Understanding Society
THE UK HOUSEHOLD LONGITUDINAL STUDY

Measuring Income, Spending and Assets and Debts in Household Surveys

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ISI 2017

Draws on past and current work with numerous collaborators:
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Supported by ESRC TR/NCRM grant ES/N006534/1

An initiative by the Economic and Social Research Council, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and TNS BMRB

Consumption, income, wealth, saving

- Few surveys measure all of:
  - Consumption
  - Income
  - Wealth/Changes in Wealth/Saving
  - (particularly in richer countries)
- Fewer still measure them in an integrated way
- This would be desirable for reasons of:
  - Substantive interest
  - Data quality

Uses of data on consumption, income and wealth

- How does household spending respond to monetary policy (interest rates) and fiscal policy (tax cuts)
- How does household spending respond to shocks to wealth or income?
- How well insured are households against various shocks, how do they smooth consumption?

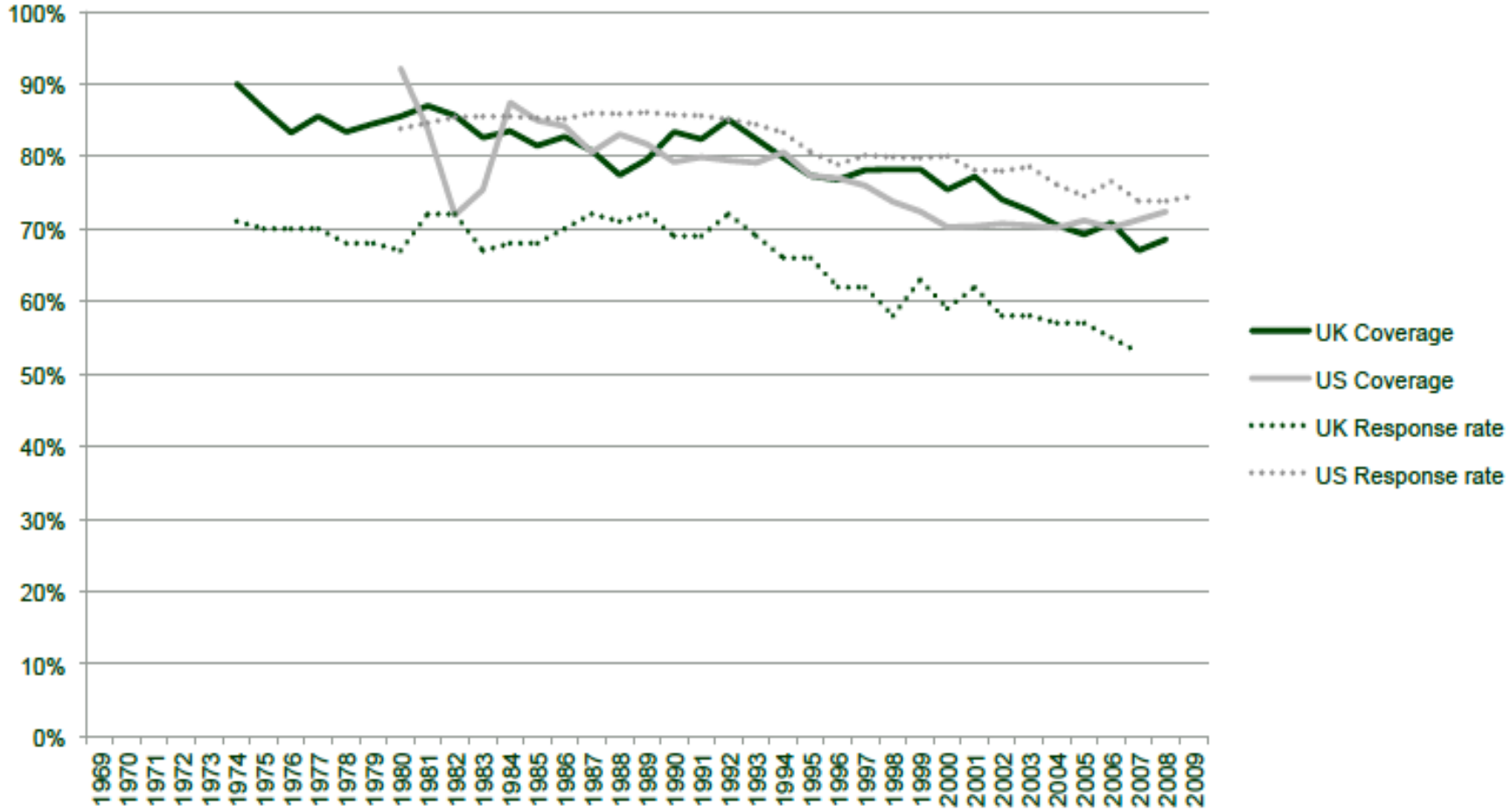
Data on consumption, income and spending

