What do financial inclusion indexes measure?

Geetika Palta   Susan Thomas

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Broad consensus on objectives of a financial inclusion index

1. Be household centric
2. Should capture *input* – *output* – *outcome*
3. Should be applicable to identify gaps across different customer types
4. Should be *timely* – regularity and frequency of measurement.

A proposed approach

- Consumer Pyramids Household Survey captures information for
  - Financial participation
  - Income
  - Consumption

  at the level of the household, thrice a year.
- We propose to measure:
  1. household financial participation as a measure of *input*.
  2. changes in participation as a proxy measure for usage of financial instruments as *output*.
  3. household consumption level and volatility as a proxy measure of *outcome*.

Measuring financial inclusion for a household

- Financial inclusion can be visualised as

  the gap in *input* – *output* – *outcome*

  between a high percentile household and a low percentile household by income.
- The higher the gap, the *worse* the inclusion.

  The lower the gap, the *better* the inclusion.
- For example, what does this approach tell us about financial inclusion between the $25^{th}, 75^{th}$ percentile households by income?

Data work

CPHS financial variables for households and their members

01 Household ownership of at least one **bank account**

02 Household ownership of at least one **health insurance**

03 Household ownership of at least one **life insurance**

04 Household ownership of at least one **employee provident fund account**

05 Outstanding investment at a household level in **fixed deposit**

06 Outstanding investment at a household level in **kisan vikas patra**

07 Outstanding investment at a household level in **national savings certificate**

08 Outstanding investment at a household level in **post office savings account**

09 Outstanding investment at a household level in **mutual funds**

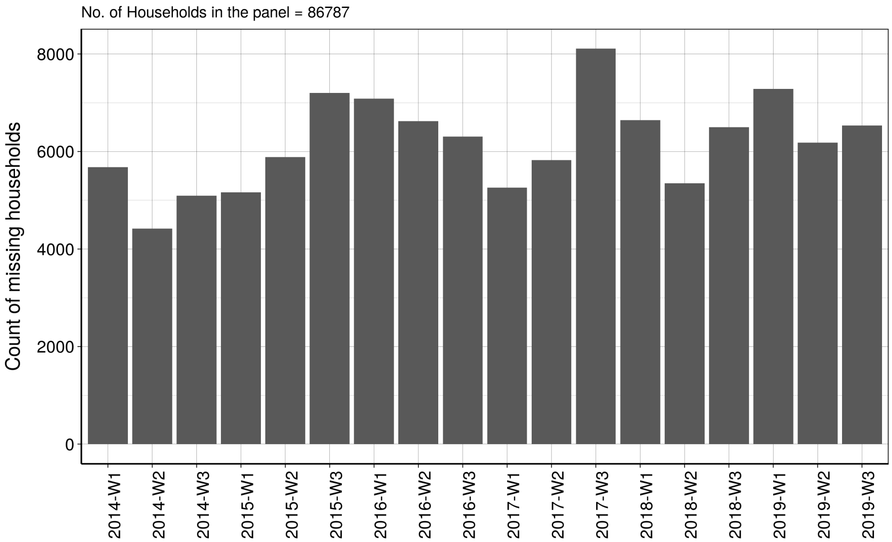
10 Outstanding investment at a household level in **listed shares**

Note: We do not include debt in this list.

Picking a sample

- If we want to understand how financial inclusion matters for a household, we should ideally observe the same household over a period of time.
- What sample should we pick?
- Identify households in the 'balanced' panel:
  $\rightarrow$ those observed in **at least two waves** every year.
- Calculate the financial participation score per household per year.
- We can calculate this from 2014 to 2019

Sample size: How many households in the balanced panel?



A simple financial participation score for a household

A simple score:
average of the 10 binary variables.

Possible values: range from 0 to 1.

Inference: the closer the score is to 1, the higher the household participation or inclusion.

(The above score can be replaced by other approaches such as the PCA.)

