Measuring Financial Inclusion: A project report

Natasha D'cruze   Indradeep Ghosh   Geetika Palta   Misha Sharma

Susan Thomas[*]

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Abstract

Despite significant policy support for financial inclusion, there is little evidence about what has been achieved by way of knowing which households and individuals are financially included, or what is the impact of such inclusion on these persons. We propose a measurement framework that aims to capture these aspects of financial inclusion using an input-output-outcome perspective. The input to financial inclusion is measured as participation in formal financial sector instruments. The output is the extent to which these are used. The outcome is how those who hold and use these instruments perceive their own well-being. A survey questionnaire is designed to collect this information, with two distinct features: It is conducted for a household, since financial holdings benefit more than one individual in a household. It is designed to facilitate regular collection, in order to aid financial service providers and policy makers in their thinking about improving financial inclusion. We deploy the questionnaire to understand the financial inclusion of a sample of 300 low-income households in two geographic areas in India. We find that financial participation has a positive correlation with financial well-being, a relationship which is significant even after controlling for income level and ownership of physical assets.

Contents

1   Introduction

Financial inclusion has been established as economic policy objective for a few decades now. Access to finance was seen as a critical pathway for poorer households to achieve better living standards, both in terms of higher regular consumption and greater certainty of managing future consumption. Over the last decade, financial inclusion has found a broader target household base. Several economic events starting from the collapse of financial institutions in 2008, exposed the vulnerability of a broader swathe of households, even at higher income levels, to the systemic economic shocks of increased inflation and unemployment. This has pushed the need of rethinking how finance can improve the lives and outlook of individuals and households, across all income levels.

But there is a gap in understanding the links between the resilience of households and the extent to which the household is financially included. The critical bottleneck is the lack of consensus on how to obtain a comprehensive measure of the household's financial inclusion or how to capture its resilience. For a policy maker, an ideal measure of financial inclusion would serve two purposes, to identify which households are financially included, and to establish the extent to which such households are more resilient to economic disruptions (Rao, 2018; United Nations Environment Program Finance Initiative (UNEP FI), 2021). When done correctly, such measures can be used by financial service providers to design and deliver financial products where there is highest demand.

There have been several efforts on defining financial inclusion, and on how it should be measured (Nguyen, 2020; Bank of India, 2020; El-Zoghbi, 2019). But most tend to be aggregated values for an economy. For example, among the first proxies used to measure financial inclusion in the economy included the M2 – which is the cash demand and time deposits – as a percentage of GDP (Beck, 2016). Later measures were aggregated at the level of a financial product, such as number of bank accounts as a fraction of the population, number of bank branches and number of ATMs) (Demirguc-Kunt et al., 2022). Only recently, have measures included a broader set of financial products and services such as insurance and pensions (Bank of India, 2020; Gupta and Sharma, 2021). But such measures do not satisfy the objectives of identifying the financially excluded, or the impact that financial inclusion has on the lives of individuals and households.

In this paper, we present a systematic approach to measurement, developing it from the perspective of input-output-outcomes evaluation of financial inclusion. Such an approach has the unique position of including all three elements in a single measurement, which has the potential to serve all the objectives listed above. An example of how a single measurement framework can capture multiple objectives is observed in the area of education policy. There, the extent to which public funds were used in build schools and hire teachers is measured as inputs, the number of children passing school into the economy is measured as the output, and to the extent to which these children could count and comprehend better is measured as the outcome (Banerji et al., 2013).

We adopt this approach for financial inclusion policy as well. Here, the participation of a household in the formal financial system are the inputs. The output measure captures the extent to which households use the financial products that they participate in. The outcome

is to measure the economic well-being of the household. Each measure has seen little development so far, because the objective of financial inclusion policy has been weakly defined. Partly, this has been driven by what data is available on financial inclusion. For example, while the end target of stated policy is the household, most of the existing measures have been on the reach and coverage of the financial service provider because household level data is rarely available.

But recent efforts by policy makers, service providers and independent researchers globally have expanded the domain of financial inclusion measurement through the use of household surveys. Most of these have limited coverage and are not conducted at regular frequencies. But they do provide a new perspective on financial inclusion at the level of households. In India as well, datasets about household participation in financial contracts have become available over the last few decades. While these are not panel datasets, they allow us to observe financial participation of households along with socio-economic characteristics that enable access and usage of finance.

In this paper, we construct a measurement framework for financial inclusion that includes financial inputs, outputs and outcomes at the level of a household. The framework comprises a set of narrowly-defined questions that capture participation of the household in the formal financial sector (inputs), and how they are used (outputs). Financial inclusion outcome for the household is captured using a perception survey. The survey has questions that capture information on consumption, both quantitative (on their consumption) and qualitative (on their ability to manage both their future anticipated consumption increases such as education, retirement, and their *consumption resilience* information, during both normal times as well as periods of stress such as losing a job or falling ill).

Further, we collaborate with a financial service provider (FSP) in order to apply this measurement framework on a sample of their customers. In this collaboration, a survey is carried out on a small sample of customer households, to capture information about financial participation of the household, the household usage of the finance, and then finally, the household's perception of both how well they can weather economic shocks and how they can meet their aspirations for a better life. These perceptions are recorded in a manner that incorporates features and conditions that are specific to their economic status and aspects that reflect the ground realities in India.

Our analysis using these quantitative and qualitative measures find a significant positive relationship between the household financial participation (input) and frequency of usage (output) with their well-being (outcome), even if the magnitude of financial participation is small. What is useful to note is that the positive relationship holds even after adjusting for the level of income and wealth, where wealth is captured in the form of physical asset ownership. The results of this collaboration offers evidence that those households with higher financial participation are more confident about their resilience to future economic shocks. It adds support to the proposition that financial access and choices can improve the economic well-being of households.

We present these discussions and our findings in detail in the following sections. Section 2 presents the current thinking on financial inclusion and how it is measured. Section 3 proposes an input-output-outcome framework for financial inclusion. This includes sugges-

tions for how each can be measured within the Indian context, through the use of a survey approach. Here, we develop a survey questionnaire to capture information to calculate financial participation and usage by households, as well as their perception of well-being. The section also presents a scoring methodology to translate the responses into an index for each of these input-output-outcome aspects of financial inclusion. In Section 4, we describe a pilot implementation of the proposed framework in collaboration with a financial service provider on a sample of 300 of their customer households within two geographies. Section 5 present the summary of the survey responses for this sample, as well as the analysis of the links between inputs, outputs and outcomes for this sample. Section 6 concludes and suggests a way forward.

2   Definitions and measurement approaches

Although, financial inclusion is increasingly used as a part of financial sector policy, both in India and globally, there has not been consensus on a single definition of what financial inclusion stands for. As a consequence, it is difficult to arrive at how financial inclusion is to be measured. A careful reading finds that the phrase often encompasses different objectives and different audiences. For example, the World Bank says:

> "financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way."

This definition has a focus on the various financial products and services that are used by individuals and businesses for a fixed set of functions. By this definition, financial inclusion could be measured from the point of view of financial service providers (FSP): the number of their products that have been made available, the assets under management of various products, their revenues and their profits, the number of customer complaints. These are aggregated measures, of the business conducted by the FSPs, and do not capture how these products are held at the level of the financial portfolio of households.

The Reserve Bank of India (RBI) defines financial inclusion as "the process of ensuring access to appropriate financial products and services needed by all sections of the society in general and vulnerable groups such as weaker sections and low-income groups in particular at an affordable cost in a fair and transparent manner by mainstream institutional players."[1]

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[1] RBI's thinking on defining financial inclusion has evolved with time. The RBI first articulated its definition of financial inclusion in the Committee on Financial Inclusion (2006), chaired by Dr. C. Rangarajan 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'. In the Committee on Financial Sector Reforms (2009), chaired by Dr. Raghuram G. Rajan, it defined financial inclusion as 'universal access to a wide range of financial services at a reasonable cost. These include not only banking products but also other financial services such as insurance and equity products'. In 2014, RBI further revised its definition of financial inclusion in its Annual Report of 2013-14 which can be accessed here. RBI's Definition of Financial Inclusion as quoted by RBI Deputy Governor, 2016 can be found here.

Both definitions have a different focus, even though they have some similarities in the scope of the financial inclusion objective. Both refer to access to financial services and products. This means that both statements focus on the aggregate supply of finance, with the second definition being more narrowly about the formal financial institutions. The difference in focus arises in who the end customer for financial inclusion is: the first addresses a broad definition of individuals and enterprise, the second has a more narrow focus on low income households.

Most early measures of financial inclusion pointed out the outreach of financial service providers (FSPs). An example of a typical financial inclusion metric was the fraction of participation in financial sector products such as bank account held in the overall economy. After the Financial Credit Crisis of 2008, this perspective shifted, given the wide-spread nature of the economic stress through loss of jobs. This caused a shift from the FSP to their end customer, with questions being asked about how access to financial products and services is important to improving the resilience of households to systemic episodes of economic stress. This shift in policy focus highlights the need for an new approach to thinking about how financial inclusion ought to be defined, and led to a new thinking on an *input-output-outcome* perspective on defining and quantifying financial inclusion.

In this approach, the extent to which households and individuals are purchasing financial products and services, or 'participation' in finance is the input to financial inclusion. This does not guarantee resilience of economic agents to economic shocks. It is also important to understand the extent to which finance is used - this is the output of financial inclusion. Most important is the extent to which participants in finance display resilience to shocks, whether it is limited to the household or it is more systemic to the overall economy. This is the expected outcome of financial inclusion. Once these three parts of financial inclusion can be observed across individuals, the links between how financial choices are made and used towards the economic well-being of the person and her resilience to economic shocks can be understood.

A persistent challenge in measuring financial inclusion is in the lack of data available on households and their financial choices (Campbell, 2006). An empirical quantification of financial inclusion requires information about how individuals access finance, and how they use it. This information has traditionally been private to the individual. This makes it even harder to capture information about financial choices at the household level. This is evident when we think about how we can implement a input-output-outcome approach to measuring financial inclusion.

1. Measuring participation (input): The input to financial inclusion is the availability of financial services and products to various customers.

As in other parts of the world, most financial participation measures tn India are limited to (a) reporting household level participation only in a limited number of formal financial instruments such as the ownership of bank accounts and bank deposits. Household participation in other financial products such as insurance, pensions and shares is far less available. (b) When it is available, the frequency of observation is very low. This prohibits any realistic description about how financial inclusion is changing in the country, or where the gaps are that are present or are emerging in the usage of finance.

