Polarized Expectations, Polarized Consumption

Rupal Kamdar
Indiana University

Walker Ray
LSE

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Federal Reserve Bank of Philadelphia

Motivation

- Fundamental relationship between economic decisions and agents' expectations
- Workhorse approach: full-information rational expectations (FIRE)
  - Useful theoretical benchmark, but requires strong assumptions
- Survey-based measures of beliefs systematically deviate from FIRE

This Paper:

- Political affiliation is a key driver of household expectations and actions

Five Facts About Expectations, Consumption, and Polarization

FACT 1: Consumer beliefs follow a similar factor model regardless of subgroup

- Using survey data, we show that household beliefs can be largely summarized by a single factor
- Essentially, households fall on a spectrum of optimism to pessimism (“sentiment”)
- The factor model is similar regardless of what demographic subgroup we consider (political affiliation, income, education etc)

Five Facts About Expectations, Consumption, and Polarization

FACT 1: Consumer beliefs follow a similar factor model regardless of subgroup

FACT 2: Sentiment persistence falls when the White House changes party

- Analyzing sentiment persistence within households, we find a high degree of stability
- One striking exception: strong switching behavior following presidential elections when the White House changes parties
  - Optimists become pessimistic, and pessimists become optimistic
  - This switching occurs at virtually no other time (eg., midterm elections, major macro events, presidential elections without a change of party)
- Over time, the magnitude of switching behavior has increased

Five Facts About Expectations, Consumption, and Polarization

FACT 1: Consumer beliefs follow a similar factor model regardless of subgroup

FACT 2: Sentiment persistence falls when the White House changes party

FACT 3: Wide dispersion in cross-section of sentiment, correlated with political affiliation

- There is a high degree of sentiment heterogeneity across households
- While aggregate sentiment fluctuates with the business cycle, there is a wide dispersion of optimistic and pessimistic households at any point in time
- Utilizing political affiliation in surveys, we show that this heterogeneity correlates with political ideology
  - Democrats tend to be optimistic when Republicans are pessimistic, and vice versa

Five Facts About Expectations, Consumption, and Polarization

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FACT 3: Wide dispersion in cross-section of sentiment, correlated with political affiliation

FACT 4: "Partisan" reasoning has risen, but the pass-through to sentiment is stable outside of elections

- Individuals are increasingly likely to mention government policy in the reasons for their expectations
- The pass-through of "partisan narratives" to sentiment has been stable over time
- The only exception is presidential elections, where we find partisan reasoning strongly affects sentiment (particularly in the most recent elections)

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FACT 4: "Partisan" reasoning has risen, but the pass-through to sentiment is stable outside of elections

FACT 5: Partisan consumption response to White House elections

- 2016 case study (high-frequency consumption and voting data at the zip code):
  - Zip codes with a higher fraction of Trump votes increased consumption
- 2020 case study (linked individual-level high-frequency consumption data and political affiliation):
  - Republican households decreased consumption (noisy due to Covid)

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Implications for expectation formation:

- Political affiliation and polarization is crucial for understanding the dynamics and dispersion of household beliefs and actions
- No "off-the-shelf" macro theories of expectation formation can rationalize all facts

Related Literature

- Deviations from FIRE, and the links between expectations and actions:
  - Croushore (1993, 1997), Coibion & Gorodnichenko (2015), Coibion, Gorodnichenko, & Kamdar (2018), Bram & Ludvigson (1998), Ludvigson (2004), Malmendier & Nagel (2016), ...
- Polarization and Expectations:
  - Bartels (2002), Gerber & Huber (2009), Benhabib & Spiegel (2019), Coibion , Gorodnichenko, & Weber (2020), D'Acunto, Hoang, & Weber (2016)...
- Polarization and Actions:
  - Gillitzer & Prasad (2018), Mian, Sufi, & Khoshkhou (2021), Meeuwis, Parker, Schoar, & Simester, (2022), Cassidy & Vorsatz (2021), Rice (2020), Dagostino, Gao, & Ma (2020), Kempf & Tsoutsoura (2021)....

Survey Expectations

Data: Michigan Survey of Consumers (MSC)

Michigan Survey of Consumers

- 1978-present, monthly, consumer survey of $\approx$ 500 households
- Rotating panel (up to 2x, six months apart)

Questions

- Includes forward- and backward-looking questions
- Includes aggregate and personal belief questions
- Since 2006, questions regarding political party affiliation are sporadically asked
- Majority of questions in the MSC are simple, qualitative questions

MSC Factor Analysis

- Conduct a factor analysis
  - Categorical responses: multiple correspondence analysis (MCA)
- Included questions in baseline:
  - Aggregate: business conditions have/will improve, state of the economy in next 1/5 years, unemployment/inflation/interest rates up/down
  - Personal: financial conditions have/will improve, family income up/down

MSC MCA Results

Table 1: MCA Fraction Explained

Panel A:	Base	Aggregate		Personal		Past
	(1)	(2)	(3)	(4)	(5)	(6)
% Explained (1)	78.8	87.4	76.4	80.7	63.8	85.2
% Explained (2)	7.1	3.4	4.5	14.3	13.1	14.8
Base Corr.		0.923	0.914	0.690	0.731	0.679
Obs.	215k	240k	136k	267k	72k	305k
Start	1978	1978	1990	1978	2007	1978

Notes: panel A's column (1) is the baseline MCA; (2) includes aggregate questions only; (3) adds 5-year price/gas price questions; (4) uses personal questions only (5) adds home price expectations; (6) includes backward-looking questions only.

