

Debt and Creditworthiness: How They Shape Households' Responses to Monetary Policy

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Motivation

Do monetary policy decisions on interest rate affect inflation expectations?

- What role does credit and debt play on expectations formation?

Literature

- [Lamla and Vinogradov \[2019\]](#) and [De Fiore et al. \[2022\]](#) find muted effects of FOMC meetings on inflation and interest rate expectations

Methodology

- Event study to estimate causal effect of monetary policy decisions on households expectations

My contribution

- Households' update of inflation expectations in response to monetary policy decisions depends on them
 - frequent dealings with interest rate
 - seeking credit
 - credit history

Main findings

- Expectations react more strongly in the 2020-2023 period
- Households that frequently deal with interest rates decrease inflation expectations in response to hikes in the federal funds rate
 - Credit card users, specially those with remaining balances, show a steeper decline in expectations
- Credit seekers show a sharper drop in expectations
- Households in precarious financial situation do not update

Literature

Inflation and inflation expectations:

- For an overview of recent developments see [D'Acunto et al. \[2024\]](#)
- Heterogeneity in inflation expectation [[Bruine de Bruin et al., 2010](#), [Conrad et al., 2022](#)]
- Households' attention is dependent on the economic environment [[Cavallo et al., 2017](#), [Weber et al., 2023](#)]
- Inflation effects on real debt are not commonly known by households [[Schnorfeil et al., 2023](#)]
- Higher inflation expectations are associated with lower levels of assets and liabilities [[Vellekoop and Wiederholt, 2019](#)]

Event studies

- Own surveys with 2-day event windows around FOMC meeting (2015-2018) show muted effects on inflation and interest rate expectations [[Lamla and Vinogradov, 2019](#)]
- SCE data (2013-2019) and 21-day event windows around FOMC meetings show no reaction of inflation expectations. High numeracy/literacy respondents update interest rate expectations [[De Fiore et al., 2022](#)]

Data

Survey of Consumer Expectations (SCE, NY Fed)

- Monthly survey since June 2013
- Covers representative sample of the US population
- I use 122 survey waves conducted between **June 2013** and **July 2023**
- Rotating panel (respondents stay on the panel for up to twelve months before rotating out)
 - Socioeconomic characteristics
 - Interest rate expectations
 - Inflation expectations (point forecast)
- Module: **Credit Access Module (CAM)**
 - Quadrimestral data: 28 waves between **October 2013** – **Februar 2023**
 - ★ **Credit**: Likelihood to apply for credit and past applications, Credit Score
 - ★ **Debt**: Debt type: credit card, mortgage,...; debt size, delinquency

Data

- Each wave consists of three batches of roughly equal size.
- Invitations sent out on the **second, eleventh, and twentieth** of the month.
- Respondents in each batch receive two reminders by email, three and seven days after their initial invitation.

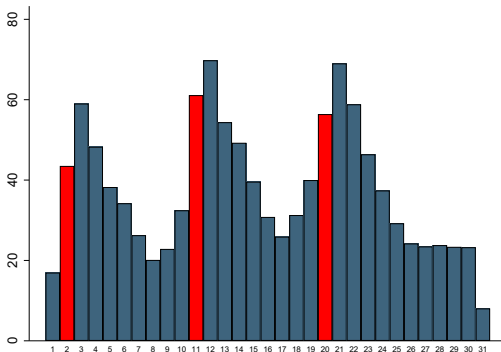


Figure 1: Average number of responses per day of month

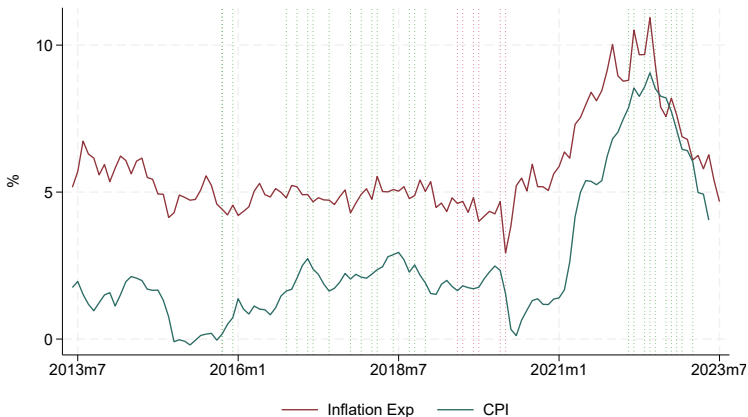
Interest Rate Expectations & FOMC Meetings

Q5new: What do you think is the percent chance that 12 months from now the average interest rate on saving accounts will be higher than it is now?