2. Measuring usage (output): If usage is restricted to just bank accounts, data on the usage of bank accounts is available from three sources: FinScope Survey, Financial Inclusion Insights (Tracker) Survey, and Global Findex. These capture the mode of payment used in the last few transactions, what a bank account was used for, or the frequency of usage of the bank account. Here too, the sample is restricted to a small sample and is typically reported as an aggregate.

3. Measuring well-being and resilience to shocks (outcome): The outcome of financial inclusion is the least discussed or defined. The traditional economics view for the importance of finance for households is to enable higher stability of household consumption. A household with a higher degree of financial inclusion is expected to have a higher stability of consumption. However, operationalising this as a measure is difficult. The traditional approach is that households that save for the future are able to sustain consumption despite shocks to their economic status. In development economics, the role of finance is to improve the economic status of the household. The more recent policy focus is that finance should enable households to be more economically resilient. These are different outcomes for measurement. Recent developments in measuring financial inclusion focus on the financial or economic *well-being* of a household.

Even more difficult than financial participation or usage, are the challenges in observing household well-being using existing administrative data. Thus far, financial well-being has been measured through perception surveys, where the questions are designed to capture how the household perceives their ability to continue their life-style despite an episode of economic stress (losing a job, falling ill, a death in the family), or their ability to reach a higher economic status. Thus, over the previous decade of 2010-2020, there have been some examples of such perception surveys such as those conducted by the Center for Household Financial Stability, Consumer Financial Protection Bureau, Financial Health Network[2], Financial Inclusion Insights and BBVA research.(Rhyne, 2020).

The questions in these surveys typically concentrate on five dimensions of household well-being which includes: the ability to maintain day-to-day functioning, resilience to withstand economic shocks (such as to income or employment), the ability to plan for the future, the extent to which the household is confident about managing itself using financial products and services, and the ability to manage household debt (Dasgupta and Palta, 2022). At present, there is no standardisation in this information: it can vary in content depending upon the financial product or service. This makes it difficult for use in evaluating the impact of a household being financially included, and not useful to measure outcomes

In the last decade, surveys have been used to collecting household level data of participation and outcomes, most of which have been episodic (Demirguc-Kunt et al., 2018, 2015; Demirguc-Kunt and Klapper, 2012). There are rare instances of countries which have administrative data from which asset holdings by households can be constructed (such as the Norwegian countries in the EU) (Calvet et al., 2007; Andersen et al., 2020). Most countries do not have such data on household holding of financial instruments (Badarinza et al., 2016; Stein

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[2]Erstwhile Center for Financial Services Innovation

[et al.](), 2011). In fact, recent concerns over data privacy makes it difficult to find consolidated household portfolios that span holdings across all financial products and service.

Nevertheless, household surveys have emerged as one source of household information in finance. In India, the relevant data sources include the following:[3]

1. All India Debt and Investment Survey (AIDIS) by the National Sample Survey Organisation (NSSO), conducted once in 10 years, from 1971-72.[4])

2. India Human Development Survey (IHDS) by the National Council of Applied Economic Research (NCAER), conducted in 2004-05, 2011-12.

3. Global Findex by the World Bank, conducted globally in 2011, 2014, 2017 and 2021.

4. Financial Inclusion Insights (Tracker) Survey by InterMedia, conducted globally annually, from 2013.

5. ICE 360° Survey by People Research on India's Consumer Economy, conducted in 2014, 2016 and 2021.

6. Consumer Pyramids Household Survey (CPHS) by Centre for Monitoring Indian Economy (CMIE), conducted thrice a year from 2014.

7. FinScope Survey by FinMark Trust, conducted globally, in India in 2015.

Most of these have been one time surveys or surveys done at low frequencies and only a handful are high frequency household surveys. In order to construct a useful measure of financial inclusion that can be reliably used for policy, it is important to build data sources that capture information about all three elements – participation, usage and well-being – on a regular basis, and for a sample that can capture as much of the heterogeneity of the individuals in the country.

3 A proposed input-output-outcome measurement framework

In developing an approach for an input-output-outcome measurement for financial inclusion, we incorporate two principles: A first principle is that the measures should help to identify households who are financially excluded in the economy. Second, they can be used to evaluate the impact of the household that is more financially included relative to a household that is less financially included. These two principles lead to the following design choices of the measurement system:

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[3]Out of these surveys, the NSSO AIDIS, NCAER Human Development Survey, ICE 360° Survey, and CMIE CPHS are India specific while the other three are global surveys.

[4]This was conducted on rural Indian households by the Reserve Bank of India in 1951-52 and 1961-62 before being handed over to NSSO for PAN India measurement.

1. *The measurement must be done at the level of the household*

   The benefits of holding financial products accrues, directly or indirectly, to all members of the household. For example, when an individual can save in the bank account, these savings benefit all the members of the household in maintaining their consumption. Similarly, when the earning member falls ill, the ability to use health insurance payouts to pay for the medical bills benefits all members of the households, rather than the person herself.

2. *The input dimension must capture financial sector participation beyond bank account ownership*

   There are a variety of financial products and services offering a household different means of addressing its financial needs and aspirations. Table 1 describes the functions and the products that are included in the proposed systems to measure financial inclusion.

Table 1: Asset groupings

Function	Financial products
Transactions	Savings bank account or post-office savings account
Savings, Risk free	Fixed and recurring deposits, National Savings Certificate, Kisan Vikas Patra or post-office time deposit accounts
Savings, Long term	PMVVS, NOAPS, NWPS, NDPS, APY, NPS, PPF, EPF, or Senior Citizens Savings Scheme (SCSS) by post offices
Savings, With risk	Listed shares, mutual funds or gold Exchange Traded Funds (ETFs)
Insurance, Life	Life insurance (such as Term Life Policy, Whole, Life Policy, Endowment Plan, ULIP or Money Back Plan)
Insurance, Health	health or medical,insurance, accident insurance
Insurance, General	Shop, cattle and livestock, and crop insurance

3. *The consequences of financial inclusion needs to be measured within the context of the*

household

While financial inclusion is integral to financial well-being, it is only one instrument through which households manage their well-being. Households' socio-economic context such as the wealth that they hold, current income, size of their family, culture, education and occupation are some of the fundamental factors determining their well-being. For example, two households that report different levels of financial participation may still have the same level of economic security or well-being because the household holding a lower number of financial products may have higher income or a a higher level of wealth. Thus, these factors do not form an integral part of the financial inclusion measurement, but are important to understand and establish the causes and consequences of financial inclusion. For this reason, the measurement system includes the capture of such factors about the household.

4. *Credit is included as a feature of the household itself rather than a financial instrument or service*

   Credit is seen as an integral element. However, we do not include credit as a financial instrument in the household financial portfolio. This is because, unlike other financial instruments which imposes an immediate cost for a future benefit, credit presents a more complicated trade-off between the present and the future consumption of a household. For example, credit can be used to support immediate household spending (for emergencies or unexpected needs), or it can be used to raise the economic status of the household over the longer horizon. But credit imposes a cost on the household in the future in the form of a repayment, unlike other financial products. Given this difference, the inclusion of credit in the measurement framework is left for future research Palta et al. (2022).

   Instead, we treat this information as an important context within which to understand the consequence of financial inclusion on household well-being. This kind of analysis can provide meaningful information on the role of credit in furthering inclusion, but also on the role of credit in improving or deteriorating well-being.

5. *Enable a better understanding of the relationship between the Input, Output and Outcome elements of financial inclusion*

   The survey approach and methodology is designed to allow us to quantify each element of financial inclusion separately. The importance of measuring each of these as distinct elements allow us to test the relationship between household features and each element (participation, usage and well-being) but also allows to test the relationship across the three elements itself. While it appears apparent that the relationship between participation and usage must be positive (without participation, there is no usage), it could be the case that it is zero i.e., that households participate in finance but do not use to improve their well-being, and instead rely on developing a stronger base of physical assets or building stronger social network support systems. Such learnings must become part

of the feedback loop, both for producers of finance and for modifications in financial inclusion policy.

These principles and guidelines are used to design the questions of a household survey. This survey is designed to be readily administered either by FSPs to their customers or by policy makers such as the Department of Financial Services at Ministry of Finance for financial inclusion programs of the Union government, or various financial sector regulators as they design specific regulations. Given the three element structure of the survey, the responses can be used by FSPs to arrive at strategic solutions for their customers (with improved participation) that achieve the objective of improving customer household well-being over time. If these learnings lead to higher customer satisfaction, it can both increase customer stickiness and loyalty in the face of competition, as well as provide credible measures of improvements in customer well-being for the various class of social impact investors who focus on financial sector investments. For financial sector policy makers, these measures can help identify where in the country are there larger gaps in financial inclusion, and of what nature, at any given point in time. Once these surveys become conducted and collated on a regular basis, these can also help an understanding in the changes in financial inclusion that accrues to various financial inclusion programs.

3.1   The survey questionnaire

The questionnaire was designed based on an extensive review of existing surveys and measurement frameworks that attempt to capture the state of financial inclusion. The final structure of the survey questionnaire has six main parts, covering a total of 78 questions. The six parts of the questionnaire collect information as follows:

1. Socio-demographic features of the households (15 questions including sub-parts)[5].

   This includes information about the geography in which the household resides, including region type (rural or urban), number of members of the household including dependents, along with age, occupation, migration status of its members.

2. Financial services proximity (8 questions including sub-parts).

   This includes access of the household to both physical and digital financial touch-points.

3. Household assets and liabilities (33 questions including sub-parts).

   This includes physical assets owned by the household, as well as financial assets, including debt.

4. Household cash flows (6 questions including sub-parts).

   This includes questions on both income as well as expenditure, questions on the level of these as well as questions designed to capture the volatility of these inflows and outflows.

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[5]6 of these questions are posed to the respondent for information on each member of the household and hence get repeated per member.

5. Medical expenditure (3 questions including sub-parts).

   This includes questions that are designed to capture the number and frequency of health shocks to the consumption needs of the household.

6. Financial well-being (13 questions including sub-parts).

   This includes questions that are designed to capture the households perception of their economic vulnerability and financial well-being.

Our measurement framework requires a comprehensive survey instrument that captures financial inclusion, including its impact on Indian households. Multiple iterations of the survey were created based on feedback from sector experts and the research advisory committee set up for this project. In comparison to other financial inclusion surveys and questionnaires, our approach for measuring financial inclusion is unique for the following reasons:

- *It is a holistic measure of financial inclusion* The survey questionnaire covers three different elements of financial inclusion – participation, usage and well-being. These can be reported as three different indexes of financial inclusion, as well as a single measure. This allows for a richer analysis about where are the gaps in financial inclusion across the country, which in turn enables better targeting of policy programs or business development by FSPs.