A simple output measure: change in state of financial participation

Calculate the following per year per household:

1. C = Average change in financial participation score (can be +, -, 0)
2. D = Standard deviation of change in financial participation score (can be +, 0)
3. Identify a household as a non-user of finance in a year if:

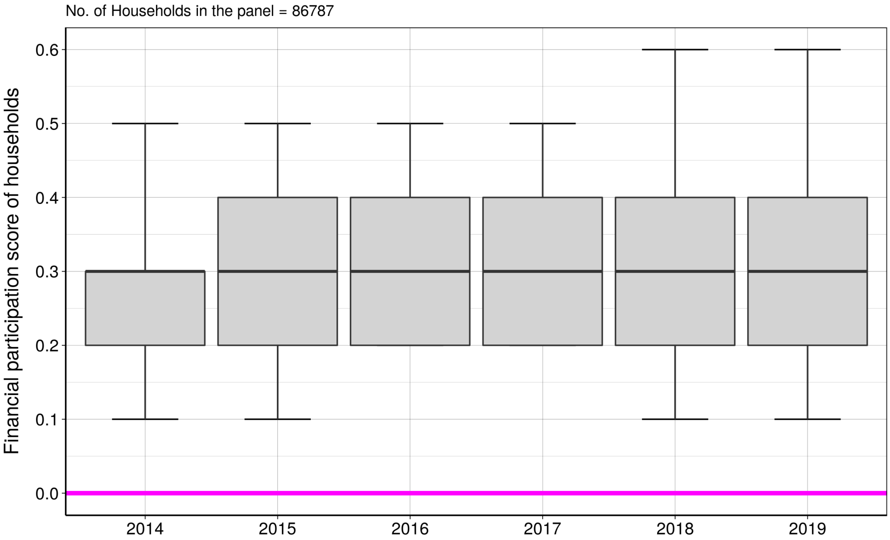
   $D = 0$ in a year

   Else, identify a household as a user of finance.
4. Capture the direction of usage for a household which uses finance:
   - Positive if $C > 0$
   - Negative if $C < 0$
   - Both if $C = 0$

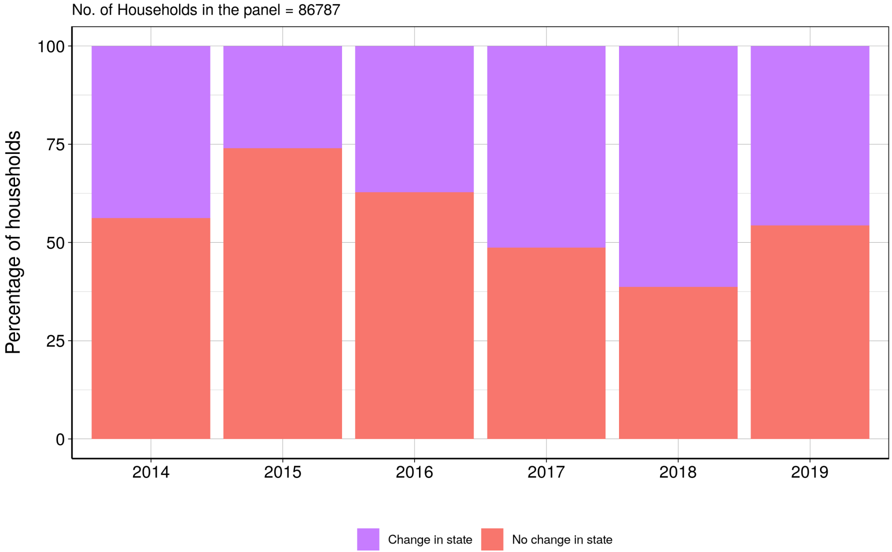
What does the balanced panel data look like?

