

# “Heterogeneous Spending and Saving Behaviors: What Can We Learn from Survey Experiments?”

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## Using Surveys in Macro (I)

**Application:** How do households reason and make decisions when faced with unexpected and transitory income shocks of different sign and size?

### Survey use 1: Model selection

Which model, among several consistent ones, explains data patterns? We can ask people more directly about their “mode of functioning” and mental models.

**Adjustment margins:** what decisions - e.g. spending, (de)leveraging, saving, labor supply - are affected by the shock?

**Motivations/Reasons:** why do households choose to use or not certain adjustment margins?

**Heterogeneity.** Ask detailed questions about economic and financial circumstances, past salient events, perceptions, expectations, hurdles and constraints, goals...

## Using Surveys in Macro (II)

### Survey use 2: Estimate key parameters

**Hypotheticals.** Recover estimates that are hard to obtain using revealed behavior (e.g., iMPCs out of hypothetical income changes).

**Experiments.** Provide randomized info or framing (e.g., shift macro perceptions).

**Higher-order beliefs.** How do you think others react in some scenarios? Relevant for policy and expectations.

## Example: Estimating iMPCs from Survey Data

- Auclert et al. (2018, 2020): a limited set of moments - iMPCs - are key sufficient statistics to study the GE propagation of shocks and policies.
- Matrix  $\mathbf{M}$  of iMPCs:

$$\mathbf{M} = \begin{bmatrix} \frac{\partial C_0}{\partial Z_0} & \frac{\partial C_0}{\partial Z_1} & \frac{\partial C_0}{\partial Z_2} & \dots \\ \frac{\partial C_1}{\partial Z_0} & \frac{\partial C_1}{\partial Z_1} & \frac{\partial C_1}{\partial Z_2} & \dots \\ \frac{\partial C_2}{\partial Z_0} & \dots & \dots & \dots \\ \dots & \dots & \dots & \dots \end{bmatrix}$$

- Available data allow to estimate the first rows of the first column.
  - ▶ Solution: match available estimates, then use models to extrapolate to other columns.
- Survey estimates allow to study the planned spending response to future anticipated income shocks  $dZ_1, dZ_2, \dots$ 
  - ▶ Use these estimates to **parametrize** the infinite-dimensional matrix  $\mathbf{M}$ .

# The Sample

## Sample and Representativeness

- We designed and conducted a survey of around 3,000 U.S. households between November 2022 and January 2023.
  - ▶ Survey distributed through Lucid Marketplace.
    - ★ Leading platform granting researchers access to multiple suppliers of survey takers.
  - ▶ Focus on respondents who are in the labor force at the time of the interview and aged between 25 and 65.
  - ▶  $\approx$  25 minutes to complete the survey.
- We set **quotas** on age, total annual household gross income, gender and race to target U.S. population shares from the CPS-ASEC (2022).
- **Data quality:** robust sample (exclude respondents based on abnormal time to complete, patterns in closed-ended questions, inconsistencies in open-ended questions).
- **Older waves of data collection:** survey on iMPCs estimation (May - October 2021;  $\approx$  1450 respondents); survey on model selection (February - March 2022;  $\approx$  900 respondents).

# Sample and Representativeness: Targeted Characteristics

	U.S. Population	Survey
Male	.53	.53
25-29 years old	.13	.13
30-39 years old	.28	.28
40-49 years old	.25	.25
50-59 years old	.24	.24
60-65 years old	.1	.1
\$0-\$19,999	.04	.04
\$20,000-\$39,999	.11	.11
\$40,000-\$69,999	.2	.2
\$70,000-\$124,999	.29	.29
\$125,000+	.36	.36
White	.61	.73
Black/African-American	.12	.12
Hispanic/Latino	.18	.13
Asian/Asian-American	.07	.03
Full time employed	.78	.79
Part time employed	.09	.08
Self-employed	.1	.08
Unemployed	.03	.05
U.S. total population	260,329	-
U.S. labor force, age 25-65	129,923	-
Sample size	-	2923

# Sample and Representativeness: Non-targeted Characteristics

		U.S. Population	Survey
Primary residence:	ownership rate	.64	.75
	value (mean)	368000	339000
	value (median)	243000	325000
Business:	ownership rate	.13	.24
	value (mean)	1235000	623000
	value (median)	105000	300000
Checking accounts:	ownership rate	.94	.93
	value (mean)	10347	11728
	value (median)	2500	4000
Total assets:	value (mean)	823000	1113000
	value (median)	236000	507000
Mortgages on primary residence:	share with mortgages	.49	.45
	value (mean)	201000	150000
	value (median)	150000	138000
Credit card balances:	value (mean)	6386	5872
	value (median)	3000	3250
Total debts:	share with debts	.86	.73
	value (mean)	166000	152000
	value (median)	97000	93000

Tot. assets: real estate, HH shares in business, motor vehicles, checking & short-term accounts, CDs, hedge funds, treasuries, bonds, stocks, pension accounts.

Tot. debts: credit card balances, mortgages, motor vehicle loans, education loans, residual debts.



# Cross-Validation of Survey Responses

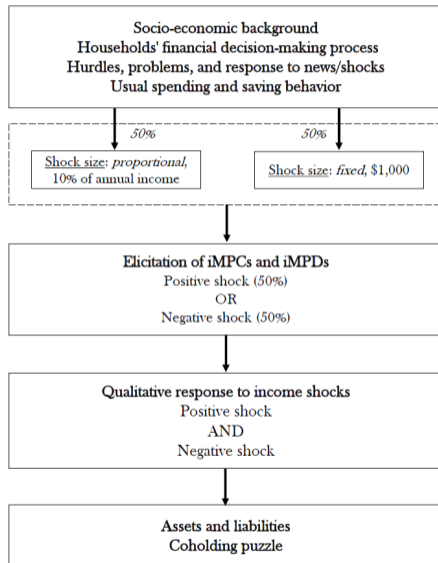
## Data Quality and Cross-Validations → Details here.

Paper	Estimate	Sample	Value	Our estimate	
Karger and Rajan (2021)	MPC out of the <u>first</u> EIP, 2 weeks	Facteus bank-account data	.46	.51 (.022)	
Baker et al. (2020)	MPC out of the <u>first</u> EIP, 10 days	SaverLife bank-account data	.25-.35		
Misra et al. (2021)	MPC out of the <u>first</u> EIP, 1 week	Facteus data, ZIP code level	.51		
Karger and Rajan (2021)	MPD out of the <u>first</u> EIP, 2 weeks	Facteus bank-account data	.10	.3 (.021)	
Karger and Rajan (2021)	MPC out of the <u>second</u> EIP, 2 weeks	Facteus bank-account data	.39	.49 (.024)	
Karger and Rajan (2021)	MPD out of the <u>second</u> EIP, 2 weeks	Facteus bank-account data	.14	.29 (.022)	
Patterson (2021)	MPC out of income loss due to unemp.	CEX, PSID	.53	.58 (.023) <i>all</i>	.58 (.042) <i>concern unemp.</i>
Ganong and Noel (2019)	$\Delta$ spending in first month of unemp.	JPMCI bank-account data	-.06	-.24 (.02) <i>all</i>	-.18 (.051) <i>concern unemp.</i>
Kaplan et al. (2014)	Share of HtM households	SCF	.31	.29 (.012)	
	Share of wealthy HtM out of total HtM	SCF	.62	.63 (.035)	
Chetty and Szeidl (2007)	Share of committed expenditures	CEX, PSID	0.5 (update: 0.6)	.62 (.005)	

*Notes:* Standard errors in parentheses.

