

How Inflation Actually Changes Trading and Household Financial Behavior

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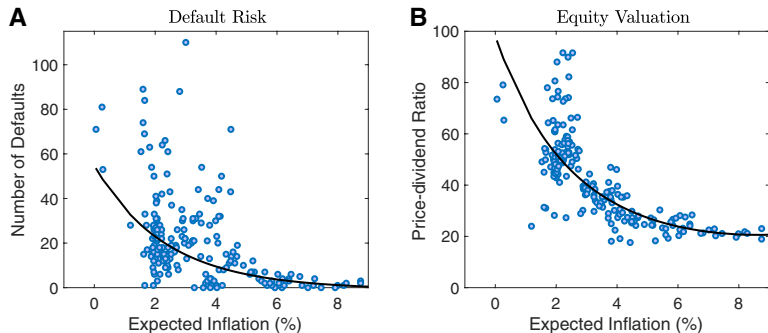
Motivation

Subjective Inflation Expectations Central for Central Banks

Inflation expectations are terribly important. We spend a lot of time watching them.

Jerome Powell (2021)

...AND for Financial Markets



Source: Coibion, Gorodnichenko, Weber, RFS (2023):
"High Inflation: Low Default Risk and Low Equity Valuations"

- Times of high inflation expectations times of low defaults AND low equity valuations
- Sticky leverage and sticky cash flows necessary theoretically

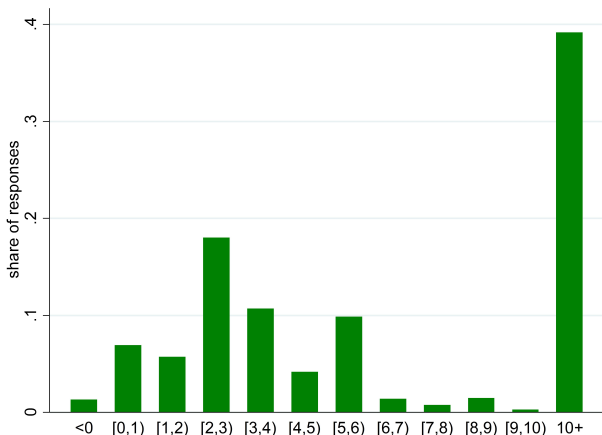
The Role of Expectations for Household Decisions...

- Key variable for economic decisions: perceived real interest rate

$$r_t^i = i_t - \mathbb{E}_t^i \pi_{t+1}$$

- Most **households'** choices depend on inflation expectations
 - ▶ Consumption/saving choices (D'Acunto, Hoang, and Weber, 2018)
 - ▶ Mortgage Uptaking, Type (Malmendier and Steiny, 2024)
 - ▶ Stock Market Participation (Das, Kuhnen, et al, 2019)
 - ▶ **Wage bargaining**
- **Normal times:** $\Delta i_t \longrightarrow \Delta r_t$ if **expectations anchored?**
- **Especially important when nominal rates low!**
(Coibion, Gorodnichenko, Kumar, and Pedemonte, 2018)
 - ▶ Policy needs to manage households' expectations
 - ▶ Examples: Unconventional Fiscal Policy, Forward Guidance

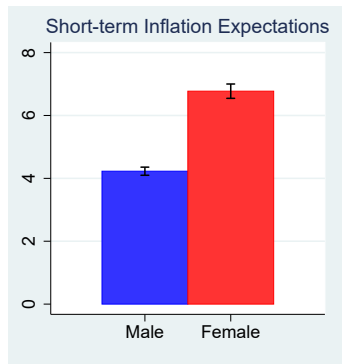
...BUT Households have dispersed knowledge



Source: Coibion, Gorodnichenko, Weber, JPE (2022):
"Monetary Policy Communication and Households' Inflation Expectations"

- More than 40% of 25,000 Americans thought inflation target was $> 10\%$ in 2018
- Expectations do react to info and determine actual consumption in scanner data

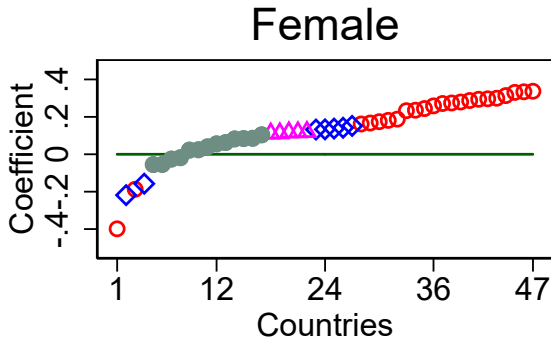
Household Inflation Expectations: Gender Gap



Source: D'Acunto, Malmendier, Weber, PNAS (2021):
"Gender Roles Produce Divergent Economic Expectations"

- Realized inflation in 2016: $< 2\%$
- Average expected inflation for 2016: $> 5\%$
- Women have (more) positively biased inflation expectations

The Gender Gap Truly Global Phenomenon



Source: D'Acunto and Weber (2023):
"Global Evidence on the Formation of Subjective Expectations"

- New survey on subjective expectations from 47,000 individuals in 47 countries
- Gender gap in inflation expectations truly global phenomenon
- Exception: Argentina, Egypt, Turkey, Zimbabwe

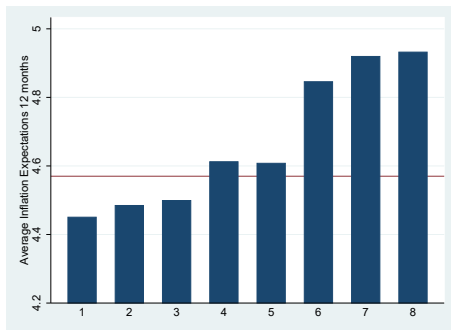
Why Are Women (More) Biased? They Do the Groceries!