Inflation Expectations

Q8v2part2: What do you expect the rate of [inflation (if Q8v2=inflation)/deflation (if Q8v2=deflation)] to be over the next 12 months? Please give your best guess.



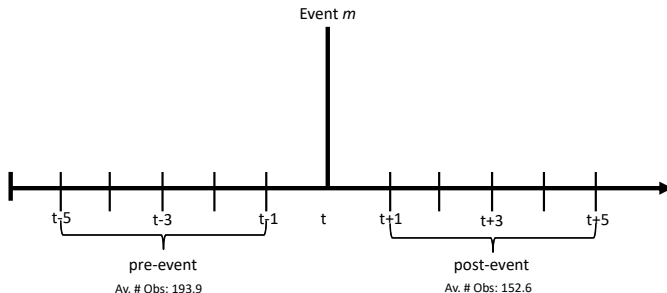
Dotted green lines represent FOMC meetings with increase in interest rates. Dotted red lines represent meetings with rate cuts.

Inflation Expectations

Credit			Debt		
	Obs	Mean		Obs	Mean
Full Sample	142304	5.69	Debt	97027	5.31
			No Debt	9543	6.04
Credit Score <680	16609	7.83	Debt_Size1	30388	6.13
Credit Score 680-719	10541	5.67	Debt_Size2	30423	5.55
Credit Score >719	63380	4.49	Debt_Size3	29802	4.42
Applied	50861	5.34	Delinquent 30d	5990	8.01
Not applied	55709	5.41	Not delinquent	91029	5.14
App. Refinance Mortgage	7268	5.01	Mortgage	53487	4.82
Granted	3903	3.88	No mortgage	53083	5.94
Not granted	841	5.85			
Likely Apply	32608	5.02	Credit Card	79745	5.35
Not Likely Apply	73949	5.54	No Credit Card	26825	5.45
			Maxed out	13436	6.70
			Not maxed out	66299	5.08

Notes: This table presents summary statistics for the SCE point forecast of inflation by debt and credit characteristics. The sample covers the June 2013 to July 2023 waves.

FOMC meetings & Event windows



FOMC meetings			
	2013-23	2013-19	2020-23
Meetings	83	53	30
Change	25	12	13
Positive	20	9	11
Negative	5	3	2

- Events with CPI announcements in the post event window are discarded

Event Study

Baseline model:

$$Exp_{j,i,m} = \theta_m + \beta_D D_{i,m} + \beta_X X_{i,m} + \varepsilon_{i,m}, \quad (1)$$

where

- $Exp_{j,i,m}$ is the expectation j (inflation or interest rate) elicited from respondent i before or after the FOMC meeting m .
- $D_{i,m}$ is a dummy that equals one if respondent i submitted after the FOMC meeting.
- $X_{i,m}$ represents socioeconomic characteristics
- Standard errors are clustered at the event level
- Cross-sectional heterogeneity comparing sample splits

Effects of rate increase on interest rate and inflation expectations

Credit Card

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	<i>Inflation Expectations</i>								
	2013-2023			2013-2019			2020-2023		
<i>after</i>	-0.98*** (0.31)	-1.16*** (0.29)	-0.59 (0.71)	-0.28 (0.59)	-0.54 (0.59)	0.34 (1.00)	-1.52*** (0.27)	-1.60*** (0.25)	-1.55 (0.99)
<i>age</i>	0.02 (0.02)	0.00 (0.01)	0.04 (0.05)	0.03 (0.02)	0.03 (0.02)	0.00 (0.06)	0.01 (0.02)	-0.02 (0.02)	0.07 (0.07)
<i>college</i>	-1.15*** (0.36)	-1.28*** (0.40)	-0.30 (0.83)	-0.21 (0.24)	-0.15 (0.26)	-0.18 (1.14)	-1.83*** (0.49)	-2.07*** (0.57)	-0.35 (1.25)
<i>employ</i>	-0.05 (0.45)	-0.00 (0.38)	-0.25 (1.09)	0.08 (0.65)	0.33 (0.69)	-0.82 (1.04)	-0.04 (0.66)	-0.08 (0.43)	0.06 (1.88)
<i>female</i>	1.21*** (0.37)	1.21*** (0.30)	1.13 (0.91)	1.15* (0.55)	1.39** (0.44)	0.25 (1.00)	1.35** (0.50)	1.16** (0.43)	1.92 (1.30)
<i>lnincome</i>	-1.30*** (0.33)	-1.60*** (0.34)	-0.91 (0.59)	-0.60 (0.39)	-0.73* (0.35)	-0.12 (0.94)	-1.99*** (0.42)	-2.52*** (0.34)	-1.54* (0.80)
<i>numeracy</i>	-2.47*** (0.64)	-2.68*** (0.75)	-2.20** (0.86)	-2.33*** (0.65)	-2.60*** (0.59)	-1.77* (0.89)	-2.41** (1.04)	-2.49* (1.30)	-2.42 (1.37)
<i>white</i>	-3.04*** (0.74)	-2.45*** (0.66)	-5.10*** (1.62)	-3.77** (1.25)	-3.24*** (0.83)	-5.89* (3.03)	-2.44** (0.86)	-1.77* (0.97)	-4.61** (1.70)
Sample	Full	Card	NoCard	Full	Card	NoCard	Full	Card	NoCard
Observations	4,609	3,547	1,062	1,999	1,523	476	2,610	2,024	586
\bar{R}^2	0.09	0.10	0.07	0.05	0.06	0.04	0.09	0.11	0.08
Window size	5	5	5	5	5	5	5	5	5
Events	19	19	19	8	8	8	11	11	11
Event FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes

Notes: Asterisks '*', '**' and '***' indicate significance at the 10%, 5% and 1% level, respectively.

Credit card x Mortgage

Effects of rate increase on inflation expectations

	(1)	(2)	(3)	(4)
	<i>Inflation Expectations</i>			
	2020-2023			
	Credit Card		Mortgage	
<i>after</i>	-1.60*** (0.25)	-1.55 (0.99)	-0.97* (0.53)	-2.15*** (0.67)
Observations	2,024	586	1,332	1,278
Window size	5	5	5	5
Events	11	11	11	11
Event FE	yes	yes	yes	yes
Controls	yes	yes	yes	yes
Sample	Card	NoCard	Mortgaged	NoMort
\bar{R}^2	0.11	0.08	0.07	0.11

Notes: Asterisks '*', '**' and '***' indicate significance at the 10%, 5% and 1% level, respectively.

- About 92% of mortgages had fixed rates in 2022. Adjustable rates often have an introductory period, usually 5 or 7 years, in which the rate is fixed [Chiang and Dueholm, 2024]
- Only cardholders that carry a balance have to pay interest rates. About 48% of households carried a balanced at least once in 2022. [Pokora and Vaughn, 2024]

- Interest rate increases significantly reduce inflation expectations of credit card users
- Mortgaged households reduce their inflation expectations less than households without mortgage

Credit Score

Effects of rate increase on inflation expectations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	<i>Inflation Expectations</i>								
	2013-2023			2013-2019			2020-2023		
<i>after</i>	-1.58 (1.26)	-0.52 (1.10)	-1.07*** (0.22)	-0.83 (2.51)	1.35 (1.16)	-0.62** (0.19)	-2.53** (1.06)	-1.89 (1.43)	-1.34*** (0.33)
Sample	Below680	680-719	Above719	Below680	680-719	Above719	Below680	680-719	Above719
Observations	781	449	3,067	370	193	1,249	411	256	1,818
\bar{R}^2	0.06	0.05	0.09	0.02	0.12	0.04	0.05	0.05	0.08
Window size	5	5	5	5	5	5	5	5	5
Events	19	19	19	8	8	8	11	11	11
Event FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes

Notes: Asterisks ‘*’, ‘**’ and ‘***’ indicate significance at the 10%, 5% and 1% level, respectively.

- Households with very good credit scores reduced their inflation expectations throughout the entire sample
- Households with fair or worse credit scores only reduced their expectation after a rate hike in the period 2020-2023

Credit

Effects of rate increase on inflation expectations

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Inflation expectations</i>					
	2020-2023					
	Apply		Maxout		Late	
<i>after</i>	-1.78 (1.44)	-4.58*** (1.24)	-0.92 (1.21)	-1.84*** (0.34)	2.41 (3.05)	-1.76*** (0.22)
Sample	NotLikely	Likely	Maxout	NoMaxout	Delinquent	NotDeli
Observations	157	354	380	1,644	131	2,262
\bar{R}^2	0.09	0.10	0.06	0.12	0.07	0.09
Window size	5	5	5	5	5	5
Events	11	11	11	11	11	11
Event FE	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes

Notes: Asterisks '*', '**' and '***' indicate significance at the 10%, 5% and 1% level, respectively.

- Households planning on applying for credit are better informed about interest rate conditions, leading to stronger inflation expectations reductions
- Inflation expectations of households that did **not** max out or have **not** being late in their loan payments significantly reduced by rate hikes

Financial Literacy

Effects of rate increase on inflation expectations

	(1)	(2)	(3)	(4)
	<i>Inflation Expectations</i>			
	2020-2023			
	Financial Literacy		QNUM8	
<i>after</i>	-0.26 (0.58)	-0.94 (0.75)	-0.78* (0.42)	0.69 (1.71)
Observations	1,713	1,856	3,138	440
Window size	5	5	5	5
Events	11	11	11	11
Event FE	yes	yes	yes	yes
Controls	yes	yes	yes	yes
Sample	High	Low	Right	Wrong
\bar{R}^2	0.07	0.06	0.07	0.05

Notes: Asterisks '*', '**' and '***' indicate significance at the 10%, 5% and 1% level, respectively.

