Real Time Measurement of Household Electronic Financial Transactions in a Population Representative Panel

Marco Angrisani
(USC)
Arie Kapteyn
(USC)
Swaroop Samek
(USC)

AEA Meeting
January 3, 2021

The **UASFin** Pilot Project

From September 2016 to September 2018, we piloted the collection of transaction data in the Understanding America Study (UAS)

The UAS is a probability-based Internet panel representative of the U.S. adult population

We partnered with Yodlee and used their API to collect transaction data

The transaction data include:

- expenditures
- income measures
- transfers
- account balances

The **UASFin** Pilot Project

The combination of survey and transaction data can help:

- decrease respondent burden
- reduce measurement error of financial outcomes from surveys
- better understand and address selectivity
- validate survey measures
- investigate heterogeneity in consumer behavior

Such data collection effort presents several challenges and is definitely not a panacea

Study Participation

We invited 1,110 UAS members to join the UASFin study

Participation involved a number of steps:

1. Provide consent to participate
2. Create an account with the financial management web-site
3. Add financial institutions to the account (using username/password)
4. Maintain linkage over time

At each step there is potential for attrition

We experimented with different monetary incentives at each step

Study Participation

Consent rate: 46% (509/1,110)

Sign-up conditional on consent

Consent	Sign-up		Total
	No	Yes	
No	592 (98.50%)	9 (1.50%)	601 (100.00%)
Yes	163 (32.02%)	346 (67.98%)	509 (100.00%)
Total	755 (68.02%)	355 (31.98%)	1,110 (100.00%)

Linkage rate conditional on signing-up: 38% (135/355)

Overall participation rate: 12% (135/1,100)

Determinants of Participation

- Consent is lowest among 55+ and married individuals; it is higher for those with internet banking experience
- Conditional on consent, the probability of signing-up decreases with age and increases with education and internet banking experience
- Conditional on signing-up, the likelihood of linking institutions is higher for individuals with at least a college degree and lower among minorities
- Financial literacy and cognitive ability are positively correlated with the conditional and unconditional probabilities of signing-up
- **Monetary incentives do not affect participation**

Proportion of UASFin Participants with Different Levels of Financial Responsibility within the Household

	None/Some/Equally Shared	Most/All
Regular shopping	35.29	64.71
Paying bills	21.01	78.99
Saving/investing	36.13	63.87

Descriptive Statistics: Comparison with Gelman et al. (2014)

Number of Accounts and Daily Transactions

	Gelman et al. (2014)		UASFin Study	
	Mean	Median	Mean	Median
Number Accounts				
Total	5.84	5	5.18	4
Checking	1.35	1	1.72	1
Savings	0.79	1	1.78	1
Credit card	3.58	3	2.50	2
Number of Daily Transactions				
Total	4.54	3	2.14	2
Checking	3.03	2	0.97	0
Savings	0.22	0	0.08	0
Credit card	1.23	1	0.77	0
Account Balances				
Checking	6,969	1,400	6,981	1,296
Savings	4,476	400	8,634	1,060
Credit card	7,228	3,600	3,146	1,587
Credit limit	23,019	11,900	10,023	7,500

Number of Accounts Linked: Comparison with SCPC Ownership Info

Checking: 60% linkage rate

Accounts in the SCPC	Accounts linked 1	2+	Total
1	30 (61%)	19 (39%)	49 (100%)
2+	10 (45%)	12 (55%)	22 (100%)

Savings: 42% linkage rate

Accounts in the SCPC	Accounts linked 1	2+	Total
0	3 (100%)	0 (0%)	3 (100%)
1	14 (67%)	7 (33%)	21 (100%)
2+	14 (67%)	7 (33%)	21 (100%)

Credit Cards: 87% linkage rate

Accounts in the SCPC	Accounts linked 1	2+	Total
1	11 (92%)	1 (8%)	12 (100%)
2+	25 (28%)	63 (72%)	88 (100%)