Source: D'Acunto, Malmendier, Weber, PNAS (2021):
"Gender Roles Produce Divergent Economic Expectations"

- Large difference in inflation expectations by gender *within* household
- Unconditional difference driven by differences in grocery shopping

Variation in Households' Bundles → Inflation Expectations



Source: D'Acunto, Malmendier, Ospina, Weber, JPE (2021):
"Exposure to Grocery Prices and Inflation Expectations"

- Sort households into bins by realized inflation in grocery bundles
- High-low portfolio: difference in expected inflation of 0.5 percentage points
- Economically sizeable given inflation target of 2%
- **Higher weight on positive prices changes of frequently purchased goods**

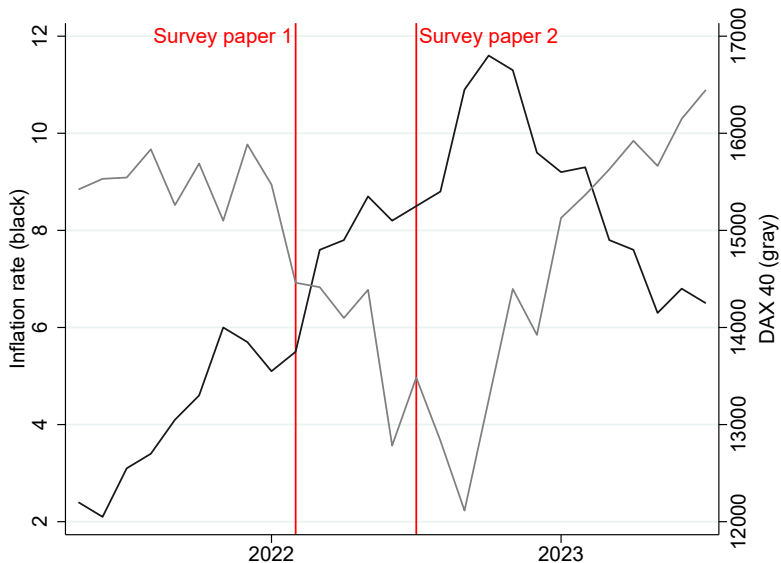
Motivation

- Large literature on inflation expectations and consumption
 - ▶ Evidence on effect of expectations on spending mixed
 - ▶ Large dispersion makes relationship difficult to establish
 - ▶ Ambiguous theoretical relationship
 - ▶ Crucial to jointly observe expectations and decisions for same agents
 - ▶ Shocks to expectations for identification
- Important to move beyond direct expectation-consumption link
- Balance sheet key for household response to inflation
 - ▶ Inflation erodes real value of nominal assets and debt
 - ▶ Wealth effects of inflation dwarf income effects for many HH
 - ▶ Many theories describe asset-return implications of inflation
- Study role of household balance sheets
 - ▶ How wealth effects of inflation mediate consumption response
 - ▶ How inflation affects debt and investment choices

Motivation

- Online survey experiments with customers of large German bank
- Novel experimental approaches
 - ▶ Interventions typically rely on shifting inflation expectations
 - ▶ We instead explain economic mechanisms to households
- 2.8–3.8k completed responses, 18 min median response time
- Match survey responses to bank data
 - ▶ Set of demographics: age, zip code, marital status, etc.
 - ▶ Categorized, transaction-level account data
 - ▶ Month-end portfolio holdings and each security transaction

Survey timing



⇒ Inflation high and rising at time of and after interventions

Inflation and Trading

(with Philip Schnorpfel and Andreas Hackethal)

Introduction

- Inflation is key risk for financial-market participants
- Negative relation exists empirically b/w inflation and stock returns
(e.g., de Rubio Cruz et al., 2023; Fama, 1981; Fama and Schwert, 1977; Fang, Liu, and Roussanov, 2022)
- Many theories explain this relation that is at odds with intuition
(e.g., Bhamra et al., 2023; Campbell, Pflueger, and Viceira, 2020; Modigliani and Cohn, 1979)
- Evidence on how inflation affects investor beliefs and choices scant

This paper

- Study directly how investors respond to inflation
- Exogenous variation in beliefs about inflation and its return impact
 - ▶ Information experiment with brokerage customers of German bank
 - ▶ Mix of info about inflation and returns during past inflation
- Analyze effects of information provision on beliefs and choices
 - ▶ Elicit return expectations, mental models, etc. in survey
 - ▶ Track investors' trading choices using bank data

Plan for the talk

- Sample and experimental design
- Prior beliefs about inflation and asset returns
- Treatment effects on return expectations
- Expectations and trading

