

Explaining Consumption Excess Sensitivity with Near-Rationality

Evidence from Large Predetermined Payments

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How do HHs respond to large, predictable and salient cash flows?

- ▶ important for macro stimulus programs
- ▶ informative for micro consumption models, ranging from
 - ▶ basic PIH under certainty ($MPC \approx 0$)
 - ▶ to hand-to-mouth behavior ($MPC = 1$)

To answer this question I use

- ▶ repeated quasi-experiments from [Alaska Permanent Fund Dividend \(PFD\)](#) payments
- ▶ transaction-level data from large [personal finance website](#)
- ▶ [Consumer Expenditure Survey \(CE\)](#) for external validity

Preview of Main Results

- ▶ Large average MPC $\sim 30\%$ for nondurables
- ▶ Heterogeneous MPCs concentrated among higher-income HHs
- ▶ Derive potential loss from not smoothing consumption
 - ▶ predicts MPC heterogeneity well
- ▶ However, actual losses are very small ($\approx 0.1\%$)
 - \Rightarrow behavior consistent with near-rationality

Alaska Permanent Fund Dividend (PFD) = annual payments from state's broadly-diversified wealth fund

Important characteristics of PFD for excess sensitivity tests:

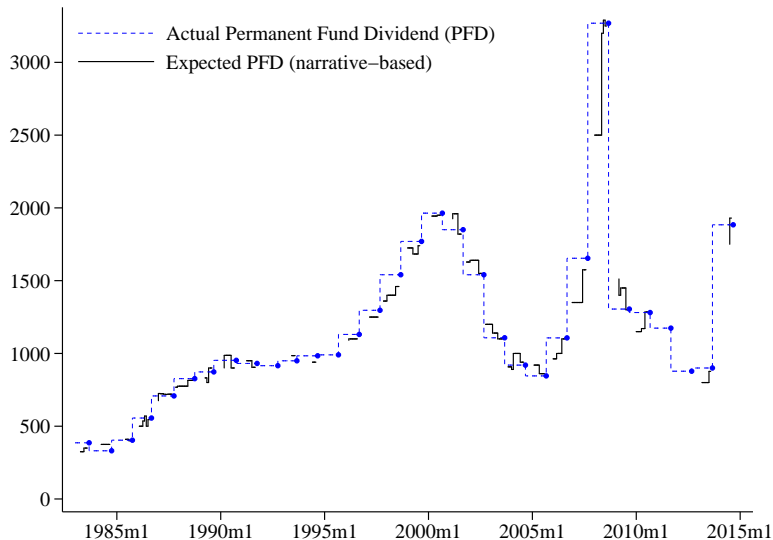
1. *predetermined, regular, and salient*

- ▶ based on June numbers, announced in Sept., paid in October
- ▶ *highly predictable*: 5-year moving average of fund's income
- ▶ well covered by local media during the year

2. *nominally large and lump-sum*

- ▶ latest dividend: \$2,072 in October 2015 *per person!*

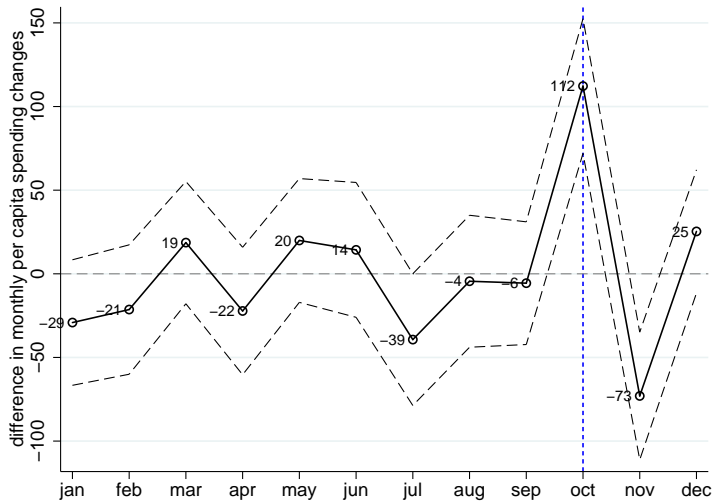
Saliency: Dividend predicted by local newspapers



