Understanding Expectations Formation for Hand-to-Mouth Households: Lessons from the Financial Crisis

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July 8, 2025

Related Literature

- [Kaplan et al., 2014] distinguish between poor hand-to-mouth (HtM) households, wealthy HtM, and other wealthy households not facing liquidity constraints. Our survey makes it possible to apply this well-established classification.
- [Farhi and Werning, 2016] show that fiscal multipliers can be much larger in the presence of liquidity constrained agents.
- [Klein, 2017] and [Klein et al., 2022] provide evidence in support of the importance of private debt for the size of the fiscal multiplier.
- [Broer et al., 2022] assume that as wealth rises the cost of acquiring information relative to current wealth falls so that wealthy households value improved information about the future, and that there are no wealthy HtM thus HtM households do not value improved information about the future, so never acquire it.

Motivation

- Liquidity constraints might limit an agent's discretion to make forward looking consumption-saving decisions based on expectations, thus reducing the incentive to pay attention and form accurate expectations in the first place.
- On the other hand, liquidity constraints might serve to raise the stakes for households thus inducing them to pay more attention and form more accurate expectations.
- Our work investigates whether there exists heterogeneity in the formation of expectations between constrained and unconstrained agents and across different types of liquidity-constrained agents.
- The financial crisis provides a unique setting wherein to study liquidity constraints as the supply of credit was restrictive rendering these constraints more relevant, and the stakes were potentially higher for liquidity constrained households.

What we do

- We examine the formation of US households' expectations following major disruptions of the macroeconomy over the period 2005:2-2013:6 encompassing the financial crisis.

- Our survey includes the specific day of the month during which each respondent was interviewed, allowing us to match each response to financial events within a precise window, e.g., from the day before the event to the day following the interview.

- Utilizing a timeline of financial crisis events along with changes in stock-market values and uncertainty around those events, we assess the responses of households' expectations regarding inflation, unemployment and the interest rate.

- We are interested in the extent to which revisions in expectations differ between poor hand-to-mouth, wealthy hand-to-mouth and wealthy unconstrained households.

What we find

- Our estimates imply differences in the formation of expectations for liquidity constrained households relative to unconstrained ones.
- While adverse financial crisis events that lower future inflation do not affect inflation expectations for all households, wealthy HtM tend to revise their inflation expectations downward and make lower forecast errors in line with having a greater incentive to do so.
- The wealthy HtM have a higher incentive to pay attention to inflation as compared to households which are less likely to have a mortgage nor any illiquid wealth to lose (i.e. the poor HtM), or have ample liquidity to make their debt payments (i.e., the wealthy non-HtM).
- Adverse financial crisis shocks increase the cross-sectional standard deviation of inflation expectations within the two HtM groups.

Data

- The CFMS provides info on the exact date of each interview over the course of each month.It includes inflation, interest rate and unemployment expectations, and household financial characteristics, available monthly over 2005:2 to 2013:6 with a mean monthly sample of 335 observations across the US.
- Includes household's monthly income, illiquid wealth, liquid assets (i.e., sum of money in savings/checking accounts, cash holdings, mutual funds, stocks and bonds) and liquid debt (i.e., sum of credit card debt, student loan debt and any debt left on bank loans, payday loans and other loans).
- HtM status of the households as in [Kaplan et al., 2014]: poor HtM are those who hold little liquid wealth and no illiquid wealth, whereas wealthy-HtM households have positive illiquid assets. Those with positive illiquid wealth and liquid wealth greater than half of their monthly income are categorized as unconstrained.

