



A COLLABORATION WITH



ESCoE Research Seminar

Do the rich still save more if we use better data?

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Do the rich still save more if we use better data?

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Motivation

- ▶ Do more affluent households save a larger fraction of current income than poorer households? Important for:
 - ▶ alternative macroeconomic models
 - ▶ incidence of consumption taxes
 - ▶ intergenerational transmission of advantage
- ▶ In cross-sectional survey data, high income households appear to save a larger share of their income than lower income households
- ▶ But no broad increase in aggregate savings rates over time even though real per capita incomes have risen

Assessing the slope of the saving function difficult

1. **Measurement error (ME)** introduces bias
 - ▶ a positive ME in income raises implied saving and biases the slope
 - ▶ this applies to classical and non-classical measurement error
 2. **Transitory shocks** bias the slope if consumption expenditure depends on long-run and not current income (Friedman 1957)
 - ▶ similar to the classical ME in income case
- ▶ Literature has attempted to address classical ME and transitory shocks using **instruments variables (IVs)** (e.g. Dynan et al. 2004; Alan et al. 2015)
- ▶ but recent evidence indicates non-classical measurement error
 - ▶ income is underreported among the poor (Sabelhaus and Groen 2000; Meyer and Sullivan 2003, 2011; Brewer et al. 2017)
 - ▶ consumption expenditure is under-reported among the rich (Crossley and ODea 2010)

What we do

- ▶ Revisit the relationship between the saving rates and income in the context of an experimental data collection
 - ▶ Collect information on the full household budgeting identity in a single household survey
 - ▶ **New approach:** reduce ME in both income and consumption expenditure directly
- ▶ Information on the full budget constraint can help identify where ME occurs
 - ▶ $Y - C \equiv \Delta W$
- ▶ Key idea: improve data quality through **reconciliation**
 - ▶ Present the budget constraint in the survey interview

Advantages of our new approach over IV

- ▶ Even if ME in income is classical (mean zero and uncorrelated with the true value) it is hard to find good instruments
 - ▶ short leads and lags of income are invalid instruments if ME is persistent
- ▶ In principle, reduces all forms of ME
 - ▶ IVs cannot address non-classical ME, which recent evidence shows is prevalent
- ▶ But only deals with ME, not transitory income fluctuations
 - ▶ this is useful to see what IV does once we eliminate as much ME as we can
 - ▶ gives us a sense of the roles of transitory income and ME
 - ▶ note, if transitory income shocks have persistence then our instruments might not be valid

Results preview

- ▶ Upward sloping savings function in the raw data
- ▶ Our best estimate gives a flatter but still upward sloping savings function
- ▶ ME, and not transitory fluctuations, the main source of bias
- ▶ Lower implied saving rates when respondents allowed to reconcile their reports
 - ▶ Mean error consistent with overreporting income, underreporting spending or reported saving

Survey and experiment: Overview

- ▶ Understanding Society Innovation Panel
- ▶ Probability sample of 1,500 households in Great Britain
- ▶ Annual interviews with all adults 16+ since 2008
- ▶ Wave 9 (2016): 2,112 respondents
- ▶ Detailed individual income questions
 - ▶ earnings, second jobs, state benefits, pensions, investment income
- ▶ 'Benefit Unit' module designed by us
 - ▶ Is our survey experiment

Survey and experiment: The 'Benefit Unit' module

- ▶ Interview at the 'Benefit Unit' level
- ▶ Net income (Y), spending (C), and net saving (ΔW) collected
 - ▶ reference period the same for each item (past month) and so the benefit unit budget constraint should hold:

$$Y - C \equiv \Delta W$$

- ▶ **Reconciliation**: questionnaire script prompted respondents to edit Y, C or ΔW where the reported budget did not balance
- ▶ Analysis sample: 880 **Benefit Units**
 - ▶ 66% single adults
 - ▶ Sample restriction: Non-negative values of income and spending before the reconciliation
 - ▶ 63% of eligible agreed to take part

Definitions

- ▶ Implied net saving = $Y - C$
- ▶ ΔW is net saving as directly reported in the questionnaire
- ▶ Balance = $Y - C - \Delta W$
= implied net saving – reported net saving
- ▶ A 'balanced BU' is one for whom the $\text{abs}(\text{Balance}) < 10\%$ of the mean of its income and spending (post reconciliation)
 - ▶ 'Balanced sample' is the sample of all such BUs
- ▶ Saving rate = net saving (implied or directly reported) / Y