- Obtain good measures of any of consumption, income, wealth is challenging
- High burden in surveys
- Consumption perhaps most challenging
- Traditional approach: (detailed) household budget survey

  High burden ➔ cross section, limited effort to collect wealth, income

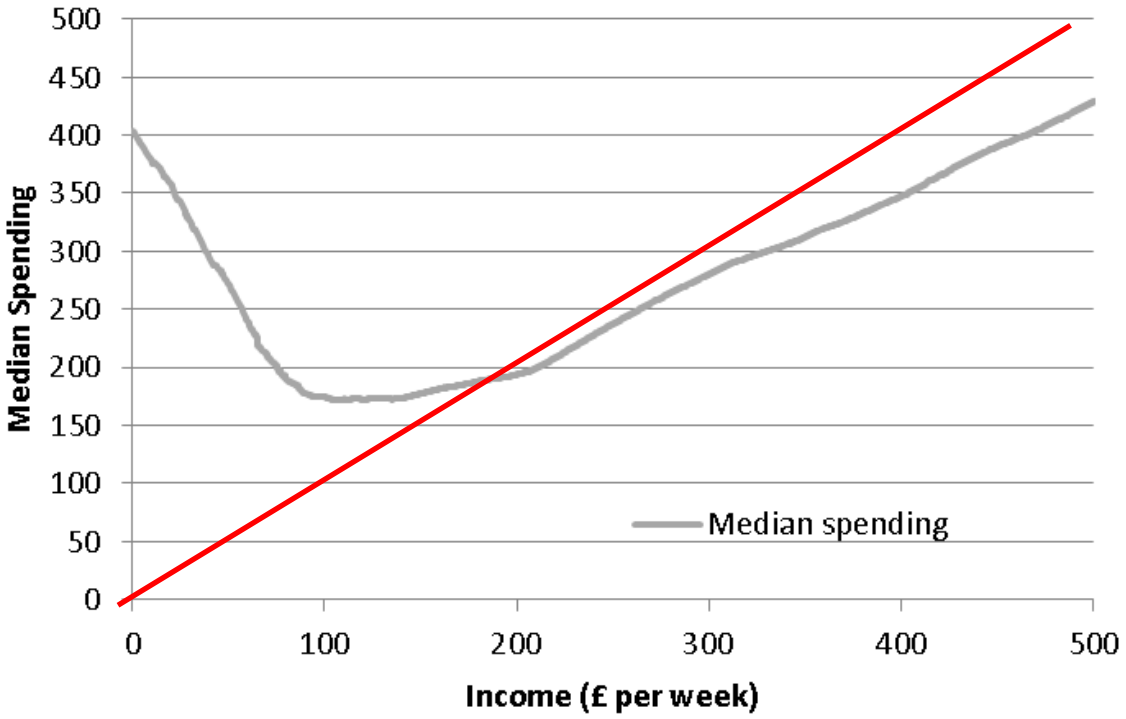
  Budget surveys appear to be in trouble

Budget surveys in trouble?