- First component we call "sentiment" (Kamdar 2019)
- First component explains a huge fraction of responses $\implies$ dimension reduction
- Results are extremely similar for many sets of included questions

Table 2: MCA Fraction Explained by Education

Panel B:	Education					
	(1)	(2)	(3)	(4)	(5)	(6)
% Explained (1)	75.2	77.0	79.4	80.1	77.8	75.1
% Explained (2)	11.0	7.8	6.9	6.4	7.3	8.9
Base Corr.	0.997	0.998	0.999	0.999	0.999	0.999
Obs.	4k	10k	57k	55k	51k	35k
Start	1978	1978	1978	1978	1978	1978

Notes: Panel B runs the baseline MCA on different subgroups. Panel B uses different education groups: no high school, some high-school, high-school diploma, some college, college degree, and post-grad.

- Estimates highly similar across subgroups $\implies$ mapping from sentiment to beliefs is relatively homogeneous

MSC MCA Results

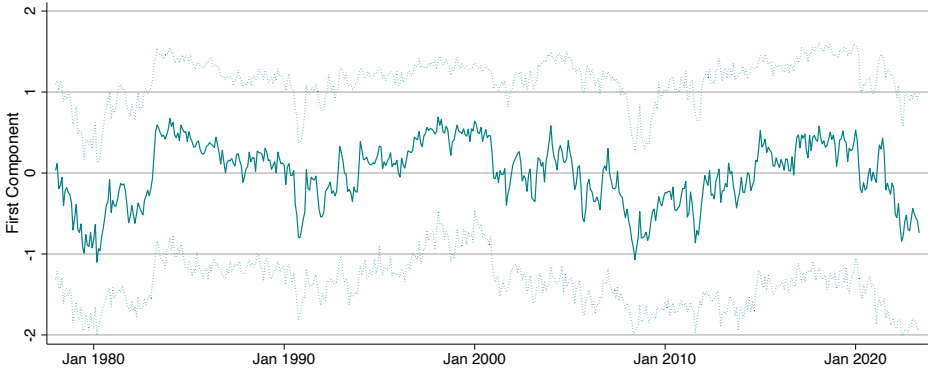
Table 3: MCA Fraction Explained by Political Affiliation

Panel D:	Pol. Aff. (Broad)			Pol. Aff. (Strong)		
	(1)	(2)	(3)	(4)	(5)	(6)
% Explained (1)	73.3	82.2	87.3	73.2	80.5	88.9
% Explained (2)	7.9	5.9	4.3	7.8	7.4	4.0
Base Corr.	0.998	0.999	0.998	0.997	0.999	0.998
Obs.	24k	20k	23k	10k	5k	8k
Start	2006	2006	2006	2006	2006	2006

Notes: panel D runs the baseline MCA on different subgroups. Panel D uses political affiliation groups; column (1) includes all Democrats; (2) all independents; (3) all Republicans; (4) strong Democrats; (5) strict Independents; and (6) strong Republicans. The baseline correlation is the correlation of fitted first components of the baseline and the given column.

- Estimates highly similar across subgroups $\implies$ mapping from sentiment to beliefs is relatively homogeneous

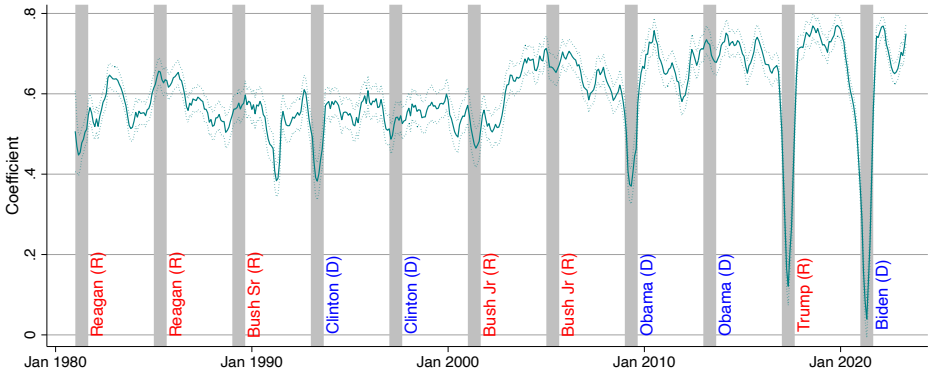
MSC MCA Results: Sentiment Distribution across Time



Notes: time series of the first component $f_{i,t}$ from the baseline MCA. The solid line is the median value of sentiment, while the dotted lines are the 90-10 percent distribution.

