

The Political Impact of Beliefs about the Economy

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Slides available at <https://tinyurl.com/nyu-march15>

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The connected crises we face in our government, economy and climate are the greatest in living memory. But I'm running for president because this moment offers an historic opportunity to join with millions of our fellow Americans at a time like no other.



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Civilian Unemployment Rate, February 2019:
3.8%

Real (annualized) GDP growth, Q4 2018: 3.1%

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Unpacking what a strong economy means to voters

- Methodological contribution
- *Received wisdom:* Economic evaluations are really measuring political opinions
- **Findings:** Systematic differences in economic sentiment – predictable with objective economic indicators

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Are citizens holding politicians accountable based on actual data or based on mistaken beliefs?

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(Obama) was “animated by a sense that, looking at the world around him, the U.S. economy is in much **better shape than the public appreciates**”

**President Obama
Weighs His
Economic Legacy**

Eight years after the financial crisis, unemployment is at 5 percent, deficits are down and G.D.P. is growing. Why do so many voters feel left behind? The president has a theory.

“You can't eat G.D.P. You can't live in a rising stock market. You can't give your kids a better life because your company's C.E.O. was able to give himself a big raise.”

— Neil Irwin

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“Exploring the process by which voters gauge a leader’s authority in a given domain would allow us to investigate not only the link between candidate performance and voter attitudes, but also learn more about the role of expectation setting in moderating the electorate’s retrospective assessments.”

— Malhotra and Margalit (2014)

Perspectives

Long tradition claiming retrospective voting is **desirable**

Achen and Bartels (2016, 97-98): “a virtual consensus has emerged that the electoral impact of economic conditions is real and substantial”

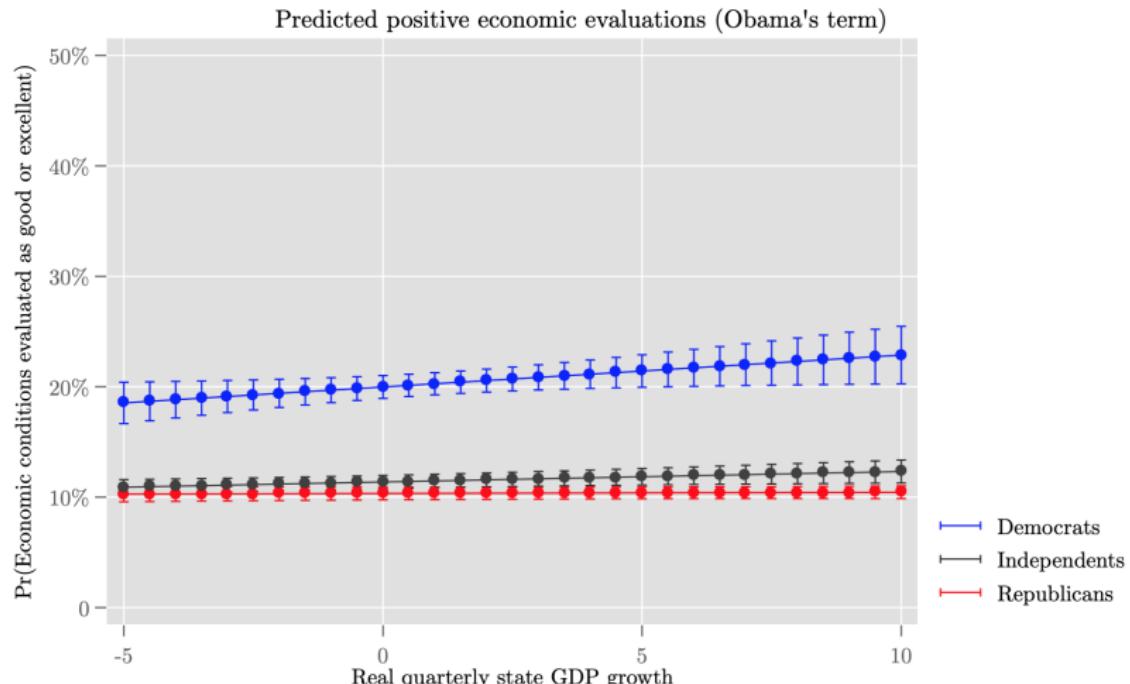
But...

- Should incumbent governors of oil-producing U.S. states enjoy a higher reelection probability after a positive price shock? (Wolfers, 2006)
- Incumbent governments tend to be punished by voters “regardless of whether the recession is home-grown or merely imported from trading partners” (Hayes et al. 2014).