Source: Barrett, Levell, Milligan, 2015

Issues with budget surveys



Source: Brewer, Etheridge & O'Dea (2013).

- Income under-reported at the bottom?
- Spending under-reported at the top?
- See also Meyer & Sullivan (2003, 2011)
- Not smoothing (Sabelhaus & Groen, 2000; Brewer, Etheridge & O'Dea, 2013)

Alternative: augment wealth/income data

1. Add a small set of expenditure questions or a single expenditure question (the “Browning one-shot”)
2. Invert the inter-temporal budget constraint (“internal” imputation)
3. Impute from external data
4. Collect the entire household (inter-temporal) budget constraint in a consistent way

Small set of expenditure questions

- "One-shot": The Italian SHIW has asked the following:

  – *What was your family's average monthly expenditure in 1995 for all consumption items?*

  – *Consider all expenses, including food, but excluding those for: housing maintenance; mortgage installments; purchases of valuables, automobiles, home durables and furniture; housing rent; insurance premiums.*

- Also: COEP, some HFCS, AHEAD pilots, Centre Panel (Netherlands)
- Experiments with short "breakdown" approach in US, Netherlands, UK

“one-shot” expenditure question

- High response rates (often better than household income).
  – Except AHEAD pilots.
- Respondents view questions about broad categories of expenditure as being less sensitive than comparable income questions (focus group evidence).
- Generates useful data. Engel Curves look good (Browning et al. 2003, Bottazzi et al. 2008).
- Data successfully employed in a number of research papers (e.g., Browning & Crossley 2001, 2008).

One-shot question

- significantly lower estimates of total consumption expenditure than more disaggregated data collection.
- Focus groups and cognitive interviews have documented problems (Gray et al. 2008, d'Ardenne & Blake 2012).
  - Recall of total expenditure is challenging for many respondents.
  - But they appear to use a variety of methods for estimation.
    - (mode effects)
- Complex households a particular problem
- "one-shot" much improved by cognitive and field testing (IP6, see Al Baghal et al., 2014)
  - But still lower estimates than 13 question module

Small set of expenditure questions

- *Understanding Society Innovation Panel*: 13 questions, cawi/capi
- PSID ≈35, cati
- HRS, HILDA, self-completion
- Burden (eg, PSID ≈ 11 minutes)

  Inevitable trade-offs: wealth detail, frequency
- Reconciliation screens work well (Hurd & Rowhedder, 2015; Al Baghal et al., 2014)

  But again adds burden

Inverting the inter-temporal budget constraint

- Data on income ($y_{h,t}$) and wealth ($w_{h,t}$)
- It is an identity that $x_{h,t} = y_{h,t} - s_{h,t}$
- Inter-temporal budget constraint:

$$w_{h,t+1} = (w_{h,t} + y_{h,t} - x_{h,t})(1 + r_{h,t})$$

$$x_{h,t} = y_{h,t} - [(1 + r_{h,t})^{-1} w_{h,t+1} - w_{h,t}]$$

$$x_{h,t} \approx y_{h,t} - [w_{h,t+1} - w_{h,t}]$$

- *Ziliak (1998): PSID (more recently Cooper, 2013)*
- *Administrative (tax) data: Browning and Leth-Peterson (2003), Browning et al. (2013), Kriender et al (2015), Koijen et al, 2015….*

Inverting the Inter-temporal Budget Constraint

- Very noisy (Zilliak, 1998; Browning et al., 2013)
- Ignoring capital gains induces substantial errors (Koijen et al, 2015).
- Estimating effects of wealth and income shocks:

$$\Delta x_{h,t} = \alpha + \beta \Delta y_{h,t} + \gamma \Delta w_{h.t} + u_{h,t}$$

$$\Delta [y_{h,t} - (w_{h,t+1} - w_{h,t})] = \alpha + \beta \Delta y_{h,t} + \gamma \Delta w_{h.t} + u_{h,t}$$