# The Survey

# Survey flow



# iMPC and iMPD elicitation

Please provide an estimate of your **total household income, after taxes and transfers**, in 2021.

- \$0 - \$14,999
- \$15,000 - \$19,999
- \$20,000 - \$24,999
- \$25,000 - \$29,999
- \$30,000 - \$39,999
- \$40,000 - \$49,999
- \$50,000 - \$59,999
- \$60,000 - \$69,999
- \$70,000 - \$79,999
- \$80,000 - \$99,999
- \$100,000 - \$149,999
- \$150,000 - \$249,999
- \$250,000 or more

# Quantitative iMPC and iMPD elicitation

Suppose that today you learn that you and your household will receive an **unexpected, one-time payment** of approximately 10 percent of your total household annual income (after taxes and transfers). You can think of this payment as a government stimulus check, tax refund, bonus, inheritance, gift, or lottery win. This one-time payment, which will not be taxed, will be available on your bank account or as a check in your mailbox within a few days.

Now, consider ways in which you and your household could use this additional income:

1. **Additional spending:** purchases of durable goods (e.g., cars, furniture, jewelry, etc.) or non-durable goods and services that do not last for a long time (e.g., food, clothes, vacation, etc.) in addition to those you have already planned.
2. **Additional debt repayments:** principal and interest payments to reimburse outstanding debt (e.g., credit card debts, mortgages, student and consumer loans, etc.) in addition to those you have already planned.
3. **Savings:** amount of additional income that is neither spent nor used to repay debt. It is left for future use, for instance by depositing it in checking, savings, or pension accounts, or by purchasing financial assets.

We would like to understand how you and your household would allocate this one-time payment to additional spending and debt repayments in the next few quarters.

# Quantitative iMPC and iMPD elicitation

Suppose that today you and your household receive a one-time payment of the following amount:

**\$4500**

Please enter how you would **allocate this one-time payment to additional spending and debt repayments** in different 3-month periods. Money that you do not use for additional spending and debt repayments during these periods will **saved for future use**.

	Additional spending	Additional debt repayments
Between today and 3 months from now	<input type="text"/>	<input type="text"/>
Between 4 and 6 months from now	<input type="text"/>	<input type="text"/>
Between 7 and 9 months from now	<input type="text"/>	<input type="text"/>
Between 10 and 12 months from now	<input type="text"/>	<input type="text"/>

**Savings: \$4500**

# Quantitative iMPC and iMPD elicitation

Suppose that today you and your household receive a one-time payment of the following amount:

**\$4500**

Please enter how you would **allocate this one-time payment to additional spending and debt repayments** in different 3-month periods. Money that you do not use for additional spending and debt repayments during these periods will **saved for future use**.

	Additional spending	Additional debt repayments
Between today and 3 months from now	<input type="text" value="500"/>	<input type="text" value="300"/>
Between 4 and 6 months from now	<input type="text" value="200"/>	<input type="text" value="200"/>
Between 7 and 9 months from now	<input type="text" value="100"/>	<input type="text"/>
Between 10 and 12 months from now	<input type="text"/>	<input type="text"/>

**Savings: \$3200**



## Quantitative iMPC and iMPD elicitation

Consider a hypothetical scenario identical to the question above, except that today you learn that you and your household will receive a future one-time payment of approximately 10 percent of your total household annual income (after taxes and transfers). You can think of this payment as a government stimulus check, tax refund, bonus, inheritance, gift, or lottery win.

This one-time payment will be **available** on your bank account or as a check in your mailbox **3 months from now**.

Will you and your household be able to increase spending and debt repayments over the next 3 months ahead of the one-time payment?

Yes

No

## Example: Responding to a positive income shock

Suppose that today you learn that you and your household will receive an **unexpected one-time payment** of **\$4500** (e.g., a government stimulus check, tax refund, bonus, inheritance, gift, or lottery win). This one-time payment (which will not be taxed) will be available in your bank account or as a check in your mailbox in just a few days.

*We will now ask you a few questions about how you and your household would react to this unexpected payment.*

# Qualitative response to a positive income shock

Suppose that today you learn that you and your household will receive an **unexpected one-time payment** of **\$4500** (e.g., a government stimulus check, tax refund, bonus, inheritance, gift, or lottery win). This one-time payment (which will not be taxed) will be available in your bank account or as a check in your mailbox in just a few days.

*We will now ask you a few questions about how you and your household would react to this unexpected payment.*

Would you do any of the following after receiving the unexpected one-time \$4500 payment?

You can spend all the money in one category or split it among categories.

Repay late bills that we wouldn't normally pay without this extra money.	Yes	No
Invest more than we usually would (e.g., buying more stocks).	Yes	No
Put money into our emergency fund.	Yes	No
Lend money to someone else.	Yes	No
Give some money to someone else as a gift or to charity.	Yes	No
Cut back on our working hours for a while.	Yes	No
Make more repayments on our other loans (e.g., mortgages, auto loans, etc.).	Yes	No
Purchase basic necessities and items that we need and cannot currently afford.	Yes	No
Purchase some bigger-ticket items (e.g., appliances, furniture, car, etc.) that we wouldn't otherwise purchase.	Yes	No
Spend on the things and activities that we like.	Yes	No
Put money aside to be able to spend more over the next few weeks or months.	Yes	No
Make more repayments on our credit card(s).	Yes	No
Put more money towards our long-term goals (e.g., house purchase, education, or retirement).	Yes	No

# Example: Responding to a positive income shock

Suppose that today you learn that you and your household will receive an **unexpected one-time payment** of **\$4500** (e.g., a government stimulus check, tax refund, bonus, inheritance, gift, or lottery win). This one-time payment (which will not be taxed) will be available in your bank account or as a check in your mailbox in just a few days.

*We will now ask you a few questions about how you and your household would react to this unexpected payment.*

## Open-ended question

Is there any other action you would take in response to the unexpected one-time \$4500 payment?

Would you do any of the following after receiving the unexpected one-time \$4500 payment?

You can spend all the money in one category or split it among categories.

Repay late bills that we wouldn't normally pay without this extra money.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Invest more than we usually would (e.g., buying more stocks).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Put money into our emergency fund.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Lend money to someone else.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Give some money to someone else as a gift or to charity.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Cut back on our working hours for a while.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Make more repayments on our other loans (e.g., mortgages, auto loans, etc.).	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Purchase basic necessities and items that we need and cannot currently afford.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Purchase some bigger-ticket items (e.g., appliances, furniture, car, etc.) that we wouldn't otherwise purchase.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Spend on the things and activities that we like.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Put money aside to be able to spend more over the next few weeks or months.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Make more repayments on our credit card(s).	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Put more money towards our long-term goals (e.g., house purchase, education, or retirement).	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

## Example: Responding to a positive income shock

*Purchase basic necessities and items that we need and cannot currently afford;*

*Purchase some bigger-ticket items (e.g., appliances, furniture, car, etc.) that we wouldn't otherwise purchase;*

*Spend on things and activities that we like;*

*Make more repayments on our credit card(s);*

*Make more repayments on our other loans (e.g., mortgages, auto loans, etc.);*

*Repay late bills that we wouldn't normally pay without this extra money;*

*Put money into our emergency fund;*

*Put money aside to be able to spend more over the next few weeks or months;*

*Put more money towards our long-term goals (e.g., house purchase, education, or retirement);*

*Invest more than we usually would (e.g., buy more stocks);*

*Give some money to someone else as a gift or to charity;*

*Lend money to someone else;*

*Cut back on our working hours for a while*

# Reasons for adjusting spending to a positive income shock

## Why increase spending?

You answered that you would increase your spending in response to an unexpected \$4500 payment. How relevant are the following reasons for not increasing your spending by even more?