- Wide dispersion of beliefs across households at any given time

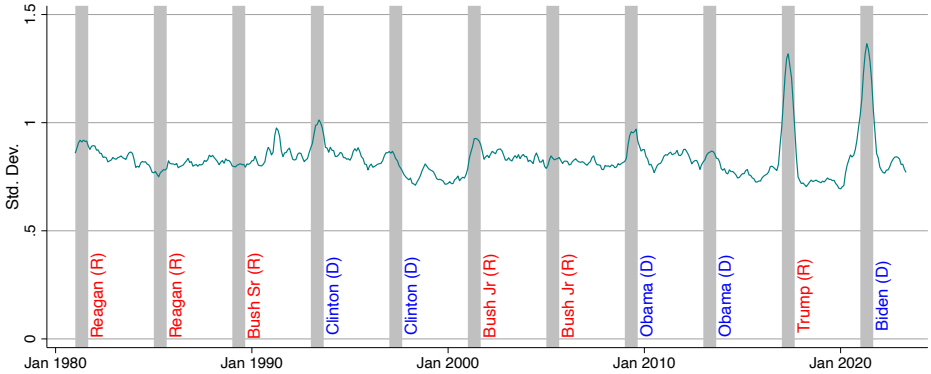
MSC MCA Results: Sentiment Persistence



Notes: results of a six-month rolling window regression $f_{i,t} = \alpha_t + \beta_t f_{i,t-6m} + \varepsilon_{i,t}$, where $f_{i,t}$ is the first component from the baseline MCA. Dotted lines represent 90% confidence intervals.

- Sentiment is highly persistent, except following changes in the White House
- Switching behavior is increasing over time

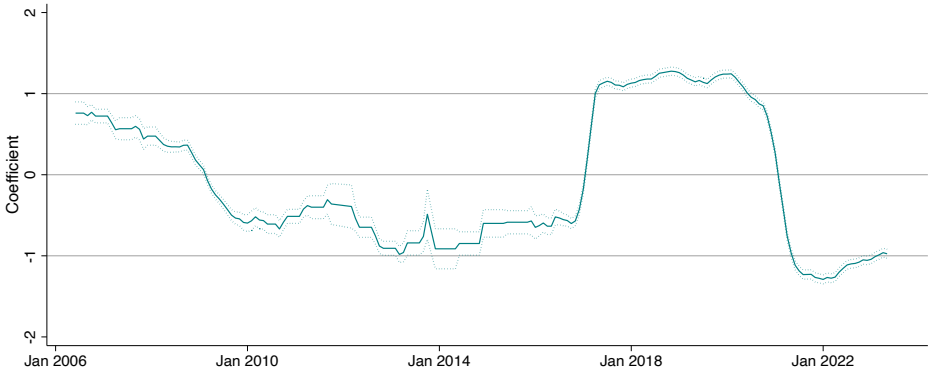
MSC MCA Results: Volatility



Notes: the standard deviation over six-month rolling windows of $f_{i,t} - f_{i,t-6m}$, where $f_{i,t}$ is the first component from the baseline MCA. Dotted lines represent 90% confidence intervals.

- The standard deviation of the change in sentiment spikes following changes in the White House
- The spikes have increased over time

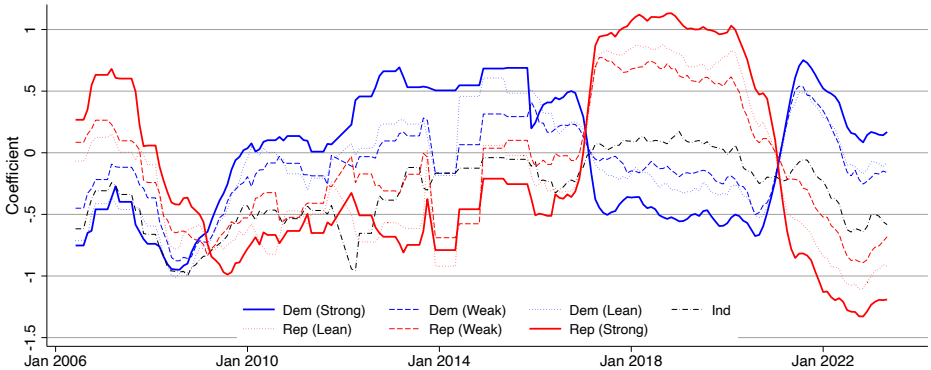
MSC MCA Results: Differential Sentiment



Notes: plots the coefficient from regressing $f_{i,t}$ (sentiment from the baseline MCA) on an indicator for Republican using a six-month rolling window and a sample of only Republicans and Democrats.