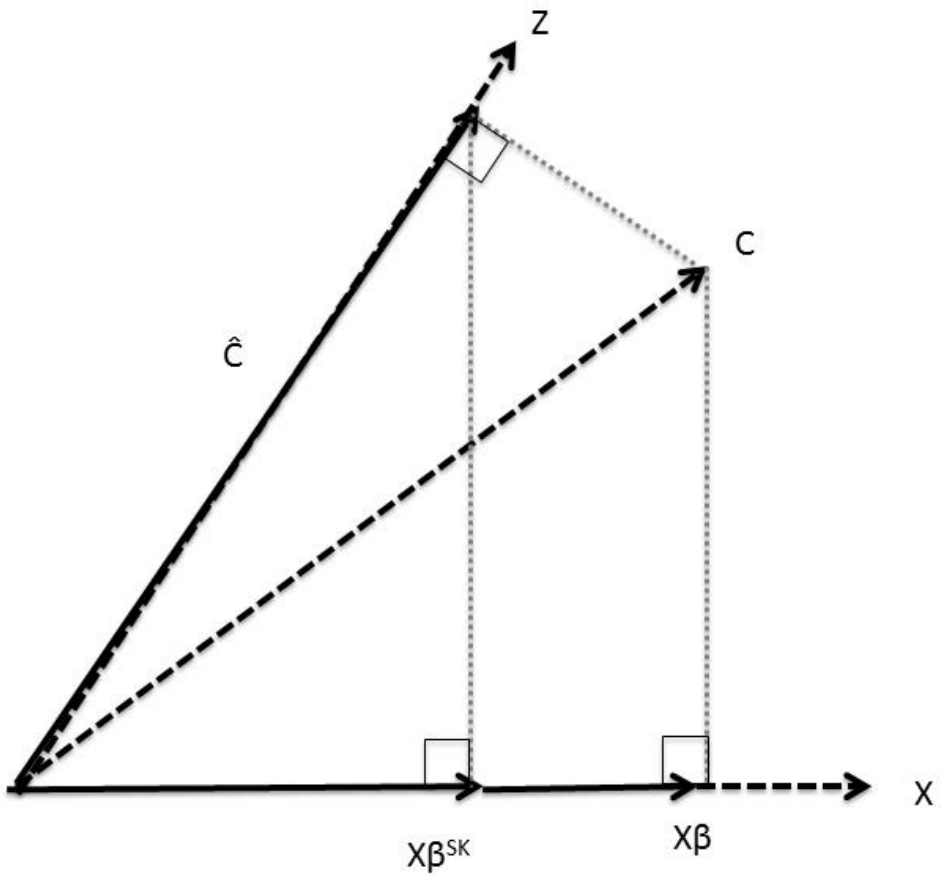
$$\Delta y_{h,t} - \Delta w_{h,t+1} + \Delta w_{h,t} = \alpha + \beta \Delta y_{h,t} + \gamma \Delta w_{h.t} + u_{h,t}$$

- Any measurement error a big problem (admin data only? instruments?)
- $x_{h,t}$ is not $c_{h,t}$

Imputation

- Skinner (1987)
  - CE: regress consumption on proxy (food)
    - inverse Engel curve
  - PSID: use proxy and estimated coefficients to predict C
    - regress predicted C on income or wealth
- Much employed
- Blundell, Preston, Pistaferri (BPP, 2008): estimate Engel curve and invert
- Crossley, Levell, Poupakis (2017)
  - Skinner inconsistent for parameter of interest.
  - Re-scale by first-stage R^2 (= BPP with one proxy)
  - Either way, standard errors need correction (like IV)