- *Household as a unit of measurement* While the questions are answered by a single respondent who is an adult and has substantial knowledge about the household's finances, the respondent represents the household as a unit. This recognises the reality that the household tends to be a stronger social construct in India relative to other geographies, and helps to develop more effective financial inclusion policy for the country.

  For example, questions on participation are framed at the household level (does anybody in your household hold at least one bank account, health insurance, pensions account, etc). Questions on financial well-being are also posed to capture the perception of household as a whole. For example, *is your household able to manage day-to-day financial needs*, or *is the household planning for long-term goals*. The framing of the questions are deliberate and have been defined with care.

- *Range of financial assets beyond bank account ownership* The survey goes beyond bank account ownership and captures ownership of a suite of products such as life and health insurance, savings and investment in risk-free and risky instruments, retirement accounts, livestock, rainfall and shop insurance for those engaged in micro and small enterprise, farming and other allied activities.

  This is an important element of design of questions, not just about financial participation, but also about usage. For example, we define access not only in the form of ownership of account, but also in terms of physical availability to these services and digital infrastructure in terms of acceptance of digital methods of payments by merchants in

the household's neighbourhood. Usage is defined to capture frequency of usage of various financial instruments with questions customised for each type of product. For example, usage of bank account is measured by the frequency with which bank accounts are used as *once a week, once a month, once in 3 months*. But the frequency of usage for insurance products is measured by the frequency with which premiums are paid.

We base the first set of products and services of this survey questionnaire on those covered in the *Consumer Pyramids Household Survey* of the CMIE. This survey includes a comprehensive range of questions on household's ownership and frequency of usage of financial instruments and proves to be a useful benchmark for our survey instrument.

- *Contextual factors that drive financial inclusion and financial well-being* While financial inclusion is integral to financial well-being, it must be noted that it is only one part of the picture. A lot depends upon socio-economic and behavioural contexts of the household itself.

  This includes features such as their wealth, income, education, and occupation of various members, as do financial habits of various household members, decisions on ownership of and use of suitable financial products and services. For this reason, we capture information in our survey that helps us understand the household's contextual and socio-economic situation, both at household level and at the household member level.

  As discussed earlier, credit is treated as a contextual household feature. Credit tends to be an integral part of the household financial portfolio, especially for low-income households. Survey questions include whether households hold debt, the type of borrowing and the purpose for such borrowing. When credit is used as a feature of the household, the extent to which financial inclusion in the typical policy financial instruments benefit households can be understood by differentiating between those households who borrow compared to those that do not borrow. This kind of analysis can provide meaningful information on the role of credit in furthering well-being or in reducing well-being.

The detailed and complete questionnaire is included in Section D in the Appendix. In the survey data collected, names and household identifiers were delinked from reported information, ensuring that the data was fully anonymised before any analysis and that full confidentiality of the correspondents information could be maintained. Additionally, we created certain categories of formal financial instruments in order to record participation in and frequency of usage of formal financial instruments as listed in Table 1.

3.2   Scoring methodology

We created three scores using the sample survey data: an input score measuring financial participation, an output score measuring frequency of usage of financial instruments, and an outcome score measuring the perceived financial well-being of households. The scoring methodology for each component is described as follows:

Input Input is measured as participation in formal financial instruments. The participation of households in formal finance is measured by at least one member of the household owning each of the aforementioned asset groupings. These groupings capture finance for day-to-day transactions, saving for long term and shocks, catering to differing risk appetites of customers.

The input score is composed of six binary variables and by design, ranges between 0 and 1. The closer the score is to 1, the higher is the ownership of formal financial instruments of an individual. Our sample of 310 responses reports an average input score of 0.22 translating to ownership of 1-2 financial instruments. The scoring strategy for measuring input is tabulated below:

Table 2: Input score

S.No.	Variable	Scoring
IP1	Whether respondent owns transactional accounts	1: Yes 0: No
IP2	Whether respondent owns risk free assets	1: Yes 0: No
IP3	Whether respondent owns risky assets	1: Yes 0: No
IP4	Whether respondent owns old-age income support schemes	1: Yes 0: No
IP5	Whether respondent owns life and health insurance	1: Yes 0: No
IP6	Whether respondent owns general insurance	1: Yes 0: No
Input score	(IP1 + IP2 + IP3 + IP4 + IP5 + IP6) / 6	

Output Output is measured as the frequency with which household members use the formal financial instruments that they own. We measure the frequency with which household members use the assets that they own and classify it as follows:

- Actively - once (or more) in 3 months,
- Passively - once in 3-12 months, or
- No usage - more than a year ago

The output score is composed of six variables, each with 3 ordered categories. By design, the score ranges between 0 and 1. The closer the score is to 1, the higher is the frequency

with which individuals use formal finance. From our sample of 310 responses, we find that the average output score is 0.19 translating to active usage of 1 financial instrument. The scoring strategy for measuring output is tabulated below:

Table 3: Output score

S.No.	Variable	Scoring
OP1	How often the respondent uses transactional accounts	1: Once or more in 3 months 0.5: Once in 3 to 12 months 0: More than a year ago
OP2	How often the respondent uses risk free assets	1: Once or more in 3 months 0.5: Once in 3 to 12 months 0: More than a year ago
OP3	How often the respondent uses risky assets	1: Once or more in 3 months 0.5: Once in 3 to 12 months 0: More than a year ago
OP4	How often the respondent uses old-age income support schemes	1: Once or more in 3 months 0.5: Once in 3 to 12 months 0: More than a year ago
OP5	How often the respondent pays premium for life and health insurance	1: Whenever due/needn't pay 0.5: Paid premium but didn't renew/sometimes did 0: Don't have insurance
OP6	How often the respondent pays premium for general insurance	1: Whenever due/needn't pay 0.5: Paid premium but didn't renew/sometimes did 0: Don't have insurance
Output score	(OP1 + OP2 + OP3 + OP4 + OP5 + OP6) / 6	

Outcome Outcome is measured as how individuals perceive that they themselves and their household as a whole fare on a combination of the five dimensions of financial well being. These dimensions are described below:

- *Day-to-day functioning*: This dimension is about a household's ability to manage its short-term expenditure and predictability of the timing and amount of its spending. It measures the ability to meet basic needs, paying bills & rent on time, as well as the income-expenditure dynamics.

- *Borrowing*: This dimension is about the debt dynamics of a household. It measures manageability of debt as well as credit discipline.

- *Resilience*: This dimension is about the preparedness of the household when faced with an emergency. It measures whether there exists a buffer of savings that can

be tapped into, how fast the household will be able to raise emergency funds and how they would fund this emergency.

- *Planning*: This dimension is about the preparedness of the household for long-term expected events. It measures whether the households have a plan in place, especially for retirement and old age.

- *Confidence*: This dimension is about the confidence that the respondent feels in the household's financial future given their present financial portfolio. It measures not just their confidence in existing instruments but also whether they have had negative financial experiences, as well as their feeling of financial stability based on the amount of savings they have and how manageable they believe their debt is.

The outcome score is composed of fifteen variables containing a mix of binary variables (5 such variables) and variables with ordered categories (10 such variables). Guided by the literature, and to reduce the time taken to conduct a survey, it was designed such that in addition to the thirteen questions posed to the respondent, we would construct two variables – one to capture the income-expenditure dynamics by looking at whether the difference between the two is positive, zero, or negative and the second to capture the respondent's financial security based on their debt manageability and emergency buffer. By design, the score ranges between 0 and 1. The closer the score is to 1, the higher is the perceived financial well-being for the household. In our sample of 310 responses, 0.52 is the reported average outcome score. The scoring strategy for measuring outcome is tabulated below.

Table 4: Outcome score

Sub-component	S.No.	Variable	Scoring
Day-to-day functioning:	OC1	Household's ability to meet basic needs	1: Have money left over after meeting basic needs 0.75: Can meet all basic needs, no surplus left over 0.5: Can meet most basic needs 0.25: Can meet some basic needs 0: Cannot meet basic needs
	OC2	Payments (bills and rent) made on time and in full	1: Yes 0: No
	OC3	How did they manage these payments	1: Monthly income 0: Any other medium – savings/borrowings etc
	OC4*	Income - expenditure dynamic	1: Income > Expenditure 0.5: Income = Expenditure 0: Income < Expenditure
Borrowing:	OC5	Difficulty managing debt	1: No 0.5: Sometimes 0: Yes
	OC6	Contacted to pay dues post due date	1: No 0: Yes
Resilience:	OC7	Adequacy of liquid savings if income stopped	1: 6months or more 0.75: 3-5 months 0.5: 1-2 months 0.25: 1-3 weeks 0: Less than a week
	OC8	Time horizon of obtaining INR 7000-8000 for an emergency	1: Immediately 0.67: Less than a week 0.33: Between 1-2 weeks 0: More than 2 weeks
	OC9	Emergency coping mechanism visualised	1: Rely on insurance ++ 0: Others – borrow, sell/pledge asset etc
Planning:	OC10	Saving and planning consistently for long term goals	1: Yes 0: No
	OC11	Saving and planning consistently for retirement	1: Yes 0: No
Confidence:	OC12	Agency to take financial decisions	1: Yes 0: No
	OC13	Confidence in financial instruments owned	1: Very confident 0.67: Somewhat confident 0.33: Slightly confident 0: Not-at-all confident
	OC14	Frequency of negative financial experiences	1: Never 0.67: Sometimes 0.33: Frequently 0: Always

OC15*	Financial security	1: debt manageable and liquid buffer for more than 6 months 0: debt not manageable and liquid buffer for less than 1 month 0.5: Otherwise

Outcome score	(OC1 + OC2 + OC3 + OC4 + OC5 + OC6 + OC7 + OC8 + OC9 + OC10 + OC11 + OC12 + OC13 + OC14 + OC15) / 15

*: These variables were not directly captured in the survey. They were constructed based on other questions asked to the respondent.