Methods

- ▶ If income 'current', then measurement error and transitory income fluctuations will bias upwards the estimated slope of the saving function (**naive estimate**)
- ▶ **Address measurement error** using our survey experiment/reconciliation. We have two analysis samples:
 1. The full sample (before and after reconciliation)
 2. The 'Balanced sample'
- ▶ **Non-parametric median regressions**
 - ▶ Saving rate vs. age-adjusted rank of income

Methods

- ▶ We compare estimates from our experiment to IV ones:
 - ▶ exploit panel data and instrument current income with 4 lags and 1 lead of income
 - ▶ Lags/leads must be correlated with long-run income but not the transitory parts of current income, nor measurement error in current income, and also that have no direct impacts on the saving rate
- ▶ Comparison of our new method to IV tells us about the importance of transitory shocks vs. measurement error

Did the reconciliation improve the data?

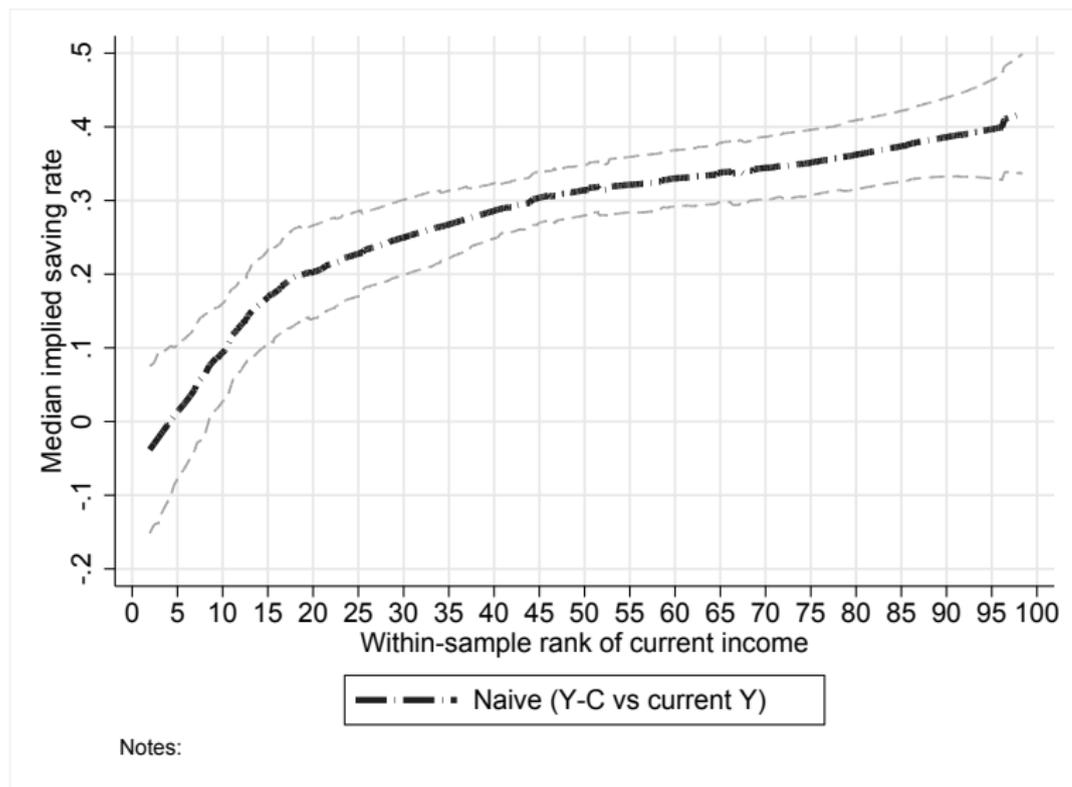
	Percent
In balance before	23.39
In balance after	37.83
Of those initially out of balance:	
balance changed	40.34
income changed	15.42
spending changed	20.87
savings changed	23.05
abs(balance) fell	37.38
abs(balance) rose	2.96
<hr/>	
N	880

Summary of respondent edits:

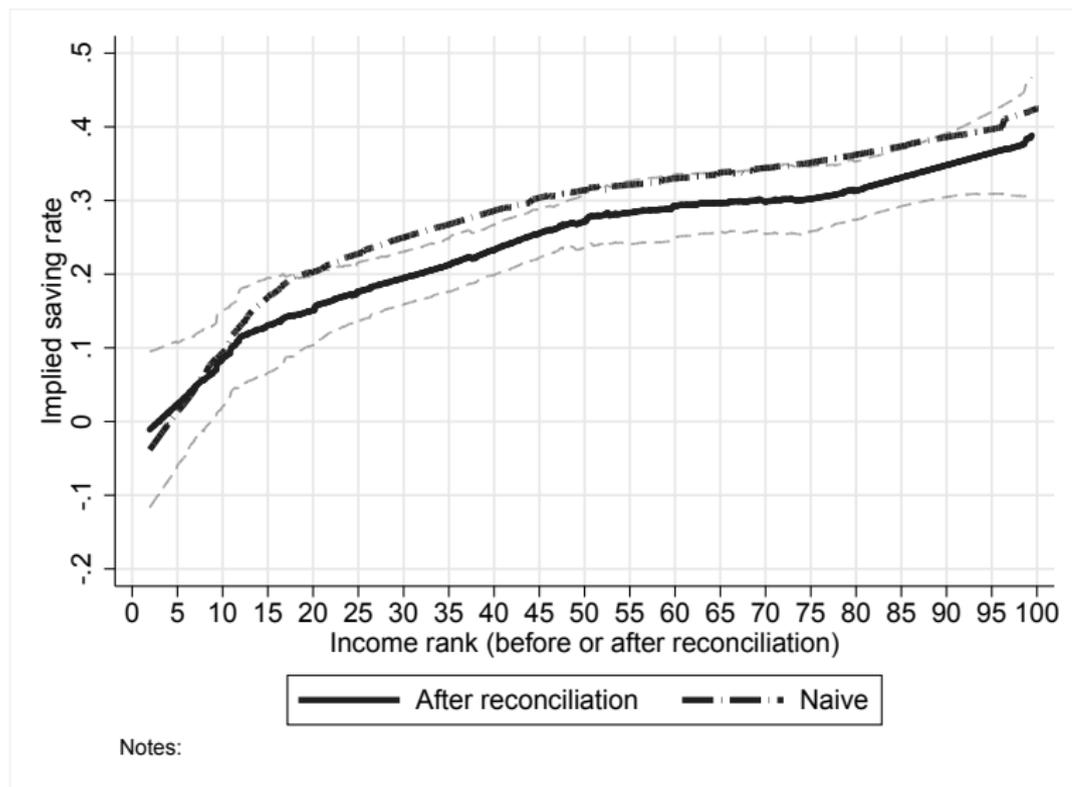
- ▶ Income hardly changed; reported spending and ΔW increased.
- ▶ The average balance implies too much income, or not enough spending or saving is being reported.