- Sentiment correlated with political affiliation
  - Democratic consumers tend to be relatively more optimistic after a Democrat is elected and in the presidency and vice versa

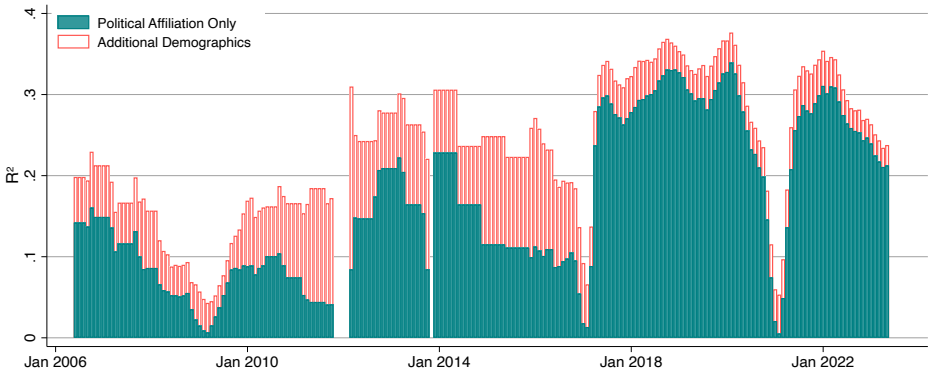
MSC MCA Results: Differential Sentiment by Affiliation Strength



Notes: plots the coefficient from regressing $f_{i,t}$ on indicators for disaggregated political affiliation using a six-month rolling window.

- Individuals with a stronger affiliation with the presidential party are more optimistic, relative to individuals of weaker affiliation

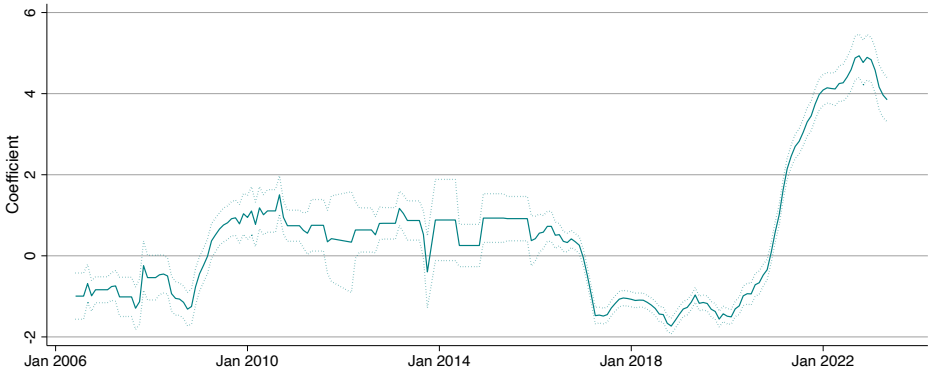
MSC MCA Results: Explanatory Power



Notes: plots the the R^2 of regressing $f_{i,t}$ on political affiliation dummies only and the marginal addition of adding several other demographic variables

- Political affiliation alone is an increasingly strong predictor of sentiment
- Adding demographic variables only marginally improves the fit

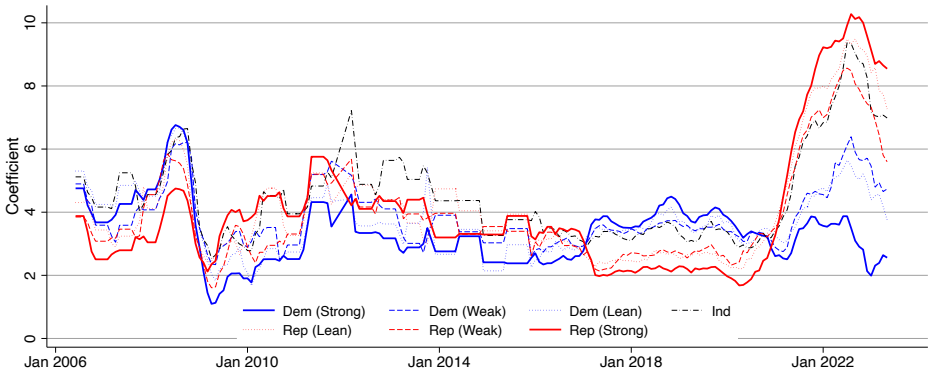
MSC E[π] Results: Differential Expected Inflation



Notes: plots the coefficient from regressing $E_{i,t}[\pi_{t+12m}]$ on an indicator for Republican using a six-month rolling window and a sample of only Republicans and Democrats.

- Inflation expectations are correlated with political affiliation
  - Democratic consumers tend to have lower inflation expectations when a Democrat is elected and in the presidency and vice versa

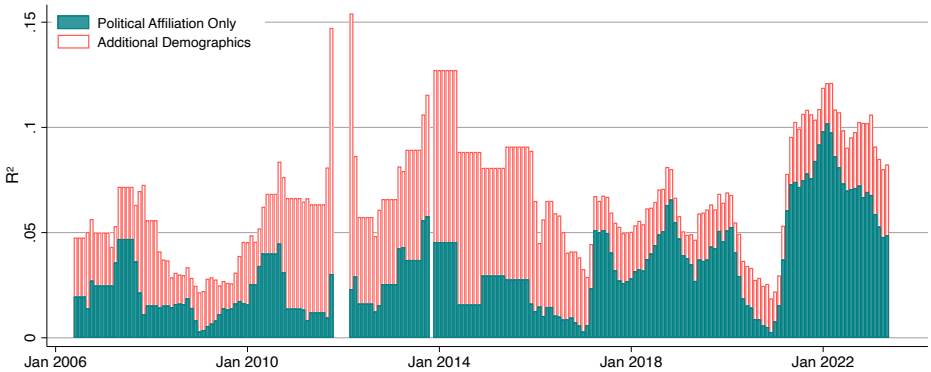
MSC E[π] Results: Differential by Affiliation Strength



Notes: plots the coefficient from regressing $E_{i,t}[\pi_{t+12m}]$ on indicators for disaggregated political affiliation using a six-month rolling window.