Sample characteristics

<i>Statistics:</i>	Mean	SD	P25	P50	P75
Demographics and portfolio					
University completed (0/1)	0.66	0.47	0.00	1.00	1.00
Gross wealth (€ k)	345.09	302.76	87.50	375.00	750.00
Portfolio value (€ k)	127.88	256.08	5.64	28.75	114.59
Equity share (%)	0.84	0.23	0.77	0.95	1.00
Monthly trades (no.)	2.17	3.94	0.00	0.50	2.58
Monthly net buys (€)	607.96	1863.34	0.00	24.22	615.51
Perceptions and expectations					
Inflation rate today (%)	4.99	1.62	4.00	5.00	5.00
Inflation rate today relative to 1yr ago (%)	3.12	1.97	2.00	3.00	4.00
Inflation as recent trading motive (0/1)	0.42	0.49	0.00	0.00	1.00
Inflation top financial-market risk (0/1)	0.26	0.44	0.00	0.00	1.00

⇒ Sample: **well-off**, **accurate inflation perception**, **inflation matters**

Experimental design

1. Pre-treatment section

- ▶ Inflation beliefs and trading motives
- ▶ Past unconditional and inflationary-period asset returns

2. Treatment section

- ▶ Control group receives no information
- ▶ T1: high current inflation and possibility of further rise
- ▶ T2: actual returns during past inflationary periods
- ▶ T3: T1 + T2 + explanations of past returns

3. Post-treatment section

- ▶ Beliefs about inflation and economy, mental models
 - ▶ Return expectations and hypothetical portfolio choice
- Track investors over time to investigate actual trading choices

T1: high current inflation and possibly further rise

- Inflation 3x higher than 10-year average + figure below
- Policymakers recently discussed possibility of further increase
- List of reasons for inflation surge

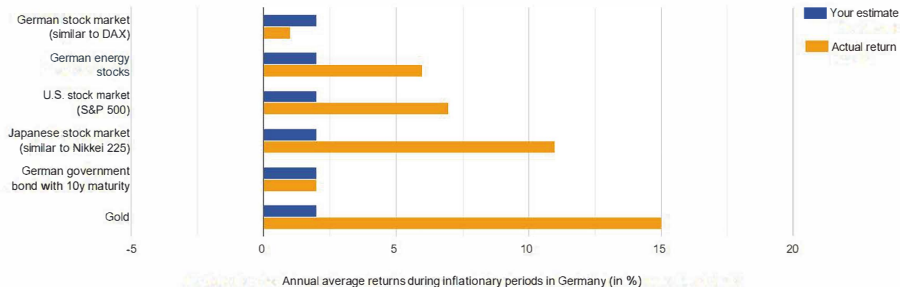
(Andre et al., 2022)



Source: Deutsche Bundesbank

T2: actual returns during past inflationary periods

- Initially display respondent's past-return estimates (blue bars)
- Click on button to display actual returns one-by-one (orange)
- One sentence contrasting both returns for each asset



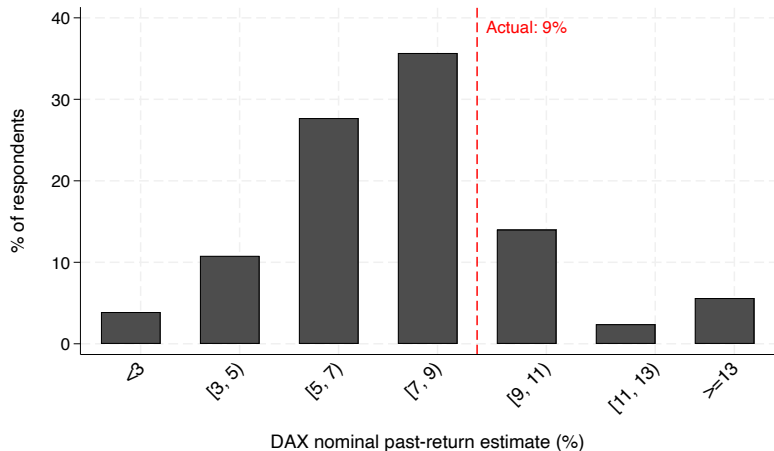
T3: T1 + T2 + explanations of past returns

- International diversification can protect against local inflation
- Commodities (such as energy) often drive inflation
- Gold perceived as a safe harbor during inflationary periods
- Calculations and explanations similar to existing work for US
(Neville et al., 2021)
- Giving context to returns might increase treatment effectiveness
(Andre et al., 2022; Goetzmann, Kim, and Shiller, 2022; Shiller, 2017)

Plan for the talk

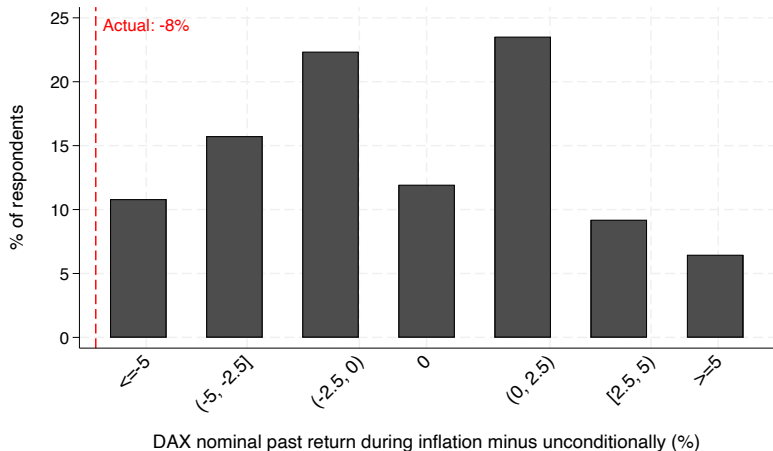
- Sample and experimental design
- **Prior beliefs about inflation and asset returns**
- Treatment effects on return expectations
- Expectations and trading