Data

- Gallup U.S. Daily Polls
- 2008 - 2017
- 1,480,955 responses

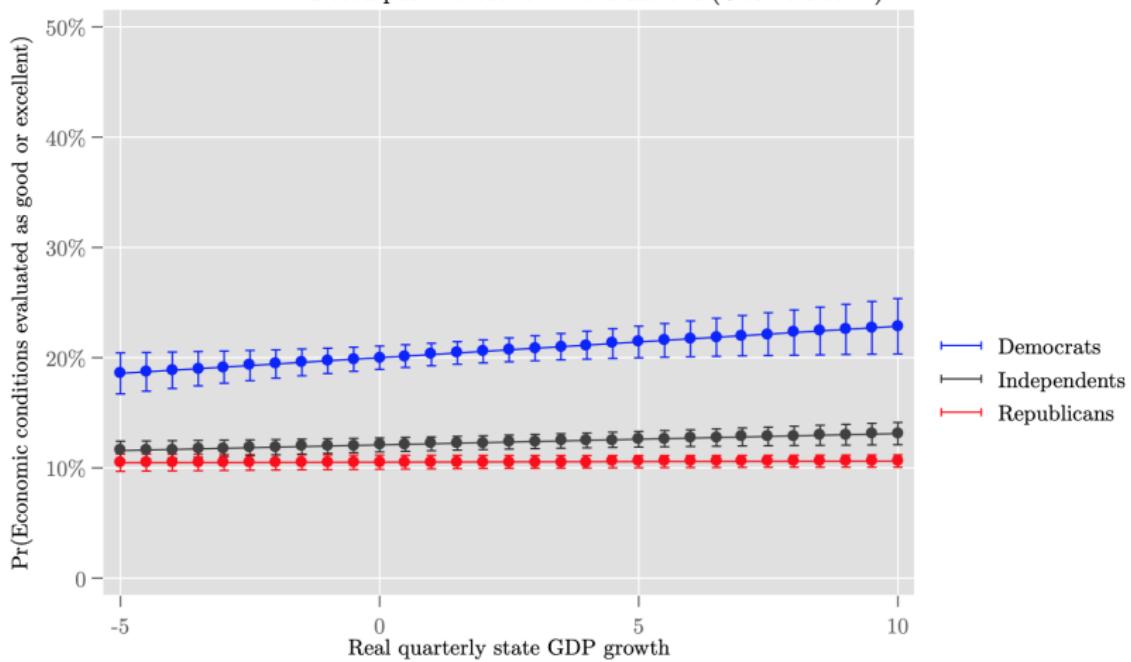
$$\text{Evaluations}_{it} = \alpha + \beta \left(\frac{\text{State GDP}_q}{\text{State GDP}_{q-1}} - 1 \right) + \delta PID_{it} + \gamma \mathbf{X}_{it} + \epsilon_{it}$$



No controls.

Time period: January 2009 to October 2016. N = 967999

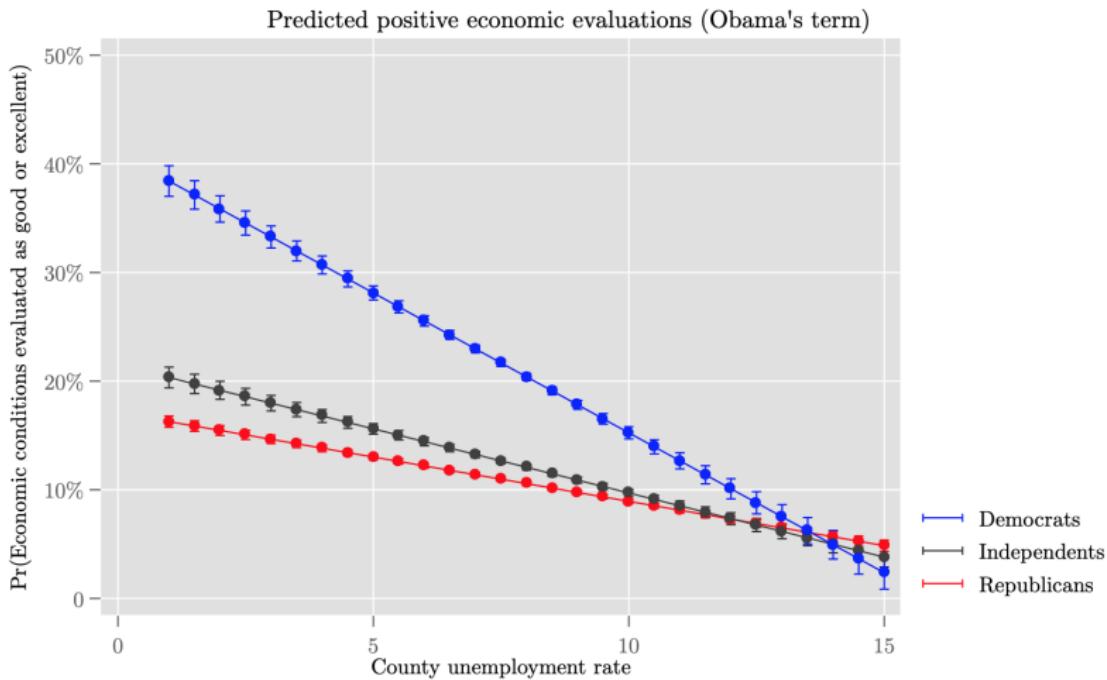
Predicted positive economic evaluations (Obama's term)



Controls: Age, race, income, and gender.