- Individuals with a stronger affiliation with the presidential party expect lower inflation, relative to individuals of weaker affiliation

MSC E[π] Results: Explanatory Power



Notes: plots the the R^2 of regressing $E_{i,t}[\pi_{t+12m}]$ on political affiliation dummies only and the marginal addition of adding several other demographic variables

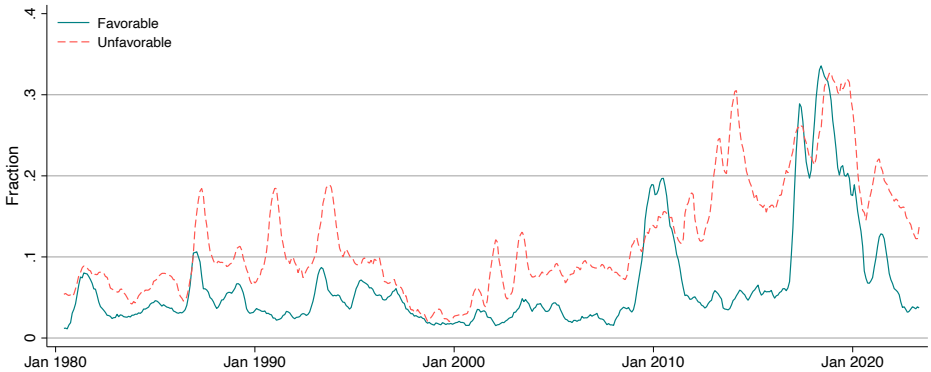
- Political affiliation alone is an increasingly strong predictor of E[π]
- Adding demographic variables only marginally improves the fit

Comparison to Professional Forecasters

In comparison to households, professional forecasters exhibit...

- Higher dimension factor structure of expectations
- Less dispersion in first component at a given point in time
- Less persistence in first component and no change when the White House switches party

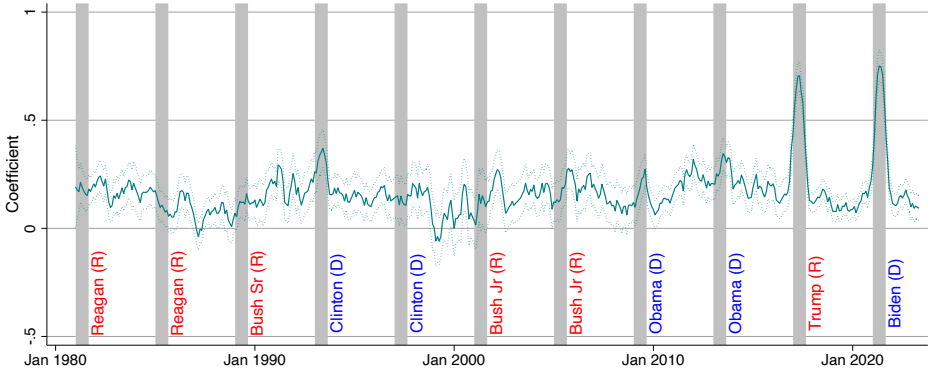
Narrative: Increase in Government-Related Reasoning



Notes: fraction of respondents over a 14-day rolling window that give a favorable or unfavorable government-related reason in any of the narrative questions in the MSC

- Marked increase in government-related reasoning (favorable and unfavorable) for why respondents hold their beliefs

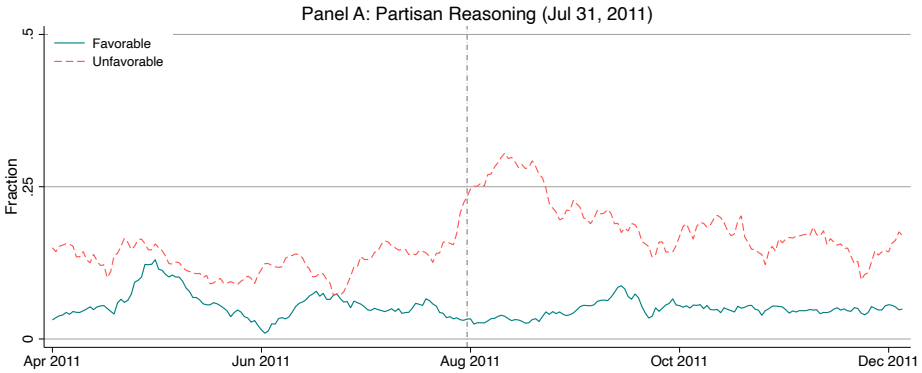
Narrative: Pass-Through



Notes: uses a six-month rolling window and plots the coefficient of $\Delta f_{i,t} = \alpha_t + \beta_t \Delta g_{i,t} + \varepsilon_{i,t}$ where $g_{i,t}$ is the difference in indicators for favorability and unfavorability.