Imputation dangers

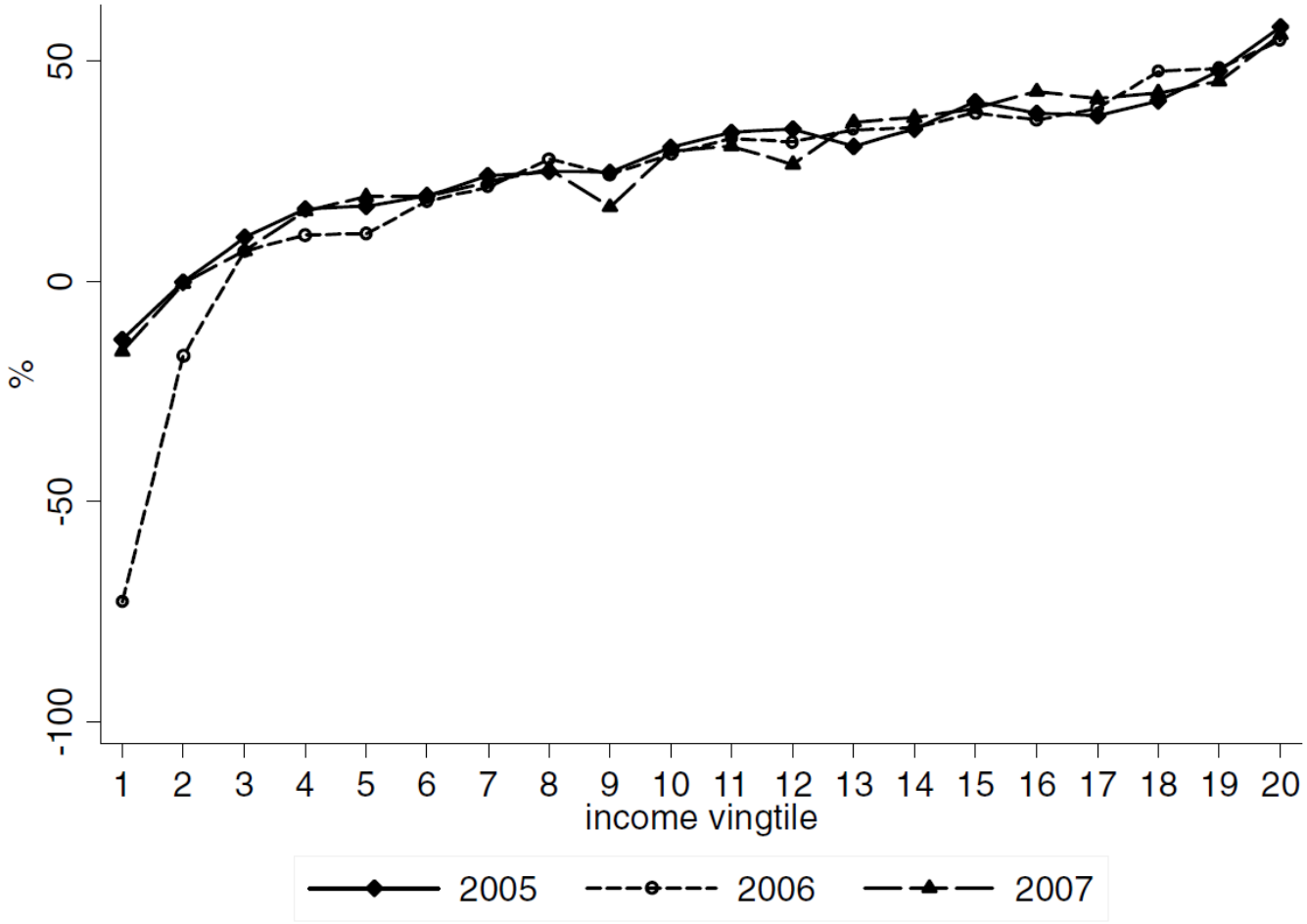


- But note that $E[\hat{C}] = E[C]$ and $E[\frac{1}{\hat{R}^2}\hat{C}_2] \neq E[C]$
- So no all-purpose imputation

Survey measurement of an integrated budget constraint

- Part of “Understanding Household Finances Through Better Measurement” project in *Understanding Society*
- Idea: $x_{h,t} = y_{h,t} - s_{h,t} \approx y_{h,t} - [w_{h,t+1} - w_{h,t}]$
- collect $x_{h,t}$, $y_{h,t}$ *and* ($s_{h,t,t}$ *or* $[w_{h,t+1} - w_{h,t}]$)
- Check balance: $x_{h,t} - y_{h,t} + s_{h,t} = 0$?
- Offer inconsistent respondents a chance to revise
- Precedents: Samphantharak and Townsend (2010), Brzozowski and Crossley (2011), Fricker et al. (2015).