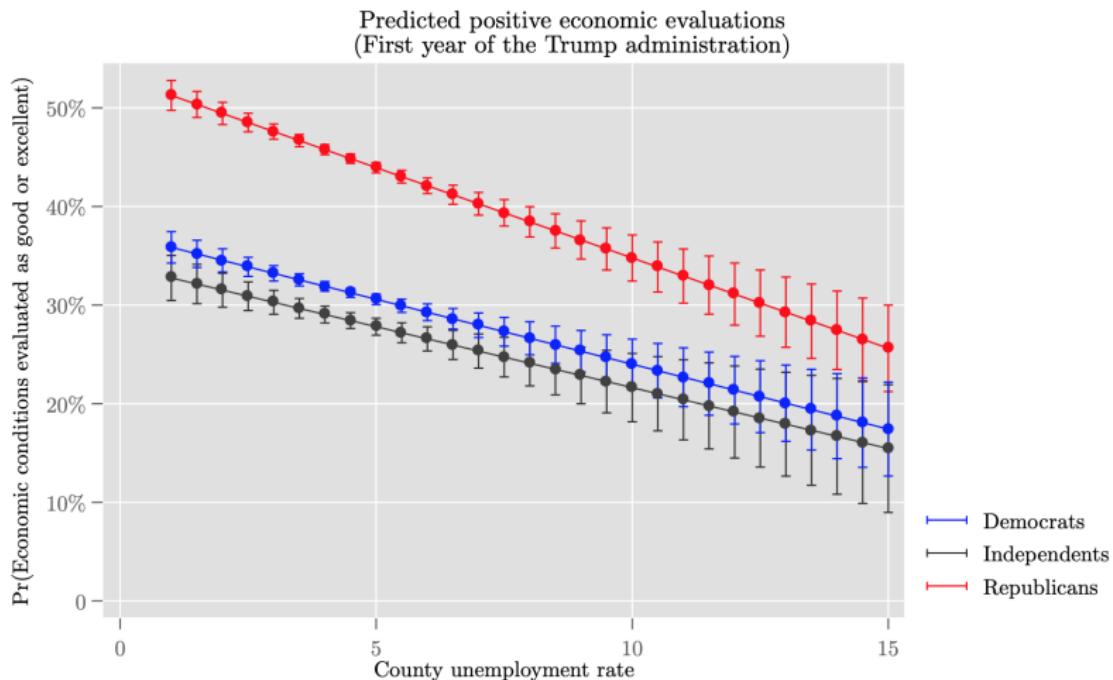
Time period: January 2009 to October 2016. N = 788105

What about the unemployment rate?



Controls: Age, race, income, and gender.

Time period: January 2009 to October 2016. N = 787447



Controls: Age, race, income, and gender.

Time period: Jan. 2017 to Dec 2017. N = 136805

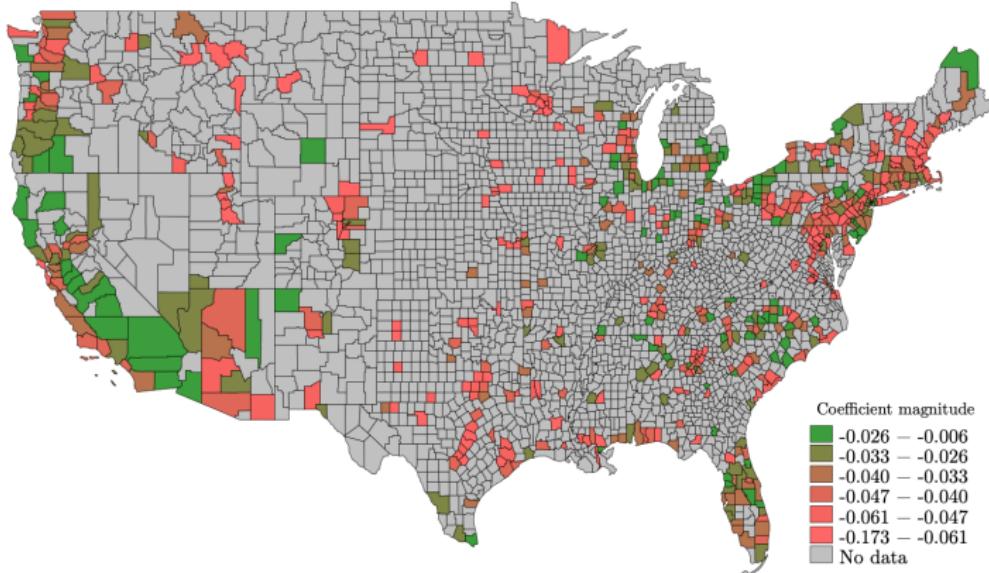
Geographic differences

$$\text{Evaluations}_{it} = \alpha + \beta \text{Unemployment Rate}_{it} + \delta PID_{it} + \gamma \mathbf{X}_{it} + \epsilon$$

- Run the regression in each county with at least 500 respondnets.