- However, "partisan reasoning" pass-through to sentiment is small and largely stable
- The major exception is elections, where pass-through is increasing

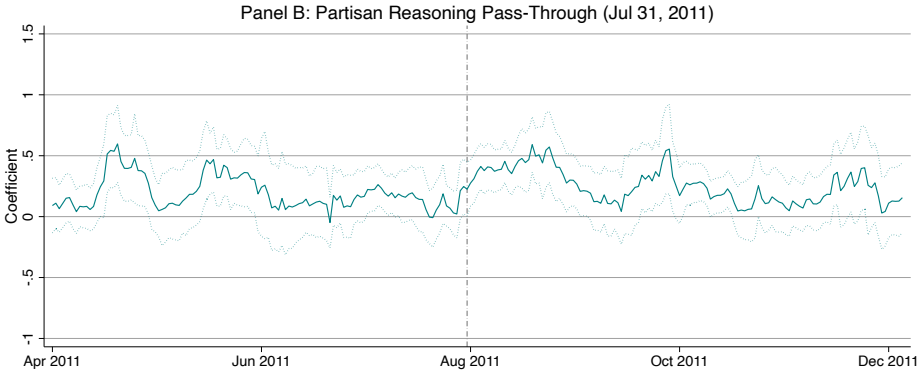
Narrative: Debt Ceiling Government-Related Unfavorable Reasoning



Notes: the fraction of respondents over a 14-day rolling window that give a favorable or unfavorable government-related reason in any of the narrative questions in the MSC

- Moreover, respondents are reactive to policy events outside of election
- For example, the 2011 debt ceiling crisis saw a sharp increase in partisan reasoning

Narrative: Debt-Ceiling Pass-Through



Notes: 14-day rolling windows slope coefficient of $\Delta f_{i,\tau} = \alpha_\tau + \beta_\tau \Delta g_{i,\tau} + \varepsilon_{i,\tau}$ where $g_{i,\tau}$ is the difference in indicators for favorability and unfavorability using a six-month difference.

- But pass-through to sentiment stays roughly constant through the debt ceiling crisis

Case Study: 2016 Election

Data: Nielsen Home Scanner

- Large panel data of household consumption
  - 60,000 households; participating households scan their purchases
  - Consumption identified at the UPC level (mostly non-durable)
- Aggregate to total spending at the zip code, weekly data
- Combine with 2016 voting data at the zip code level
  - Voting data is reported at the precinct level (raw data and shapefiles from US Election Project)

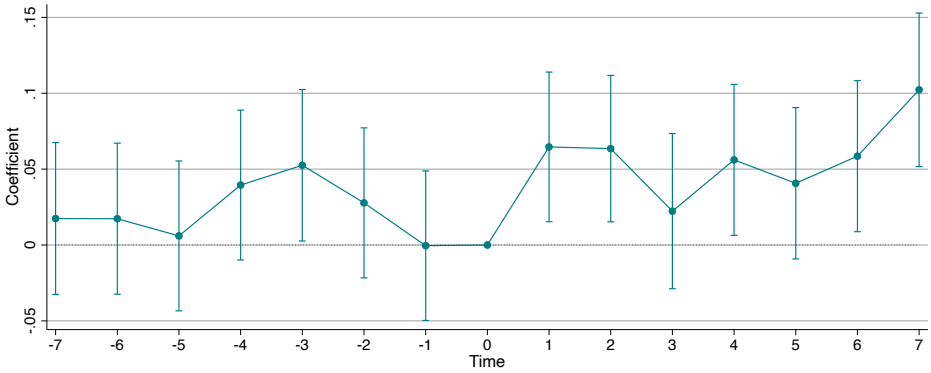
Event Study Design: 2016 Election

- Event study design:

$$c_{z,t,y} = \alpha_{z,t} + \gamma_{t,y} + \sum_{k=-\underline{T}}^{\bar{T}} \beta_{k,y} \cdot v_z^{16} \cdot \mathbf{I}_{t=k} + \varepsilon_{z,t,y}$$

  - $c_{z,t,y}$: (log) consumption in zip code z during week t ($t = 0$: week of election) in year y
  - v_z^{16}: Trump's vote margin in zip code z: $-1 \leq v_z^{16} \leq 1$
  - $\hat{\beta}_{k,2016}$: percent change in consumption for a 1ppt increase in a zip code's Trump vote share margin, k weeks after the 2016 election
  - Include consumption data for 2014-2016 to control for different seasonal consumption patterns across zip codes with more/less Trump voters

2016 Event Study: Consumption Responses



Notes: results of the 2016 event study across all zip codes with at least 100 votes. Vertical lines represent 90% confidence intervals.

