well as an objective recording of its ability to sustain a stable level of consumption over time. This opens up several questions about consumption measurement. For example, should all types of consumption be considered when analysing household consumption resilience, or should the focus be restricted only to a subset of basic items such as food? Should the analysis occur at a monthly frequency or at lower frequencies, such as quarterly or annual? Such an analysis could also make use of economic data that has not been traditionally available, but that can be constructed from rapidly evolving alternative datasets such as mobile phone usage, Google mobility data and satellite imagery (Patnaik et al. 2021).

Second, while the present form of the DR-XKDR method does not incorporate information about the borrowings of households, the households covered in the first run all hold some debt. Thus, the observations about the link between financial well-being and financial participation indirectly contain the effects of both financial participation in financial instruments and debt, rather than reflecting the sole effect of financial participation on financial well-being. This is an important distinction. It is well documented that, unlike in developed economies, where debt is used to invest for a higher level of earnings, in emerging economies, households draw upon debt to smooth consumption. Given the ambiguity about why the household chooses to hold debt, it is difficult to disentangle the effect of debt and non-debt financial participation in explaining the positive impact of financial participation on the household's perception of well-being in this work.

Whether a positive link exists between the financial participation of a household in debt and its financial well-being remains an ambiguous matter. In a recent paper, Sane and Thomas (2022), find that

before borrowing, first-time borrower households have a lower level of consumption expenditure relative to households that did not have to borrow, but that after borrowing, the former's consumption expenditure rises to almost equal that of the latter (albeit for a limited period only, before falling back again). Additionally, the first-time borrower households experience a higher level of volatility in their monthly consumption expenditure after borrowing. This re-emphasises the need to capture both observed as well as perceptions of resilience to shocks in measuring outcomes of financial participation, particularly on the liability side.

Work by Morduch and Merfeld (2022) appears to suggest that when the income and consumption patterns of the poor are subject to high-frequency analysis (monthly, as opposed to yearly), then even borrowing to consume does not appear to be such a bad thing after all, as such consumption smoothing tends to reduce the overall poverty headcount.

Future work by Dvara Research and XKDR Forum will seek to address the above limitations while building on the framework that they have developed and that has been described in this chapter.

9.7. THE WAY FORWARD FROM A FINANCIAL INCLUSION POLICY PERSPECTIVE

What are some implications of this work for India's financial inclusion policy? Any policy initiative benefits from having in place a measurement framework which can be used to test the validity of the policy thesis and, on an ongoing basis, can be used to monitor and calibrate the policy process. From this point of view, it has been established that an inputs/outputs/outcomes framework of measurement is to be preferred. The DR-XKDR method delivers on this front, and also it offers an innovation on the traditional measurement framework in having a focus on households as the unit of measuring financial inclusion. However, if this framework is to be useful for both policymakers as well as for FSPs, then the measures have to be useful in two ways:

1. They should be capable of measuring the consequence of a policy intervention or a financial sector innovation on financial inclusion outcomes.
2. They should be capable of identifying the factors (for e.g., household characteristics) that may cause the intervention or innovation to have more or less consequence for some households compared to others. This can serve as a guide for

fine-tuning the intervention or the innovation so that it helps all households improve their financial wellbeing.

The above two requirements necessarily point to the adoption of a panel approach in the collection of survey data among households. This will make it possible to identify whether changes in inputs, outputs and outcomes over time are related, and if so, in what manner. Thus, the causal impact of greater access or greater usage on financial wellbeing can be estimated.

There are few information sources today that capture features about financial participation and usage *at the level of the household*. Further, any given FSP tends to have visibility on how an individual or a household participates in their domain, rather than having visibility on the entire financial asset holdings of the household. Next, most of the data available about the household's participation in financial assets tend to be updated at a much lower frequency than the frequency at which change takes place in the financial sector in India. Finally, once the consequence of financial sector or financial policy innovation is calculated, an understanding about what factors cause different households to benefit differently requires also that various socio-economic-geographic-cultural features about these households be captured.

Table 9.5 shows the datasets that are available for use in measuring financial inclusion. Some of these are collected and published by the government ('pub'), while some of them are by private firms ('pvt'), both international and domestic. While some of the information that is required to measure financial inclusion is available within these to calculate participation in a standardised manner, there remain gaps on usage and outcomes. The DR-XKDR method offers suggestions on what needs to be observed in order to close this gap.

The usefulness for such a measurement system can be maximised when the same financial inclusion measures can be calculated and compared by anyone in the ecosystem readily and with consensus. This requires some thought on standardisation of definition of the variables that are used in the methodology and standardisation of the methods for calculation of the financial inclusion measures. With this in place, any financial inclusion measure published can then become comparable with each other, and can be equally used by investors, researchers, policy makers and financial sector firms.