Comparability with Michigan data

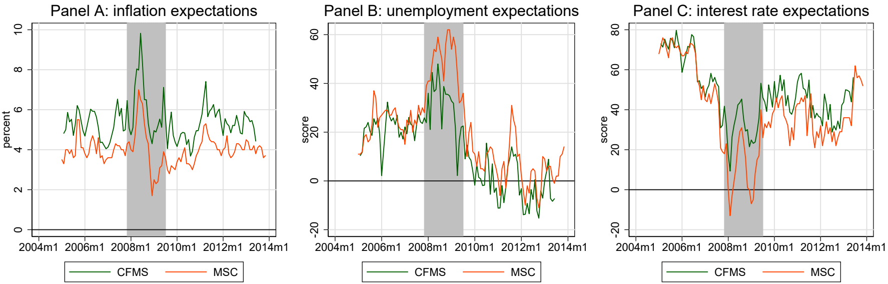
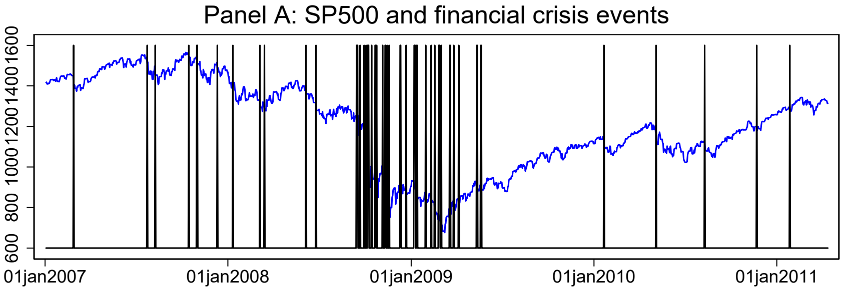


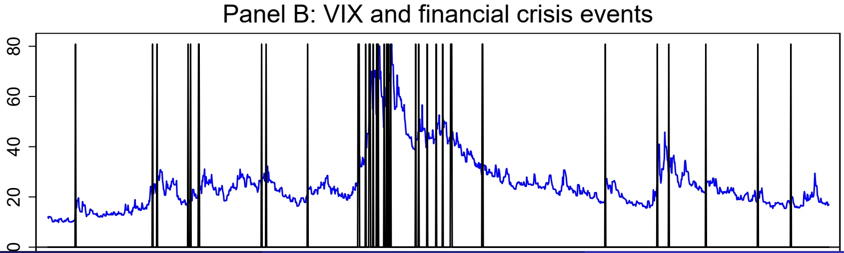
Figure 1: Aggregate CFMS expectations together with MSC expectations

Data

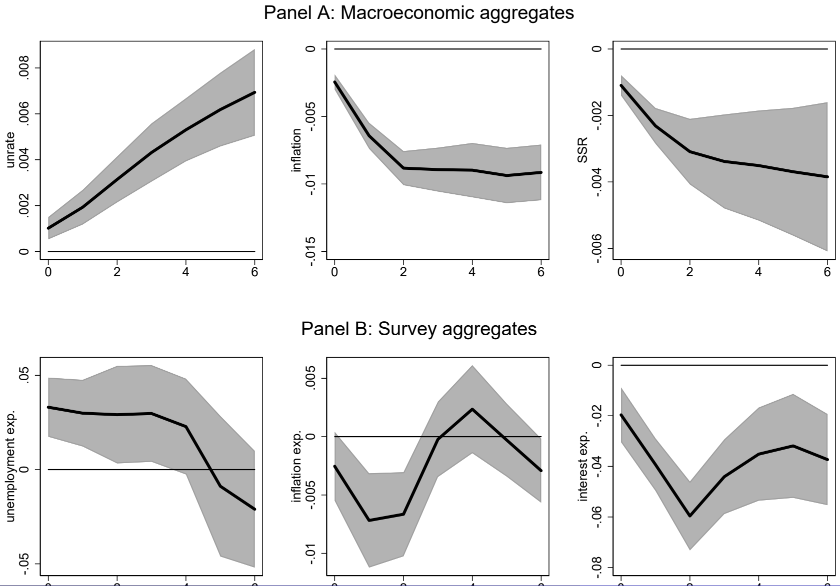
- We use the Federal Reserve Bank of St. Louis' Financial Crisis Timeline which dates events associated with the financial crisis, to construct a novel measure for financial crisis shocks which varies across individuals according to their interview dates.
- To quantify these events, we utilize their immediate effects on daily asset prices, namely the SP500 and the VIX.
- We consider 58 SP500-based events and 42 VIX-based events related to adverse reactions of the stock market where the SP500 drops or the VIX increases by more than one standard deviation.