	Not at all relevant	Somewhat relevant	Very relevant	Extremely relevant
We don't like to splurge too much when we get extra money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
We don't want to think more about how to spend this money.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
We try to maintain a relatively stable level of spending.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
There is nothing else we currently need or want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Not at all relevant	Somewhat relevant	Very relevant	Extremely relevant
We are very self-disciplined in how we spend our money and we mostly stick to our plans.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't like spending too much of any extra money because we worry about the future.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This amount of money is too small to spend more time thinking about how to spend it.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Why not increase spending by more?

You answered that you would increase your spending in response to an unexpected \$4500 payment. How relevant are the following reasons for not increasing your spending by even more?

	Not at all relevant	Somewhat relevant	Very relevant	Extremely relevant
We don't like to splurge too much when we get extra money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
We don't want to think more about how to spend this money.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
We try to maintain a relatively stable level of spending.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
There is nothing else we currently need or want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
	Not at all relevant	Somewhat relevant	Very relevant	Extremely relevant
We are very self-disciplined in how we spend our money and we mostly stick to our plans.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
We don't like spending too much of any extra money because we worry about the future.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This amount of money is too small to spend more time thinking about how to spend it.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# Reasons for adjusting spending to a positive income shock

## Why increase spending?

*We would like to splurge on something nice;*

*We really need some items that we cannot otherwise afford;*

*We have been saving toward a larger purchase (e.g., a car, appliances etc.) and this unexpected payment allows us to purchase it;*

*We try to save towards our goals, so it's nice to have extra cash for spending;*

*Most of our wealth is invested and we don't like selling assets for spending. It's nice to have extra cash to spend more freely;*

*When we get extra money we like to spend it on higher-quality items or activities that we would not otherwise;*

*We don't have time to think about how to invest or save that money or how else to use it, so we prefer to simply spend it.;*

*This amount of money is not enough to spend time thinking about;*

*When we receive some extra money, we cannot resist the temptation to buy something nice;*

*We like to enjoy what we currently have and not worry too much about future issues.;*

*We worry that prices will keep rising, so we prefer to use this money to buy things now*

## Example: Responding to a positive income shock - Adjusting spending

→ *Other reasons here.*

### Why not increase spending by more?

*There is nothing else we currently need or want;*

*We don't like to splurge too much when we get extra money;*

*We try to maintain a relatively stable level of spending;*

*We don't want to think more about how to spend this money;*

*This amount of money is too little to spend more time thinking about how to spend it;*

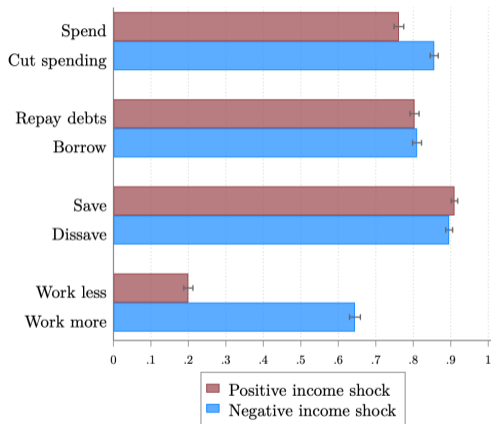
*We are very self-disciplined in how we spend our money and we mostly stick to our plans;*

*We don't like spending too much of any extra money because we worry about the future*



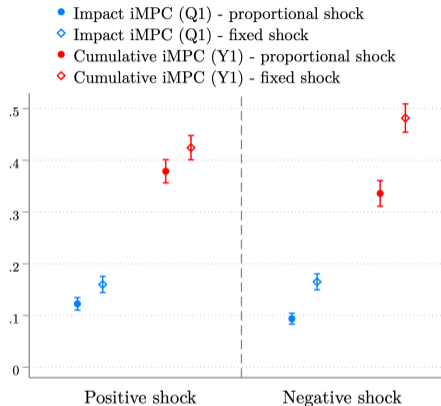
# Adjustment Margins and MPCs

# Adjustment margins



- 4 margins of adjustment for each of the 2 shocks. → *Distribution of number of margins here.*
- Asymmetry in extensive margins: more spending & hours adjustment for negative shock.
  - ▶ Difficult to adjust hours of work down; possible to work overtime.

## iMPCs estimates



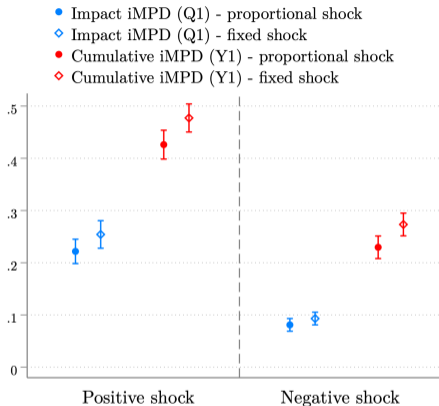
**Size effects:** MPCs decrease in size of the transfer (higher for \$1,000 fixed shock)

**Sign effects:** no difference on impact, but cumulating over one year

**Relation to previous estimates:** Auclert (2019) Italy annual MPC  $\approx 0.45$ ; Fagereng et al. (2021) Norway annual MPC  $\approx 0.5$ ; Fuster et al. (2021) quarterly MPC  $\approx 0.1$ ; Kaplan and Violante (2014) quarterly MPC  $\approx 0.14$ .

Avg reported MPCs out of an income shock.

# iMPDs estimates



**Size effects:** MPDs decrease in size of the transfer (higher for \$1,000 fixed shock)

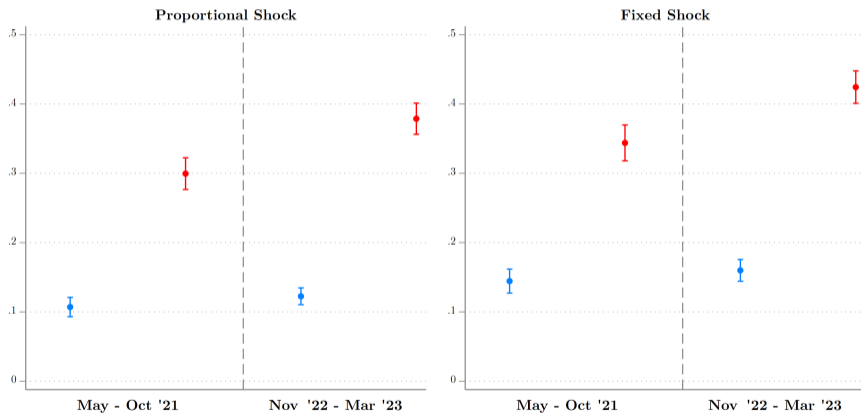
**Sign effects:** on impact and cumulatively after one year

**Relation to previous estimates:** Kosar et al. (2022) NY Fed SCE find cumulative MPD slightly greater than cumulative MPC.