4   A pilot implementation

The pilot survey was conducted in collaboration with an India based FSP that works with remote households in rural geographies. This was primarily done to tap into the customer base of the FSP as potential respondents for our survey, thereby making the operations of the pilot logistically easier as well as most relevant, given our objective of prioritising measuring financial participation, frequency of usage, and well-being among households. The pilot survey was conducted among households from two Indian states- Chhattisgarh and Tamil Nadu to gauge their levels of financial inclusion using the input-output-outcome framework. Since this survey was conducted in 2021, at the time of the second wave of the COVID pandemic in India when mobility was severely constrained, it was administered over phone-calls among randomly selected households. The survey instrument was designed to be administered to an adult member of the household who had a sound understanding of the financial decisions of the household. For the purpose of the survey, a household was defined as an entity which satisfied the following conditions:

- Composed of blood relatives

- Sharing the same kitchen if they physically reside in the same house

- Non-residents of the household who are still considered a part of household; for example- a child who has migrated for work is considered a part of this household while a married daughter is not.

4.1   Survey design

Our aim was to survey a total of 300 distinct households from two states of India, namely Chhattisgarh and Tamil Nadu. In addition to having a 50-50 representation across the two states, the survey was also designed to have equal representation across gender and age. A multi-stage stratified survey design was deployed to draw the sample of respondents, each representing a distinct household, from the customer base of the FSP. The three strata are described below:

1. The first stratum was the state in which the respondent's household was located. For this, we considered the customers of the FSP present in Chhattisgarh and Tamil Nadu as potential respondents.

2. The second stratum was the gender of respondent.

18

3. The third stratum was the age group in which the respondent belongs.

For the customers in each of the two states, we observed the gender distribution and further, how young or old the female as well as male customers were. Given our sample size of 300, respondents were randomly selected such that they represent 150 households from each state, and in each state, 75 respondents were by design, female and 75 male. The third stratum was constructed in order to represent adults across the stages of their life-cycle. Although, it would have been ideal to observe respondents before and after retirement i.e. 60 years of age, the cut-off of 50 years was derived from the underlying dataset which had more data on younger people. This meant that in our last stratum, there would be 38 respondents under the age of 50 and 37 above this age. The aim of these design choices was such that the survey would capture the nuances of differing financial habits across different regions, gender and goals that households have based on where they are in their life-cycle.[6] If the sampling strategy were to pan out as envisioned, there would be 150 female respondents, with 75 of them from Chhattisgarh and 75 from Tamil Nadu, and a nearly 50-50 representation of the age groups. The same would also be true for the male respondents. Respondents under 50 years of age would be equally comprised of males and females from Chhattisgarh as well as Tamil Nadu, just like older respondents. By design, every stratum would represent 50% of the whole sample surveyed – be it state, gender, or age group.

Table 5: Survey design and response characterisation

Stratum 1: State			Stratum 2: Gender			Stratum 3: Age group		
State	Design	Response	Gender	Design	Response	Age group	Design	Response
Chattisgarh	50%	51%	Female	50%	39%	< 50	50%	67%
Tamil Nadu	50%	49%	Male	50%	61%	>= 50	50%	33%

Sample size: 310

As observed in Table 5, the sample that we were able to collect had a total of 310 respondents, of which 152 (51%) were from Chhattisgarh and the remaining 158 (49%) were from Tamil Nadu. The gender in the final sample had female representation of 39% and male representation of 61%. Hersh et al. (2021) shows that telephonic surveys tend to be less representative of women, mainly due to the prevalence of male management of household phones

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[6]The objective of stratifying the sample by gender and age was to understand if household financial behaviour pertaining to participation in and frequency of usage of formal financial services, and perceptions of financial well-being differ by gender and age of the respondent. Here the assumption we make is that the respondent is either the head of the household or the spouse of the head of the household. This is because if the respondent indeed falls in one of these two categories, their individual characteristics in terms of their gender, age, education, occupation and other preferences will have a strong bearing on the overall financial profile of the household. Given that the respondent is an adult (18+) and has a strong knowledge about the financial profile of the household, it is very likely that the respondent is indeed either the head or the spouse of head of the household. However, since we did not capture information pertaining to 'member type' in our survey instrument, we are unable to confidently specify the respondent's position in the household. Therefore, we do not include individual level characteristics such as gender, age, occupation and education in our regression analysis. However, in future iterations of the survey, we aim to capture this and incorporate member type information in our analysis.

which significantly reduces access to female respondents. A majority of our sample (67%) was representative of individuals below 50 years of age. Of the 152 respondents from Chhattisgarh, a) 62 (41%) were female and 90 (59%) were male and, b) the younger of the Chhattisgarh respondents comprised 76% while the remaining 24% were older than 50[7]. While in Tamil Nadu, a) 60 (38%) respondents were female and 98 (62%) were male, and b) the younger of the Tamil Nadu respondents comprised 59.5% while the remaining 40.5% were older than 50[8].

4.2   Additional household features

A larger set of variables were constructed from the survey questions which includes:

1. *Physical asset ownership*: A ratio capturing how many of the recorded six types of assets are owned by the respondent's household.[9] On an average, this ratio stood at 0.43 indicating that respondents reported owning either 2 or 3 types of physical assets on an average.

2. *Technology exposure*: A binary variable based on the respondent owning a smartphone and having access to both, network & internet. 43% of the sample reported having such technology exposure.

3. *Physical infrastructure*: A ratio capturing whether respondents have a cash-in-cash-out touch-point within 15 minutes of walking distance.

4. *Digital infrastructure*: A binary variable indicating the availability of digital payments at merchants in the vicinity of the household.

5. *Digital infrastructure usage*: A ratio of how many of the captured five types of transactions is the digital mode of payment used for, by anyone in the household.[10]

5   Findings

The sample had 310 responses. Within this, there were 201 observations for which there were no missing responses for each of the framework variables i.e. the variables used to design the input, output and outcome scores detailed above. A description of these 201 responses received across geographical regions, gender and age groups is presented in Table 6.

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[7]The Chhattisgarh sample contained 43 (28%) young females and 72 (47%) young males. 19 (13%) female respondents and 18 (12%) male respondents were 50 years or older.

[8]The Tamil Nadu sample contained 41 (26%) young females and 53 (34%) young males. 19 (12%) female respondents and 45 (28%) male respondents were 50 years or older.

[9]Physical assets recorded in the survey: 1.Real estate – plot of land/independent house/office/shop, 2. Livestock, 3. Car, 4. Two-wheeler, 5. Bicycle and 6. Tractor

[10]Types of transactions recorded in the survey: 1. transfer money, 2. pay bills, 3. pay merchants, 4. receive salary, 5. receive government transfers

Table 6: Survey response characterisation of the sample without missing data

Stratum 1: State		Stratum 2: Gender		Stratum 3: Age group	
State	Response	Gender	Response	Age group	Response
Chattisgarh	42%	Female	35%	< 50	68%
Tamil Nadu	58%	Male	65%	>= 50	32%

Sample size: 201 "complete responses"

In the entire sample, there was nearly a 50-50 representation of the states of Tamil Nadu and Chhattisgarh respectively, with a a 79% rural and a 65% male representation. However, we focus our analysis on the subset of responses for which we had no missing information (with 201 responses).[11] In this sub-sample, 84 (42%) were from Chhattisgarh and the remaining 117 (58%) were from Tamil Nadu, with female representation of 35% and male representation of 65%. Most of the sample (68%) was individuals below 50 years of age. Of the 84 respondents from Chhattisgarh, a) 29 (34.5%) were female and 55 (65.5%) were male and, b) the younger of the Chhattisgarh respondents comprised 80% while the remaining 20% were older than 50[12]. While in Tamil Nadu, a) 42 (36%) respondents were female and 75 (64%) were male, and b) the younger of the Tamil Nadu respondents comprised 59% while the remaining 41% were older than 50[13].

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[11]We also analysed the full sample of 310 responses collected and found similar results.

[12]The Chhattisgarh sample contained 22 (26%) young females and 45 (54%) young males. 7 (8%) female respondents and 10 (12%) male respondents were 50 years or older.

[13]The Tamil Nadu sample contained 28 (24%) young females and 41 (35%) young males. 14 (12%) female respondents and 34 (29%) male respondents were 50 years or older.

5.1 Sample characteristics by economic features of the households

Table 7: Summary statistics for the sample of 201 responses

Variable	Mean
Monthly income	16,662
Monthly expenditure	14,365
Physical asset ownership	0.4245
Technology exposure	0.7761
HH size	4.532
Occupation	
Casual Labor in Agriculture	8%
Casual Labor in Non-Agriculture	7%
Regular wage/salary earning	24.4%
Self-employed in Agriculture	17.9%
Self-employed in Non-Agriculture	22.9%
Unemployed	19.9%
Education	
No education	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%
Diploma/Certificate course	1%
Graduation	10.9%
Post Graduation and above	1.5%
Input score	0.222
Output score	0.208
Outcome score	0.542

Table 7 presents the summary features of the households in the complete response sub-sample. This shows that 19.9% households reported being unemployed while 24.4% reported being regular wage/salary earners. Self employment is the second dominant employment type. Here, 17.9% of the respondents are agriculturists and 22.9% are in the non-agricultural industry. Most respondents reported having completed 10th class education (23.9%) followed by education in classes 6-9 (16.4%) and 12th class education (15.4%) respectively. While 10.9% of the sample reported having completed graduation, 18.9% reported having no education. On an average for the 201 respondents who responded to all these framework questions, the input score is 0.222, the output score is 0.208 and the outcome score is 0.542[14].

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[14]The distribution of the three scores in Appendix B

Table 8: Summary statistics by geographical location of the household

Variable	Chhattisgarh	Tamil Nadu
	Mean	Mean
Monthly income	18,274	15,504
Monthly expenditure	12,677	15,577
Physical asset ownership	0.4345	0.4174
Technology exposure	0.7381	0.8034
HH size	4.964	4.222
Occupation		
Casual Labor in Agriculture	2.4%	12%
Casual Labor in Non-Agriculture	1.2%	11.1%
Regular wage/salary earning	31%	19.7%
Self-employed in Agriculture	9.5%	23.9%
Self-employed in Non-Agriculture	29.8%	17.9%
Unemployed	26.2%	15.4%
Education		
No education	19%	18.8%
Pre primary (Up to 1st standard)	1.2%	0%
2nd to 5th standard	9.5%	12.8%
6th to 9th standard	7.1%	23.1%
Completed 10th standard	29.8%	19.7%
Completed 12th standard	20.2%	12%
Diploma/Certificate course	1.2%	0.9%
Graduation	10.7%	11.1%
Post Graduation and above	1.2%	1.7%
Input score	0.216	0.226
Output score	0.184	0.225
Outcome score	0.603	0.498

Table 8 shows that, while respondents in Chhattisgarh households reported having higher income and physical asset ownership than Tamil Nadu households, they reportedly spent lesser. Similarly, while Chhattisgarh households reported higher perceived financial well-being, they reported lesser participation in finance and using it at a lower frequency. Tamil Nadu households reported higher technology exposure and smaller family size.