Financial Crisis Events





Macroeconomic impact of the events



Household-level regression analysis

- In the aggregate analysis, identification of the events is not as tight since the chronological coincidence of events and interview dates is complicated by monthly aggregation and fails to exploit the individual-level interview dates in relation to events that happen right before.
- We thus consider household-level regressions that allow for a sharper identification as we can tightly relate the daily events to the individual interview dates:

$$y_{it} = \alpha_0 + \alpha_1 x_{1it} + \alpha_2 x_{2it} + \alpha_3 x_{3it} + \alpha_4 z_{it} + \epsilon_{it} \tag{1}$$

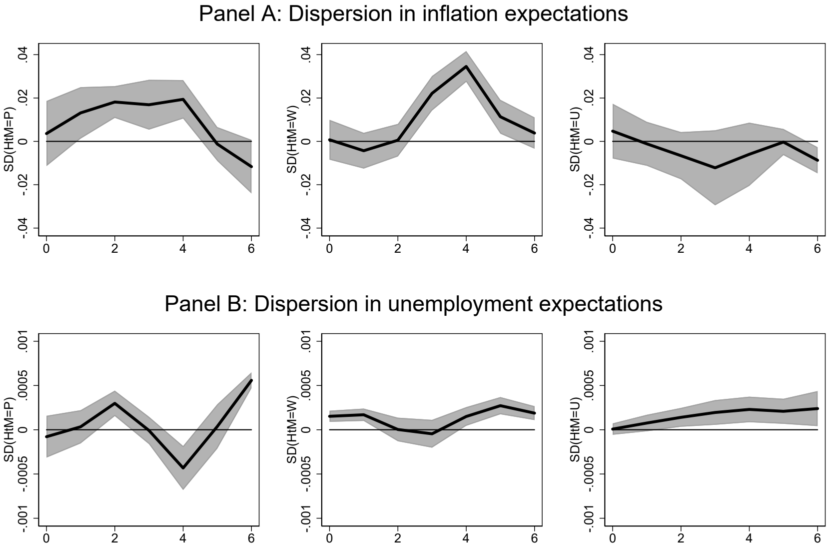
  y stands for economic expectations, x_1 includes dummies for poor and wealthy HtM status, x_2 includes financial shock measures, x_3 includes interactions between the financial shock measures and HtM status, and z are controls like income, education, sex, race, and age or birth cohort.
- Add interactions of the shock with birth cohorts to capture inflation experiences[Malmendier and Nagel, 2016], and education.

TABLE 1: Inflation Expectations Formation

HtM=P	3.619***	2.484***	3.527***	2.372***
	(6.93)	(3.97)	(6.88)	(3.85)
HtM=W	2.271***	2.049***	2.196***	1.972***
	(7.90)	(5.67)	(7.66)	(5.47)
Shock	-0.00596	-0.00406	-0.0241	-0.0126
	(-0.56)	(-0.33)	(-0.30)	(-0.14)
HtM=P x Shock	-0.0472	0.00640	-0.380	0.189
	(-1.01)	(0.08)	(-1.35)	(0.44)
HtM=W x Shock	-0.0576***	-0.0587***	-0.387***	-0.352***
	(-3.19)	(-2.81)	(-3.37)	(-2.70)
Log Hshld Income		-0.921***		-0.928***
		(-5.60)		(-5.64)
Shock Measure	S&P	S&P	VIX	VIX
Characteristics	YES	YES	YES	YES
Macro Variables	YES	YES	YES	YES
Observations	12295	8579	12159	8470

TABLE 4: Forecast Errors

HtM=P	4.319***	3.116***	4.259***	3.069***
	(8.93)	(5.37)	(8.97)	(5.35)
HtM=W	2.247***	2.119***	2.210***	2.120***
	(8.36)	(6.30)	(8.25)	(6.30)
Shock	0.0213**	0.0164	0.121*	0.0898
	(2.24)	(1.48)	(1.72)	(1.12)
HtM=P x Shock	0.0497	0.107*	0.180	0.637*
	(1.28)	(1.71)	(0.75)	(1.94)
HtM=W x Shock	-0.0538***	-0.0601***	-0.376***	-0.390***
	(-3.55)	(-3.48)	(-4.04)	(-3.70)
Log Hshld Income		-0.888***		-0.853***
		(-5.73)		(-5.49)
Shock Measure	S&P	S&P	VIX	VIX
Characteristics	YES	YES	YES	YES
Macro Variables	YES	YES	YES	YES
Observations	12295	8579	12159	8470