Association between local unemployment rate and economic evaluations

Counties with fewer than 500 respondents are dropped from the sample



Regressions control for respondents' race, gender, income, and PID.

Marginal effect of 1 p.p. increase in the local unemployment rate on Pr(Positive Economic Evaluations)

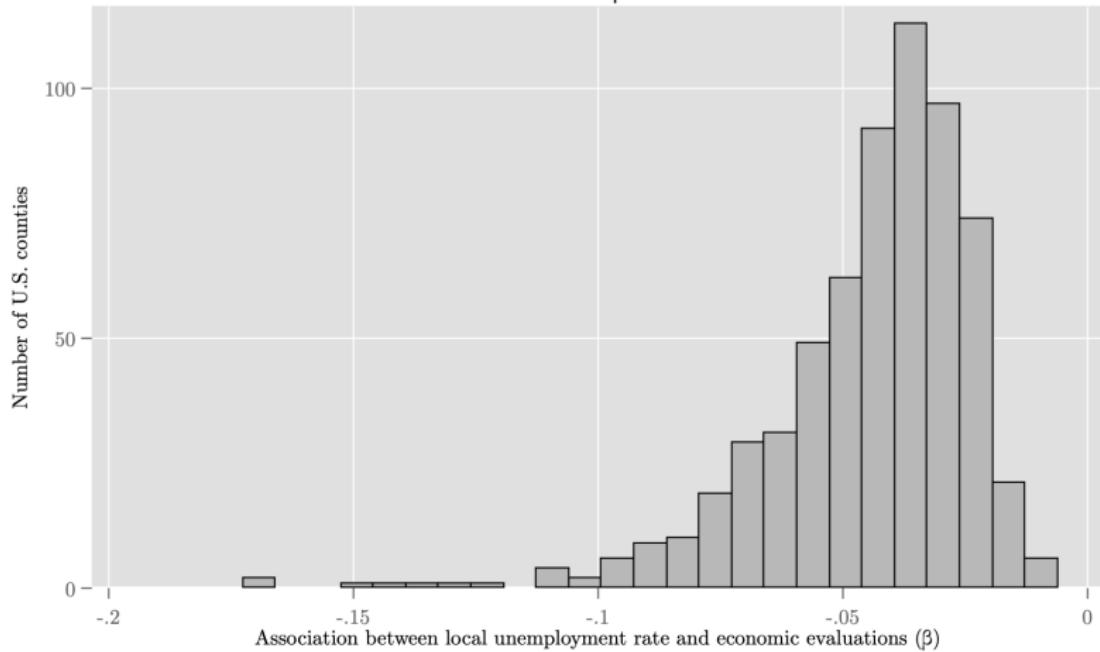
Bronx, NY: -0.8%

Cook, IL: -2.9%

Harris, TX: -4.8%

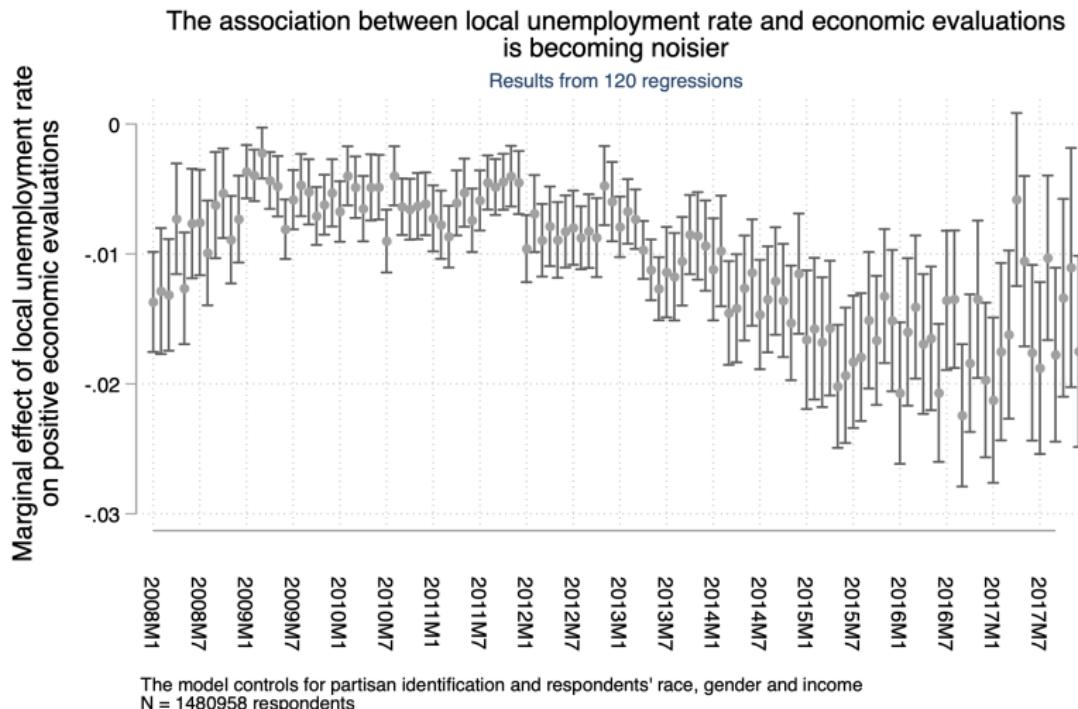
Tulsa, OK -6.4%

Distribution of β coefficients

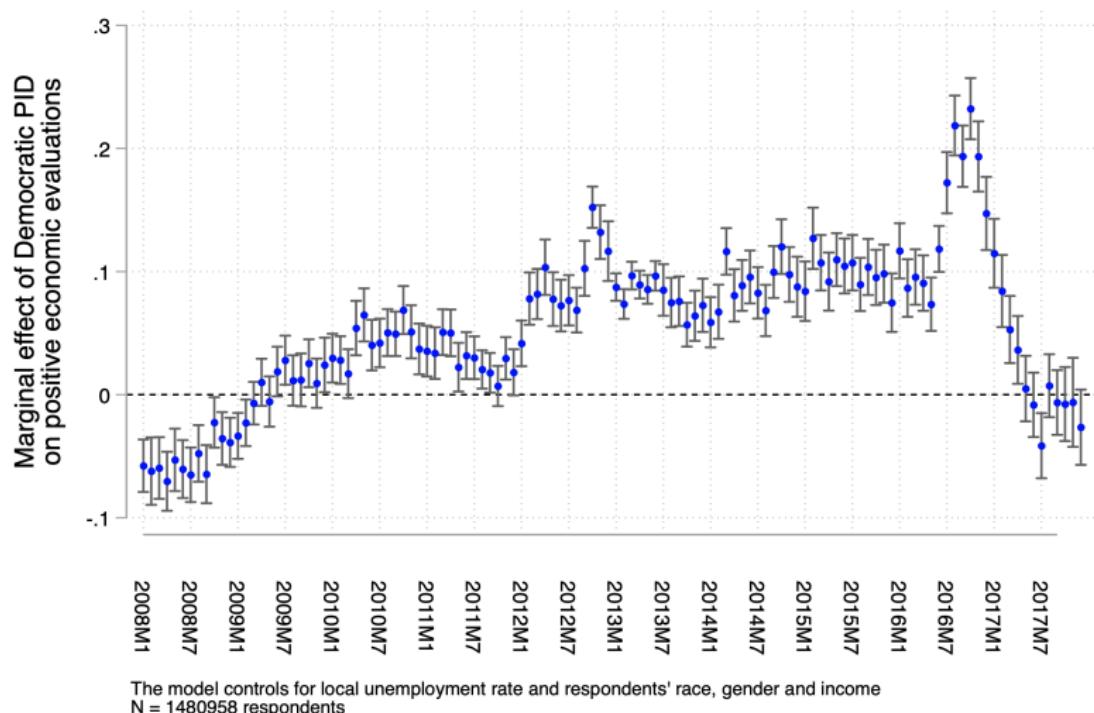


Analysis restricted to counties with at least 500 respondents

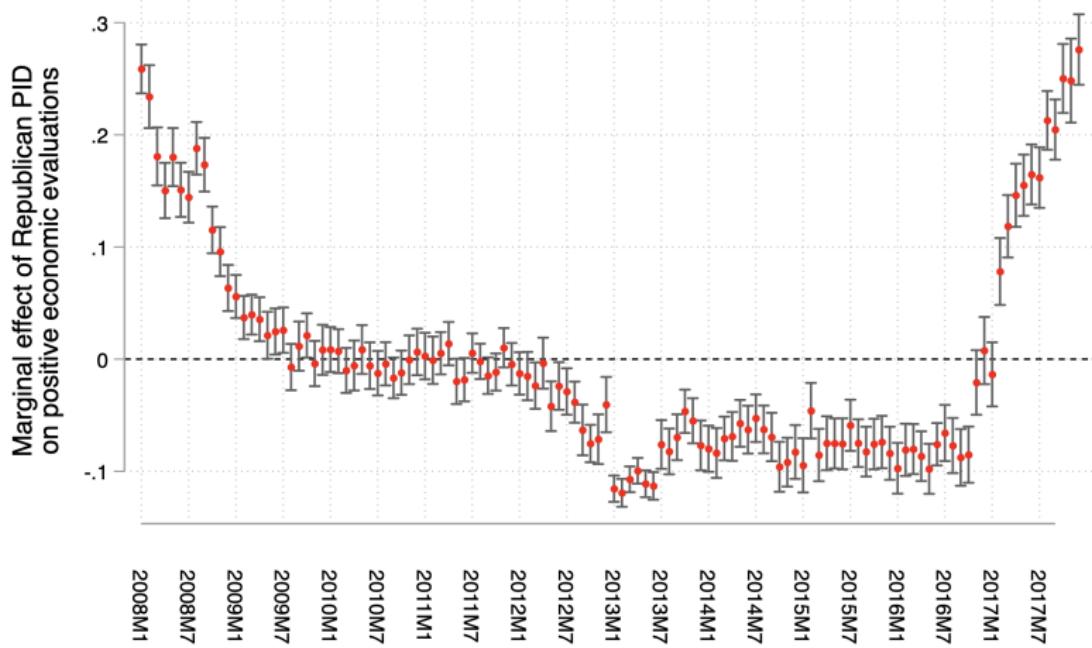
Differences over time



Partisan bias



Partisan bias



The model controls for local unemployment rate and respondents' race, gender and income
N = 1480958 respondents

Goal: Model opinions about the economy when voters strategically choose which data is relevant and worthy of attention.

Theory (follows Bordalo et al., QJE, 2016)

- 2 parties (groups)
- Two types of economic outcomes
 - Good weeks/months/years for the stock market, labor market, GDP growth, or inflation
 - And conversely bad outcomes
 - N_i events observed for each party i .