Perceived unconditional historical stock-market returns



⇒ High awareness of average past stock returns (average of 7.2%)

Perceived historical stock-return impact of inflation



⇒ Disagreement & overoptimism about inflation impact (6.7% vs. 1%)

Equation to estimate treatment effects on return beliefs

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i,$$

with

- \hat{y}_i = post-treatment 12-month return expectation of respondent i
- $I(x_i = x^k)$ = indicator that respondent i receives treatment k
- \mathbf{X}_i denotes set of controls from survey and bank data:
 - ▶ Age, risk tolerance, inflation and return perceptions, wealth and debt
 - ▶ Dummies for gender, marital status, education, financial literacy, financial advice, trading activity, timing of survey participation

Treatment effects on 12-month return expectations

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i$$

<i>Dependent variable:</i>	DAX	DE energy	S&P 500	Nikkei 225	Bunds 10y	Gold
	(1)	(2)	(3)	(4)	(5)	(6)
T1: inflation	0.092 (0.181)	0.243 (0.189)	0.051 (0.203)	-0.163 (0.166)	-0.087 (0.103)	-0.026 (0.170)
T2: past returns	-0.684*** (0.184)	0.505*** (0.189)	-0.035 (0.205)	1.066*** (0.200)	0.123 (0.102)	1.909*** (0.214)
T3: 1+2+reason	-1.049*** (0.185)	0.429** (0.180)	-0.114 (0.205)	1.490*** (0.194)	0.164 (0.109)	2.354*** (0.219)
Observations	2,568	2,572	2,499	2,578	2,644	2,525
R-squared	0.14	0.10	0.16	0.18	0.16	0.22
Controls	Y	Y	Y	Y	Y	Y
Avg. Y control group	5.0	4.6	5.9	4.1	1.4	4.0

- Inflation treatment has no effect on return expectations
- Info on low German stock returns reduces expectations
- Info on high returns of other assets has large effects

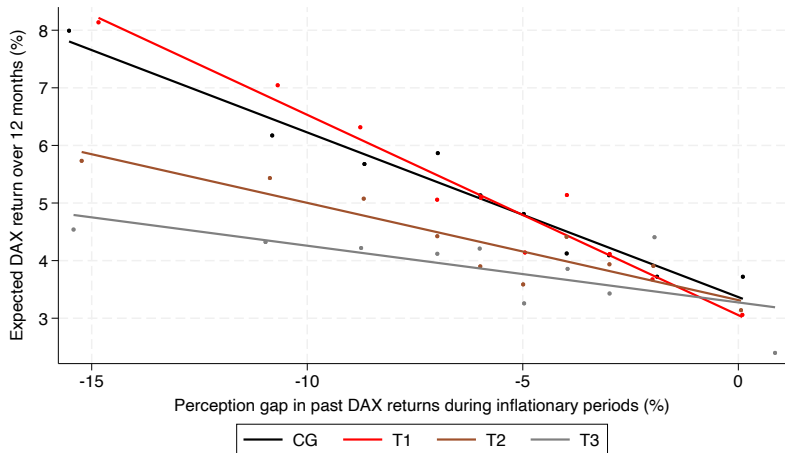
Treatment effects on return beliefs by perception gaps

- Learning might be stronger when priors deviate more from signals
- Focus on degree of updating as function of news in signal:

$$\hat{y}_i = \sum_{k=1}^3 \beta_k I(x_i = x^k) (x^{ret} - \hat{x}_{i,prior}^{ret}) + \mu_k I(x_i = x^k) + \delta_k (x^{ret} - \hat{x}_{i,prior}^{ret}) + \theta \mathbf{X}_i + \epsilon_i$$

- $(x^{ret} - \hat{x}_{i,prior}^{ret})$ = gap b/w realized return and prior estimate
- μ_k measures treat effects that are independent of priors
- δ_k captures posteriors across respondents w/ different priors

Treatment effects on return beliefs by perception gaps



⇒ Return info (T2/T3) weakens forecasts for most optimistic priors

Plan for the talk

- Sample and experimental design
- Prior beliefs about inflation and asset returns
- Treatment effects on return expectations
- Expectations and trading

Treatment effects on hypothetical trading

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i$$

<i>Dependent variable:</i>	DAX	DE energy	S&P 500	Nikkei 225	Bunds 10y	Gold
	(1)	(2)	(3)	(4)	(5)	(6)
T1: inflation	-73.6 (120.5)	42.8 (61.8)	-50.5 (121.0)	-58.4 (41.3)	-25.8 (41.2)	-3.7 (83.5)
T2: past returns	-830.6*** (123.7)	155.3** (63.7)	-231.1* (124.8)	383.4*** (55.9)	30.7 (40.3)	397.3*** (94.9)
T3: 1+2+reason	-1288.1*** (120.8)	372.0*** (65.8)	-125.8 (123.0)	522.3*** (57.8)	21.2 (40.1)	456.8*** (91.1)
Observations	2,597	2,594	2,529	2,599	2,648	2,549
R-squared	0.11	0.06	0.16	0.09	0.04	0.09
Controls	Y	Y	Y	Y	Y	Y
Avg. Y control group	3,444.3	771.8	2,963.2	488.0	264.9	1,024.4

