

Can Survey Participation Alter Saving Behaviour?

Thomas Crossley (U. Essex and IFS)

Joint work with J. de Bresser (Groningen), L. Delaney (Stirling) and J. Winter (Munich)

CRDCN Conference, October 4, 2013

Preview

- Study the effect of participating in surveys on subsequent behaviour
- Analyze linked data from an **internet panel** and **administrative records** to distinguish changes in economic behaviour from changes in reporting behaviour
- Interesting implications for data collection strategies
- Broader implications for public policy towards saving

Motivation: Data from Panel Surveys

- Key advantage: understand and distinguish **heterogeneity** and (short and long run) **dynamics**
- Possible disadvantages:
 - respondent burden
 - cost
 - confidentiality
 - attrition
 - **survey effects?**

A Motivating Example

- Many expenditure surveys collect data via two week diaries
- 2nd week records always significantly less than first week.
- 1996 Canadian Food Expenditure Survey: 10%
- Statistical agencies attribute these drop-offs to “diary fatigue” (**reporting** behaviour)
- But is it?

1996 Food Expenditure Survey

Table 3: Ratio of Mean Week 2 Food Consumption over Mean Week 1 Food Consumption
(By Broad Food Categories and Store Types)

All food at home	0.91
By category:	
Meat	0.91
Fish and other marine products	0.94
Dairy products and eggs	0.91
Bakery and cereal products	0.91
Fruits and nuts	0.91
Vegetables	0.92
Condiments spices and vinegar	0.92
Sugar and sugar preparations	0.86
Coffee and tea	0.88
Fats and oils	0.92
Other food	0.93
Non alcoholic beverages	0.84
By Store Type:	
Food from specialty stores	0.83
Food from convenience stores	0.75
Food from supermarkets	0.93
Food from other stores	0.83

Source: Ahmed, Brzozowski and Crossley, 2006.

Recording and Behaviour

- Many self-help books argue that recording behaviour helps to change it
 - If you want to lose weight: weigh yourself regularly
 - If you want to spend less: record your expenses
- Some evidence from the “behavioural change” literature that this works
- Do surveys merely measure, or do they also shape, perceptions, attitudes, and behaviours?
- **Can we measure behaviour without affecting it?**
 - Particularly relevant for panel surveys, but broader implications as well

Self-Monitoring and Behavioural Change



American Dietetic
Association

Review



Meets Learning Need Codes 4000, 5000, 6000, and 9000. To take the Continuing Professional Education quiz for this article, log in to ADA's Online Business Center at www.outright.org/abc, click the "Journal Article Quiz" button, click "Additional Journal CPE Articles," and select this article's title from a list of available quizzes.

RESEARCH

Self-Monitoring in Weight Loss: A Systematic Review of the Literature

LORA E. BURKE, PhD, MPH; JING WANG, PhD, MPH, RN; MARY ANN SEVICK, ScD, RN

ABSTRACT

Self-monitoring is the centerpiece of behavioral weight loss intervention programs. This article presents a systematic review of the literature on three components of self-monitoring in behavioral weight loss studies: diet, exercise, and self-weighing. This review included articles that were published between 1993 and 2009 that reported on the relationship between weight loss and these self-monitoring strategies. Of the 22 studies identified, 15 focused on dietary self-monitoring, one on self-monitoring exercise, and six on self-weighing. A wide array of methods was used to perform self-monitoring; the paper diary was used most often. Adherence to self-monitoring was reported most frequently as the number of diaries completed or the frequency of log-ins or reported weights. The use of technology, which included the Internet, personal digital assistants, and electronic digital scales were reported in five studies. Descriptive designs were used in the earlier studies whereas more recent reports involved prospective studies and randomized trials that examined the effect of self-monitoring on weight loss. A significant association between self-monitoring and weight loss was consistently found; however, the level of evidence was

weak because of methodologic limitations. The most significant limitations of the reviewed studies were the homogeneous samples and reliance on self-report. In all but two studies, the samples were predominantly white and women. This review highlights the need for studies in more diverse populations, for objective measures of adherence to self-monitoring, and for studies that establish the required dose of self-monitoring for successful outcomes.

J Am Diet Assoc. 2011;111:92-102.

Behavioral weight loss programs typically involve decreased energy intake, increased energy expenditure, and use behavior strategies such as goal setting and self-monitoring. Self-monitoring consists of recording dietary intake and physical activity so that individuals are aware of their current behaviors (1). The use of self-monitoring in behavior change has a strong theoretical foundation.