Financial participation score by year

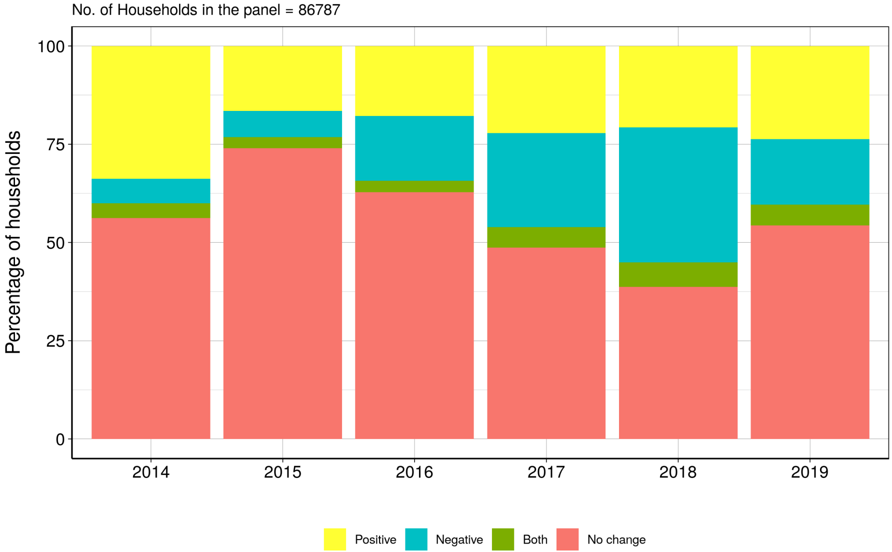
Balanced panel



C: Change in state of financial participation

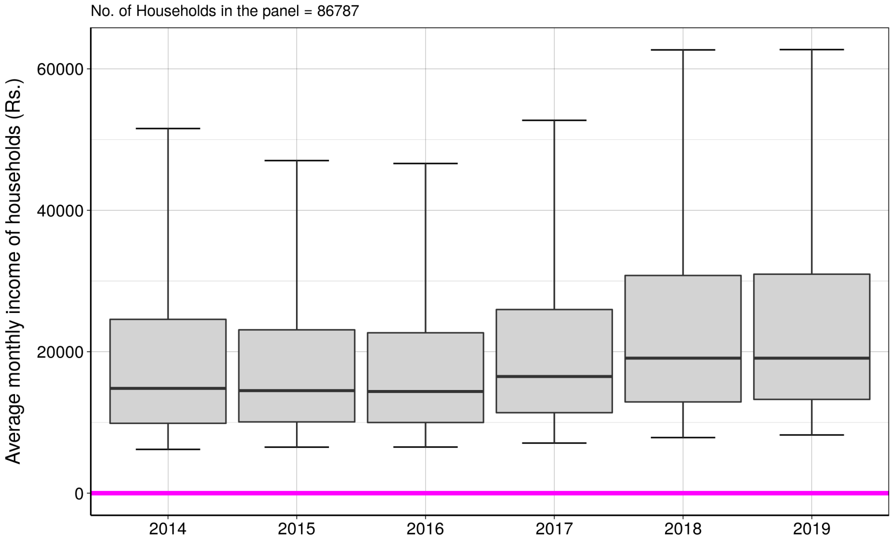


D: Direction of change in state of financial participation



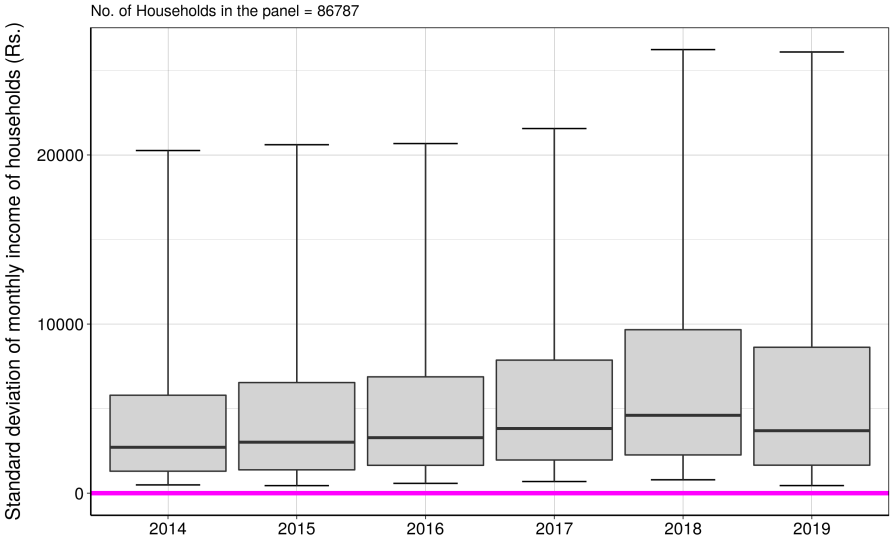
Household income by year