- Polarized response of consumption to election results - estimates are large but noisy

Case Study: 2020 Election

Data: 2020 Election Survey

- Survey of households participating in Nielsen Homescan (from Coibion, Gorodnichenko, & Weber (2020)) conducted in the days before and after the 2020 election
- Questions regarding macroeconomic expectations and consumption attitudes (and political affiliation)
  - Allows us to trace out how beliefs and consumption attitudes changed in the days before and after the election
- By linking with Homescan data, can also see how actual consumption responded in the weeks before and after the election

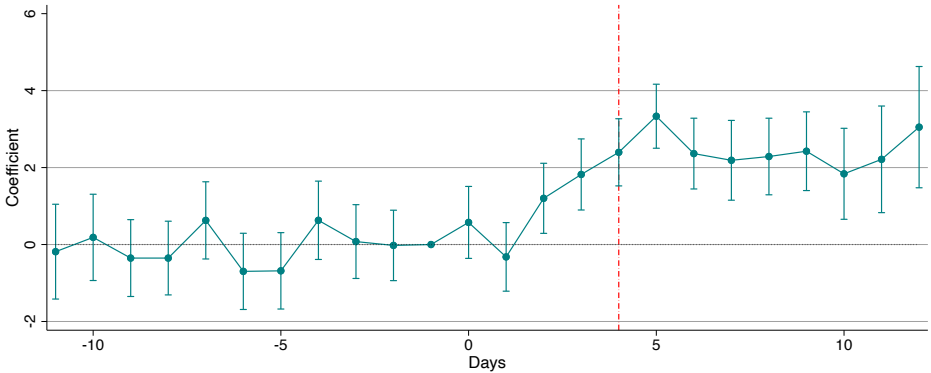
Event Study Design: 2020 Election and Expectations

- Event study design:

$$y_{i,t} = \gamma_t + \sum_{\kappa=-\underline{T}}^{\overline{T}} \beta_\kappa \cdot \mathbf{I}_{i \in R} \cdot \mathbf{I}_{t=\kappa} + \varepsilon_{i,t}$$

  - $y_{i,t}$: response of household i during day t
  - $\mathbf{I}_{i \in R}$: whether household i is politically affiliated with the Republican party
  - $\hat{\beta}_\kappa$: differential response of Republican relative to Democratic HH t days following the election

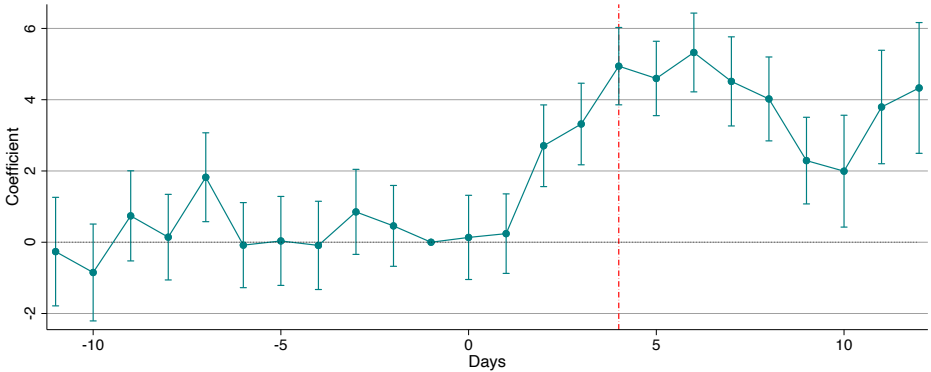
2020 Event Study: Inflation Expectations



Notes: results of the 2020 event study for inflation expectations; responses are in percentage points. Vertical lines represent 90% confidence intervals.

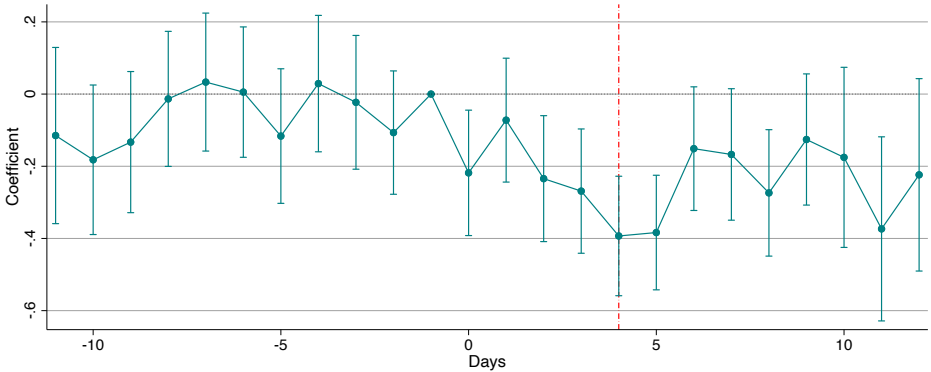
- Strong and (almost) immediate reaction following the election, but not in the lead-up (media election calls occurred on days 3-5)

2020 Event Study: Unemployment Expectations



Notes: results of the 2020 event study for unemployment expectations; responses are in percentage points. Vertical lines represent 90% confidence intervals.