Avg reported MPDs out of an income shock.

# MPCs across survey waves

- Relatively stable estimates across waves.
- Smaller cumulative MPCs after Covid checks sent to households.



- Impact iMPC (Q1)
- Cumulative iMPC (Y1)

## Predicting MPCs from HH characteristics

	iMPC (Q1)	iMPC (Y1)	iMPD (Y1)
Fixed shock	0.038*** (0.012)	0.047** (0.019)	0.049** (0.022)
Age: 35-49	0.021 (0.016)	0.045* (0.025)	-0.001 (0.029)
Age: 50-65	-0.005 (0.017)	-0.053* (0.027)	0.138*** (0.032)
High education	0.003 (0.016)	0.015 (0.025)	0.034 (0.030)
HH with children	0.002 (0.015)	0.046** (0.023)	-0.039 (0.027)
High income	-0.010 (0.016)	0.005 (0.026)	-0.051* (0.031)
High liquid assets	-0.003 (0.015)	0.020 (0.024)	-0.036 (0.028)
High cred card debt	-0.016 (0.013)	-0.050** (0.020)	0.051** (0.023)
High Illiquid Assets	-0.000 (0.015)	0.060** (0.024)	-0.035 (0.028)
High illiquid debt	-0.029** (0.012)	-0.073*** (0.020)	0.012 (0.025)
Observations	1179	1170	860
Adjusted $R^2$	0.012	0.085	0.089

More difficult to predict impact MPCs than cumulative (one-year) MPCs.

- Timing variation across households.

### Demographics, income & assets

- **Age (life-cycle component):** older HHs have *lower* MPCs, *higher* MPDs. High MPCs in middle-age.
- **Income:** high income HHs have *lower* MPDs. No role for MPCs
- **Liquidity:** high credit card debt HHs have *lower* MPCs and *higher* MPDs (in line with Kosar et al., 2022).
- High illiquid assets & low illiquid debts HHs have higher MPCs; HHs with children have higher cumulative MPCs.

# Predicting MPCs from HH characteristics

	iMPC (Q1)	iMPC (Y1)	iMPD (Y1)
Low self-control	0.008 (0.017)	0.068** (0.027)	-0.038 (0.030)
Risk lover	0.014 (0.014)	0.032 (0.023)	-0.009 (0.027)
Patient	0.008 (0.013)	-0.004 (0.021)	0.006 (0.024)
Concern retirement	0.006 (0.016)	-0.022 (0.025)	0.055* (0.029)
High commitments	0.013 (0.013)	0.007 (0.020)	0.048** (0.024)
High income risk	0.007 (0.017)	0.004 (0.026)	0.009 (0.031)
High planned investments	-0.008 (0.013)	0.020 (0.020)	0.054** (0.024)
Not enough for basic needs	-0.013 (0.019)	-0.062** (0.029)	0.104*** (0.034)
Observations	1174	1165	856
Adjusted $R^2$	0.008	0.092	0.114

## Preferences, beliefs, and goals:

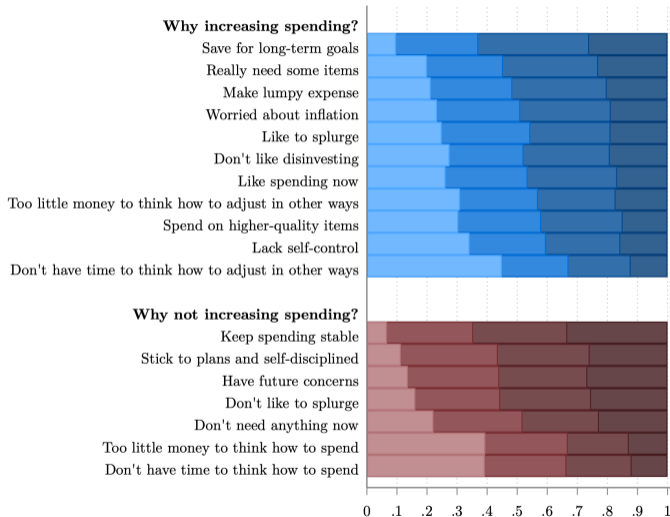
- **Preferences:** low self control have *higher* MPCs.
- **Concern retirement:** predicts *higher* MPDs.
- High commitments & high planned investments: *higher* cumulative MPD.
- Not enough for basic needs: *lower* cumulative MPC; *higher* cumulative iMPD.

Note: we control for demographics, income & assets. → *Definitions here.*

# Heterogeneity in models across households

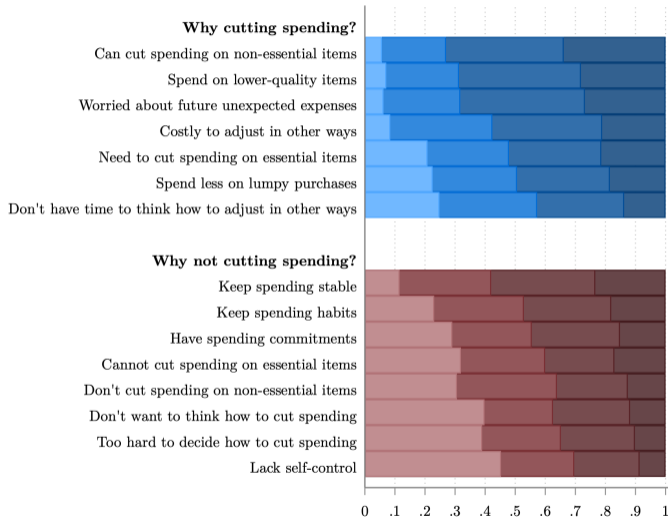


# Reasons: why adjust/not adjust spending out of a positive shock?



Note: scale from “not at all relevant” (light color) to “extremely relevant” (dark color)

# Reasons: why adjust/not adjust spending out of a negative shock? → *Other reasons here.*



Note: scale from “not at all relevant” (light color) to “extremely relevant” (dark color).

## Classifying Households into Types → *Details on definitions here.*

- **Smoothers** (24%):

smooth spending in response to the positive and negative shock

are unconstrained (sufficient savings, low debts, have enough for essential purchases).