Balanced panel



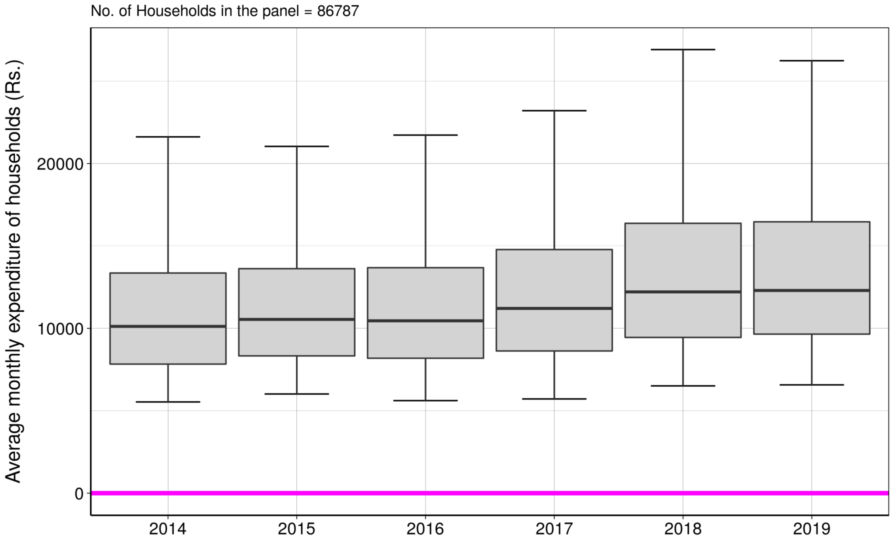
Income volatility by year

Balanced panel



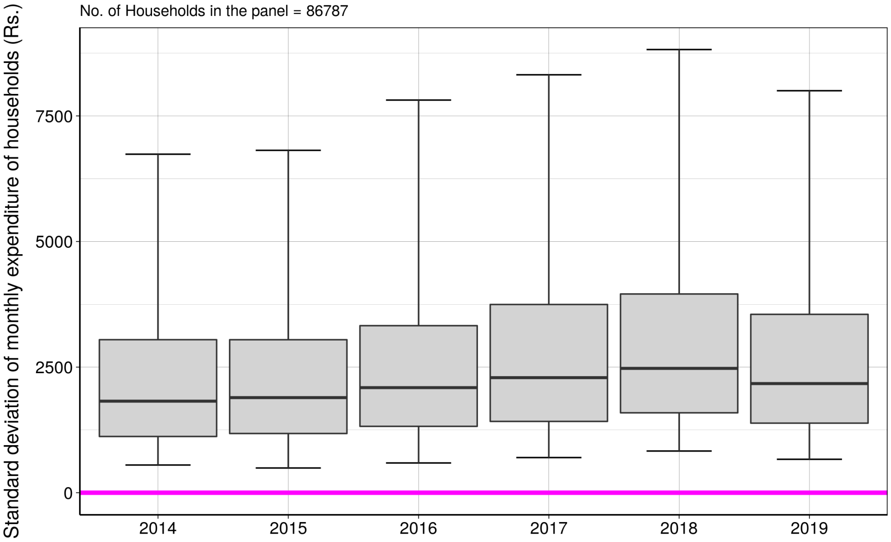
Expenditure levels by year

Balanced panel



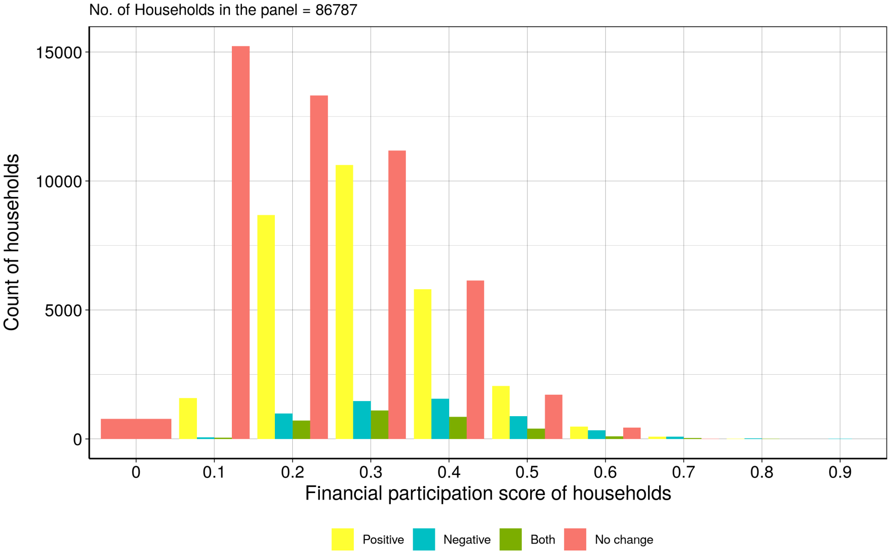
Volatility of expenditure by year

Balanced panel

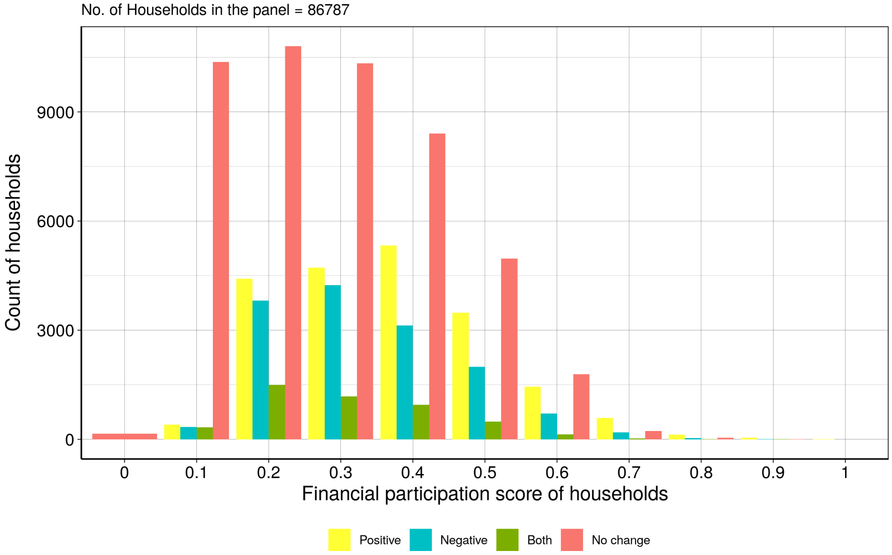