Fin lit questions

- Questions are similar to [Lusardi and Mitchell \[2011\]](#)
- QNUM8. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?
 - More than today (1)
 - Exactly the same (2)
 - Less than today (3)

Conclusion & Next Steps

- I estimate the causal effect of changes in FED funds rate on inflation expectations of households
- Household's expectations reacted more strongly to interest rate changes in the period of 2020-2023
- Inflation expectations decrease after interest hikes, depending on households
 - being in frequent contact with interest rate
 - seeking new lines of credit
 - having good credit history

Next steps

- Market high-frequency surprises
- Treatment based on the magnitude of interest rate changes

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Credit Card

Effects of rate increase on interest rate and inflation expectations - prior expectations

	<i>Inflation Expectations</i>								
	2013-2023			2013-2019			2020-2023		
<i>after</i>	-0.66*	-0.97***	0.15	0.05	-0.27	0.82	-1.21***	-1.47***	-0.52
	(0.34)	(0.33)	(0.57)	(0.62)	(0.64)	(0.98)	(0.34)	(0.31)	(0.76)
<i>infl_exp_lag</i>	0.38***	0.40***	0.32***	0.22	0.21**	0.24	0.46***	0.49***	0.38**
	(0.06)	(0.05)	(0.11)	(0.12)	(0.09)	(0.18)	(0.03)	(0.04)	(0.13)
Observations	4,407	3,387	1,020	1,874	1,424	450	2,533	1,963	570
Window size	5	5	5	5	5	5	5	5	5
Events	19	19	19	8	8	8	11	11	11
Event FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sample	Full	Card	NoCard	Full	Card	NoCard	Full	Card	NoCard
\bar{R}^2	0.23	0.26	0.17	0.10	0.10	0.09	0.29	0.32	0.22

Notes: Asterisks '*', '**' and '***' indicate significance at the 10%, 5% and 1% level, respectively.

Main Results

Credit Card

Effects of rate increase on interest rate and inflation expectations - offset before window

	<i>Inflation Expectations</i>								
	2013-2023			2013-2019			2020-2023		
<i>after</i>	-0.63** (0.30)	-0.44 (0.30)	-1.21** (0.45)	-0.72 (0.43)	-0.55 (0.45)	-1.19* (0.59)	-0.50 (0.41)	-0.26 (0.41)	-1.44 (0.80)
Observations	5,227	3,891	1,336	2,607	1,886	721	2,620	2,005	615
Window size	5	5	5	5	5	5	5	5	5
Events	20	20	20	9	9	9	11	11	11
Event FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes
Sample	Full	Card	NoCard	Full	Card	NoCard	Full	Card	NoCard
\bar{R}^2	0.07	0.08	0.05	0.05	0.07	0.02	0.07	0.07	0.08

Notes: Asterisks '**', '***' and '****' indicate significance at the 10%, 5% and 1% level, respectively.

Main Results

Credit Questions

- QNUM2. Let's say you have \$200 in a savings account. The account earns ten per cent interest per year. Interest accrues at each anniversary of the account. If you never withdraw money or interest payments, how much will you have in the account at the end of two years?
- N3: Over the past 12 months, did you max out (borrow up to the limit) on any of your credit cards?
 - Yes (1)
 - No (0)
- N15 [asked of those who choose at least one option in N1]: Over the past 12 months, were you late on any of your loan payments by more than 30 days?
 - Yes (1)
 - No (0)
- N17a/b Over the next 12 months, how likely is it that you will do any of the following? / Over the next 12 months, what do you think is the percent chance that you will do any of the following?
 - Apply for a credit card (1)
 - Apply for a mortgage or home-based loan(2)
 - Apply for an auto loan (3)
 - Request an increase in the credit limit of a credit card (4)
 - Request an increase in the limit of an existing loan (5)
 - Request to refinance your mortgage (6)
 - Apply for a student loan (7)

Financial Literacy Questions

- QNUM2. Let's say you have \$200 in a savings account. The account earns ten per cent interest per year. Interest accrues at each anniversary of the account. If you never withdraw money or interest payments, how much will you have in the account at the end of two years?
- **QNUM8. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?**
 - More than today (1)
 - Exactly the same (2)
 - Less than today (3)
- QNUM9. Please tell me whether this statement is true or false: Buying a single company's stock usually provides a safer return than a stock mutual fund.
 - True (1)
 - False (2)