- Historically, $\alpha\%$ of economic events under Democrats have been good
- $\beta\%$ of economic events under Republicans have been good
- Assume $\beta > \alpha$
 - This is true for the unemployment rate, but not for some other economic outcomes in the U.S. context
 - So parameters will be context-specific!
 - **Key:** Under this assumption, even if $\alpha > 1/2$, the representative outcome for Democrats will be negative

	Good econ. outcomes	Bad econ. outcomes
Democrats	αN_D	$(1 - \alpha)N_D$
Republicans	βN_D	$(1 - \beta)N_R$

	Good econ. outcomes	Bad econ. outcomes
Democrats	αN_D	$(1 - \alpha)N_D$
Republicans	βN_D	$(1 - \beta)N_R$

$$Pr(Dem|Bad) = \frac{Pr(Bad|Dem) \times Pr(Dem)}{\underbrace{Pr(Bad|Dem)Pr(Dem) + Pr(Bad|GOP)Pr(GOP)}_{Pr(\text{Bad economic outcomes})}}$$

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Assuming equal priors:

$$Pr(Dem|Bad) = \frac{1 - \alpha}{(1 - \alpha) + (1 - \beta)}$$

Departure from fully informed beliefs

A biased learner believes

$$Pr(Bad|Dem)^{biased} = Pr(Bad|Dem) \times \frac{h(R(Bad, Dem))}{\sum_t Pr(t|Dem)h_t(R(t, Dem))}$$

$h(\cdot)$ captures how representative type t is in category
 $G = Democrat$.

Let $h_t = \delta^{r(t)}$ where $r(t)$ is the representativeness-based ranking of economic competence.