- **Behavioral** (21%):

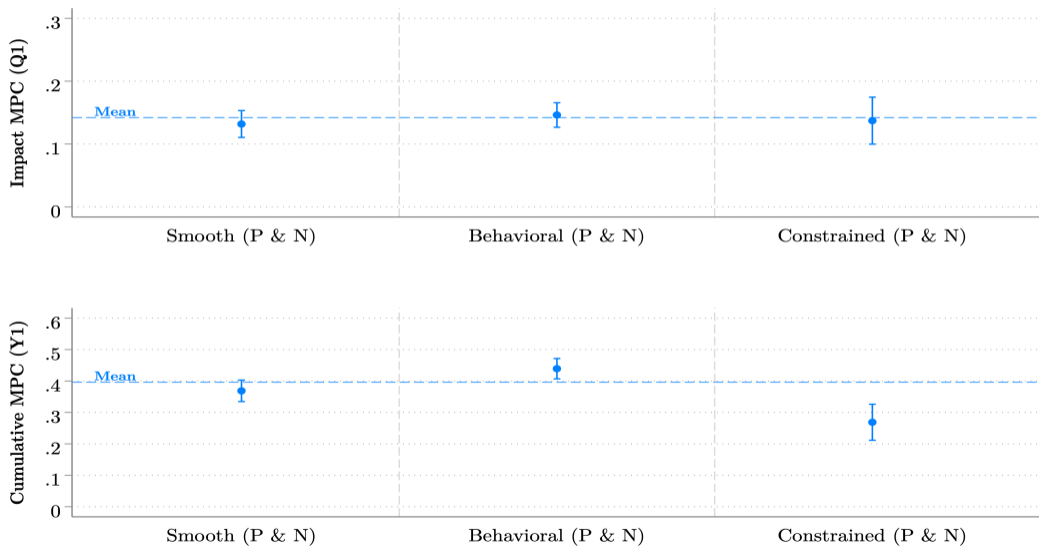
spend the money when positive shock or cut spending when negative shock because do not want to spend time/effort thinking about how to adjust to income shock.

follow rules of thumb.

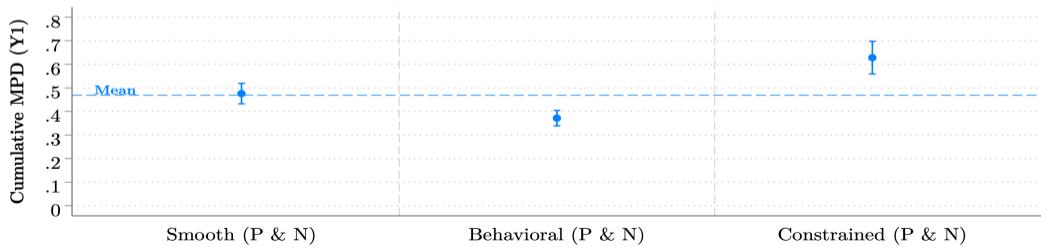
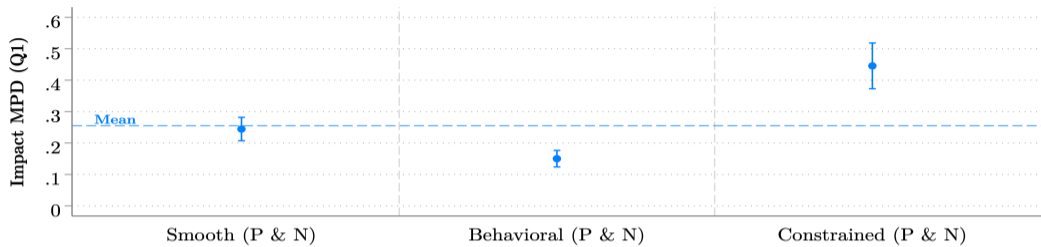
- **Constrained** (6%):

are constrained (need to adjust spending on essential items when negative shock, cannot easily borrow, have insufficient savings).

# MPCs of different household types



# MPDs of different household types



# Predicting models from HH characteristics - I

	Smooth (P & N)	Behavioral (P & N)	Constrained (P & N)
Fixed shock	0.028* (0.016)	-0.006 (0.015)	-0.001 (0.009)
Age: 35-49	-0.006 (0.022)	0.025 (0.020)	0.012 (0.012)
Age: 50-65	0.079*** (0.022)	-0.087*** (0.021)	0.011 (0.012)
High education	0.018 (0.020)	0.002 (0.019)	-0.003 (0.011)
HH with children	-0.067*** (0.019)	0.064*** (0.018)	-0.009 (0.010)
High income	-0.015 (0.021)	0.062*** (0.020)	-0.052*** (0.011)
High liquid assets	0.116*** (0.020)	0.020 (0.019)	-0.061*** (0.011)
High cred card debt	-0.078*** (0.017)	0.069*** (0.016)	0.030*** (0.009)
High Illiquid Assets	0.054*** (0.020)	0.000 (0.019)	0.001 (0.011)
High illiquid debt	-0.054*** (0.017)	0.033** (0.016)	0.001 (0.009)
Observations	2668	2668	2668
Adjusted $R^2$	0.052	0.077	0.067

Smoothers:

- are older; have higher liquid and illiquid assets; lower debt.

Behavioral individuals:

- are younger; have higher income; higher debt

Constrained individuals:

- are poorer; have lower liquid and illiquid assets; have higher credit card (but not other) debt.

## Predicting models from HH characteristics - II

	Smooth (P & N)	Behavioral (P & N)	Constrained (P & N)
Low self-control	-0.037* (0.022)	0.113*** (0.021)	-0.024** (0.012)
Risk lover	-0.002 (0.018)	0.047*** (0.017)	-0.015 (0.010)
Patient	-0.024 (0.017)	0.012 (0.016)	-0.019** (0.009)
Concern retirement	-0.027 (0.021)	0.052*** (0.019)	0.001 (0.011)
High commitments	-0.014 (0.017)	-0.021 (0.016)	0.021** (0.009)
High income risk	-0.059*** (0.022)	-0.020 (0.020)	0.037*** (0.012)
High planned investments	0.057*** (0.017)	-0.051*** (0.016)	-0.019** (0.009)
Not enough for basic needs	-0.065*** (0.023)	-0.014 (0.022)	0.085*** (0.012)
Observations	2659	2659	2659
Adjusted $R^2$	0.082	0.140	0.106

Smoothers:

- report lower income risk; more planned investments; higher self-control

Behavioral individuals:

- report lower self-control, lower risk aversion, lower planned investments.

Constrained individuals:

- report lower patience; higher commitments; higher income risk, lower planned investments; and scarcity of resources for basic needs.

$R^2$  consistently low.

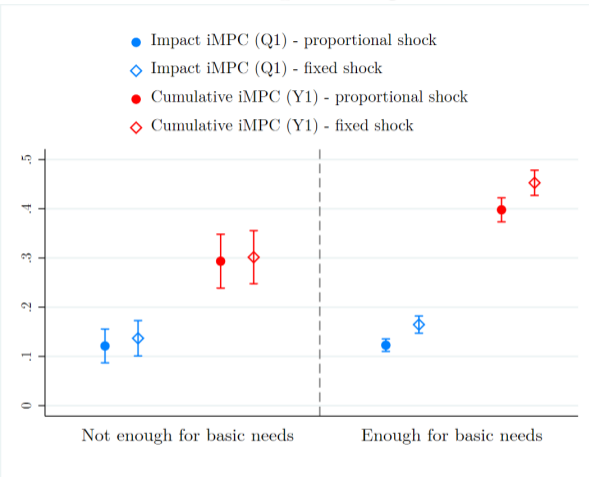
# Resolving Puzzles



## Spending behavior of the constrained

- How do strongly constrained households respond to transfers?
- Recent evidence shows smaller spending responses to transfers than previously estimated
  - ▶ Parker et al. (2022) use the Consumer Expenditure Interview Survey. Find quarterly MPCs  $\approx 15\%$  out of the EIPs (similar to us during that period), smaller than previous estimates
  - ▶ Kosar et al. (2023) use NY Fed special survey modules during Covid and show that more constrained households focus on debt repayments rather than spending upon receipt of transfers
  - ▶ Both papers suggest the stimulus checks might be largely used for insurance purposes rather than spending
- In our data we jointly observe
  - ▶ proxies for constraints (e.g., respondents' self-reported need for basic goods)
  - ▶ their reported MPCs and MPDs
  - ▶ the reasoning (models) they use when adjusting to income shocks