Household Spending Data

1. New transaction data from user accounts at a large **personal finance website** from 2010-2014
 - ▶ 1,400 Alaskan users that receive dividend via direct deposit (treatment group)
 - ▶ 2,200 users from state of Washington (control group)
2. **Consumer Expenditure Survey** (CE) to check external validity of new data and results

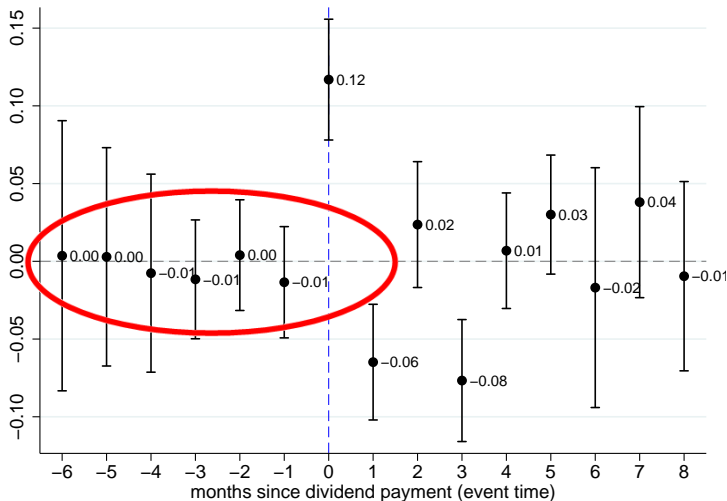
Nonparametric Evidence: Average nondurable spending changes per person by month in Alaska vs. Washington (Diff-in-Diff)



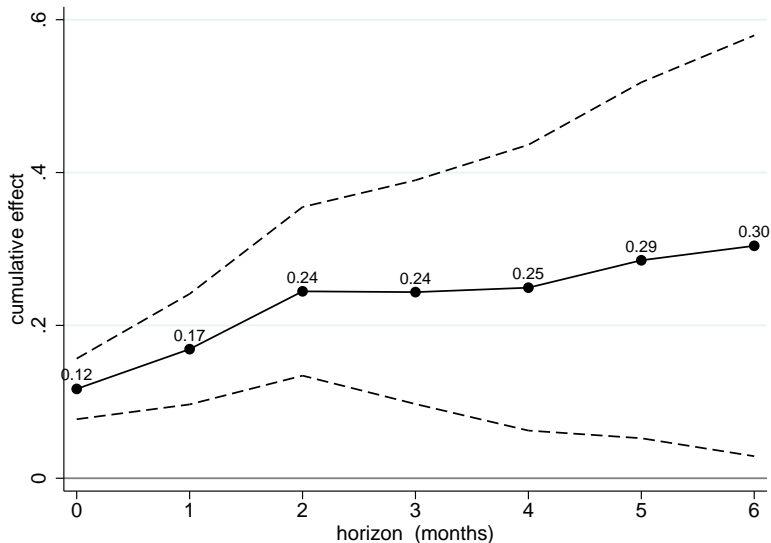
Implies MPC of 12% after one month, 22% after one quarter

Parametric Evidence: No anticipation effects

$$\Delta C_{it} = \sum_s \beta_s \cdot PFD_{i,t-s} + \alpha_t + \text{Alaska}_i + \lambda \cdot \text{FamilySize}_i + \epsilon_{it}$$



Parametric Evidence: Cumulative MPC stable after 1 quarter



What can explain this large excess sensitivity?