Median Account Balances by Education, Financial Literacy and Cognitive Ability

	Education		Fin. Literacy		Cog. Ability	
	No-Col	Col	Low	High	Low	High
Checking	775	1,726	997	1,854	1,149	1,515
Savings	1,420	800	1,215	756	1,234	650
Credit card	1,531	1,630	1,888	1,274	1,970	1,213
Credit limit	5,500	10,000	5,300	10,000	6,000	10,000

Descriptive Statistics: Median Monthly Income and Expenditures

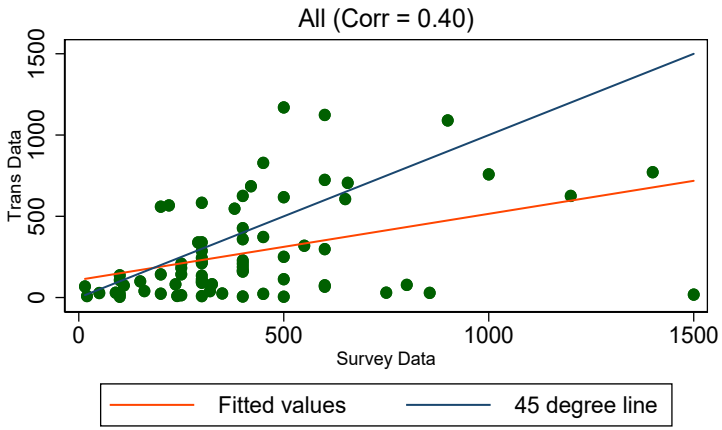
	All	Education		Fin. Literacy		FinResp
		NoCol	Col	Low	High	
Reg Inc	4,024	1,773	4,641	3,322	4,160	3,779
Tot Inc	4,411	2,481	5,420	3,825	4,745	4,328
Tot Exp	5,145	3,076	5,803	4,426	5,486	4,321
$(\text{TotExp})_{nocheck}$	4,126	2,297	4,718	3,749	4,329	3,524
Grocery	320	229	333	300	343	280
Restaurant	259	146	313	276	235	203
Merchandise	545	506	554	549	533	482
Automotive	180	98	196	181	179	157

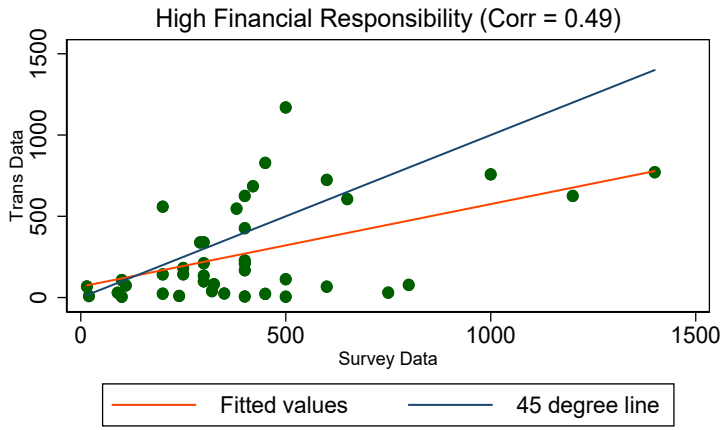
Sample: UASFin participants with both income and expenditure data

FinResp: UASFin participants with both income and expenditure data who reported having most or all responsibility for shopping and paying bills within the household

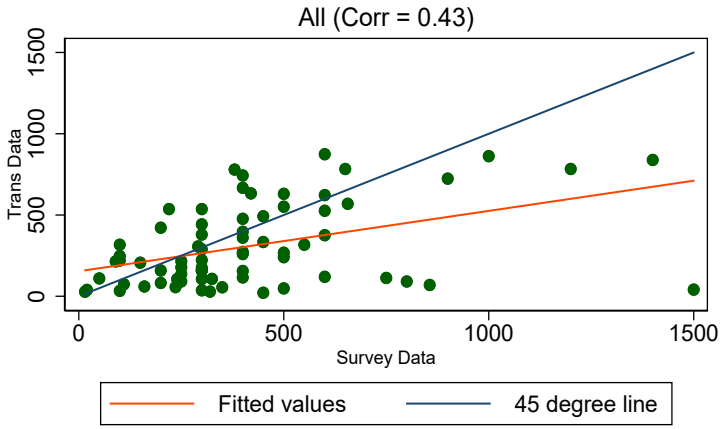
Grocery Expenditure Comparison: Self-reports vs. Transaction Data