- Inflation treatment has no effect on hypothetical trading
- Return info alters allocations in expected direction (except US)
- T3 effects larger; in particular for German stocks

Treatment effects on actual trading

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i$$

DV:	Number German equities				German equities in EUR			
	Gross buys		Net buys		Gross buys		Net buys	
Trades:								
Post:	2m	4m	2m	4m	2m	4m	2m	4m
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
T1	-0.05 (0.05)	-0.04 (0.04)	-0.03 (0.05)	-0.01 (0.04)	-24.55 (292.96)	-89.58 (201.89)	37.19 (275.04)	46.06 (211.29)
T2	-0.02 (0.05)	-0.01 (0.04)	0.00 (0.05)	0.01 (0.04)	-261.13 (296.61)	-209.77 (212.80)	-103.66 (272.08)	-150.14 (210.64)
T3	-0.15*** (0.05)	-0.09** (0.04)	-0.13*** (0.05)	-0.07* (0.04)	-693.94*** (265.69)	-388.77* (203.70)	-229.40 (251.07)	-91.79 (200.70)
N	1,994	1,994	1,994	1,994	1,994	1,994	1,994	1,994
Y	0.55	0.49	0.34	0.31	1,823.67	1,415.51	550.27	428.34

- Hypothetical trading translates into actual trading
- Effect operates primarily through adjustments in gross buys
(e.g., Calvet, Campbell, and Sodini, 2009)

Take Away I

- Heterogeneity and overoptimism about return impact of inflation
- Shifting return beliefs alters expectations and trading
- Results informative for household finance, asset pricing, and macro
 - ▶ HF: investors care about inflation but are unaware of hedging
 - ▶ AP: shed light on which subjective models guide investor behavior
 - ▶ Macro: implications of HH inflation expectations for investments

Households' Response to the Wealth Effects of Inflation

(with Philip Schnorpfel and Andreas Hackethal)

Introduction

- Unexpected inflation redistributes wealth from creditors to debtors
(Doepke and Schneider, 2006; Fisher, 1933)
- Consumption effects of the wealth redistribution (Fisher channel)?
(Auclert, 2019)
- Evidence on households' response to the wealth effects lacking
 - ▶ Limited awareness b/c of money illusion?
(Cohen, Polk, and Vuolteenaho, 2005; Modigliani and Cohn, 1979)
 - ▶ Limited reaction b/c of low MPC out of unrealized gains?
(Di Maggio, Kermani, and Majlesi, 2020; Lettau and Ludvigson, 2004)

This paper

- Study how households respond to wealth effects of inflation
- Exploit exogenous variation in knowledge about erosion channel
 - ▶ Experiment with customers with observable transactions and debtors
 - ▶ Explain inflation-induced erosion of nominal positions
- Analyze whether/how knowledge affects beliefs and choices

Plan for the talk

- Sample and experimental design
- Prior knowledge about the wealth effects of inflation
- The effects of information treatments on beliefs
- Wealth effects of inflation and consumption

Sample characteristics

<i>Statistics:</i>	Mean	SD	P25	P50	P75
Demographic characteristics					
University completed (0/1)	0.48	0.50	0.00	0.00	1.00
Homeowner (0/1)	0.59	0.49	0.00	1.00	1.00
Stockholdings (0/1)	0.54	0.50	0.00	1.00	1.00
Nominal assets / gross wealth (%)	42.67	33.66	10.00	30.00	79.00
Nominal debt / gross wealth (%)	16.78	22.88	0.00	5.00	30.00
Net nominal position / gross wealth (%)	25.89	44.90	0.00	20.00	60.00
Perceptions and expectations					
Inflation rate today (%)	8.78	6.24	7.00	7.90	8.00
Inflation important for own wealth (0-4)	2.37	1.02	2.00	2.00	3.00
GDP growth important for own wealth (0-4)	1.73	1.06	1.00	2.00	2.00
Interest rates important for own wealth (0-4)	1.34	1.14	0.00	1.00	2.00

⇒ Sample: well-off, exposed to inflation, accurate inflation perception

Experimental design

1. Pre-treatment section

- ▶ Preexisting knowledge about erosion channel
- ▶ Balance-sheet decomposition and real-net-wealth change

2. Treatment section

- ▶ Control group receives info on current inflation only
- ▶ One treatment group learns about inflation + nominal-asset erosion
- ▶ One treatment group learns about inflation + nominal-debt erosion

3. Post-treatment section

- ▶ Beliefs about nominal positions, own real wealth, economy
 - ▶ Planned consumption and hypothetical real-estate choice
- Track households over time to investigate actual choices

Text for loan-treatment group

The **current rate of inflation in Germany is 8.7%**, the highest rate for more than 70 years. That is, goods and services priced at €100 one year ago now cost €108.7 on average. This price increase has a relatively **positive effect on borrowers**: the loan amount is unchanged nominally, but worth less in real terms as a consequence of money depreciation.