Results: Full sample

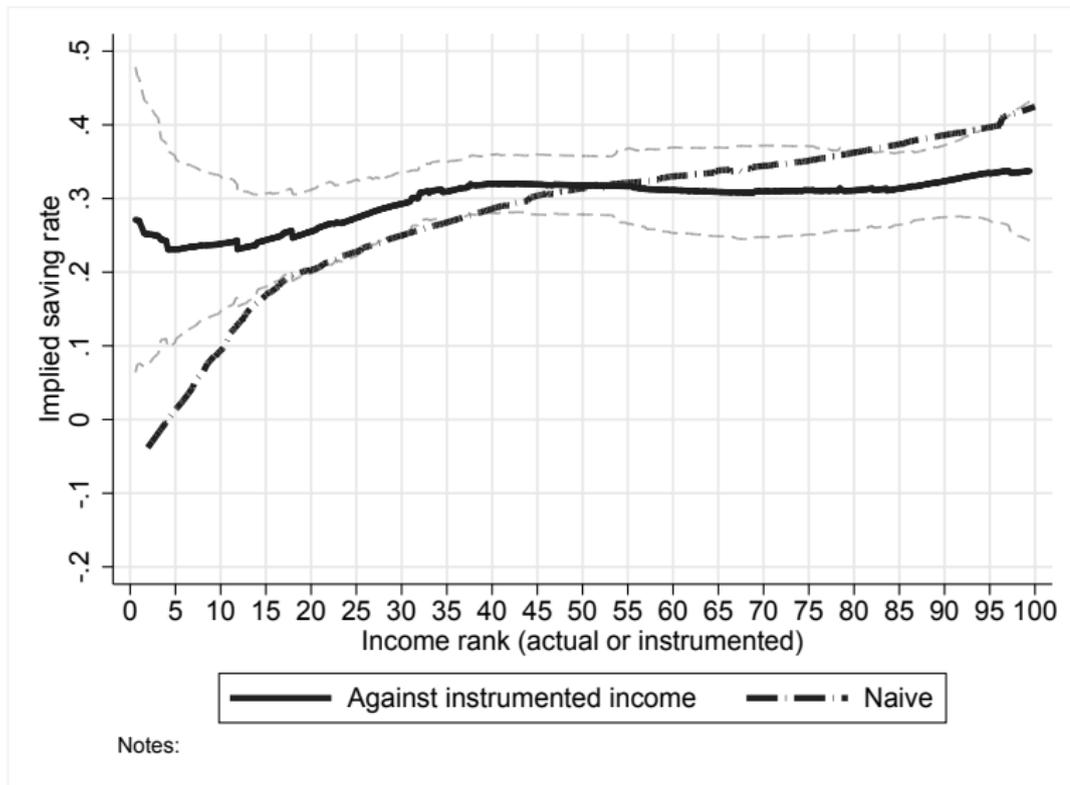
Y-C savings function



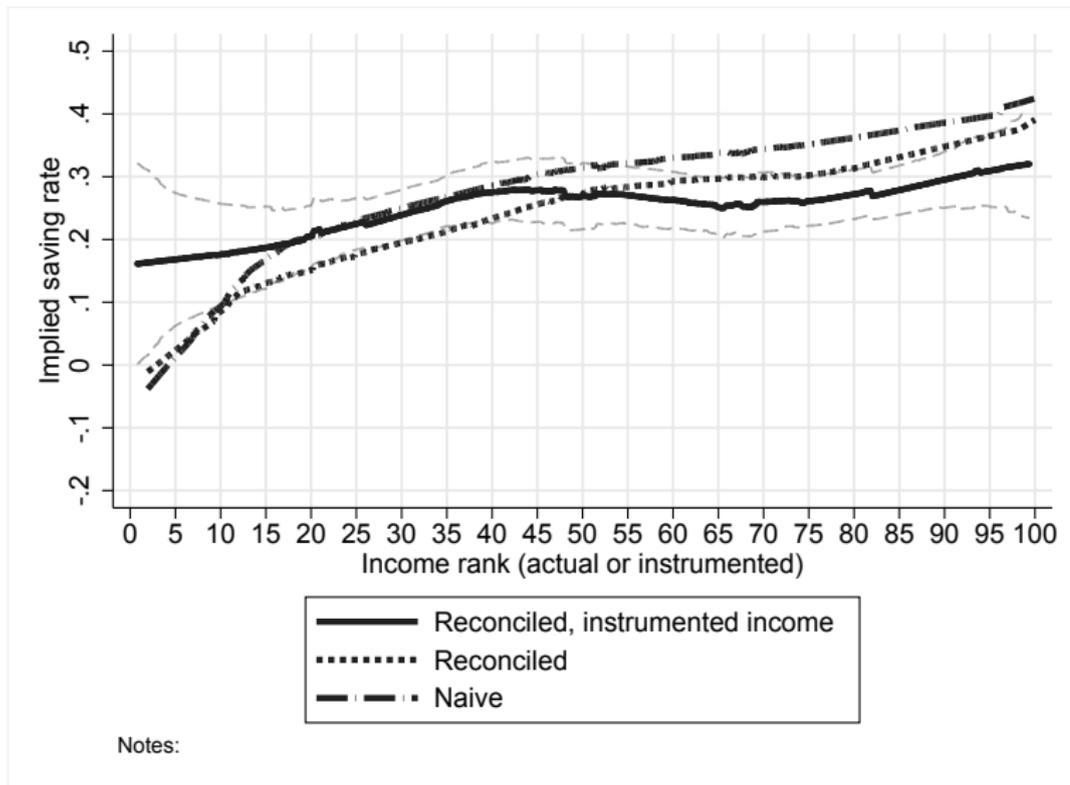
Y-C savings function, after reconciliation