Self-regulation theory posits that self-monitoring precedes self-evaluation of progress made toward one's goal and self-reinforcement for the progress made (2); thus, the process of changing habits requires well-developed self-regulatory skills (3,4). Self-monitoring is central to this process and includes deliberate attention to some aspect of an indi-

Research Question and Contribution

- Does participation in a survey change the saving behavior of households?
- Treatment: participation in a detailed survey module on “adequate standard of living in retirement” and retirement income needs
- We analyze effect of participation on the yearly flow of savings
- First analysis of survey effects on savings (high-stake outcome)
- Randomized assignment to treatment
- Measure outcomes **independently** of the survey
 - high-quality, linked - administrative data on assets and income
 - distinguish changes in economic behaviour from changes in reporting behaviour

Outline

- Related Literature
- Data and Research Design
- Results
- Discussion and Conclusion

Literature Review

(Economists often the last to know.....)

- Survey methodology: “panel conditioning”
 - Participation in earlier waves of a panel affects responses in later waves
- Consumer psychology, marketing: “question-behavior effects”
 - Questions on intentions or predictions shape subsequent behavior
- Economics: “survey effects”
 - Participation in a survey affects behavior even if questions do not directly concern behavior

Survey Methodology: Panel Conditioning

- Typical design: compare experienced panel members with refreshment sample
- Evidence in many dimensions:
 - Subjective wellbeing (Landeghem, 2012)
 - Marital satisfaction (Glenn, 1998)
 - Expenditures after retirement (Binswanger et al., 2011)
- Confounding of attrition bias and panel conditioning
 - Notable exception: Das et al. (2011). Conditioning effects in knowledge questions, not in attitudinal questions
- Cognitive stimulus theory (Sturgis et al., 2009)
 - Questions → reflection → stronger, internally consistent response

Consumer Psychology, Marketing: Question Behaviour Effects

- Questions about future behavior (intentions/predictions) influence that behavior
- Mere measurement effect: normatively ambiguous behavior
 - Purchase of durables
 - Survey on intention to buy a car and realized purchases (Morwitz et al., 1993)
- Self-prophecy effect: normatively desirable behavior
 - Voting, health, charitable giving
- Many different applications, competing theoretical perspectives

Question Behaviour Effects - Risky Behaviours



ELSEVIER

Available online at www.sciencedirect.com



Journal of Consumer Psychology 18 (2008) 82–95

Journal of
**CONSUMER
PSYCHOLOGY**

Research Dialogue

Should we ask our children about sex, drugs and rock & roll? Potentially harmful effects of asking questions about risky behaviors

Gavan J. Fitzsimons*, Sarah G. Moore

Duke University, 1 Towerview Drive, Durham, NC 27708, USA

Received 20 January 2008

Available online 11 March 2008

Economics: Survey Effects

- Zwane et al. (PNAS, 2011): 5 field experiments with random assignment to surveys
- Context: development economics
 - Water purification
 - Purchase of medical insurance
 - Take-up and renewal of micro-loans
- Key feature: subsequent outcome measures are not self-reports
- Findings
 - Being surveyed increases water treatment product usage
 - Being surveyed increases take-up of medical insurance
 - No effect on borrowing
 - Survey effect leads to biased estimates of the treatment effect of improved water source quality

The LISS PANEL

- Longitudinal Internet Studies for the Social Sciences
- Large **internet panel** in the Netherlands, started in 2007
- Administered by CentERdata, Tilburg U.
- **Representative sample** from Dutch population (8,000 individuals in 5,000 households)
 - Probability sample from Statistics Netherlands address frame
 - Simple computer (designed for elderly) supplied to those without internet access
 - Considerable effort to maximize response rates
 - 75% participate in recruitment interview of which more than 80% agree to internet panel.
 - final membership rate over 50% (then attrition and refreshment)

The LISS PANEL (cont'd)

- monthly online surveys,
- core longitudinal survey uses about half of available interview time
- remaining time given over to content submitted by researchers
- **randomized modules**
- Wide range of survey measurements:
 - Standard survey questions on income, savings, wealth etc.
 - Subjective measures, preferences, expectations
 - Survey experiments
- **Linked to administrative** records (assets, income etc.)