Financial inclusion by participation and usage

Variation in financial usage by participation, 2014

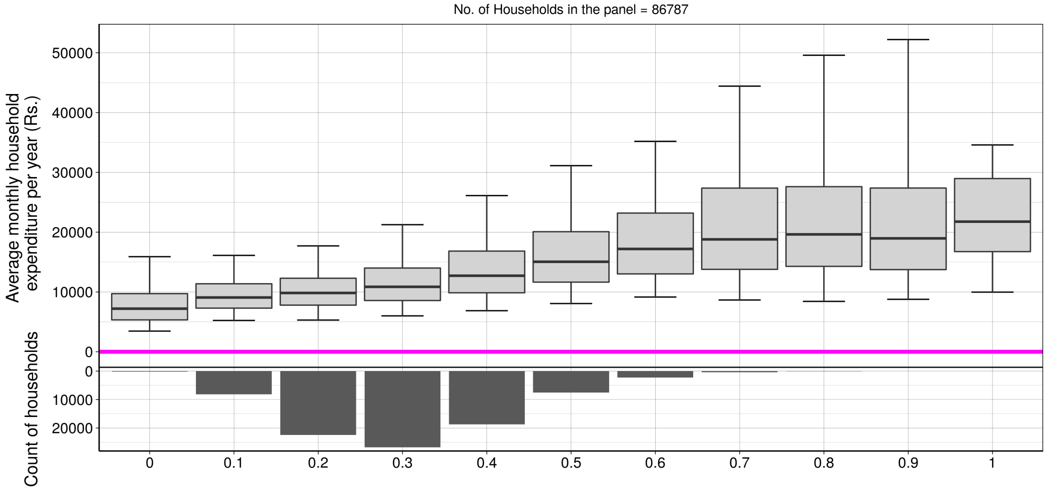


Variation in financial usage by participation, 2019

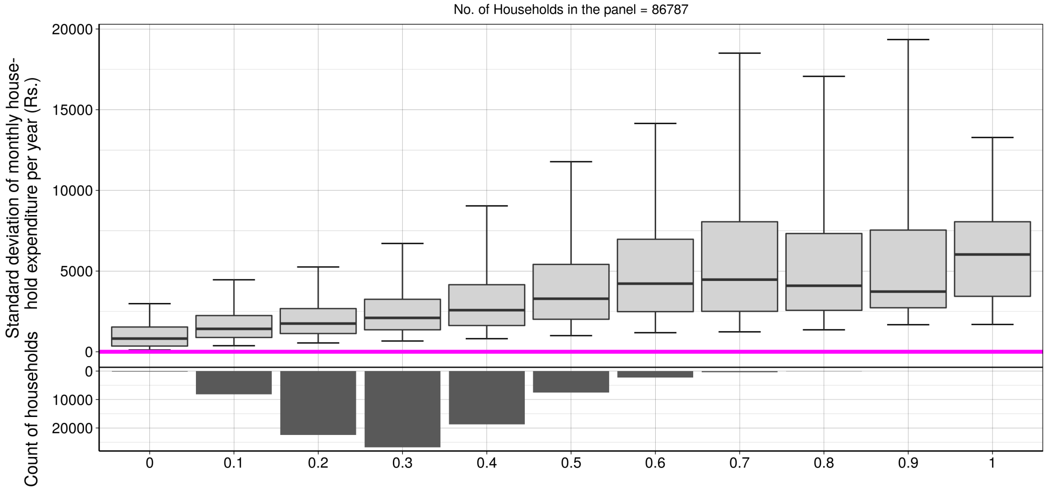


Variation of household consumption by financial inclusion measures, balanced panel