Table 9: Summary statistics by gender of the respondent

Variable	Female	Male
	Mean	Mean
Monthly income	15,176	17,473
Monthly expenditure	13,289	14,953
Physical asset ownership	0.3756	0.4513
Technology exposure	0.7042	0.8154
HH size	4.169	4.731
Occupation		
Casual Labor in Agriculture	11.3%	6.2%
Casual Labor in Non-Agriculture	5.6%	7.7%
Regular wage/salary earning	15.5%	29.2%
Self-employed in Agriculture	9.9%	22.3%
Self-employed in Non-Agriculture	7%	31.5%
Unemployed	50.7%	3.1%
Education		
No education	29.6%	13.1%
Pre primary (Up to 1st standard)	1.4%	0%
2nd to 5th standard	11.3%	11.5%
6th to 9th standard	19.7%	14.6%
Completed 10th standard	14.1%	29.2%
Completed 12th standard	14.1%	16.2%
Diploma/Certificate course	0%	1.5%
Graduation	7%	13.1%
Post Graduation and above	2.8%	0.8%
Input score	0.209	0.229
Output score	0.194	0.215
Outcome score	0.493	0.569

From Table 9, males reported higher expenditure, income and physical asset ownership than females. Females also reported lower technology exposure and family size. Males reported higher participation in finance, frequency of using finance, and perceived financial well-being than their female counterparts.

Table 10: Summary statistics by age-group of the respondent

Variable	< 50	>= 50
	Mean	Mean
Monthly income	17,195	15,546
Monthly expenditure	14,253	14,600
Physical asset ownership	0.4277	0.4179
Technology exposure	0.7868	0.7538
HH size	4.713	4.154
Occupation		
Casual Labor in Agriculture	5.9%	12.3%
Casual Labor in Non-Agriculture	5.1%	10.8%
Regular wage/salary earning	30.9%	10.8%
Self-employed in Agriculture	13.2%	27.7%
Self-employed in Non-Agriculture	24.3%	20%
Unemployed	20.6%	18.5%
Education		
No education	11.8%	33.8%
Pre primary (Up to 1st standard)	0.7%	0%
2nd to 5th standard	8.1%	18.5%
6th to 9th standard	16.2%	16.9%
Completed 10th standard	26.5%	18.5%
Completed 12th standard	18.4%	9.2%
Diploma/Certificate course	1.5%	0%
Graduation	14.7%	3.1%
Post Graduation and above	2.2%	0%
Input score	0.229	0.208
Output score	0.209	0.205
Outcome score	0.551	0.522

As seen in Table 10, while the younger respondents reported higher income and physical asset ownership than the older respondents, they reportedly spent lesser. The older respondents reported lower technology exposure and family size. The younger respondents reported higher participation in finance, frequency of using finance, and perceived financial well-being than their older counterparts.

5.2 Observations of sample participation and usage

We observe from the survey sample that, while 74% of respondents reported having access to physical financial infrastructure (cash-in-cash-out touch-point availability within 15 minutes of walking distance), only 27% had access to digital infrastructure in the form of shops and service providers in the respondent's neighbourhood that accepted digital payments. A majority of them owned a smartphone while a small proportion of the respondents had used

digital payment methods in the last one month. Additionally, 70% of the households had outstanding borrowing from formal sources and only six (i.e. 3%) of them did not use informal sources to meet any of their financial needs. 12% of the respondents reported a health shock out of which only three respondents said they relied on insurance for recovering from the shock, in addition to other resources that they tapped into.

We found that the take-up of insurance products such as health and life insurance were at 25% but the ownership of other insurance products such as shop, crop, cattle, and livestock insurance was as low as 4% especially prevalent among those who owned these underlying assets. We found that the participation in transactions assets, primarily bank account, was universal but this was not the case for other asset classes where the average ownership of risk-free assets was at 5%, and that of retirement savings instruments and risky assets was even lower at 2% and 1% respectively[15].

Though nearly everyone reported having a bank account, 86% of the respondents said they used it at least once a month while some (6.5%) reported not using it for more than a year. The usage of risky and risk-free assets was reportedly quite infrequent and only few owned these assets. Same was the case for payment of insurance premium, where the few who owned the product reported paying the premium on time. Although few owned a retirement savings instrument, they reported saving in it at least once a month[16].

From our sample of 201 complete-case responses, the average input score stands at 0.222, translating to ownership of 1-2 financial instruments. The average output score of 0.208 translates to active usage of 1-2 financial instruments.

5.3   Observations about perceived financial well-being

The perceived financial well-being of households was quite mediocre with 0.542 as the reported average outcome score. Deconstructing this further, we found that more than half of the respondents reported being able to meet only some of their daily, basic needs. 47.3% of households said that it was not difficult for them to manage their debts and 79.1% of them had also not been contacted by a FSP for delay in paying their debt installments. When checking for the kind of emergency buffer that households owned, we found that 41% said that their savings would last them between one to two months whereas 36% answered with having a one to three week buffer. Out of the 201 respondents, 4.5% claimed that they would rely on insurance to cope with an emergency. A fifth of the respondents were planning for a long-term goal while this number was even lower, at 14% for retirement planning as an active financial goal. To get a sense of whether poor customer experience could be a barrier to individuals pursuing their financial goals, we asked respondents whether they had had any negative experiences when seeking financial services, and 94% said they had never been subjected to this[17].

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[15]Detailed summary statistics in Appendix A.1
[16]Detailed summary statistics in Appendix A.2
[17]Detailed summary statistics in Appendix A.3

5.4 Observations about financial participation, usage and perceived well-being

In order to capture the link between financial well-being and financial participation, we estimate regressions between the two. However, since both household financial participation as well as household well-being will be strongly correlated with income and wealth, we conduct a series of regressions to identify and isolate the relationship between financial participation (input) and financial well-being (outcome). First, we study the relation between these household characteristics and the three components of financial inclusion (Table 11). Next, we study the relationship between the three components of financial inclusion to understand how the input correlates with the output and outcome, as well as how output correlates with outcome (Table 12). Finally, we study how outcome changes when both the input and output are considered together.

Table 11: How the scores interact with socio-economic features

	Input score	Output score	Outcome score
Monthly income (Rupees ('0000s))	−0.003	−0.004	0.018*
	(0.007)	(0.008)	(0.009)
Technology exposure	0.005	0.018	0.038
	(0.020)	(0.021)	(0.026)
Household size	−0.001	−0.004	−0.008
	(0.005)	(0.005)	(0.006)
Physical infrastructure	0.005	0.002	0.048
	(0.030)	(0.031)	(0.038)
Digital infrastructure	0.033*	0.037*	0.084***
	(0.018)	(0.019)	(0.023)
Digital infrastructure usage	0.028	0.050*	−0.029
	(0.027)	(0.029)	(0.035)
Physical asset ownership	0.117**	0.095*	0.254***
	(0.050)	(0.052)	(0.063)
Constant	0.159***	0.155***	0.353***
	(0.039)	(0.041)	(0.050)
Observations	192	192	192
R^2	0.054	0.068	0.180
Adjusted R^2	0.018	0.033	0.149
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 12: How the scores interact with each other

	Output score		Outcome score					
Input score	0.975***	0.969***	0.314***	0.246***			0.657**	0.679***
	(0.027)	(0.028)	(0.093)	(0.093)			(0.257)	(0.249)
Output score					0.235***	0.159*	−0.353	−0.447*
					(0.090)	(0.090)	(0.246)	(0.239)
Controls								
Monthly income (Rupees ('0000s))		−0.001		0.019**		0.019**		0.019**
		(0.003)		(0.009)		(0.009)		(0.009)
Technology exposure		0.013*		0.037		0.035		0.043*
		(0.008)		(0.026)		(0.026)		(0.026)
Household size		−0.003*		−0.008		−0.007		−0.009
		(0.002)		(0.006)		(0.006)		(0.006)
Physical infrastructure		−0.003		0.046		0.047		0.045
		(0.012)		(0.038)		(0.038)		(0.037)
Digital infrastructure		0.005		0.076***		0.078***		0.078***
		(0.007)		(0.023)		(0.023)		(0.023)
Digital infrastructure usage		0.023**		−0.036		−0.037		−0.026
		(0.011)		(0.035)		(0.035)		(0.035)
Physical asset ownership		−0.018		0.226***		0.239***		0.218***
		(0.019)		(0.063)		(0.064)		(0.063)
Constant	−0.009	0.001	0.472***	0.314***	0.493***	0.328***	0.469***	0.314***
	(0.007)	(0.016)	(0.023)	(0.051)	(0.021)	(0.052)	(0.023)	(0.051)
Observations	201	192	201	192	201	192	201	192
R^2	0.871	0.873	0.055	0.210	0.033	0.194	0.064	0.225
Adjusted R^2	0.871	0.868	0.050	0.176	0.029	0.158	0.055	0.187
Note:						*p<0.1; **p<0.05; ***p<0.01		

From Table 11, we observe that higher levels of physical asset ownership and access to digital infrastructure correlates with higher participation in financial assets, frequency of usage of financial assets as well as perceived financial well being. Additionally, high monthly income correlates with high perceived financial well being or the outcome score[18].

Table 12 shows that higher technology exposure also correlates with higher intensity of using financial assets, and financial well-being. Unlike a higher input score, a higher output score does not co-move with a higher outcome score. When evaluating the financial well-being of a household the additional explanatory power contribution by the inclusion of inputs and outputs is 4 percentage points.[19]

5.5 Implications of learnings from the pilot

Based on our pilot survey, the following revisions have been made to the survey tool in order to measure financial inclusion with a high frequency going forward:

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[18]A Rupees 10,000 increase in income correlates with an increase in the outcome score by 0.018 i.e. higher income households also perceive higher levels of financial well-being.

[19]The value of R^2 in Table 12 indicates that the studied independent variables have a 22.5% explanatory power. This is about 4.5 percentage points greater than the corresponding explanatory power in Table 11, which is 18%.

- *Framing all questions at the household level-* In order to maintain consistency across all questions, we have ensured that the framing of questions are at the household level for all the modules of the questionnaire.

- *Adding a question on member type-* In order to additionally evaluate financial inclusion by differing education levels, occupations, genders, ages etc of respondents, a question on the respondent's relationship with the household head has been added to the questionnaire. The aim of this is to proxy the household head's or their spouse's demographic features as a proxy for the household's demographic characterisation.