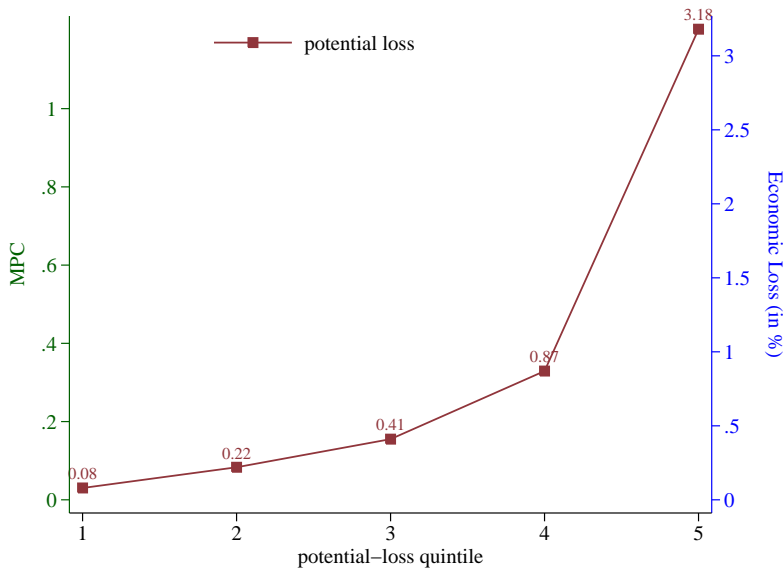
- ▶ Liquidity-to-income ratio does predict lower MPC, but most is left unexplained
- ▶ Instead, see if **near-rationality** explains excess sensitivity
- ▶ Derive **potential loss from fully spending PFD** in the 4th quarter (c^{coh}) instead of fully smoothing (c^*)

$$Loss(c^{coh}, c^*) \equiv \frac{\Delta W}{W} \propto \left(\frac{PFD}{C_T} \right)^2$$

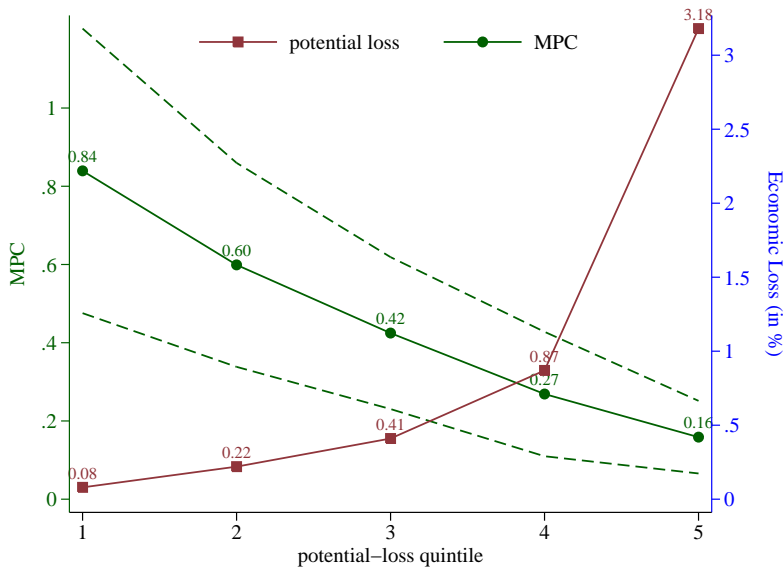
- ▶ The **actual loss** depends on endogenous HH behavior (MPC)

$$Loss^{ex-post} = MPC^2 \times Loss(c^{coh}, c^*)$$

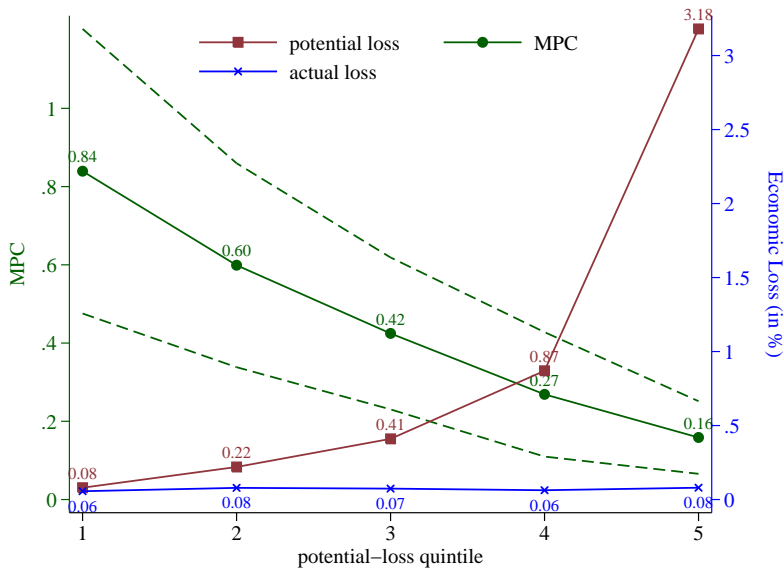
Potential-loss statistic quintiles across HHs (average numbers)