A balance check can help



Source: Crossley & Brzozowski (2011), Canadian Survey of Household Spending

Data

Understanding Society Innovation Panel:

- Separate sample of 1500 households in Britain
- core + experiments
- mixed-mode design: capi/cawi

  Allocation (but not realization) random

- IP9 (2016): all asked to take part in a follow-up “Benefit Unit” (BU) interview
- Consents required for couples:
  - 65% of couples agree to take part (77% of adults in couples consented)
  - 1,056 BUs (697 single, 359 couples)

“Benefit Unit”

Aim: improve income data at the Benefit Unit level

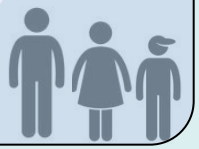
Household

father mother dependent child

lodger

Benefit Unit

Benefit Unit 1

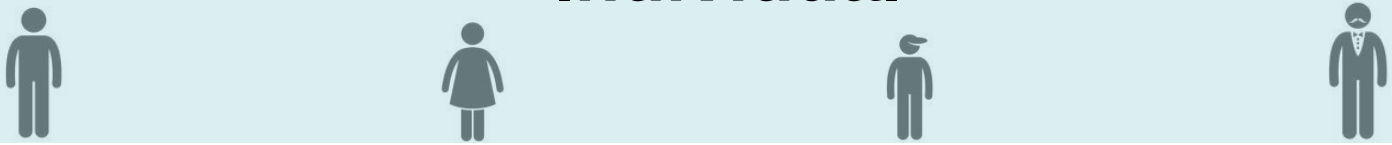


“A single adult or a couple living as married and any dependent children” (DWP, 2016)