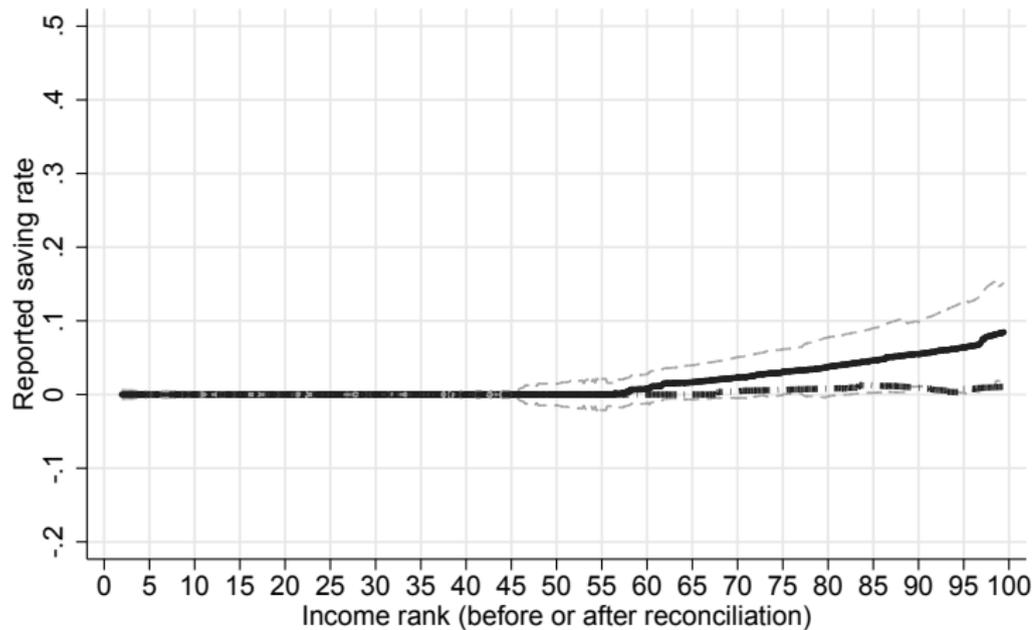
Instrumented Y-C savings function



Instrumented Y-C savings function, after reconciliation



ΔW saving function

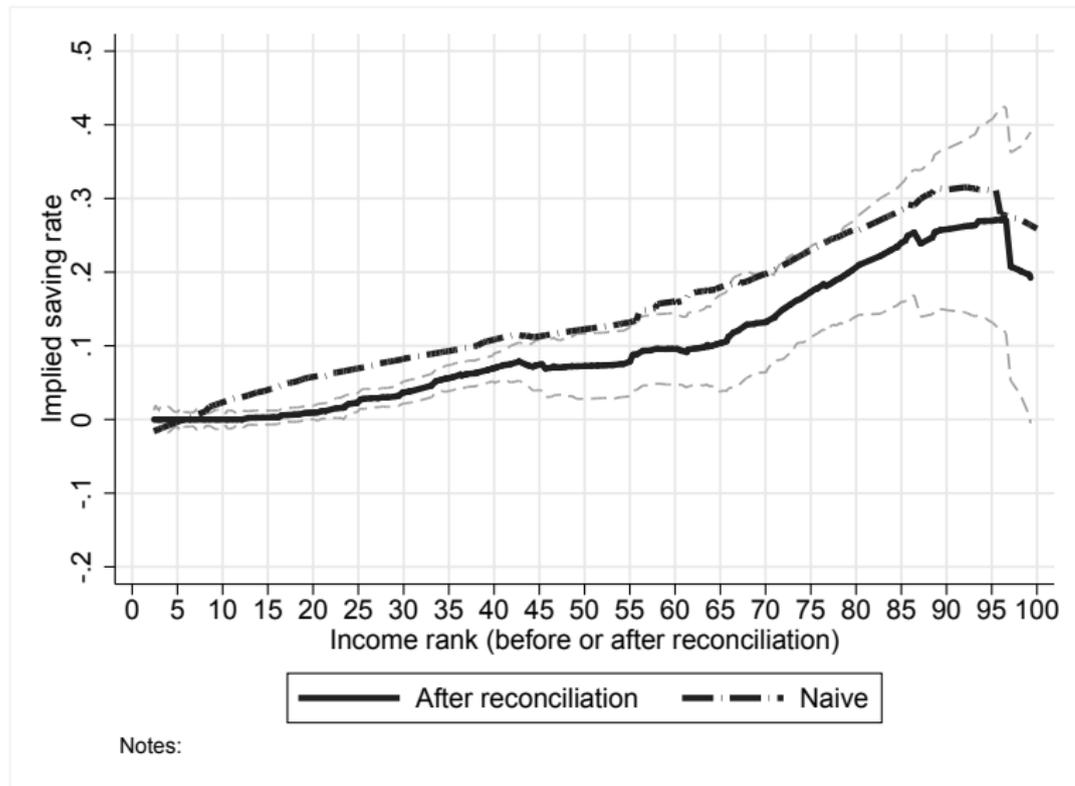


— After reconciliation - - - Before reconciliation

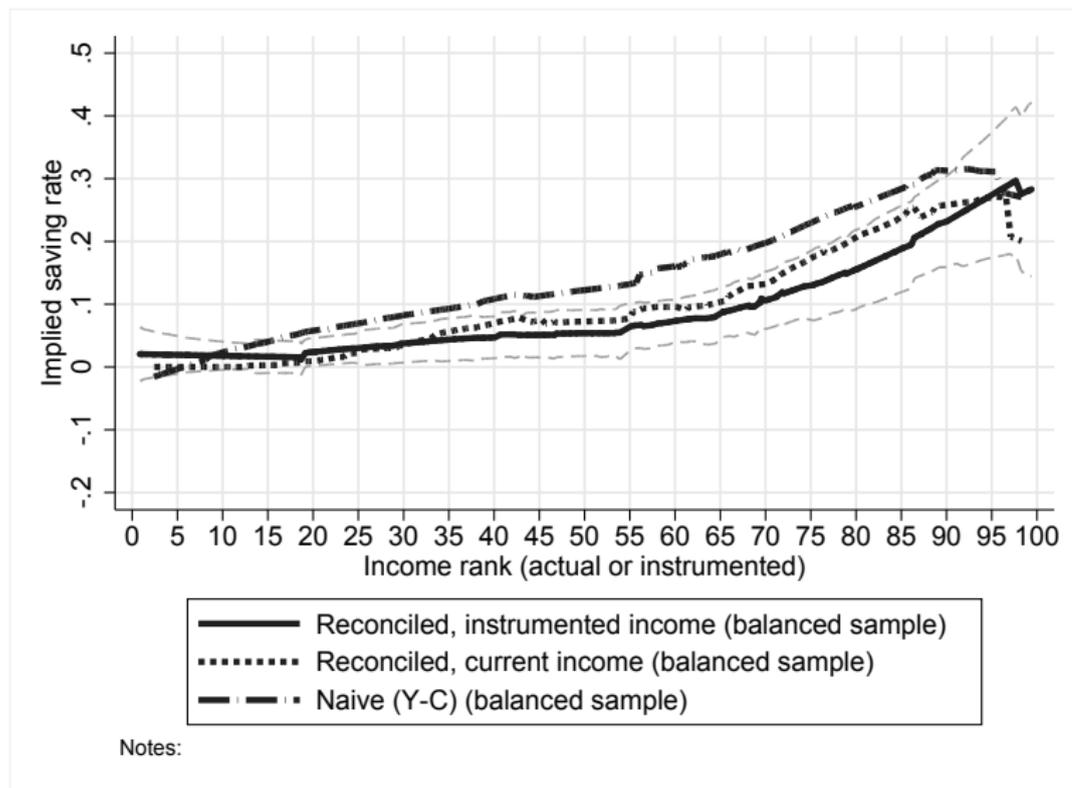
Notes:

Results: Balanced sample

Savings function, sample who are balanced (after reconciliation)



Best estimate: balanced sample, post-reconciliation and instrumented



Conclusions

- ▶ The raw savings function slopes steeply upwards
 - ▶ Implies saving rates in excess of 25% for the top half of the income distribution
- ▶ Our best estimate (balanced sample and instrumenting) differs notably in two respects: flatter (still upward sloping) and implies lower savings rates
 - ▶ Instrumenting alone removes most of the slope of the savings function but implies (implausibly?) high rates of saving across most of the income distribution
- ▶ Measurement error, rather than transitory fluctuations, plays a large role in biasing the slope of the savings function
 - ▶ Once we remove measurement error (balanced sample) the additional effect of instrumenting is rather minor

Conclusions

- ▶ Our survey instrument leads to more consistent data and lower implied saving rates
 - ▶ Improves the accuracy of data on BU-level income and spending
 - ▶ Can construct samples giving 'balanced' data
 - ▶ Improves the share reporting 'balanced' data
- ▶ But a majority of households still do not present consistent data on their household finances even after prompting
 - ▶ Highlights the challenges measurement error poses to this type of research

Appendix

Collecting data on the household budget: Income (Y)

- ▶ Detailed income information collected in the individual interviews
- ▶ Questionnaire script calculated a benefit unit total of monthly net income from the amounts reported in the individual interviews
- ▶ Prior to the reconciliation, benefit units were asked to confirm or correct that amount
- ▶ The corrected amounts went into the reconciliation (and are the ones in the analysis)

Collecting data on the household budget: Spending (C)

- ▶ Single benefit unit level question on income
 - ▶ based in part on an experiment in an earlier wave of the UKHLS Innovation Panel (see Al Baghal et al., 2014).