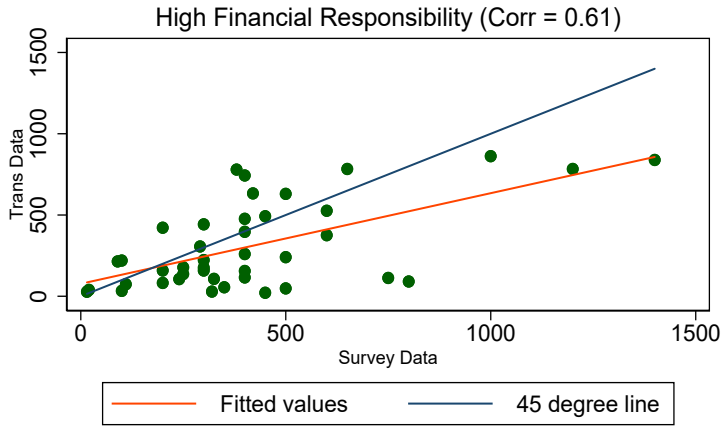
Self-Reports vs. Same Month Trans Data





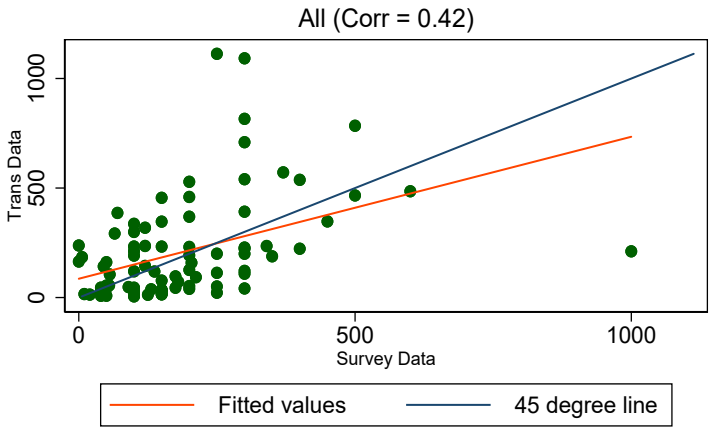
Self-Reports vs. Average Monthly Trans Data