Table 9.5. Available Datasets, as of 2022

Dataset	Organisation	Years	Frequency	Sample Size (L ³)
AIDIS	Pub. ⁴	1971-2012	Decennial	1,10,800 households
FIIS	Pvt. ⁵	2013-2017	Annual	47,132 individuals
FS	NPO ⁶	2015	One-off	266.66 million adults
IHDS	Pvt.	2004-2005, 2011-2012	Twice	42,152 households
ICE	NPO	2014, 2016	Twice	20,195 households ⁷
Findex	Intl. ⁸ Pub.	2011 ⁹ , 2014 ¹⁰ , 2017 ¹¹ , 2021 ¹²	Triennial	3,000 households
CMIE CPHS	Pvt.	2014-2002	Triannual	1,73,181 households

REFERENCES

- Annan, K. (2003). Speech on 23 December 2003 at the UN General Assembly: 77th Plenary Meeting. Available at: <https://www.un.org/webcast/2003.html>
- Campbell, J. Y. (2006). Household finance. *The journal of finance*, 61(4), 1553-1604.
- Dasgupta, M., & Palta, G. (2022). Measurement of financial well-being, a review of the literature. Retrieved November 22, 2022, from <https://www.dvara.com/research/wp-content/uploads/2022/03/Measurement-of-financial-well-being-a-review-of-the-literature.pdf>
- Emmons, William R and Bryan J Noeth (Dec. 2014). Five simple questions that reveal your financial health and wealth. Retrieved November 22, 2022, from https://www.stlouisfed.org/-/media/project/frbstl/stlouisfed/files/pdfs/publications/pub_assets/pdf/itb/2014/in_the_balance_issue_10.pdf
- Gubbins, P., Rhyne, E., & Mazzotta, B. (2021, September 14). Measuring Financial Health: Concepts and considerations. Retrieved November 22, 2022, from <https://www.unsgsa.org/publications/measuring-financial-health-concepts-and-considerations>
- Gupta, S., & Sharma, M. (2021). A Demand-Side Approach to Measuring Financial Inclusion: Going Beyond Bank Account Ownership. Retrieved November 22, 2022, from <https://www.dvara.com/research/wp-content/uploads/2021/07/A-Demand-Side-Approach-to-Measuring-Financial-Inclusion-Going-Beyond-Bank-Account-Ownership.pdf>
- Merfeld, J., & Morduch, J. (2022). Poverty at High Frequency. Retrieved November 22, 2022, from https://conference.iza.org/conference_files/Statistic_2022/merfeld_j24118.pdf
- National Strategy for Financial Inclusion - Reserve Bank of India. Reserve Bank of India. (2019). Retrieved November 22, 2022, from <https://rbidocs.rbi.org.in/rdocs/content/pdfs/NSFIREPORT100119.pdf>
- Palta, Sarah, & Thomas. (2022, July 3). Measuring financial inclusion: how much do households participate in the formal financial system? Retrieved November 22, 2022, from <https://blog.theleapjournal.org/2022/07/measuring-financial-inclusion-how-much.html>
- Patnaik, A., Shah, A., Tayal, A., & Thomas, S. (2021). But clouds got in my way: Bias and bias correction of VIIRS nighttime lights data in the presence of clouds. Available at SSRN 3957319.
- Reddy, Y.V. (2006). Annual policy statement for the year 2005-06. Reserve Bank of India. Available at: https://www.rbi.org.in/scripts/BS_ViewMonetaryCreditPolicy.aspx?Id=2217#1
- Renuka Sane and Susan Thomas. When households first borrow: causes and consequences. XKDR Working Paper 18. Forthcoming.

END NOTES

- ***, ** and * indicate statistical significance at 10% level, 5% level, 1% level respectively
- ***, ** and * indicate statistical significance at 10% level, 5% level, 1% level respectively
- L stands for the last period for which data is available
- Pub. Stands for public body
- Pvt. Stands for private body
- NPO stands for Not for Profit Organisation
- Last period data not available. Previous period data used.
- Intl. stands for international
- Data excludes Northeast states and remote islands representing approximately 10% of the adult population.
- Data excludes Northeast states and remote islands representing less than 10% of the population. In addition, some districts from Assam, Jammu, Kashmir, Uttar Pradesh, Bihar and Jharkhand were replaced due to the deteriorating security situation.
- Data excludes Northeast states and remote islands representing less than 10% of the population.
- Included a financial well-being score.