Question: About how much did you spend on everything in the last month? Please exclude work expenses for which you are reimbursed, money put into savings and repayment of loans. Examples of what to include and exclude are shown on this card.

Collecting data on the household budget: Spending (C)

PLEASE DO NOT INCLUDE

- Work expenses that are reimbursed
- Money you put into savings, investments or pensions
- Repaying bank loans, debts, student loans, credit cards

PLEASE INCLUDE

Essentials

- Regular **Mortgage or rent** payments
- **Bills** e.g. gas, electricity, water, council tax, telephone, internet, TV, mobile and household insurance.
- **Transport costs** e.g. running a car (petrol, tax, insurance) and public transport costs.
- **Food and groceries**
- **Clothes and footwear**
- **Child costs** e.g. childcare, school equipment and fees
- **Home improvements and household goods** e.g. DIY, gardening, furniture, white goods or electrical goods
- **Health expenses** e.g. glasses, dental care, prescriptions, social care

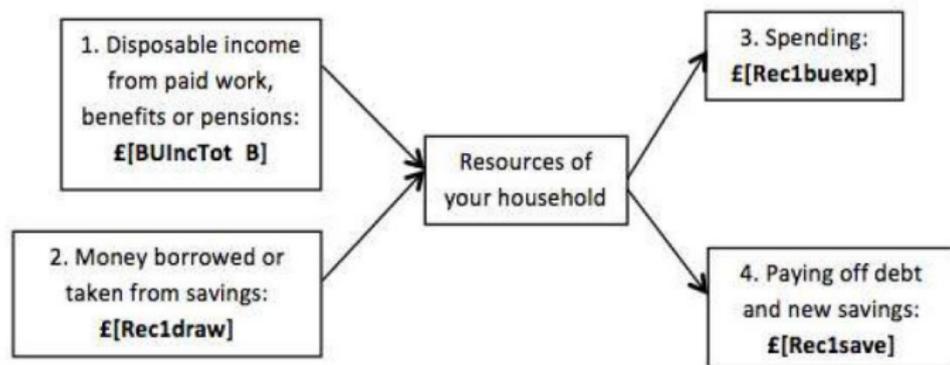
Leisure

- **Socialising and hobbies** e.g. going out (restaurants, pub, cinema, theatre, concert), gym or club membership, arts and crafts, children's activities
- **Other treats** e.g. books, magazines, DVDs, CDs, games, toys, beauty products
- **Holidays**
- **Giving money or gifts to other people** e.g. money for children, gifts or money for relatives, donations to charity

Collecting data on the household budget: net savings (ΔW)

- ▶ Varied experimentally (2 versions)
- ▶ Version 1: Outgoing money (spending, new savings and debts that have been paid off) subtracted from incoming money (income, increases in debts and withdrawals from savings)
- ▶ Version 2: asked about the starting and ending balance in all of their financial assets (including debts), which were then aggregated to give a change in net financial assets
 - ▶ current account, savings accounts, ISAs, other stocks, credit card, store card, personal loans, pay-day loans