→ unit for benefit & TC entitlement

Benefit Unit 2

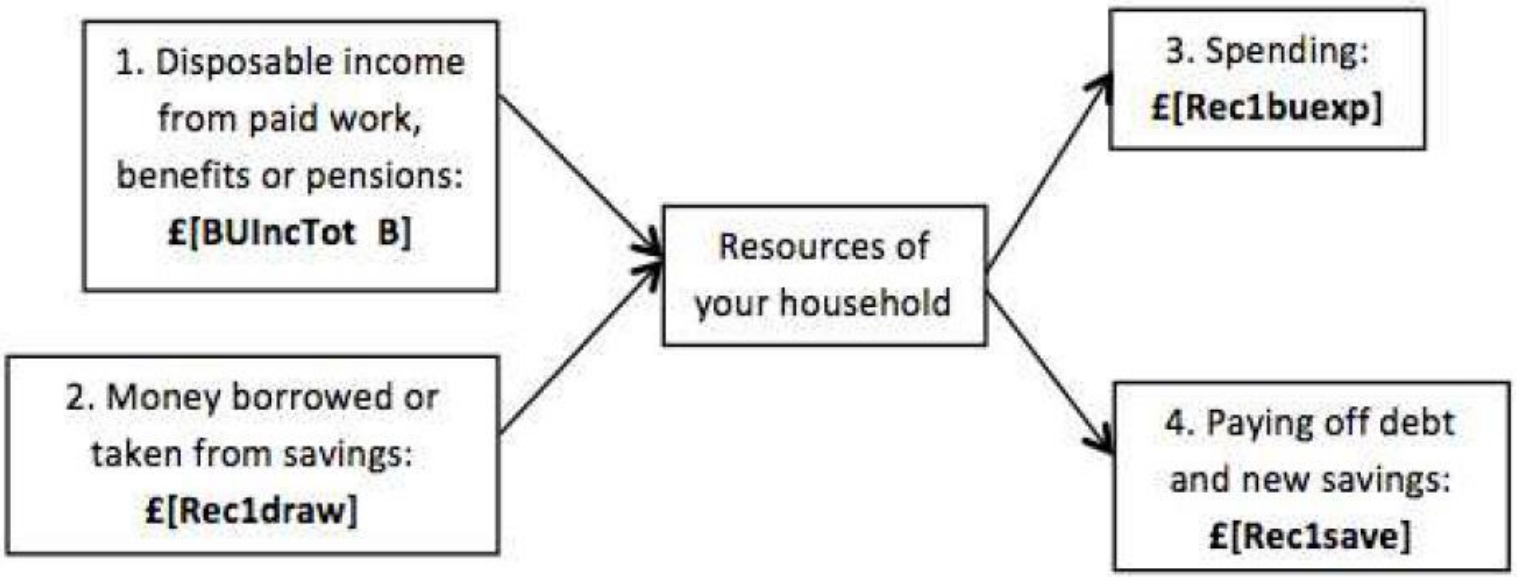
Individual



The experiment

- Group 1: collect $x_{h,t}$, $y_{h,t}$ and $s_{h,t,t}$ *(net flows)*
  - Two flow questions: sources and uses
- Group 2: collect $x_{h,t}$, $y_{h,t}$ *and* $[w_{h,t+1} - w_{h,t}]$
  - Change in stocks of several assets/debts summed
- $x_{h,t}$ "one-shot"
- $y_{h,t}$ net income aggregated from individual responses
- BUs invited to confirm and revise if out of balance
- Experiment interacts with mode allocation

Group 1: net flows



Total incoming money (Box 1 and Box 2): **£[Rec1totin]** minus Total outgoing money (Box 3 and Box 4): **£[Rec1totout]** = **£[Rec1balance]**

Preliminary Results

	Group 1 (net flows)	Group 1 (Change in stocks)
“In balance” before	0.22	0.24
“In balance” after	0.39	0.37
Total	402	436
Of those initially out of balance:		
balance changed	0.45	0.36
abs(balance) fell	0.43	0.32
income changed	0.15	0.16
spending changed	0.24	0.18
“change in assets” changed	0.24	0.22
Total	312	330

NB: sample of BUs reporting non-zero values of income and spending (N=838)

Preliminary results

- Initially, most (>75%) BUs out of balance
- Reconciliation improves % in balance by about 15 ppts, and reduces size of imbalances
  - Modest improvement consistent with Fricker et al. (2015)
  - Revisions are to spending, and changes in assets
- Reconciliation more effective in F2F
  - But note realized mode not random

In-depth qualitative interviews

- To complement IP9 testing
- Kantar Public
- 15 singles and 10 couples
- Geographic, demographic and socioeconomic spread
- ≈1 hour interview, in respondents home
  - Semi-structured discussion of household finances
  - Household finance mapping exercise
  - Reactions to a simulated version of the survey instrument

In-depth interviews - findings

- Households liked the module; some felt the balance exercise formalized their thinking
- Language difficulties