The *exemplar* type of a Democratic government is bad if negative economic events come to mind more easily:

$$t_{Dem}^* = \operatorname{argmax}_{t \in \{\text{Good}, \text{Bad}\}} \frac{Pr(t|Dem)}{Pr(t|GOP)}$$

Indeed, $\frac{1-\alpha}{1-\beta} > \frac{\alpha}{\beta}$ and therefore $t_{Dem}^* = \{\text{Bad}\}$

Let $Pr(\text{Bad}|Dem) = \pi_{Bad,Dem}$. Because “bad outcome” is the representative category for the Democratic Party, the agent will believe

$$Pr(Dem|Bad)^{\text{biased}} = \frac{\pi_{Bad,Dem}^{\text{biased}} \times Pr(Dem)}{\pi_{Bad,Dem}^{\text{biased}} \times Pr(Dem) + \pi_{Bad,GOP}^{\text{biased}} \times Pr(GOP)}$$

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$$\begin{aligned} Pr(Dem|Bad)^{\text{biased}} &= \frac{\pi_{Bad,Dem}^{\text{biased}} \times Pr(Dem)}{\pi_{Bad,Dem}^{\text{biased}} \times Pr(Dem) + \pi_{Bad,GOP}^{\text{biased}} \times Pr(GOP)} \\ &= \frac{(1-\alpha) \times \frac{\delta}{(1-\alpha)\delta+\alpha\delta^2} \times \frac{1}{2}}{[\pi_{Bad,Dem}^{\text{biased}} + \pi_{Bad,Dem}^{\text{biased}}] \times \frac{1}{2}} > Pr(Dem|Bad) \end{aligned}$$

Actual data

The true data since the end of the Cold War reflect that. . .