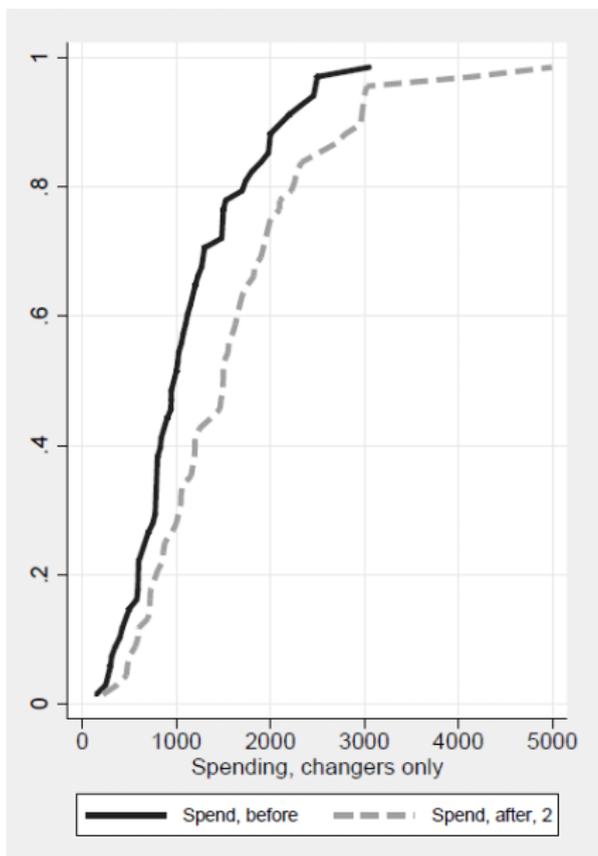
Reconciliation: Version 1



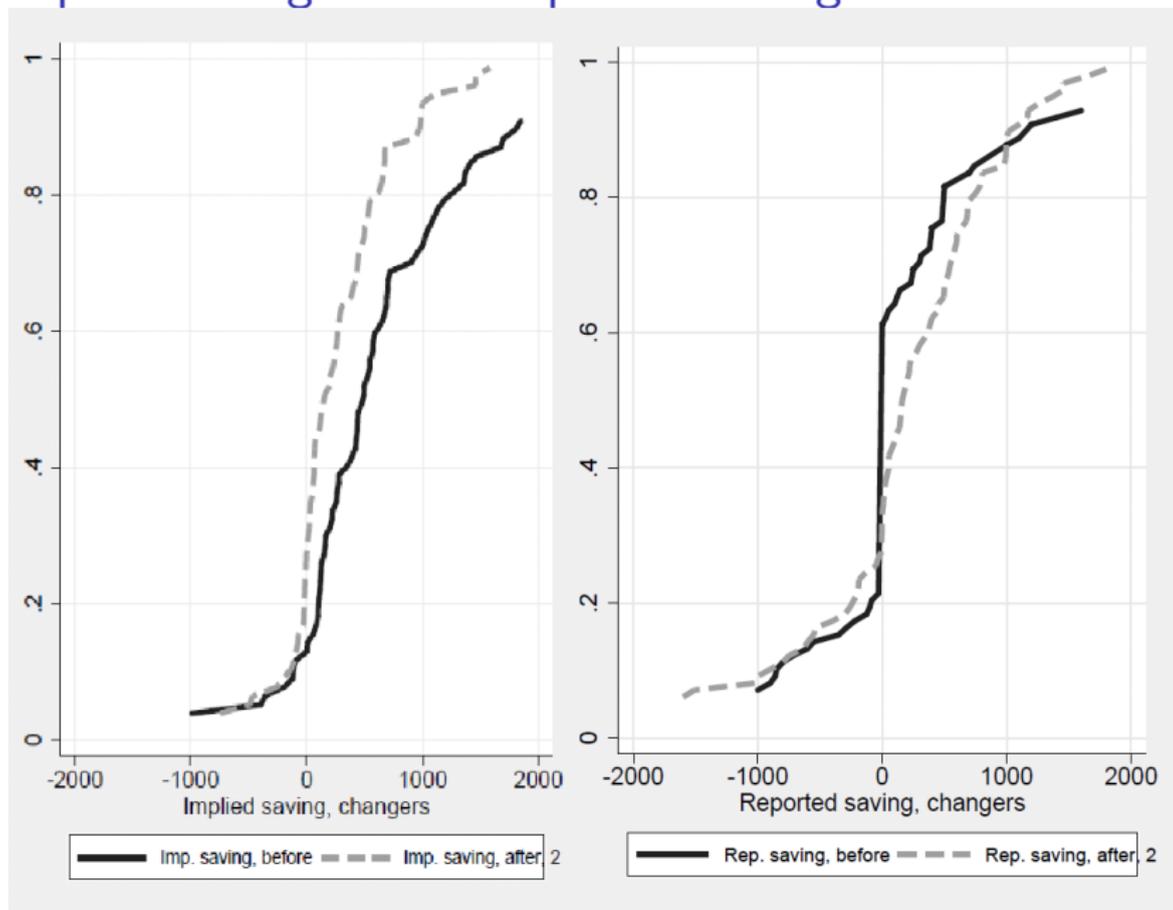
Total incoming money (Box 1 and Box 2):
 $£[Rec1totin]$ minus

Total outgoing money (Box 3 and Box 4):
 $£[Rec1totout]$ = $£[Rec1balance]$

Spending increased... (but not income)



... implied saving fell but reported saving rose ...



... so more were in balance ie. gave consistent data