## Spending behavior of the constrained: iMPCs

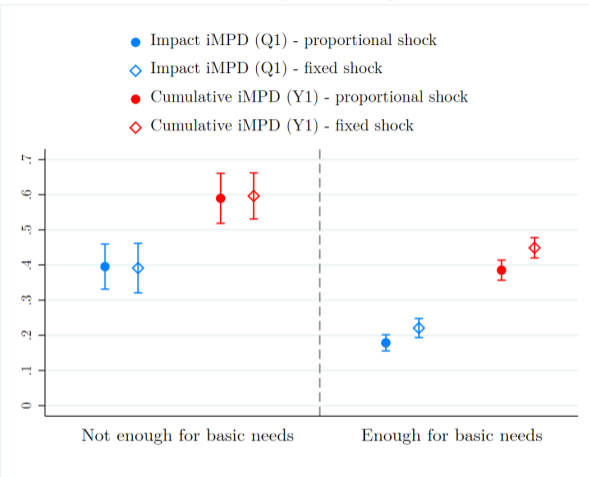


Constrained respondents have lower income & assets; higher income risks and concerns.

Have significantly smaller MPCs, especially when looking at the cumulative response over 4 quarters

Avg reported MPCs out of an income shock by group.

## Spending behavior of the constrained: iMPDs



Avg reported MPDs out of an income shock by group.

Constrained respondents also have significantly larger MPDs, both on impact and cumulatively

Jointly, results confirm that constrained households favor using transfers to deleverage rather than to increase spending

Our data on reasoning suggest why:

- ▶  $\approx 35\%$  increase spending because "they really need some items"
- ▶  $\approx 70\%$  increase savings or deleverage out of "precautionary" motives

main priority when receiving transfers is to create buffer and/or relieve some constraints by deleveraging (self-insurance).

## The liquidity puzzle

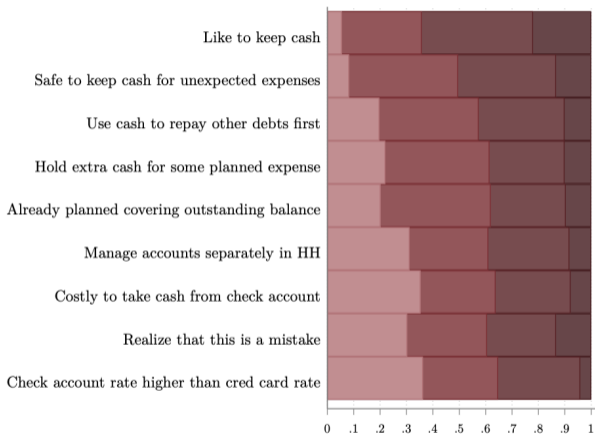
- Why do we observe high MPCs for liquid HHs?
- Tabulate reasons of **low vs high liquid assets** HHs who have high cumulative MPCs (i.e., above median conditional on  $MPC > 0$ ).
- Different ranking of reasons and different shares:
  - ▶ *Low liquidity HHs*: more likely to spend out of need.
  - ▶ *High liquidity HHs*: more likely to splurge, spend because have term liquidity constraint, and want to make a lumpy purchase.

	Low liquid assets		High liquid assets	
<i>Reasons rank</i>	<i>Reasons</i>	<i>Shares (s.e.)</i>	<i>Reasons</i>	<i>Shares (s.e.)</i>
(1)	Splurge	.46 (.04)	Long-Term Goals	.65 (.03)
(2)	Long-Term Goals	.46 (.04)	Splurge	.53 (.03)
(3)	Behavioral	.42 (.04)	Behavioral	.42 (.03)
(4)	Need	.36 (.04)	Lumpy	.35 (.03)
(5)	Inflation	.33 (.04)	Need	.29 (.03)
(6)	Lumpy	.24 (.03)	Inflation	.26 (.03)

## The coholding puzzle

- Gomes et al. (2022) with SCF:  $\approx 30\%$  of U.S. credit card holders who revolve debt have liquid assets exceeding their outstanding balance.
- Our sample:  $\approx 60\%$  of card holders who revolve debt have liquid assets (checking + short-term accounts) exceeding their outstanding balance (but subject to measurement error).
  - ▶ 21% of all sample; 26% of all with credit card.
  - ▶ Consider only respondents who do not repay credit card debt when receiving the positive income shock (i.e., who behave as coholders):  $\approx 17\%$ .
- Various explanations in the literature for this puzzling behavior: cash needed to purchase some items (Telyukova and Wright, 2008); concerns about future access to credit (Fulford, 2015; Druedahl and Jorgensen, 2018; Gorbachev and Luengo-Prado, 2019); disjoint decision making within HH (Bertaut et al., 2009).
- In our survey: ask co-holders why they behave in such a way; directly elicit which explanation applies.

# Why do people engage in coholding?



- Large share of respondents like keeping cash (per se, for planned expense, for unexpected expense).
- Have a plan to repay other debts first.
- Are going to repay but are caught in a moment where have not repaid yet.
- It does not appear to be a 'mistake.'

## Coholding puzzle for low and high income HHs

- 50% of coholders are high-income.
- Tabulate reasons of **low vs high income**.
- Different ranking of reasons:
  - ▶ Preference for holding cash common to both.
  - ▶ High income: “realize mistake” and have “already planned covering credit card balances.”
  - ▶ Low income: “need to prioritize other debts first.”

<i>Reasons rank</i>	<b>Low income</b>		<b>High income</b>	
	<i>Reasons</i>	<i>Shares (s.e.)</i>	<i>Reasons</i>	<i>Shares (s.e.)</i>
(1)	Like to keep cash	.3 (.04)	Like to keep cash	.36 (.05)
(2)	Use cash to repay other debts first	.21 (.04)	Realize that this is a mistake	.2 (.04)
(3)	Safe to keep cash for unexpected expenses	.21 (.04)	Safe to keep cash for unexpected expenses	.18 (.04)
(4)	Realize that this is a mistake	.11 (.03)	Already planned covering outstanding balance	.13 (.03)
(5)	Costly to take cash from check account	.11 (.03)	Hold extra cash for some planned expense	.13 (.03)
(6)	Hold extra cash for some planned expense	.11 (.03)	Manage accounts separately in HH	.13 (.03)

## Conclusion

Surveys can help us understand *why* households act the way they do.

Can disentangle observationally equivalent models

Households follow heterogeneous models.

We can understand some puzzles better by asking households directly.

Survey responses can be cross-validated: key feature is that hypotheticals respondents are asked about are not too far from their daily choices.