- *Reducing the length of the survey-* We have reduced the length of the survey by cutting down on questions that either did not reap meaningful results, or were not understood by the respondents very well or questions that required a lot of explanation from the surveyors to the respondents.

- *Consistency in the number of response options for survey questions-* To make the calculation of financial inclusion scores more straightforward, we revised the responses to questions such that within a component (namely, input, output, outcome) they contain the same number of response options. Because we employ a simple average approach to determine component scores, having a consistent number of options would allow us to eliminate any implicit weighting as a result of different number of response options for different questions.

- *Rebuilding the output module-* Our study results were ambiguous in terms of the relationship between intensity of usage of financial services and financial well-being of households. This led us to believe that there is merit in reworking on the output module by testing a new set of questions. Therefore, instead of defining output merely as the frequency of usage of various financial products, we customise this module further based on the utility different products provide. Therefore, to test the usage of products such as health and life insurance, we intend to build questions around both the cover amount for these types of insurance as well as the ability to use it during an emergency and whether the household was able to settle their claims, if any. Similarly, we intend to rebuild the usage questions for other financial instruments, so that we can capture the usability and relevance of the product for each household.

6 In summary

Financial participation is about owning a suite of formal financial products such as old age income support schemes, insurance, savings and investments in both risk-free and risky assets and payment instruments, while financial usage is about usage of these services to meet one's financial needs, as often as needed.

We use a combination of desk research, secondary data analysis, primary data collection and analysis to understand household-level financial inclusion. The measures include

household-level ownership and frequency of usage (once a month, once in 6 months, once a year, more than a year, etc.) of these instruments to gauge the extent of financial participation and usage. Such a measurement framework goes beyond defining financial inclusion purely from the lens of having a bank account. This is different from the existing mainstream narrative around financial inclusion which gets restricted to bank account ownership only. While the ownership of bank accounts may be an important element of enabling participation in formal finance, a financial inclusion measure with a sole emphasis on bank accounts carries with it the implicit assumption that having bank accounts will automatically translate into usage of bank accounts and other financial services.

We find and present evidence that creating and using measures of financial inclusion that are broad based and include other financial services and products that are available in the formal financial system is important. For example, Gupta and Sharma (2021) create such a composite demand-side index, and when comparing it with an index based solely on bank account ownership find that there is a 30 point difference in the financial inclusion index score differentiating households across states in India.

We implement an input-output-outcome framework to measure financial inclusion at the household level. Here, input is measured as the broad based participation in formal finance. Output is measured as the extent to which households continue to participate in these products and services, especially when the default is that the ownership will lapse without explicit re-engagement (for some products).

While there is some existing work on financial participation, we find that there is, as yet, little to no work on measuring financial inclusion outcomes. Financial inclusion outcomes have typically been measured as financial well-being of households which is a perception of the extent to which a household believes that it has the resilience to withstand economic shocks, and can reach their economic aspirations. We calculate the financial well-being measure by using five components that the literature has been focusing on Dasgupta and Palta (2022):

1. Ability to manage day to day finances

2. Planning for medium-term and long-term goals

3. Manageability of debt and credit discipline

4. Ability to manage and recover from shocks

5. Confidence in one's financial future

We construct a measure of household financial well-being using the responses of a questionnaire administered to a sample of households in a pilot survey done on customers of one FSP in India. We then use this data to create a financial well-being score for the households in the sample, and to analyse the link between household characteristics and its financial well-being. We find a small but statistically significant positive correlation between financial well-being and ownership of formal financial instruments by the household.

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A Framework Questions

A.1 Input variables

Table 13: Summary statistics

	Mean
Q1: Whether respondent owns transactional accounts	
0	4%
1	96%
Q2: Whether respondent owns risk free assets	
0	95%
1	5%
Q3: Whether respondent owns life and health insurance	
0	74.6%
1	25.4%
Q4: Whether respondent owns general insurance	
0	96%
1	4%
Q5: Whether respondent owns risky assets	
0	99%
1	1%
Q6: Whether respondent owns old age income support schemes	
0	98%
1	2%

A.2 Output variables

Table 14: Summary statistics

	Mean
Q1: How often the respondent uses transactional accounts	
0	6.5%
0.5	7.5%
1	86.1%
Q2: How often the respondent uses risk free assets	
0	95.5%
0.5	0.5%
1	4%
Q3: How often the respondent uses life and health insurance	
0	74.6%
0.5	2.5%
1	22.9%
Q4: How often the respondent uses general insurance	
0	96%
0.5	0.5%
1	3.5%
Q5: How often the respondent uses risky assets	
0	99%
0.5	0%
1	1%
Q6: How often the respondent uses old age income support schemes	
0	98%
0.5	0.5%
1	1.5%

A.3 Outcome variables

Table 15: Summary statistics

	Mean
Q1: Household's ability to meet basic needs	
0	9%
0.25	54.2%
0.5	19.9%
0.75	7%
1	10%
Q2: Payments (bills and rent) made on time and in full	
0	16.4%
1	83.6%
Q3: How did they manage these payments	
0	72.6%
1	27.4%
V4: Income - expenditure dynamic	
0	11.4%
0.5	42.8%
1	45.8%
Q5: Difficulty managing debt	
0	32.8%
0.5	19.9%
1	47.3%
Q6: Contacted to pay dues post due date	
0	20.9%
1	79.1%
Q7: Adequacy of liquid savings if income stopped	
0	10.4%
0.25	35.8%
0.5	40.8%
0.75	8%
1	5%
Q8: Time horizon of obtaining INR 7000-8000 for an emergency	
0	4.5%
0.33	28.4%
0.67	36.8%
1	30.3%
Q9: Emergency coping mechanism visualised	
0	95.5%
1	4.5%
Q10: Saving and planning consistently for long term goals	
0	79.6%
1	20.4%
Q11: Saving and planning consistently for retirement	
0	86.1%
1	13.9%
Q12: Agency to take financial decisions	
0	0%
1	100%
Q13: Confidence in financial instruments owned	

0	1.5%
0.33	7%
0.67	37.8%
1	53.7%
Q14: Frequency of negative financial experiences	
0	0%
0.33	2%
0.67	4%
1	94%
V15: Financial security	
0	25.9%
0.5	73.1%
1	1%

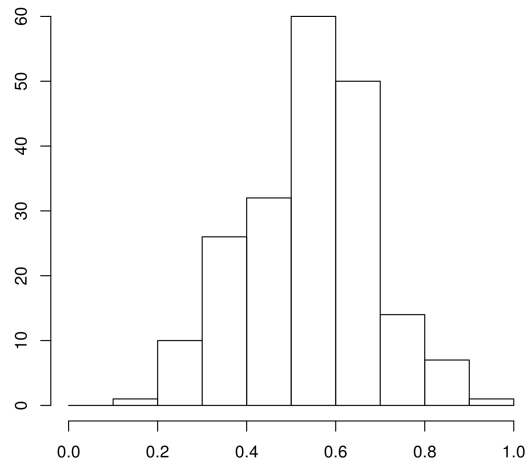V: Constructed variables.

B   Distributions of the scores
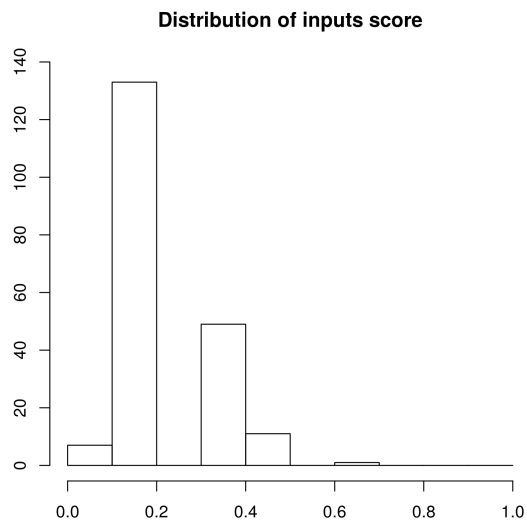
Distribution of outputs score
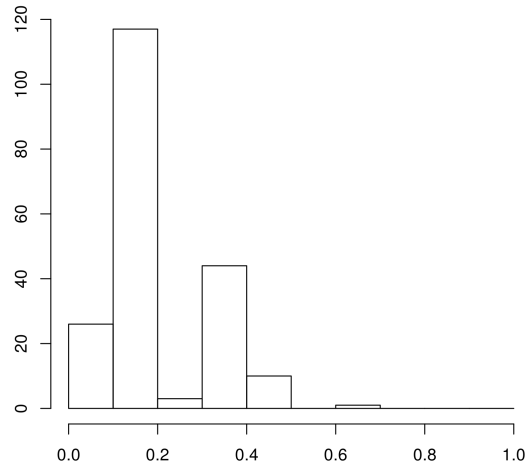
Distribution of outcomes score

C   Data analysis by state

From Table 16, we observe that higher levels of physical asset ownership and access to digital infrastructure correlates with higher participation in financial assets and frequency of usage of financial assets. Higher outcome score or perceived financial well being correlates with high monthly income, higher levels of physical asset ownership and smaller family size.[20] While Tamil Nadu households report higher usage frequency of formal finance, they perceive their well-being to be lower than their Chhattisgarh counterparts.

Table 17 shows that higher technology exposure also correlates with higher frequency of using financial assets. When evaluating the financial well-being of a household, the additional explanatory power contribution by the inclusion of inputs and outputs is 4 percentage points.[21]

Table 16: How the scores interact with socio-economic features

	Input score	Output score	Outcome score
Tamil Nadu	0.024	0.077***	−0.096***
	(0.021)	(0.021)	(0.026)
Monthly income (Rupees ('0000s))	−0.003	−0.004	0.018*
	(0.007)	(0.007)	(0.009)
Technology exposure	0.004	0.015	0.041
	(0.020)	(0.021)	(0.025)
Household size	0.0004	−0.0001	−0.013**
	(0.005)	(0.005)	(0.006)
Physical infrastructure	0.005	0.001	0.048
	(0.030)	(0.030)	(0.037)
Digital infrastructure	0.049**	0.089***	0.020
	(0.023)	(0.023)	(0.028)
Digital infrastructure usage	0.020	0.022	0.006
	(0.028)	(0.029)	(0.035)
Physical asset ownership	0.126**	0.125**	0.217***
	(0.050)	(0.051)	(0.062)
Constant	0.134***	0.073	0.455***
	(0.045)	(0.045)	(0.056)
Observations	192	192	192
R^2	0.061	0.132	0.237
Adjusted R^2	0.020	0.094	0.204
Note:		*p<0.1; **p<0.05; ***p<0.01	

[20]A Rupees 10,000 increase in income correlates with an increase in the outcome score by 0.018 i.e. higher income households also perceive higher levels of financial well-being. An increased member in the family reduces the outcome score by 0.013, i.e. drives perception of well-being down.