As an example, consider a €50,000 loan with a three-year maturity that you took out one year ago. The real value of the loan has already fallen sharply, and will depreciate further if inflation remains high:

€50,000 loan value one year ago ↓ **€38,800 real loan value today**

The **inflation-induced loan depreciation** thus has a positive effect on the real net wealth of borrowers.

Text for savings-treatment group

The **current rate of inflation in Germany is 8.7%**, the highest rate for more than 70 years. That is, goods and services priced at €100 one year ago now cost €108.7 on average. This price increase has a relatively **negative effect on savers**: the savings amount (e.g., checking account, bond, life insurance) is unchanged nominally or lower, but worth less in real terms as a consequence of money depreciation.

As an example, consider a €50,000 savings product with a three-year maturity that you invested in one year ago. The real value of the savings product has already fallen sharply, and will depreciate further if inflation remains high:

€50,000 savings value one year ago ↓ **€38,800 real value today**

The **inflation-induced savings depreciation** thus has a negative effect on the real net wealth of savers.

Text for control group

The **current rate of inflation in Germany is 8.7%**, the highest rate for more than 70 years. That is, goods and services priced at €100 one year ago now cost €108.7 on average.

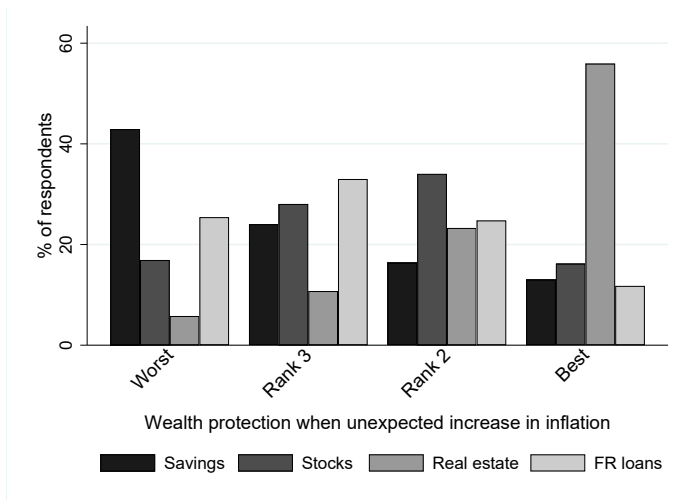
- Control group receives first two sentences only
 - ⇒ All groups learn about prevailing level of inflation
 - ⇒ By comparing groups, isolate effect of erosion-channel information

Plan for the talk

- Sample and experimental design
- Prior knowledge about the wealth effects of inflation
- The effects of information treatments on beliefs
- Wealth effects of inflation and consumption

Prior knowledge about wealth effects of inflation

Question: "Which of the following financial instruments should yield the highest real-net-wealth return in times of unexpectedly high inflation?"



⇒ Awareness of inflation-induced savings erosion, limited for debt

Plan for the talk

- Sample and experimental design
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Equation to estimate treatment effects on beliefs

$$posterior_i = const + \sum_{j=1}^2 \beta_j I\{i \in treat\ j\} + \gamma prior\ rnw_i + controls_i + error_i$$

with

- $posterior_i$ = post-treatment measure of beliefs of respondent i
- $I\{i \in treat\ j\}$ = dummy variable indicating that respondent i receives treatment j (savings or loan erosion)
- $prior\ rnw_i$ = prior beliefs on real-net-wealth change
- $controls_i$ from survey and bank data:
 - ▶ Gross wealth, quadratic polynomial in age, risk tolerance
 - ▶ Dummies for education, survey characteristics, gender, marital status, employment status, balance-sheet positions, inflation beliefs, zip code

Treatment effects on perceived changes in real net wealth

$$posterior_i = const + \sum_{j=1}^2 \beta_j I\{i \in treat\ j\} + \gamma prior\ rnw_i + controls_i + error_i$$

DV:	Change in real net wealth						
	Last 12 months		Next 12 months		Last + next 12 months		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treat: savings	-0.932 (0.648)	-0.807 (0.646)	-0.835 (0.769)	-0.981 (0.773)	-1.767 (1.217)	-1.788 (1.222)	-1.606** (0.781)
Treat: loan	1.490** (0.676)	1.743*** (0.666)	1.260 (0.769)	1.204 (0.761)	2.749** (1.222)	2.947** (1.207)	2.495*** (0.787)
Controls prior	Y	Y	Y	Y	Y	Y	Y
Controls demo	N	Y	N	Y	N	Y	Y
Robust reg	N	N	N	N	N	N	Y
Avg. Y CG	-2.51	-2.55	-3.11	-3.01	-5.62	-5.56	-6.33
Observations	3,190	3,134	3,190	3,134	3,190	3,134	3,099
R-squared	0.00	0.19	0.00	0.13	0.00	0.20	0.40

- Savings treatment has limited effect on wealth perception
- Loan treatment increases perceived wealth by 3 percentage points
- Results robust to and more precise with Huber-robust estimations

Plan for the talk

- Sample and experimental design
- Prior knowledge about the wealth effects of inflation
- The effects of information treatments on beliefs
- Wealth effects of inflation and consumption

Treatment effects on planned spending

$$posterior_i = const + \beta I\{treat\ loan_i\} + \gamma prior\ rnw_i + controls_i + error_i$$

Dependent variable:

Planned spending

Groceries	Restaurants	Leisure	Clothing	Durables
(1)	(2)	(3)	(4)	(5)