# Thank you!

- **Comprehensive guide:** “How to Run Surveys: A guide to creating your own identifying variation and revealing the invisible.”  
([socialeconomiclab.org/how-to-run-surveys/](https://socialeconomiclab.org/how-to-run-surveys/))



- **More projects:** [socialeconomiclab.org](https://socialeconomiclab.org)

# Appendix

## Example: Responding to a positive income shock - Adjusting debts → [Go back here.](#)

### Why repay debts?

*We have too many outstanding loans and debts;*

*We have maxed out or are close to maxing out our credit card(s);*

*We want to maintain or improve our credit score;*

*We are late on our credit card payments/bills or loan payments;*

*We want to make sure that if we need to borrow or take out credit again in the future, we will be able to do so;*

*We don't like having debt so we try to reduce them whenever we can;*

*We need to repay friends or family members who lent us money;*

*We worry about what could happen and that we may not be able to repay our bills or debts in the future. So, we prefer paying whatever we can now*

## Example: Responding to a positive income shock - Adjusting debts → [Go back here.](#)

### Why not repay more debts?

*We do not have any additional outstanding bills, credit card payments, or other overdue loan payments;*

*We do not have any outstanding loans or debts;*

*The interest rates on all our loans are low;*

*Even if we have some outstanding bills, credit card payments, or other loan payments, we already have a plan for how to repay them over time;*

*We mostly stick to our regular monthly payments for all our loans or credit cards. It is too complicated to make any change to our plans;*

*This amount of money wouldn't make much of a difference so we'd rather not think about which additional loans to repay;*

*Even if we have some additional outstanding bills, credit card payments, or other loan payments on which we are late, we don't want to think about it more now*

## Example: Responding to a positive income shock - Adjusting savings → [Go back here.](#)

### Why save?

*In order to meet our long-term goals, we need to save as much as we can;*

*We don't have as much in savings as we'd like right now;*

*We like saving extra money whenever we can;*

*We are usually not able to save as much as we would like;*

*We worry about unexpected things that can happen in the future, so we'd rather save the money;*

*We worry that in the future we may struggle to access credit (e.g., obtain a loan or credit card) in case we need some money. So, we prefer to save this money;*

*We want to invest and take advantage of the current market returns and rates;*

*We don't need to buy anything right now or over the next several months that we haven't already budgeted for;*

*We plan to use the money for some purchases or activities in a few months, but not now;*

*We are worried about rising prices, so we prefer to save for future needs*

## Example: Responding to a positive income shock - Adjusting savings → [Go back here.](#)

### Why not save more?

*We don't need to save more;*

*We are well on track to meet our financial goals;*

*We don't worry too much about future problems because we have enough savings if something comes up;*

*We would like to save more, but we don't want to think about it right now;*

*We wouldn't be able to invest more of this money well right now;*

## Example: Responding to a positive income shock - Adjusting work [→ Go back here.](#)

### Why reduce work hours?

*Our main jobs have flexible hours and we can easily adjust our working hours from month to month;*  
*We have second jobs with flexible hours and can easily adjust our working hours from month to month;*  
*We already work overtime, so we'd like to reduce our work hours;*  
*We usually work extra hours in some paid activity (such as freelance, driving for a ride-sharing company, babysitting, etc.) that we would be willing to cut down if we could.*

## Example: Responding to a positive income shock - Adjusting work [→ Go back here.](#)

### Why not reduce work hours by more?

*Our current jobs do not allow us to adjust hours more;*

*We do not work extra hours in any paid activity (such as in a freelance, driving or ride-sharing company babysitting, etc.);*

*We do not want to reduce our income from working by more;*

*It's too complicated to change our work hours further.*



## Karger and Rajan (2021) → [Go back here.](#)

**Object of estimation:** MPC and MPD out of First&Second EIPs.

### Elicitation in the paper:

- Horizon: 2 weeks after EIP receipt.
- Facteus (standardized) transaction-level data from multiple banks.

### Paper estimate:

MPC (First/Second EIP) = 0.46/0.39.

### Our elicitation:

- Report amount received of (first, second, or third) EIP.
- Report (out of every \$ 100 received as EIP) amount allocated to durable, non-durable spending, debt-repayments, savings.
- Horizon: 3 months after EIP receipt ⇒ estimate an upper bound.

### Our estimate:

MPC (First/Second EIP) = 0.51/0.30.

**Object of estimation:** MPC out of income losses following unemployment.

**Elicitation in the paper:**

- Horizon  $\approx$  1 year.
- MPC at the individual level.
- PSID data (total spending imputed from CEX following Blundell et al., 2008).
- Unemployment used as instrument of income drop.

**Our elicitation:**

- Report individual labor earnings in 2020.
- **Hypothetical** scenario: unemployment with loss  $\approx$  30% of labor earnings.
- Report spending reduction in food, non-durables, durables, over next 12 months.

**Paper estimate:**

MPC for total spending = 0.53.

**Our estimate:**

MPC for total spending = 0.58.

## Ganong and Noel (2019) → [Go back here.](#)

**Object of estimation:** Monthly drop in non-durable spending at unemployment onset, before UI receipt.

### Elicitation in the paper:

- Horizon: 1 month before UI receipt.
- JPMCI bank-account data.
- Monthly frequency at HH level.

### Our elicitation:

- Report HH non-durable spending over last month.
- **Hypothetical** scenario: unemployment with labor earnings loss, no UI before 1 month.
- Modify spending? No/increase/decrease.
- If increase/decrease: report planned non-durable spending over next month.

### Paper estimate:

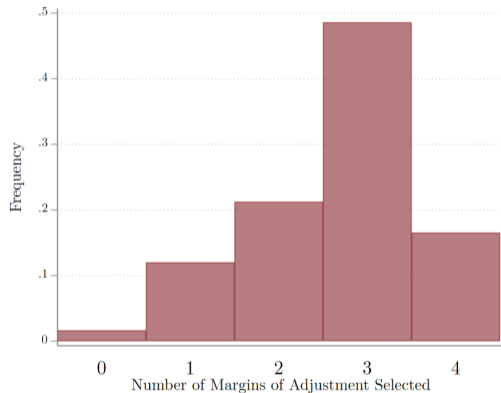
Drop in spending = 6%.

### Our estimate:

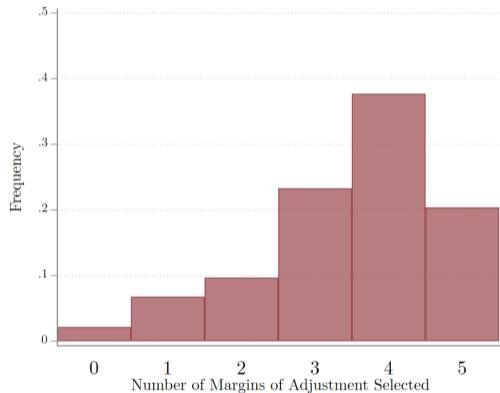
Drop in spending = 24%.