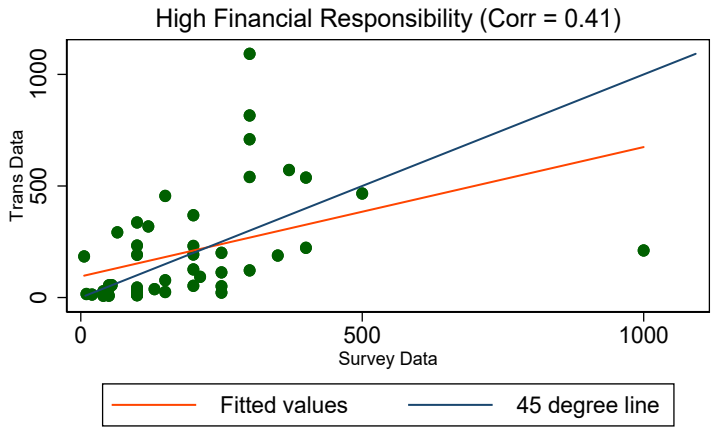




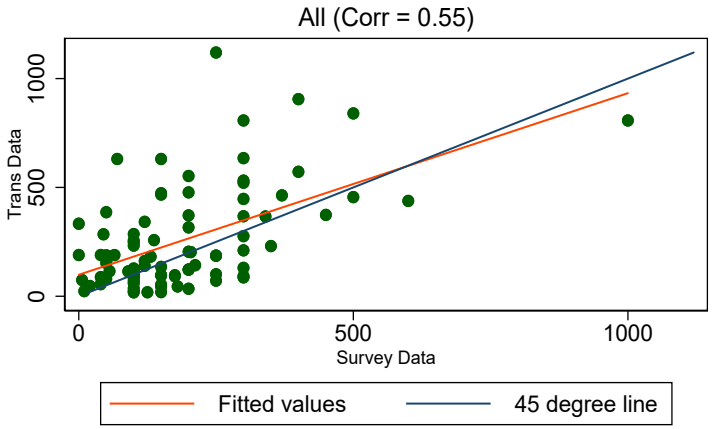
Restaurant Expenditure Comparison: Self-reports vs. Transaction Data

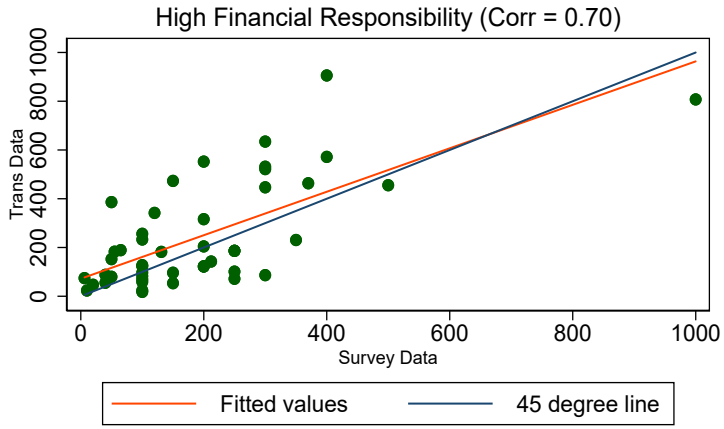
Self-Reports vs. Same Month Trans Data





Self-Reports vs. Average Monthly Trans Data





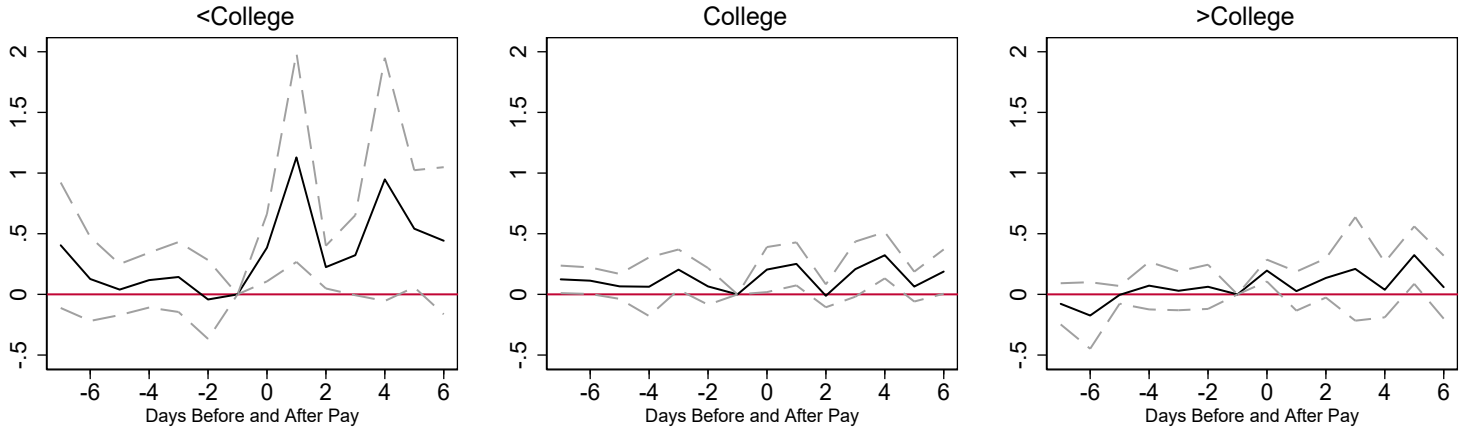
Expenditure Smoothing over Pay Cycle

Analysis Details:

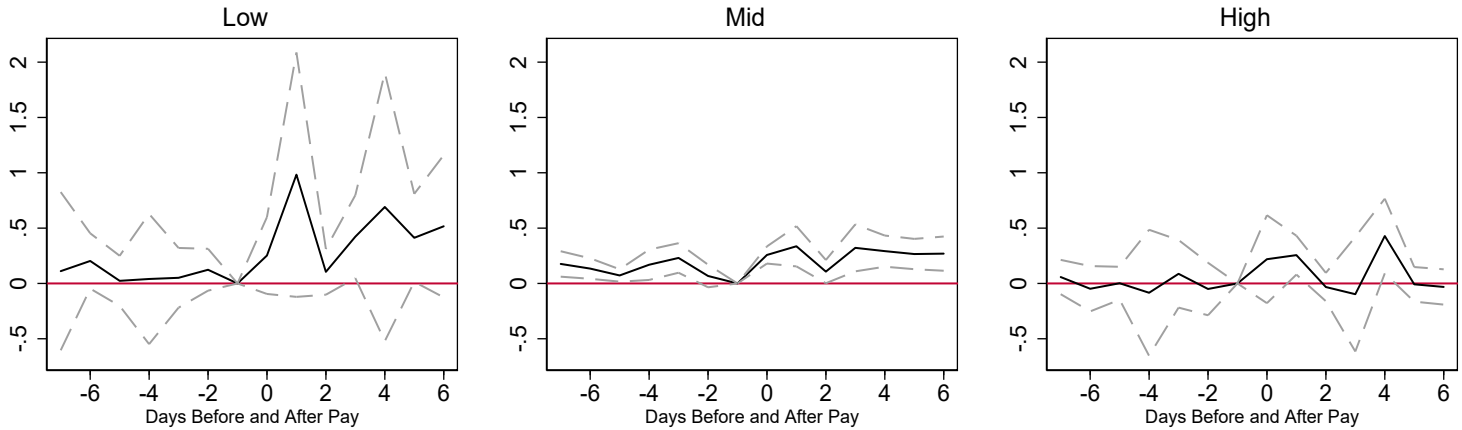
- Focusing on salary and regular income, we identify a payment dates for each individual
- Frequency of payment is defined as the within-individual median of distances between two successive payment dates
- We rely on 32 study participants who are paid bi-weekly
- We consider 3 types of expenditures: grocery, restaurant, and merchandise
- For each individual, we compute average expenditure over the 2-year observation period and then take the ratio of each date's expenditure to average expenditure
- We run regressions of expenditure ratios on a set of dummies for the 7 days before the payment date, the payment date itself, and the 6 days after the payment date

Expenditure Smoothing over Pay Cycle: Merchandise

by Education



by Financial Literacy



What we Learned

- Participation in this kind of studies is driven by respondents' willingness/skills to register accounts
- The biggest barrier is represented by privacy and security concerns
- Selectivity is an important issue, which can be addressed with survey data
- Coverage of all accounts is not necessarily guaranteed, but transaction data can be complemented with survey data
- Individual vs. household financial situation: the important role of survey information

What's Next?

- We recently launched a new transaction data collection effort, inviting all UAS members (about 8,000)
- We are now using Plaid's API (better coverage of institutions, better transaction categorization)
- We have developed a new guided linking process, which should induce respondents to link most of their accounts
- We elicit reasons for non participation
- With about 1,000 participants, we can better explore the potential of combining transaction and survey data for economic analyses