[21]The value of R in Table 17 indicates that the studied independent variables have a 27.6% explanatory power. This is about 4 percentage points greater than the corresponding explanatory power in Table 16, which is 23.7%.

Table 17: How the scores interact with each other

	Output score		Outcome score					
Input score	0.968***	0.953***	0.336***	0.277***			0.176	0.252
	(0.025)	(0.025)	(0.086)	(0.089)			(0.256)	(0.270)
Output score					0.326***	0.261***	0.166	0.026
					(0.084)	(0.089)	(0.248)	(0.267)
<u>Controls</u>								
Tamil Nadu	0.032***	0.055***	−0.108***	−0.103***	−0.118***	−0.116***	−0.114***	−0.104***
	(0.005)	(0.007)	(0.019)	(0.025)	(0.019)	(0.026)	(0.021)	(0.029)
Monthly income (Rupees ('0000s))		−0.001		0.019**		0.019**		0.019**
		(0.002)		(0.009)		(0.009)		(0.009)
Technology exposure		0.011*		0.040		0.037		0.040
		(0.007)		(0.025)		(0.025)		(0.025)
Household size		−0.0005		−0.013**		−0.013**		−0.013**
		(0.002)		(0.006)		(0.006)		(0.006)
Physical infrastructure		−0.003		0.046		0.048		0.047
		(0.010)		(0.036)		(0.036)		(0.036)
Digital infrastructure		0.042***		0.007		−0.003		0.006
		(0.008)		(0.028)		(0.029)		(0.030)
Digital infrastructure usage		0.003		0.001		0.0003		0.001
		(0.010)		(0.034)		(0.035)		(0.035)
Physical asset ownership		0.005		0.182***		0.184***		0.182***
		(0.017)		(0.062)		(0.062)		(0.062)
Constant	−0.026***	−0.055***	0.530***	0.418***	0.543***	0.436***	0.535***	0.419***
	(0.007)	(0.015)	(0.024)	(0.056)	(0.021)	(0.055)	(0.025)	(0.058)
Observations	201	192	201	192	201	192	201	192
R^2	0.890	0.905	0.187	0.276	0.186	0.272	0.188	0.276
Adjusted R^2	0.889	0.900	0.178	0.240	0.178	0.236	0.176	0.236
Note:								*p<0.1; **p<0.05; ***p<0.01

D Questionnaire administered

The questionnaire that was administered to the 310 respondents, each representing 310 distinct households, is attached below for further perusal. This questionnaire was last edited on June 7, 2021.

Consent form:

Hi, we are researchers trying to study the level of financial inclusion in India. For this we will be conducting a survey with you which can take up to 25 minutes. Is this a good time to talk to you or would you like us to call you later? (In case the surveyor expresses a will to participate at a later time, then confirm when and call back at that time).

Description of project: This research is being conducted to gauge the manner in which households interface with the financial system in the country. The focus of this project is to study the interaction of households especially with the formal financial system.

Participation: Your participation in this survey is voluntary. You may refuse to take part in the research or exit the survey at any time without penalty. You may skip any question you do not wish to answer for any reason.

Confidentiality: The answers that you give in response to the survey questions will be kept confidential. Personally identifiable information will be delinked from the data collected. The data will be stored on a password protected online server.

Benefits and risks: You will receive no direct benefits from participating in this research study. However, your responses may help us learn more about your interaction with the formal financial system. There are no foreseeable risks involved in participating in this study other than those encountered in day-to-day life.

- *The possible risks or discomforts of the study are minimal. You may feel a little tired answering many survey questions*
- *There is the risk that you may find some of the questions to be sensitive*

Contact information: *phone number and e-mail of the survey agency*

Advice for enumerators: Text in italics does not have to be read out. Mention that the respondent can refuse to answer any question of the survey. Don't read out the options in prompts (prompts have been put inside round brackets) unless the respondent is unable to give an answer or asks for examples. Don't give the "don't know" option in the beginning.

Consent {proceed only if the answers to each of these is yes}**:**

1. Are you 18 years or older?
   a. Yes
   b. No
2. Do you have a fair understanding of the financial decisions of this household?
   a. Yes
   b. No
3. Do you consent to participate in this survey?
   a. Yes
   b. No

Pre -pilot survey questionnaire for measuring financial inclusion

Begin by reading this out to the respondent: The household is defined as an entity satisfying the following conditions:

1. Composed of blood relatives
2. Sharing the same kitchen if they physically reside in the same house
3. Non-residents of the household who are still considered a part of your household; for example- a child who has migrated for work is considered a part of this household while a married daughter is not

1. Household Features (Socio-demographic)

a. *State*- Household level: To be pre-filled by surveyor

b. *District*- Household level: To be pre-filled by surveyor

c. *City or village name*- Household level: Which village or city are you residing in?

d. *Region type*- Household level: What is your region type?

    i. Rural

    ii. Urban

e. *Household ID*- Household level: Pre-assigned

f. *Household size*- Household level: How many members are there in your household? (Table 1 should have columns for as many members as answered for this question)

g. *Migration status* - Household level: How many members of your household have migrated?

Household Roster

h. *Names of members*- Member level: (always ask the name of the respondent first followed by other household members)

i. *Member ID*- Member level: Automatically assigned

Table 1

Q. no.	Question	Options	Member 1	Member 2	Member 3	Member 4	Skips
1.j.	*Age*- Member level: What is your age in years, completed as of today?						
1.k..	*Gender*- Member level: What is your gender?	i. Male ii.Female iii.Others					

1.l.	*Marital status*- Member level: What is your marital status?	i.Never married ii.Married iii.Divorced iv.Separated v.Do not want to disclose					
1. m.	*Occupation category*- Member level: How would you classify your occupation?	i.Self-employed in Agriculture ii.Self-employed in Non-Agriculture iii.Regular wage/salary earning iv.Casual Labor in Agriculture v.Casual Labor in Non-Agriculture vi. Unemployed vii. Retired viii.Others					
1.n.	*Education*- Member level: What is your education qualification?	i.No education ii.Pre primary (Up to 1st standard) iii.2nd to 5th standard iv.6th to 9th standard v.Completed 10th standard vi.Completed 12th standard vii.Diploma/Certificate course viii.Graduation ix.Post Graduation and above					

1.o.	*KYC documents* - Member level; Do you have the following KYC documents yes or no	i.Address proof eg: Aadhar/ rent agreement/ electricity bill/ sale deed/ passport/ voter ID/ driving license ii. Identity proof eg: Passport/ voter ID/ driving license/ student ID card from a renowned institute iii. PAN card	i. ii. iii.				4

2. Financial services infrastructure

    a. *Physical infrastructure/Cash-in-cash-out (CICO) touchpoint availability*- Household level: Would you be able to use a financial service access point such as bank branch, post office, AEPS/kirana store/Business Correspondent, ATM, within 15 minutes of walking distance as and when required?

        i.   Yes

        ii.   No

        iii.   Don't know

    b. *Digital infrastructure*- Household level:

        i.   In the last one month, did anyone in your household use any digital mode of financial services (that is services through an electronic platform like mobile phones, debit or credit electronic cards, internet, payment wallets such as Google-pay, Paytm, etc.) for the purpose of

            1. Transfering money

                a. Yes

                b. No

                c. Don't know

            2. Bill payment

                a. Yes

                b. No

                c. Don't know

            3. Merchant payment (for any purchases you made)

                a. Yes

                b. No

                c. Don't know

            4. Receiving wages/ salary from employer digitally (bank account/e-wallet)

                a. Yes

b. No

c. Don't know

d. Not applicable since not in a salaried occupation

5. Receiving government transfers digitally (from MGNREGS, PM-KISAN scheme, maternity or any other state level schemes)

a. Yes

b. No

c. Don't know

d. Not eligible for any such scheme

ii. Do shops and other service providers (eg: beauty parlours, hairdressers etc.) in your locality accept payments digitally?

1. Yes

2. No

3. Don't know

c. *Product documents in vernacular language*- Household level: In your go-to financial institutions, do you find financial product documents in the vernacular language? For example: Tamil, Hindi etc

i. Yes

ii. Yes, for some products

iii. No

iv. Not applicable (I don't have a go-to financial institution)

v. Don't know

3. Household assets and liabilities

3.1 Physical assets

1. *Property ownership*- Household level: How many units do you own each of the following:

a. Plot of land for non-agri purpose

b. Independent house/ residential apartment

c. Office space

d. Shop

e. Plot of land for agri purpose

2. *Living arrangement*- Household level: Which of these describes your living arrangement:

a. Own the house you live in

b. Pay rent for the house you live in

c. Don't know

3. *Vehicles*- How many units do you own of each of the following {Note for surveyors: in case the respondent reports a surprisingly high number of

vehicles then please clarify if the vehicles are used for any business purposes. Mention this in the notes section at the end of section.} :
   a. Bicycle
   b. Motorbike/ scooter
   c. Car
   d. Tractor

4. *Livestock-* Do you own livestock (cow, buffalo, goat/rooster etc.):
   a. Yes
   b. No
   c. Don't know

5. *Mobile and network-*
   a. Does anyone in the household own a smartphone?
      i. Yes
      ii. No
      iii. Don't know
   b. Does anyone in the household own a regular mobile phone (not a smartphone)?
      i. Yes
      ii. No
      iii. Don't know
   c. Is there network access on your mobile (are you able to make or receive calls)?
      i. Yes
      ii. Sometimes
      iii. No
      iv. Don't know
   d. Is there internet access (mobile data, wifi or portable internet devices like JioFi etc)?
      i. Yes
      ii. Sometimes
      iii. No
      iv. Don't know

6. *Gold-* Does anyone in your household own gold (gold bars or gold jewellery or gold coins)?
   a. Yes
   b. No
   c. Don't know

3.2 Formal financial system

3.2.1 Formal financial assets (INPUT & OUTPUT)

a. *Transactional assets (like savings bank account or post-office savings account*):

a.1. Access- Household Level: Does anyone in your household own at least one such account?