Panel A. Reduced form

Treat: loan erosion	-0.007 (0.043)	0.110*** (0.041)	0.108** (0.042)	0.042 (0.042)	0.069 (0.043)
Controls for prior beliefs	Y	Y	Y	Y	Y
Controls for demographics	Y	Y	Y	Y	Y
Observations	2,088	2,088	2,088	2,088	2,088
R-squared	0.04	0.16	0.12	0.10	0.09
Avg. Y	0.00	0.00	0.00	0.00	0.00

- Groceries spending unaffected
- Treatment effect strongest for nondurable spending (11% of SD)

Treatment effects on actual spending

$$\text{posterior}_i = \text{const} + \beta I\{\text{treat loan}_i\} + \gamma \text{prior rnw}_i + \text{controls}_i + \text{error}_i$$

DV:	Total			Nondiscretionary			Discretionary		
Window:	30	60	90	30	60	90	30	60	90
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
T: loan	65.0* (36.5)	192.6*** (59.7)	171.3** (79.0)	-4.9 (15.9)	23.6 (24.2)	41.9 (33.4)	39.6 (24.8)	123.3*** (40.9)	131.3** (55.8)
N	1,465	1,513	1,477	1,431	1,414	1,405	1,451	1,488	1,497
R2	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.04	0.03
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Avg. Y	-267.0	-308.4	-22.8	-92.6	-46.6	58.7	-147.2	-222.9	-240.3

- Planned changes in spending translate into actual changes
- 6% increase in spending relative to average over prior 60 days
- MPC of 2.5–3% out of treatment-induced perceived wealth change

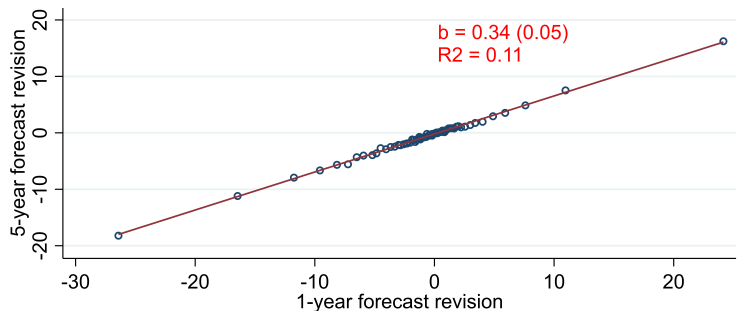
Take Away II

- Households care and are well-informed about inflation
- Yet they know little about inflation-induced nominal-debt erosion
- Providing information on this erosion channel affects...
 - ▶ beliefs about nominal debt and own real wealth
 - ▶ consumption and debt financing in real-estate transaction
- Real wealth can hence mediate how households respond to inflation
- But limited awareness likely mutes consequences of redistribution
- Informative to HANK models in which Fisher channel is important
 - ▶ Unexpected inflation boosts economy b/c debtors have high MPC
 - ▶ Our results suggest role for info frictions & other deviations from FIRE

(Pfäuti and Seyrich, 2024)

Open Questions

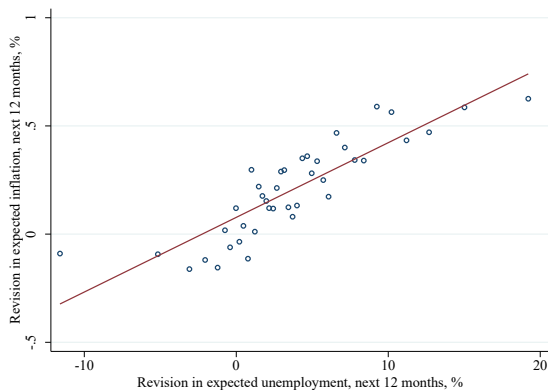
Term Structure of Expectations



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Most research focuses on one-year ahead expectations
- But for housing decisions or car purchases longer-run expectations crucial
- Strong correlation between revisions in short and long-term expectations

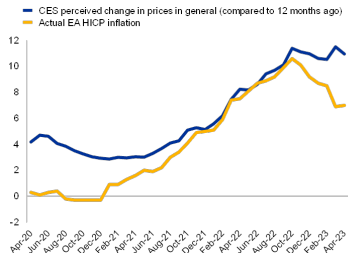
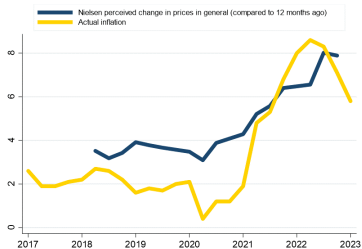
Joint Formation of Expectations



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Supply-side view: strong correlation between expected π and UR
- Also true for revisions at individual level!
- Relevant to observe relevant expectations jointly

Time Varying Attention to Macro Variables

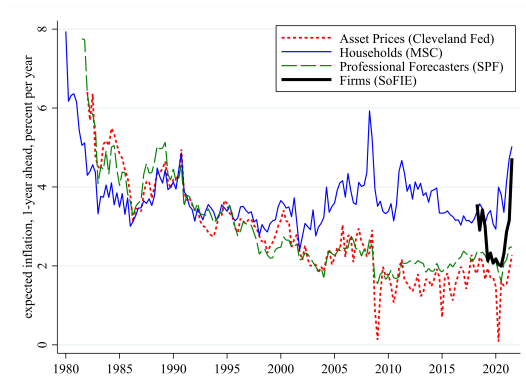


Source: Weber et al (ECMA 2025):