Institutional Context

- Dutch pension system consists of 4 “pillars”
 - Flat-rate public pension (universal, subsistence level)
 - Occupational pensions (90% of workers covered)
 - Saving accounts for retirement (taxed during payout)
 - Other assets
- Pillars 1 and 2 replace 70% of final income on average (80% replacement after tax)
- Survey fielded in January 2008: before a major public debate about sustainability

Treatment

- *What is an adequate standard of living during retirement?* (Binswanger and Schunk, 2012) – the treatment
- First randomized survey module in LISS (January 2008)
- Questions on
 - minimum income needed in retirement
 - housing costs
 - preferences for current and retirement spending
 - risk attitudes w.r.t. income in retirement
- No direct questions on (intended) savings (not a classic question-behaviour effect)
- **Basic Strategy: compare respondents randomly allocated to the module to eligibles who were not allocated to the module**

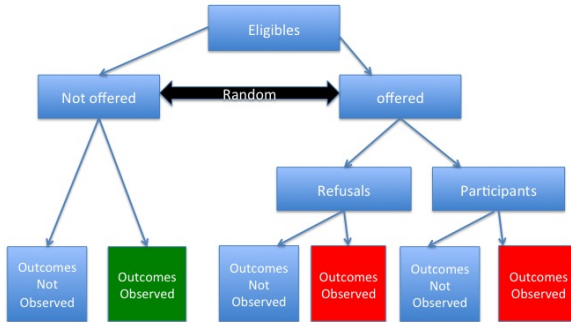
Sample

- Individual respondent is eligible for the treatment if
 - Age > 25
 - Household head or partner
 - HH income > 800 euro/month
- Household eligible for the treatment if at least one member is eligible ($N = 3,125$ HHs)
- Records matched to administrative assets data: $\sim 50\%$ match rate ($N = 1,430$ HHs)
- Removed households in which all eligible members are retired, some outliers
- Final analysis sample: $N = 999$ HHs

Outcome Measures

- Savings (level and rate) from **administrative records**
 - Administrative dataset on wealth (*integral vermogensbestand*; from Statistics Netherlands; 2007, 2008 and 2009)
 - Mostly based on tax records, plus bank records
 - 2008 flow of savings: difference between non-housing wealth stocks in January 2008 and January 2009
 - Net income data are also derived from tax records
 - **accurate and independent of survey response behaviour**
- Self-reported ownership of private pensions (life annuities)
 - Missing in the admin records (because of delayed taxation)
 - LISS assets module (sometime 2008)
- Self-reported satisfaction with the economic situation in NL
 - LISS income module (June 2008)

Research Design



Threats to Validity

- Imperfect compliance with treatment
 - Solution: “intention to treat” and IV analyses
 - IV quantile analysis (Frölich and Melly, 2008; 2010)
- Randomization at the level of the individual respondent; savings measured at the household level
 - Households with multiple eligible members were more likely to be offered treatment
 - We control for presence of multiple eligible members
- Selection into outcome measurement
 - Admin data: no permission or no match about 50%; mostly panel attrition (permission sought in 2011)
 - Survey data: nonresponse
 - Test for mean independence of instrument from selection

IV Framework

- Outcome equation

$$y = \beta_0 + \beta_1 s + \beta_2' x + u$$

- y : savings (or some other, self-reported outcome)
- s : dummy variable indicating whether the respondent participated in the treatment survey
- x : vector of socio-demographic control variables (dummy for multiple eligible HH members)

- First-stage equation

$$s = \delta_0 + \delta_1 z + \delta_2' x + v$$

- z : dummy variable indicating whether the respondent was randomly selected for the treatment
- x : vector of socio-demographic control variables (dummy for multiple eligible HH members)

Sample

	Couples				Singles			
	Full sample (LISS)		Estimation sample		Full sample (LISS)		Estimation sample	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Female	0.12	(0.32)	0.11	(0.32)	0.58	(0.49)	0.62	(0.49)
Age	47.4	(11.8)	46.9	(11.5)	45.4	(12.1)	44.6	(11.6)
Children	1.16	(1.15)	1.15	(1.16)	0.41	(0.81)	0.36	(0.78)
Homeowner	0.83	(0.38)	0.81	(0.40)	0.49	(0.50)	0.42	(0.50)
Married	0.81	(0.39)	0.83	(0.38)	0.06	(0.23)	0.04	(0.19)
N	2167 (77.0%)		768 (76.9%)		649 (23.0%)		231 (23.1%)	