  Disposable income

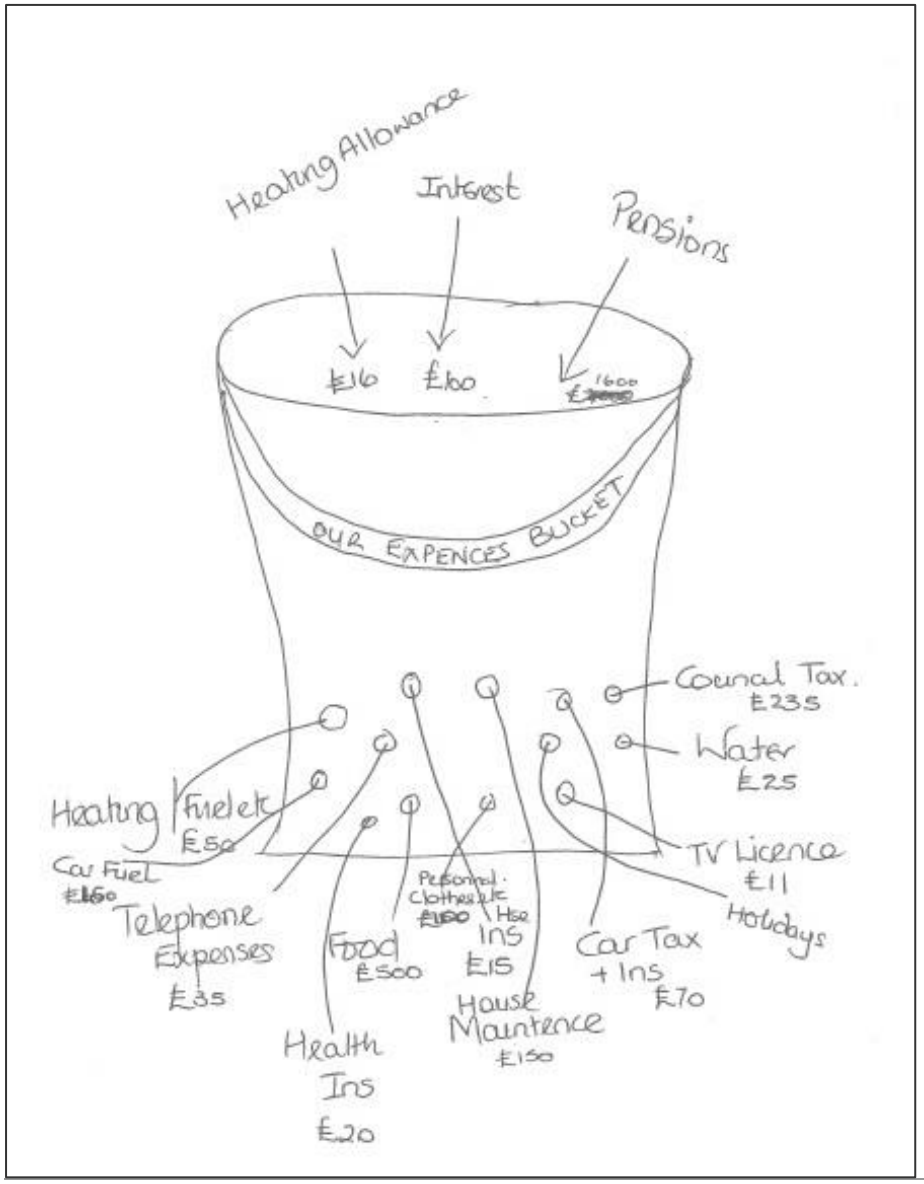
  Saving interpreted as a longer term investment (not accumulation in current account)
- Consequently “balance” counter intuitive for some:

  $y_{h,t} - x_{h,t} - s_{h,t}$ = *“surplus” income*
- Sensitivity and confusion around negative balances (uses exceed resources)
- ***One cannot test too much***….

Future directions

- Revise module in light of qualitative research results
- Use technology for one or more of $x_{h,t}$, $y_{h,t}$ *or* $s_{h,t,t}$
  - Experiments with receipt scanning and spending survey on mobile device.

Last picture:



From the household finance mapping exercise.

Thank-you!

More information

- Past literature: further detail and many references in:

  Browning, M., T.F. Crossley and J.K. Winter. 2014. “The Measurement of Household Consumption Expenditures,” Annual Review of Economics, 6:475-501.

- Current project homepage:

  https://www.iser.essex.ac.uk/misoc/strands/understanding-household-finance-through-better-measurement

- Or: tcross@essex.ac.uk

Some further references

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