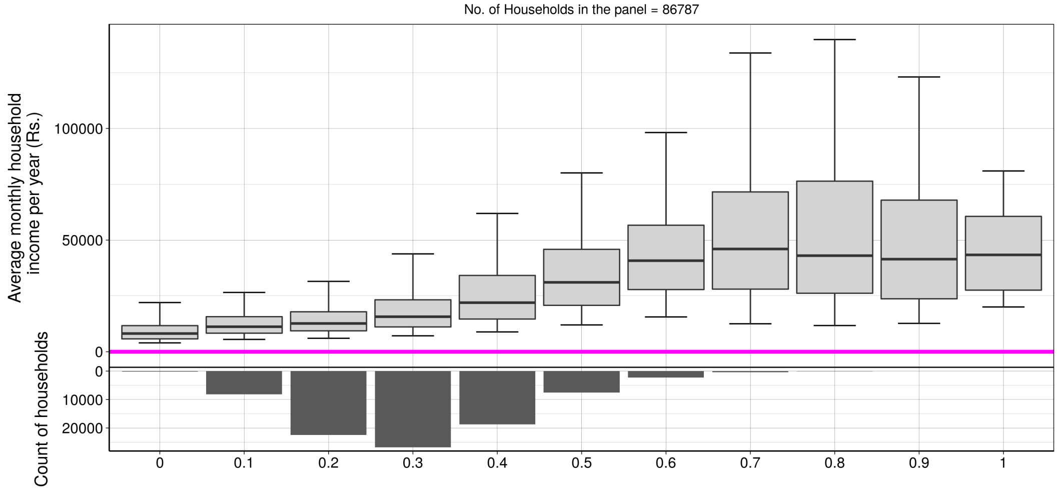
Average consumption and financial participation



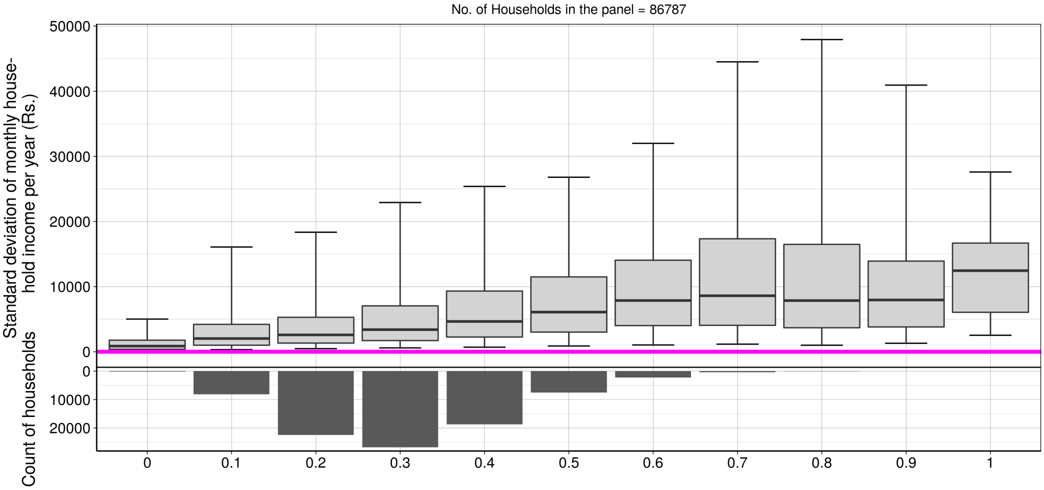
Consumption volatility and financial participation



Average income and financial participation



Income volatility and financial participation



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- Disentangling confounding effects:
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  2. Wealth, income and financial participation

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- Applying participation and usage scores to households at the ends of the income distribution:

  10^{th} vs. 90^{th} percentile, 25^{th} vs. 75^{th} percentile.
- Changes as proxy for usage: how does the *type of change* matter?

  For example, shift in household participation from Fixed Deposits to Insurance vs. Life insurance to Health insurance.

Thank you

Questions? Comments?

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