# Number of adjustment margins selected → [Go back here.](#)

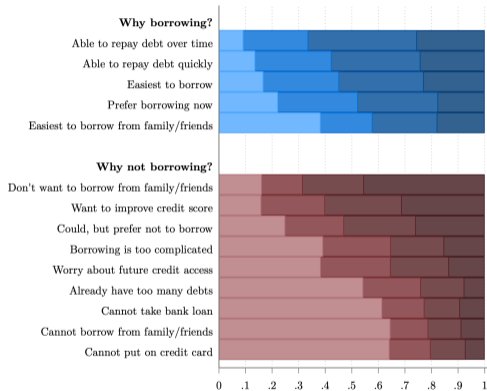
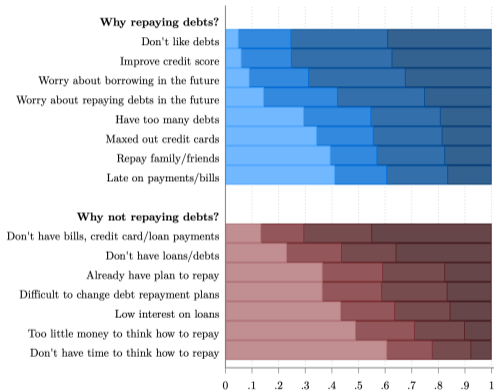
Tabulation of Positive Adjustment Margins



Tabulation of Negative Adjustment Margins

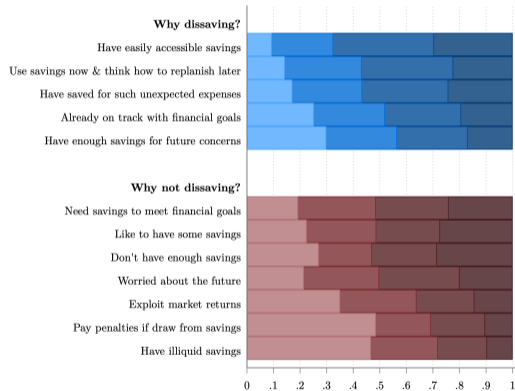
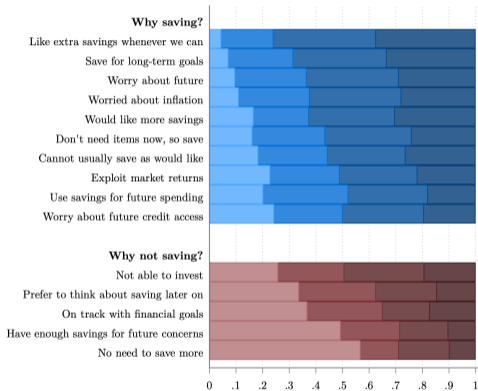


# Reasons: why adjust/not adjust debts? → [Go back here.](#)



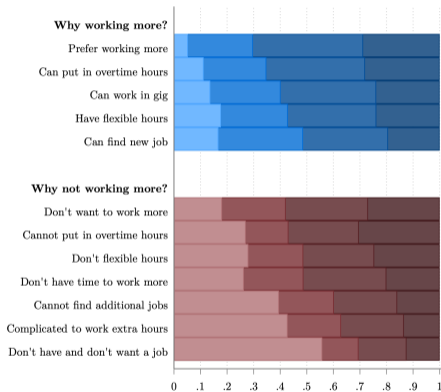
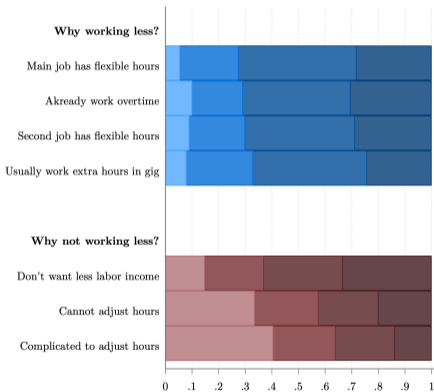
Note: scale from "not at all relevant" (light color) to "extremely relevant" (dark color)

# Reasons: why adjust/not adjust savings? → [Go back here.](#)



Note: scale from “not at all relevant” (light color) to “extremely relevant” (dark color)

# Reasons: why adjust/not adjust hours? → [Go back here.](#)



Note: scale from "not at all relevant" (light color) to "extremely relevant" (dark color)

## Some variable definitions I [→ Go back here.](#)

### Tables - Part 1

- **Income**: indicator for HH total net income in 2021 above median.
- **Liquid assets**: sum of checking and short-term accounts. Indicators for being above median.
- **Illiquid assets**: total assets minus liquid assets. Indicators for being above median.
- **Illiquid debts**: total debts minus credit card debts. Indicators for being above median.



## Some variable definitions II → [Go back here.](#)

### Tables - Part 2

- **Low self control:** respondent regrets purchase “often” or “very often” (self-reported measure of self-control, following Parker (2017)).
- **Patient:** indicator for patience above median value (self-reported measure of impatience, following Falk et al., 2018).
- **Risk lover:** indicator for risk-loving above median value (according to self-reported measure of risk-loving, following Falk et al., 2018).
- **Concern retirement:** respondent “extremely concerned” about retirement.
- **High commitments:** indicator for committed expenditures above median value.
- **High income risk:** respondent “extremely uncertain” to “neither certain nor uncertain” about future HH income.
- **High planned investment:** indicator for planned investments (retirement, housing, durables, education, health, other) above median value.
- **Not enough for basic needs:** self-report not having enough money for basic needs.

## Details on model definition I → *Go back here.*

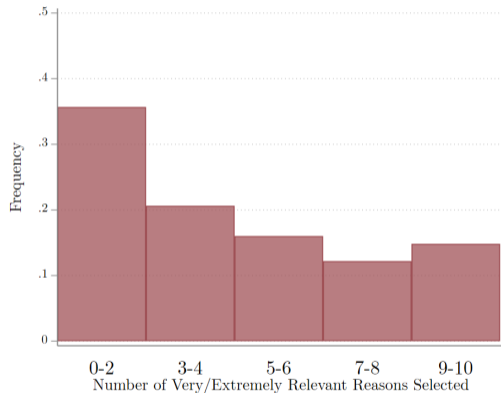
- Smooth (P & N):
  - ▶ Positive shock. Unconstrained & Smoother: not increase spending by more since “don’t need anything now,” “keep spending stable,” “stick to plans and self-disciplined,” “don’t like to splurge;” or don’t repay debts by more since “Don’t have bills, credit card/loan payments,” “Don’t have loans/debts,” “Low interest on loans,” “Already have plan to repay;” or don’t save by more since “No need to save more,” “On track with financial goals,” “Have enough savings for future concerns.”
  - ▶ Negative shock. Unconstrained: not cutting spending by more since “Keep spending stable,” “Don’t cut spending on non-essential items,” “Keep spending habits,” or borrow since “Able to repay debt quickly,” “Able to repay debt over time;” or dip into savings since “Already on track with financial goals,” “Have enough savings for future concerns.”

## Details on model definition II [→ Go back here.](#)

- Behavioral (P & N):
  - ▶ Positive shock. Behavioral: increase spending, or not repaying debts, or not saving since “don’t have time to think how to repay debts or save,” “too little money to think how to repay debts or save.”
  - ▶ Negative shock. Behavioral: cut spending since “Don’t have time to think how to adjust in other ways,” “Easier to cut spending than to adjust in other ways.”
- Constrained (P & N):
  - ▶ Positive shock. Constrained: increase spending since “really need some items;” or repay debts since “Have too many debts,” “Maxed out credit cards,” “Late on payments/bills,” “Repay family/friends;” or save since “Would like more savings,” “Cannot usually save as would like.”
  - ▶ Negative shock. Constrained: cut spending since “Need to cut spending on essential items;” or not cutting spending by more since “Cannot cut spending on essential items;” or not borrowing since “Cannot take bank loan,” “Cannot put on credit card,” “Cannot borrow from family/friends;” or not dipping into savings since “Don’t have enough savings.”

# Number of reasons selected: positive shock, spending margin → [Go back here.](#)

Tabulation of reasons for increasing spending



Tabulation of reasons for not increasing spending by more