Panel A: Dispersion in inflation expectations
SD(HtM=P)
SD(HtM=W)
SD(HtM=U)
-.04
-.02
0
.02
.04
0
2
4
6
Panel B: Dispersion in unemployment expectations
SD(HtM=P)
SD(HtM=W)
SD(HtM=U)
-.001
-.0005
0
.0005
.001
0
2
4
6

Sample Statistics on key variables

	Poor-HTM	Wealthy-HTM	Non-HTM
Liquid Assets	729.22	2986.68	268100.5
	(76.2)	(228.9)	(10028.4)
Liquid Debt	7598.12	12138.47	2915.73
	(481.67)	(547.97)	(125.54)
Liquid Wealth	-6841.79	-9151.79	265184.8
	(456.25)	(436.43)	(10028.72)
Illiquid Wealth	-12921.95	209098.9	449649.3
	(1146.6)	(16529.5)	(10089.9)
Monthly Income	2613.59	5108.74	7351.7
	(104.9)	(124.3)	(87.03)
Net Worth	2098.27	193251.08	707448.01
	(125696.8)	(966325.6)	(1715119.3)
% with mortgage	0.19	0.53	0.55
	(0.395)	(0.499)	(0.498)
Yrs at current job	2.76	6.00	8.23
	(6.201)	(9.137)	(10.56)

Conclusions

- While financial crisis events do not affect everyone's inflation expectations, wealthy HtM tend to revise inflation expectations downward relative to other households and increase the degree of accuracy in the face of adverse events that reduce future inflation.
- Liquidity constraints provide wealthy HtM with a greater incentive to pay attention and to more accurately decipher the financial events' noisy signal regarding lower future inflation as compared to wealthy unconstrained households or poor HtM ones.
- Consistent with [Sims, 2010] or [Mackowiak and Wiederholt, 2009], where individuals can be rationally inattentive.

Conclusions

Sizeable impact: A shock that lowers the S&P500 by the one-standard-deviation cutoff amounting to 43.72 index points, decreases inflation expectations by 43.72 x 0.06= 2.6 percentage points for the wealthy HtM relative to non-HtM households.

TABLE 2: Unemployment Expectations Formation

HtM=P	0.328***	0.230***	0.328***	0.219***
	(5.60)	(3.13)	(5.59)	(2.98)
HtM=W	0.169***	0.139***	0.169***	0.134***
	(4.10)	(2.73)	(4.10)	(2.65)
Shock	0.00963***	0.0108***	0.0602***	0.0644***
	(5.54)	(5.50)	(4.99)	(4.82)
HtM=P × Shock	-0.00826**	-0.0102*	-0.0743***	-0.0778*
	(-2.07)	(-1.74)	(-2.72)	(-1.85)
HtM=W × Shock	-0.00576*	-0.00453	-0.0459**	-0.0400*
	(-1.82)	(-1.25)	(-2.23)	(-1.75)
Log Hshld Income		-0.110***		-0.118***
		(-4.92)		(-5.23)
Shock Measure	SP	SP	VIX	VIX
Other Controls	YES	YES	YES	YES
Observations	13458	9364	13300	9243

TABLE 3: Interest Rate Expectations Formation

HtM=P	-0.0679	-0.147*	-0.0704	-0.161**
	(-1.10)	(-1.92)	(-1.14)	(-2.10)
HtM=W	0.0550	0.0131	0.0557	0.0118
	(1.24)	(0.24)	(1.25)	(0.22)
Shock	-0.00865***	-0.00600***	-0.0393***	-0.0225*
	(-4.81)	(-2.96)	(-3.21)	(-1.68)
HtM=P × Shock	0.00136	-0.000617	0.00552	0.0156
	(0.34)	(-0.10)	(0.20)	(0.38)
HtM=W × Shock	0.000676	0.000314	0.00567	0.00519
	(0.22)	(0.09)	(0.28)	(0.23)
Log Hshld Income		-0.0994***		-0.102***
		(-4.19)		(-4.25)
Shock Measure	SP	SP	VIX	VIX
Other Controls	YES	YES	YES	YES
Observations	13460	9322	13303	9200

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