Our Sample - Continued

	Couples				Singles			
	Full sample (LISS)		Estimation sample		Full sample (LISS)		Estimation sample	
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)
Education								
Primary	0.08	(0.28)	0.08	(0.28)	0.09	(0.28)	0.09	(0.29)
University	0.11	(0.32)	0.09	(0.29)	0.10	(0.30)	0.06	(0.25)
Employed	0.72	(0.45)	0.75	(0.43)	0.69	(0.46)	0.70	(0.46)
N	2167 (77.0%)		768 (76.9%)		649 (23.0%)		231 (23.1%)	

Asset Levels

	2007		2008		2009	
	Mean	SD	Mean	SD	Mean	SD
Assets						
Saving accounts	25,551	40,870	26,728	42,568	28,008	44,963
Risky assets	7,210	23,974	6,627	22,560	4,857	17,468
Property	196,713	162,020	201,325	161,463	199,616	155,063
Real estate	9,808	53,750	6,906	41,722	7,689	44,442
Business	1,202	12,588	1,212	13,842	1,459	15,485
Other	861	9,914	959	10,871	1,014	10,779
N	983		999		999	

Debt and Net Worth

	2007		2008		2009	
	Mean	SD	Mean	SD	Mean	SD
Debt						
Mortgage	105,119	105,553	104,079	103,787	108,243	106,892
Non-mortgage debt	2,375	13,796	1,992	12,621	2,432	18,823
Net worth	133,852	172,072	137,687	170,305	131,968	167,938
Net housing wealth	91,594	131,904	97,246	128,481	91,374	124,627
Net worth excl. housing	42,258	82,970	40,440	76,797	40,594	77,325
N	983		999		999	

Savings

	Mean	Std. dev.	Percentiles				
			0.05	0.25	0.5	0.75	0.95
HH income	38,165	17,649	16,289	27,056	35,699	46,107	67,474
Non-housing savings							
Levels (2008 euros)	154	9,411	-13,632	-3,221	2	3,084	14,860
Savings rates	-0.01	0.19	-0.40	-0.09	0.00	0.09	0.33
N	999						

Relevance of the Instrument

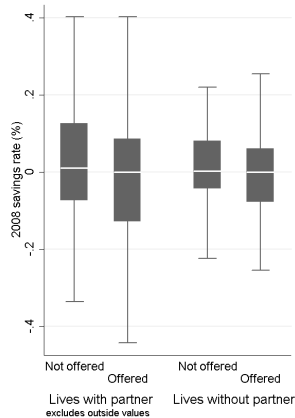
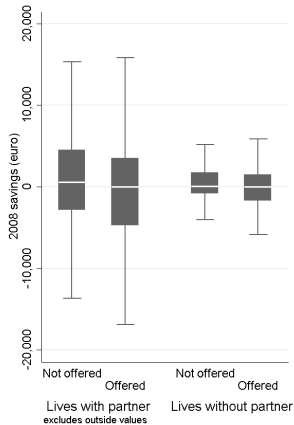
Dependent variable: HH treated	
HH offered	0.879*** (0.0127)
Multiple eligibles	-0.0376** (0.0159)
Constant	0.0231** (0.00988)
R squared	0.688
F(1, n-(k+1))	4,818.37***
N	999

Validity of the Instrument

Dependent variable: indicator for estimation sample (outcomes observed)

Offered	-0.0209 (0.0201)
Multiple eligibles	0.00700 (0.0215)
Constant	0.364*** (0.0207)
Number of selected HHs	999
N	2,816

Intention to Treat Analysis



IV Estimates

2008 non-housing savings		
	level	rate
	(thousands of euros)	(1 = 100%)
Dependent variable:		
Treated	-1.683** (0.764)	-0.0351** (0.0144)
Sample	0.154	-0.01
Compliers	0.875	
N	999	

Quantile IV Estimates

		Deciles						
	Mean	0.20	0.30	0.40	0.50	0.60	0.70	0.80
Dependent variable: 2008 non-housing savings rate (1 = 100%)								
Treated	-0.0351** (0.0144)	-0.0519* (0.0286)	-0.0337** (0.0166)	-0.0224* (0.0135)	-0.00922 (0.0130)	-0.0352** (0.0141)	-0.0247 (0.0153)	-0.0317 (0.0208)
Sample	-0.01	-0.14	-0.07	-0.02	0.00	0.03	0.07	0.13
Compliers				0.875				
N				999				