2020 Event Study: Appliance Purchase Attitudes



Notes: results of the 2020 event study for appliance purchase attitudes; responses range from 1 (very bad time to buy) to 5 (very good time to buy). Vertical lines represent 90% confidence intervals.

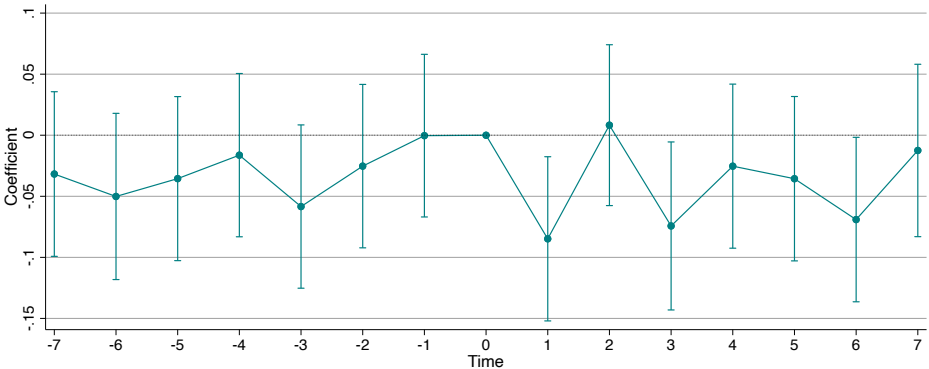
Event Study Design: 2020 Election and Consumption

- Event study design:

$$c_{i,t,y} = \alpha_{i,t} + \gamma_{t,y} + \sum_{k=-\underline{T}}^{\bar{T}} \beta_{k,y} \cdot \mathbf{I}_{i \in R} \cdot \mathbf{I}_{t=k} + \varepsilon_{i,t,y}$$

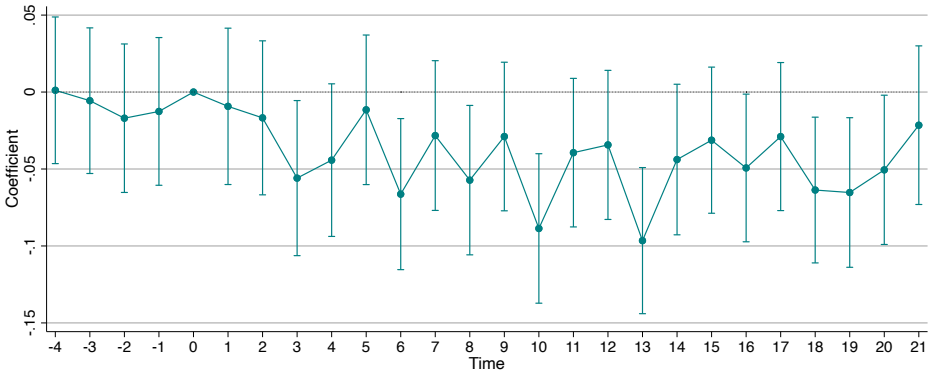
  - $c_{i,t,y}$: (log) consumption for HH i during week t ($t = 0$: week of election) in year y
  - $\mathbf{I}_{i \in R}$: whether household i is politically affiliated with the Republican party
  - $\hat{\beta}_{k,2020}$: percent change in consumption of Republican relative to Democratic HHs, k weeks following the 2020 election
  - Include consumption data for 2018-2020 to control for different seasonal consumption patterns across Republican/Democratic HHs

2020 Event Study: Consumption



Notes: results of the 2020 event study for weekly log consumption. Vertical lines represent 90% confidence intervals.

Covid Event Study: Consumption



Notes: results of Covid event study for weekly log consumption. Time is bi-weekly. Vertical lines represent 90% confidence intervals.

Implications for Existing Theory

Implications for Existing Theory

Challenge: simultaneously explain:

- Single dimension factor structure
- Household expectations and consumption fall along party lines
- Strong reaction to changes in the White House
- Weak/no reaction to outcomes of Congressional elections, Presidential elections without a change of party, or in lead-up to a Presidential election

Models that do not (fully) work:

- FIRE
- Models with consistent under/over-reaction (sticky information, rational inattention, diagnostic expectations)
- “Agree to disagree” economic policy models
- Robustness/ambiguity aversion models
- “Cheerleading” models

Conclusion

Five Facts

1. Household beliefs, regardless of subgroup, are well-described by a single factor: sentiment
2. At any time, there is wide dispersion in household sentiment, largely driven by political affiliation
3. Household sentiment is highly persistent, except when the White House switches party. The magnitude of this switching behavior at elections has increased over time
4. Partisan reasoning has risen, but pass-through to sentiment is stable outside of elections
5. Consumption responds differentially along party lines following changes in the White House

Standard theories of expectation formation struggle to simultaneously rationalize the facts