Under Democratic presidents:

- ① Inflation has been lower
- ② GDP growth was higher
- ③ The unemployment rate was higher

2 out of 3 metrics favor Democrats

So “which party is a more competent steward of the economy?” does not have an unambiguous answer.

	Average inflation	Average GDP growth if 2009 is attributed to Republicans	Average unemployment rate
Republican administrations	3.25%	1.95%	5.30%
Democratic administrations	1.98%	3.09%	6.33%

Source: U.S. Bureau of Economic Analysis, Real Gross Domestic Product [A191RL1Q225SBEA] and U.S. Bureau of Labor Statistics, retrieved from FRED, Federal Reserve Bank of St. Louis; Author's calculations.

Split into good/bad outcomes

	Proportion of years between 1989 and 2017 when...		
	... inflation exceeded 2%	... GDP growth was at least 2%	... the unemployment rate exceeded 6%
Republican administrations	92%	57%	13%
Democratic administrations	56%	75%	50%

Attribution of competence

What is the “representative” type (for delivering a particular economic outcome) for each party, $P \in \{GOP, DEM\}$?

$$t_P^* = \arg \max_{t \in \{low, high\}} \frac{Pr(t|P)}{Pr(t|\neg P)}$$

Example 1: Handling inflation

What is the “representative” type for each party?

$$t_{GOP}^* = \{\text{High inflation}\}$$

because $\frac{Pr(\text{High inflation}|GOP)}{Pr(\text{High inflation}|DEM)} > \frac{Pr(\text{Low inflation}|GOP)}{Pr(\text{Low inflation}|DEM)}$

$$\text{And } t_{Dem}^* = \{\text{Low inflation}\}$$

because $\frac{Pr(\text{Low inflation}|DEM)}{Pr(\text{Low inflation}|GOP)} > \frac{Pr(\text{High inflation}|DEM)}{Pr(\text{High inflation}|GOP)}$

Therefore,

$$Pr(\text{Low inflation}|DEM)^{\text{biased}} = \pi_{Good,Dem} \times \text{Salience Distortion}$$

Various forms of salience functions can be used. Here, we simply use rank-based discounting:

$$Pr(\text{Low inflation}|DEM)^{\text{biased}} = \pi_{Good,Dem} \times \frac{\delta}{\delta\pi_{Good,Dem} + \delta^2\pi_{Bad,Dem}}$$

where $\pi_{t,G} = Pr(t|G)$. Plug in actual data and let $\delta = .5$:

$$Pr(\text{Low inflation}|DEM)^{\text{biased}} = 44\% \times \frac{.5}{.5 \times .44 + .5^2 \times .56} = 60.9\% > Pr(\text{Low inflation}|DEM)^{\text{unbiased}}$$

The Democrats' actual competence in handling inflation is **overestimated** due to the (relative) ease of access in memory of low-inflation years under Democratic administrations.

Developing intuition for departures from
Bayesian learning due to updating distortions
via stereotypes (Bordalo, Coffman, Gennaioli
and Shleifer, 2016)

Broader debate

View #1: Humans are good intuitive statisticians

Cosmides and Tooby (1996), Gigerenzer (2011), many economics textbooks

Broader debate

View #1: Humans are good intuitive statisticians

Cosmides and Tooby (1996), Gigerenzer (2011), many economics textbooks

vs.

View #2: Predictions are insensitive to reliable evidence

Starting with Kahneman and Tversky, 1973: Large literature on *mislearning* due to **under-inference** and **base rate neglect**

Simple example: Hair color

What is $Pr(\text{Red hair} | \text{Irish})$?

	<i>dark</i>	<i>light</i>	<i>red</i>
Group	Irish		
	Rest of the		
	world		

What is $Pr(\text{Red hair}|\text{Irish})$?

Answer: Only 10%.

	<i>dark</i>	<i>light</i>	<i>red</i>
Group			
Irish	50%	40%	10%
Rest of the world	85%	14%	1%

Group	<i>dark</i>	<i>light</i>	<i>red</i>
Irish	50%	40%	10%
Rest of the world	85%	14%	1%

- If someone is Irish, then red color is the **least likely color** for them
- There are many more dark-haired people from Ireland than there are people with red hair
- In fact, the most likely color among both groups is DARK; so the optimal guess of someone's type is always *dark hair*, regardless of nationality

What is $Pr(\text{Red hair}|\text{Irish})$?

Group		dark	light	red
Irish		50%	40%	10%
Rest of the world		85%	14%	1%

- $Pr(\text{Red hair})$ may be easier to guess than $Pr(\text{Red hair}|\text{Irish})$. So **giving data to people might worsen accuracy of beliefs.**
- $Pr(\text{Dark hair}|\text{Irish}) = 5 \times Pr(\text{Red hair}|\text{Irish})$
- Ranking or types the same for both groups
- Ease of recall

Learning distortion

$Pr(\text{Red hair}|\text{Irish})$ is mistakenly (and systematically) over-estimated.
Why?