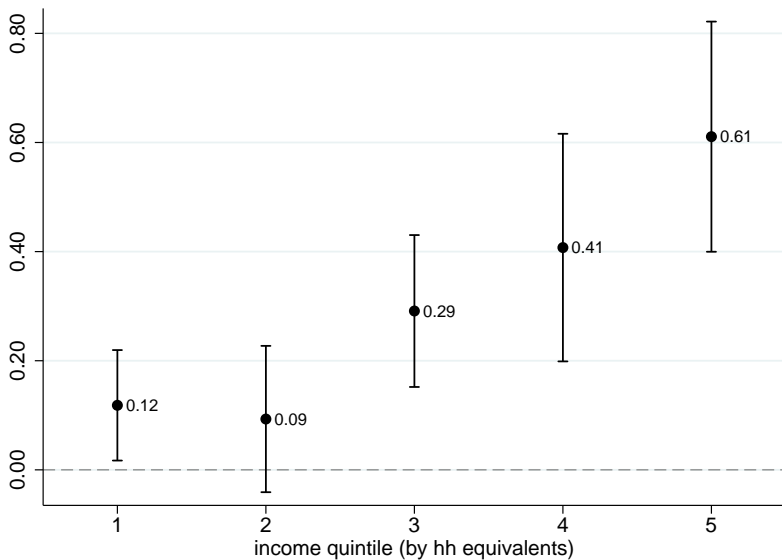
Does loss predict MPCs ↘? ⇒ interact PFD with loss quintiles



Is this near-rational behavior? \Rightarrow calculate actual losses



What drives this heterogeneity? \Rightarrow mostly **income per capita**



External validity implementing same analysis using the CE

I obtain similar results after taking into account

1. dividend has to be imputed in the CE
2. different sample composition

Table 5: External Validity using the Consumer Expenditure Survey (CE)

Dep. var.: Δc_{it} , quarterly nondurables and services	<i>CE Sample</i>	<i>PFW Sample</i>		
		using the observed PFD	using the imputed PFD	dealing w/ sample composition
	(1)	(2)	(3)	(4)
PFD payments		0.276*** (0.042)		
<i>PFD x family size</i>	0.079** (0.036)		0.184*** (0.031)	-0.044 (0.048)
PFD x family size x income/\$100,000				0.201*** (0.046)
<i>predicted MPC at average CE income</i>				0.082*** (0.029)
- Time FE, Alaska FE, other controls	YES	YES	YES	YES
Observations	385,800	50,210	50,210	50,210
R-squared	0.006	0.107	0.107	0.109

Conclusion

Main findings

1. Large average excess sensitivity even to large payments
2. Potential-loss statistic predicts higher-income HHs MPCs
3. Low liquidity-to-income predicts low-income HHs MPCs
4. Actual ex-post losses are similar and small \Rightarrow near-rationality

Policy implications

- ▶ Targeting low-income HHs might not be the only way to stimulate the economy
- ▶ Modeling near-rational behavior is important next step:
Why do high-income HHs spend dividend? (see Gabaix 2015)

How much of the MPC heterogeneity can **liquidity** (CoH-ratio) and **near-rationality** (potential-loss statistic) jointly explain?

Table 3: MPC Heterogeneity and Near-Rationality

Dep. var.: ΔC_{it} , quarterly nondurables and services	
	(8)
PFD payments	0.881*** (0.125)
PFD payments x potential-loss quintile	-0.161*** (0.032)
PFD payments x liquidity quintile	-0.054** (0.023)
- Time FE	YES
- Alaska FE	YES
- Potential-loss quintile FE	YES
- Cash-on-hand ratio quintile FE	YES
- Other controls	YES
Observations	44,577
R-squared	0.108

Quintiles go from 0-4 \Rightarrow from lowest quintiles cell to the highest reduces MPC from 88% to 2%

Various **robustness checks** in paper

1. difference between spending and consumption
⇒ broad-based effect, incl. groceries and restaurants
2. consumption commitments and wealthy-hand-to-mouth cons.
3. decomposition of identifying variation, such as
 - ▶ using only variation within Alaska
 - ▶ controlling for family FEs
 - ▶ difference between family size and # of users
4. log-changes (elasticity) vs. level differences (MPC)
5. squared instead of relative PFD payments