Falsification tests: 2007 Savings

	Mean	Deciles						
		0.20	0.30	0.40	0.50	0.60	0.70	0.80
Dependent variable: 2007 non-housing savings rate (1 = 100%)								
Treated	-0.0136 (0.0147)	-0.00961 (0.0249)	-0.00279 (0.0133)	0.00197 (0.0121)	-0.00198 (0.0122)	-0.00296 (0.0136)	-0.0211 (0.0218)	-0.0257 (0.0298)
Compliers				0.866				
N				1,014				

Heterogeneous Effects: non-housing savings (levels)

	Income below median			Income above median		
	Education			Education		
	Low	Middle	High	Low	Middle	High
Dependent variable: 2008 savings (thousands of euros)						
Age < 40	2.683** (1.356)	1.983* (1.087)	-2.934** (1.226)	2.895* (1.577)	2.194 (1.375)	-2.723* (1.623)
Age 40-54	1.631 (1.328)	0.931 (1.187)	-3.986*** (1.320)	1.843 (1.313)	1.142 (1.196)	-3.774** (1.478)
Age 55+	-1.217 (1.046)	-1.918 (1.446)	-6.835*** (1.694)	-1.006 (1.593)	-1.706 (1.897)	-6.623*** (2.190)
R-squared	0.0777					
N	999					

Heterogeneous Effects: non-housing savings (rates)

	Income below median			Income above median		
	Education			Education		
	Low	Middle	High	Low	Middle	High
Dependent variable: 2008 savings rates (1 = 100%)						
Age < 40	0.0158 (0.0297)	0.00494 (0.0251)	-0.0895*** (0.0291)	0.0667* (0.0360)	0.0559* (0.0293)	-0.0385 (0.0292)
Age 40-54	-0.0000107 (0.0292)	-0.0109 (0.0281)	-0.105*** (0.0323)	0.0509* (0.0305)	0.0401 (0.0261)	-0.0543** (0.0266)
Age 55+	-0.0392 (0.0267)	-0.0500 (0.0336)	-0.144*** (0.0337)	0.0117 (0.0333)	0.000869 (0.0366)	-0.0935*** (0.0335)
R-squared				0.0595		
N				999		

Additional Evidence from Survey Data

- Households do not re-allocate savings to life annuities
 - No effect on ownership by December 2009
 - No effect on change in ownership status 2007-2009
 - No effect on amount invested conditional on ownership
- The survey made individuals slightly more satisfied with the economic situation
 - Consistent with negative effect on saving

Summary

- Investigate effects of survey participation on households' financial behavior
- Treatment: participating survey on adequacy of income in retirement
- Key features
 - Randomized assignment to treatment
 - Outcome (savings) measured using administrative data
- Key findings
 - Survey caused households to save less (3.5 ppt; on a mean of 1% with sd 19%)
 - Survey did not cause households to reallocate saving to private pensions
 - Survey improved satisfaction with economic situation

Discussion

- Plausibility
 - In January 2008, first 2 pillars were still generous and universal
 - We find the largest effects (relative to current income) for poor households which had the highest replacement rates
 - We also find large effects for highly educated and older respondents, who are entitled to generous occupational pensions
- Some Limitations
 - The survey was distributed only once; we cannot investigate effect of repeated participation
 - Admin data on assets only available for 2007–2009; we cannot investigate long run effects
- Replication seems desirable....

Discussion - Data

- Results suggest more thought be given to the effects of repeated measurement
 - how and what can we measure without effecting behaviour?
- LISS: internet panel survey with core and modules offers very responsive platform
 - questions, ideas, hypothesis from researchers
 - emerging policy questions
 - rapid deployment
- Research could not have been done without **linked survey and administrative data**

Discussion - Information and Saving Behaviour

- “Limited attention” (Della Vigna, 2009) is a plausible mechanism for this effect
- unintended consequences of survey support the idea that “salience shocks” may be an effective tool for influencing household financial behaviour
- Karlan et al. (2012) show that reminders can increase saving among individuals enrolled in a goal-specific savings program.
- Stango and Zinman (2011) show that salience shocks can reduce the probability that individuals incur overdraft fees.
- Here, the survey **reduced** saving,
 - highlights possible context specificity
 - also raises a number of concerns including asymmetric effects

Conclusions

- Being surveyed can affect economic attitudes and financial behavior
- Possible Mechanism: surveys make salient variables that should affect choices
- Important for thinking about data collection;
 - possibly also important for policy towards household finance
- Linked survey-admin data very valuable
- internet surveys also offer exciting possibilities
 - some kinds of social science experiments can be conducted within surveys