Representativeness

$$t_G^* = \arg \max_{t \in \{\text{dark, light, red}\}} \frac{Pr(t|G)}{Pr(t|\neg G)}$$

Learning distortion

$Pr(\text{Red hair}|\text{Irish})$ is mistakenly (and systematically) over-estimated.
Why?

Representativeness

$$t_G^* = \arg \max_{t \in \{\text{dark, light, red}\}} \frac{Pr(t|G)}{Pr(t|\neg G)}$$

The representative color is red: $t_{IRISH}^* = 10 > \frac{40\%}{14\%} > \frac{50\%}{85\%}$.

Similar problems

- $G = \text{African-American}$; $T = \{\text{poor, middle-income, rich}\}$
- $G = \text{Democrat}$; $T = \{\text{socialist,}\dots\}$
- $G = \text{Republican}$; $T = \{\text{alt-right,}\dots\}$

Similar problems

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- $G = \text{Democrat}$; $T = \{\text{socialist, . . .}\}$
- $G = \text{Republican}$; $T = \{\text{alt-right, . . .}\}$

- The median African-American household is not poor but poverty is more prevalent among African-Americans
- The average Democrat is not a socialist but you are more likely to meet a socialist at a gathering of Democrats than at a meet-up of centrists or Republicans

How does updating take place?

Problem statement

What is $Pr(\text{Good Economic Steward} | \text{GOP})$?

The unbiased answer would take into account a rich set of factors (attributes of the macroeconomy):

$$\begin{aligned} Pr(GES | GOP) &\propto \frac{1}{w_1} Pr(\text{GOP} | \text{Low unemployment}) Pr(\text{Low unemployment}) + \\ &\quad \dots + \\ &\quad + \frac{1}{w_n} Pr(\text{GOP} | \text{Low inflation}) Pr(\text{Low inflation}) \end{aligned}$$

Selective attention

For N economic outcomes that voters care about, the prediction that GOP will perform well is:

$$Pr(GES|GOP) = \frac{\sum_{i=1}^N \frac{1}{w_i} Pr(GOP|Outcome_i)Pr(Outcome_i)}{\sum_{i=1}^N \frac{1}{w_i} Pr(GOP|Outcome_i)Pr(Outcome_i) + \sum_{i=1}^N \frac{1}{w_i} Pr(GOP|Bad\ Outcome_i)Pr(Bad\ Outcome_i)}$$

Idea: Strategic focus on those economic outcomes that make the out-party look worse

Selective attention

A Democrat will solve

$$\begin{aligned} Pr(\text{Good Economic Steward}|GOP) &\propto \\ Pr(\text{GOP|Low inflation}) &Pr(\text{Low inflation}) \end{aligned}$$

A Republican will solve

$$\begin{aligned} Pr(\text{Good Economic Steward}|GOP) &\propto \\ Pr(\text{GOP|Low unemployment rate}) &Pr(\text{Low UR}) \end{aligned}$$

International evidence

Goal

Explain variation in economic sentiment around the world.

(This set of slides is focused on Europe.)

Usual approach

- Add “plausible” covariates into a long regression
- Alternative approach: disciplined variable selection (ML)

	Full sample	2005-2007	2008-2011	2012-2015
GDP growth	33%	7%	31%	36%
Real wage growth	26%	-6%	22%	29%
Unemployment	-63%	-57%	-61%	-67%
Inflation	23%	-15%	27%	23%
LFP	47%	58%	37%	56%
LFP (men)	36%	50%	25%	46%
Regional: CEE	-26%	-34%	-31%	-23%
Regional: PIGS	-47%	-43%	-40%	-53%
Manufacturing	-5%	5%	-7%	-4%
Trade	30%	32%	29%	29%

Why ML

- Researcher will specify the set of potential covariates
- Letting the data speak (without ex-post data-mining)
- Cross-validation (prune the model if over-fitting)

Kleinberg et al. (2015): “Machine learning techniques are in one sense not new: they are a natural offshoot of non-parametric statistics. But they provide a disciplined way to predict \hat{y} which (i) uses the data itself to decide how to make the bias-variance trade-off and (ii) allows for search over a very rich set of variables and functional forms.”

Athey (2016) - Model selection in social science is unprincipled - Questions in social science “entail a combination of prediction and causal inference”; econometrics and social science statistics “fail with many covariates”

Prediction methods

- Tree and classification models: partition the sample by those attributes & cutoff points that maximize
- Lasso: pay a penalty each time you add a new regressor

What we learn

- There are circumstances when knowing the GDP growth rate is not informative (it is unnecessary for accurate predictions of economic sentiment).
- People's responses indicate they attend to three attributes of the economy: GDP growth, unemployment rate, LFP.
- Beyond the unemployment rate, other labor market statistics contain useful signals.