    1. Yes

    2. No

    3. Don't know

a.*2 Access*- Respondent level: Do you own at least one such account? (if no, skip a.3)

    1. Yes

    2. No

    3. Don't know

a.3.*Usage*- Respondent level: How often do you deposit/withdraw/operate such an account?

    a. many times in a month

    b. once a month

    c. once in 3 months

    d. once in 6 months

    e. once in 12 months

    f. more than a year ago

b. *Risk free assets (like fixed and recurring deposits, National Savings Certificate, Kisan Vikas Patra or post-office time deposit a/c):*

b.1. Access-Household level : Does anyone in your household own at least one such financial instrument?

    1. Yes

    2. No

    3. Don't know

b.*2. Access*- Respondent level: Do you own at least one such financial instrument? (If no, skip b.3.)

    1. Yes

    2. No

    3. Don't know

b.3. .*Usage*- Respondent level: How often do you use (invest in/ withdraw from) this set of products?

    a. many times in a month

b. once a month

c. once in 3 months

d. once in 6 months

e. once in 12 months

f. more than a year ago

c. *Insurance for covering health shocks- (life insurance (*such as Term Life Policy, Whole Life Policy, Endowment Plan, ULIP or Money Back Plan)*, health or medical insurance, accident insurance)* -

c.1. Access - Household Level : Does anyone in your household own such an insurance policy?

1. Yes
2. No
3. Don't know

c.2 *Access*- Respondent level: Do you own such an insurance policy? (If no, skip c.3.)

1. Yes
2. No
3. Don't know

c.3. *Usage*- Respondent level: How often do you pay a premium for or renew your investment in this set of products?

a. Whenever it is due

b. Sometimes

c. Paid premium but did not renew it

d. Do not need to pay premium/ renew it (true in case of a public insurance scheme)

d. *Shop, cattle and livestock, and crop insurance* -

d.1 Access - Household level: Does anyone in your household own any such insurance policy?

1. Yes
2. No
3. Don't know
4. Not applicable

d.2 *Access*- Respondent level: Do you own any such insurance policy? (If no, or not applicable, skip d.3.)

1. Yes
2. No
3. Don't know
4. Not applicable

d.3. *Usage*- Respondent level: How often do you pay a premium for or renew your investment in this set of products?

    a. Whenever it is due

    b. Sometimes

    c. Paid premium but did not renew it

    d. Do not need to pay premium/ renew it (true in case of a public insurance scheme)

e. *Risky assets (like listed shares, mutual funds or gold ETF):*

e.1. Access - Household level: Does anyone in your household hold at least one such financial instrument?

1. Yes
2. No
3. Don't know

e.2 *Access*- Respondent level: Do you hold at least one such financial instrument as of today? (If no, skip e.3.)

1. Yes
2. No
3. Don't know

e.3.*Usage*- Respondent level: How often do you use (invest in/buy or sell/withdraw from) this set of products?

    a. many times in a month

    b. once a month

    c. once in 3 months

    d. once in 6 months

    e. once in 12 months

    f. more than a year ago

f. *Old age income support* (like PMVVS, NOAPS, NWPS, NDPS, APY, NPS, PPF, EPF, or Senior Citizens Savings Scheme (SCSS) by post offices)-

f.1. *Access*- Household level : Does anyone in your household own a retirement or pension account?

1. Yes

2. No

3. Don't know

f.2 *Access*- Respondent level: Do you own a retirement or pension account ? (If no skip f.3.)

    1. Yes

    2. No

    3. Don't know

f.3. .*Usage*- Respondent level: How often do you deposit in /withdraw from such an account?

    a. many times in a month

    b. once a month

    c. once in 3 months

    d. once in 6 months

    e. once in 12 months

    f. more than a year ago

g. *Financial advice (product suitability)*- Respondent level: Who did you receive financial advice from, for any formal financial asset:

    i. Same financial service provider that you approached

    ii. Third party financial advisor

    iii. Social network

    iv. Did not seek advice

    v. Did not receive advice

    vi. Don't know

3.2.2. Formal financial liabilities

a. *Loan from formal sources*- Household Level : Does anyone in your household have an outstanding borrowing from Banks, NBFC dealers, SHGs (either via a bank loan or an NGO linked SHG), MFIs or credit cards for any purpose?

    i. Yes

    ii. No

    iii. Don't know

b. *Loans from formal sources*- Respondent level: Do you have an outstanding borrowing from Banks, NBFC dealers, SHGs, or MFIs or credit cards for any purpose?

    i. Yes

    ii. No

    iii. Don't know

c. *Financial advice (product suitability)*- Respondent level: Who did you receive financial advice from, for formal credit:

  i) Third party financial advisor

  ii) Social network

  iii) Did not seek advice

  iv.) Did not receive advice

  v) Don't know

d. *Turned Down for Credit*- Respondent level: In the past 12 months, in case you tried to get a loan from a formal financial institution, did you get rejected?

  i. Yes

  ii. No

  iii. Did not try

  iv. Don't Know

3.3. Informal financial system

a. Household level: What all do you rely on informal financial products for {select all that apply}

  i. Day-to-day functioning

  ii. Borrowing

  iii. Sale of assets (eg gold, livestock, other physical asset)

  iv. Financing unexpected events (eg medical shocks)

  v. Financing expected life events (eg marriage, education)

  vi. Others, please specify

  vii. Do not use informal finance

  viii. Don't know

4. **Household cash flows**

a. *Household income*- Household level: What was the monthly income of the whole household in the last year on an average?

b. *Household expenditure*- Household level: What was the monthly expenditure on food, transport, utilities, medical expenses, education etc., of the whole household in the last year on an average?

c. *Income volatility*-

  i. Household level: In any given month per year, are you certain about how much money your household will get as income?

    1. Yes

    2. No

    3. Don't know

ii. Household level: In any given month per year, are you certain about when your household will get its income?
1. Yes
2. No
3. Don't know

d. *Expenditure volatility-*
i. Household level: In any given month per year, are you certain about how much money your household will spend?
1. Yes
2. No
3. Don't know
ii. Household level: In any given month per year, are you certain about when your money is likely to be spent?
1. Yes
2. No
3. Don't know

5. Medical expenditure

To be read out to the respondent: Health shocks are defined as unpredictable illnesses that diminish health status, and are among the most important factors associated with poverty in this context. Households facing health shocks are often affected by both the payments for medical treatment and the income loss from an inability to work.

a. *Health shock* - Household level: Over the last 12 months, did your household have to make any unexpected medical expenditure? (if yes, then ask 5b and 5c else, skip to section 6)
i. Yes
ii. No
iii. Don't know

b. *Medical expenses* - Household level: What was the total medical expenditure that the household incurred in the last 12 months on the following:
i. Primary medical care (does not require hospitalisation)
ii. Secondary medical care (requires one-time short-term hospitalisation)
iii. Tertiary medical care (requires recurring/prolonged hospitalisation)

c. *Handling unforeseen medical expenditure* - Household level: How did you deal with this medical emergency: {select all that apply}
i. rely on your social network (For example: Friends, immediate family, relatives, neighbours, employer and/or local authorities)
ii. rely on insurance

       iii.   draw down savings/investments

       iv.   borrow

       v.   sell gold

       vi.   Sell other physical asset

       vii.   pledge gold

       viii.   pledge other physical asset

       ix.   Don't know

6. Financial well-being

6.1 Day-to-day functioning

a. *Ability to meet basic needs* - Household level: Is your household able to meet basic needs?
   i. Cannot meet basic needs
   ii. Can meet some basic needs
   iii. Can meet most basic needs
   iv. Can meet all basic needs with no surplus left over
   v. Have money left over after meeting basic needs
   vi. Don't know

b. *Payments made on time and in full* - Household level: Over the last 3 months, were you able to make your payments (bills and rent) on time and in full?
   i. Yes
   ii. No
   iii. Don't know

c. *Managing payments*- Household level: How did you manage to make these payments?
   i. Used monthly disposable income
   ii. Used savings
   iii. Borrowed
   iv. Sold an asset
   v. Broke an FD
   vi. Tapped into retirement savings
   vii. Did not pay insurance premium

6.2 Borrowing

a. *Manageability of debt* - Household level: Does paying back the money you owe (to any lender) make it difficult for you to pay for other things you need?
   i. Yes
   ii. Sometimes

       iii.   No

       iv.   Don't know

b. *Credit discipline* - Household level: In the past 12 months, have you been contacted by a person or company trying to collect debt from you when it was past your due date?

       i.   Yes

       ii.   No

       iii.   Don't know

6.3. Resilience

a. *Adequacy of liquid saving* - Household level: How many weeks or months would your savings last if your income stopped?

       i.   Less than a week

       ii.   1-3 weeks

       iii.   1-2months

       iv.   3-5 months

       v.   6 months or more

       vi.   Don't know

b. *Ability to obtain a lump sum for emergency (time horizon)* - Household level: If you have to get money for an emergency (Rs. 7000-8000) how quickly can you get it?

       i.   Immediately

       ii.   Less than a week

       iii.   Between 1-2 weeks

       iv.   More than 2 weeks

       v.   Don't know

c. *Handling unforeseen expenditure* - Household level: If you found yourself needing extra money to cope with an emergency (medical or otherwise), how would you deal with it: {select all that apply}

       i.   rely on your social network (For example: Friends, immediate family, relatives, neighbours, employer and/or local authorities)

       ii.   rely on insurance

       iii.   draw down savings/investments

       iv.   borrow

       v.   sell gold

       vi.   Sell other physical asset

       vii.   pledge gold

       viii.   pledge other physical asset

       ix.   Don't know

6.4 Planning

    a. *Long-term goals* - Household level: Are you planning and saving consistently for your long term goals?

        i.   Yes

        ii.   No

        iii.   Don't know

    b. *Retirement savings* - Household level: Are you planning and saving consistently for your old age?

        i.   Yes

        ii.   No

        iii.   Don't know

6.5 Perception

    a. *Financial Control* - Respondent level: Do you think you have the agency to take financial decisions?

        i.   Yes

        ii.   No

        iii.   Don't know

    b. *Product satisfaction* - Respondent level: How confident are you that your financial instruments will provide support when you need them to?

        i.   Very confident

        ii.   Somewhat confident

        iii.   Slightly confident

        iv.   Not at all confident

        v.   Don't know

    c. *Negative Financial Services Experiences* - Respondent level: How often have you had negative experiences with financial services where you did not feel respected or where you felt mistreated or any other kind of negative experiences (Experience problems- discrimination, long waiting time etc)?

        i.   Always

        ii.   Frequently

        iii.   Sometimes

        iv.   Never

        v.   Don't know

(Note - Under financial well-being, variables such as income vs. expenditure (under day-to-day savings) and financial security (under perception) can be imputed using existing questions included in the survey)