"Tell me Something I don't Already Know: Learning in Low- and High-Inflation Settings"

- HH perceptions closer to actual inflation when inflation high
- Implications for research
 - ▶ Important to take into account state dependence of expectations
 - ▶ Relevant to perform subsample analyses

Firms and Households Form Expectations Alike



Source: Weber, D'Acunto, Gorodnichenko, Coibion, JEP (2022):
"The Subjective Inflation Expectations of Households and Firms"

- Limited evidence for firms suggest general biases of HH also prevalent for firms

Recent reviews of this literature

- “The Subjective Inflation Expectations of Households and Firms: Measurement, Determinants, and Implications”
Weber, D’Acunto, Coibion, and Gorodnichenko
Journal of Economic Perspectives (2022)
- “What Do the Data Tell Us About Inflation Expectations?”
D’Acunto, Malmendier, and Weber
Handbook of Subjective Expectations (2023)
- “The Expected, Perceived, and Realized Inflation of U.S. Households before and during the COVID19 Pandemic”
Weber, Coibion, and Gorodnichenko
IMF Economic Review (2023)
- “Subjective Inflation Expectations are Important and Meaningful”
D’Acunto and Weber
Annual Review of Economics (2024)

Appendix

Treatment effects on inflation expectations

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i$$

<i>Dependent variable:</i>	1yr forecast		Revision 1yr forecast		5yr forecast	
	(1)	(2)	(3)	(4)	(5)	(6)
T1: inflation	0.395*** (0.101)	0.493*** (0.089)	0.532*** (0.094)	0.546*** (0.092)	0.294*** (0.096)	0.350*** (0.087)
T2: past returns	-0.189* (0.105)	-0.093 (0.087)	-0.198** (0.088)	-0.178** (0.086)	-0.140 (0.101)	-0.066 (0.091)
T3: 1+2+reason	0.417*** (0.109)	0.478*** (0.093)	0.331*** (0.101)	0.412*** (0.098)	0.202** (0.097)	0.299*** (0.091)
Controls	N	Y	N	Y	N	Y
Avg. Y control group	5.0	5.0	0.4	0.3	3.7	3.7
Observations	2,747	2,660	2,704	2,631	2,751	2,663
R-squared	0.02	0.27	0.02	0.09	0.01	0.18

Shift in inflation f /cast \times prior beliefs about return impact

<i>Dependent variable:</i>	DAX	DE energy	S&P 500	Nikkei 225	Bunds 10y	Gold
	(1)	(2)	(3)	(4)	(5)	(6)
T1: inflation	-0.035 (0.185)	0.338* (0.191)	0.195 (0.203)	-0.092 (0.167)	-0.098 (0.113)	-0.093 (0.183)
Return Δ when inflation	0.208*** (0.045)	0.284*** (0.045)	0.171*** (0.052)	0.154*** (0.047)	0.069* (0.041)	0.173*** (0.047)
T1 \times return Δ	-0.026 (0.061)	-0.028 (0.072)	0.102 (0.077)	0.071 (0.073)	0.001 (0.065)	0.071 (0.071)
Controls	N	Y	N	Y	N	Y
Observations	1,402	1,387	1,343	1,389	1,424	1,340
R-squared	0.19	0.20	0.24	0.22	0.21	0.24

Shift in inflation f/cast x shift in beliefs about returns

<i>Dependent variable:</i>	DAX	DE energy	S&P 500	Nikkei 225	Bunds 10y	Gold
	(1)	(2)	(3)	(4)	(5)	(6)
Inflation-forecast revision	-0.038 (0.089)	-0.074 (0.086)	0.004 (0.097)	-0.001 (0.110)	0.065 (0.061)	-0.002 (0.131)
Controls	N	Y	N	Y	N	Y
Observations	538	542	530	544	557	529
R-squared	0.15	0.13	0.14	0.18	0.12	0.14

Treatment effects on other expectations

$$\hat{y}_i = \alpha + \sum_{k=1}^3 \beta_k I(x_i = x^k) + \theta \mathbf{X}_i + \epsilon_i$$

DV:	Own salary		Own portfolio		Unemployment		Economic growth	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
T1	0.003 (0.040)	-0.005 (0.040)	-0.034 (0.047)	-0.074 (0.046)	-0.049 (0.045)	-0.067 (0.045)	0.006 (0.051)	-0.021 (0.050)
T2	-0.014 (0.042)	-0.003 (0.041)	0.118** (0.048)	0.077 (0.047)	0.020 (0.049)	-0.028 (0.049)	0.056 (0.054)	0.017 (0.053)
T3	0.004 (0.041)	0.017 (0.040)	0.039 (0.048)	-0.012 (0.047)	-0.042 (0.048)	-0.078 (0.049)	-0.081 (0.053)	-0.129** (0.053)
Controls	N	Y	N	Y	N	Y	N	Y
Avg. Y	3.3	3.3	3.5	3.5	2.9	2.9	3.1	3.1
N	2,792	2,690	2,792	2,690	2,792	2,690	2,792	2,690
R2	0.00	0.09	0.00	0.09	0.00	0.04	0.00	0.06