

# Politically Motivated Causal Evaluations of Economic Performance

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## Abstract

The current study seeks to extend research on motivated reasoning by examining how prior beliefs influence the interpretation of objective graphs displaying quantitative information. The day before the 2018 midterm election, conservatives and liberals made judgments about four economic indicators displaying real-world data of the US economy. Half of the participants were placed in an 'alien cover story' condition where prior beliefs were reduced under the guise of evaluating a fictional society. The other half of participants in the 'authentic condition' were aware they were being shown real-world data. Despite being shown identical data, participants in the Authentic condition differed in their judgments of the graphs along party lines. The participants in the Alien condition interpreted the data similarly, regardless of politics. There was no evidence of a 'backfire' effect, and there was some evidence of belief updating when shown objective data.

**Keywords:** motivated reasoning; politics; biases; reasoning; decision-making

## Introduction

Previous research has shown that individuals often reason differently about information depending on whether it is congruent with their prior beliefs. Individuals tend to more easily accept information that is congruent with prior beliefs and desires and discount information that is incongruent with prior beliefs and desires. This process is known as motivated reasoning. In the current research, we studied the influence of political attitudes on how people interpret time series graphs of the economy. This research is at the intersection of two fields: causal reasoning about time series data, and motivated reasoning.

### Motivated Reasoning and Causal Reasoning: Similarities and Differences

The fields of motivated reasoning and causal reasoning have long been intimately connected in certain ways, yet also distant in other ways. The current research aims to advance both of these fields, and to advance research on the intersection of the two.

In one aspect, these two fields have studied similar questions about the role of prior beliefs and desires on the acceptance or rejection of new information. On the causal reasoning side, there has been considerable research into how people incorporate new information with prior causal beliefs (e.g., Alloy & Tabachnik, 1984). Furthermore, many of the particular topics that have been studied in the field of motivated reasoning have had to do with causal or at least predictive relations. For example, in a seminal work on

motivated reasoning, Kunda (1987) found that people tend to believe that other people who have attributes similar to themselves are less likely to get divorced than people with dissimilar attributes. Note how in this study, the attribute is as a potential cause or predictor of the effect (divorce). Other research on motivated reasoning that is less directly related to causation still often studies acceptance of causal-scientific explanations, for example, about global warming (Campbell & Kay, 2014).

On the other hand, there are also important differences between these fields. First, causal learning has traditionally been focused on the rational (Bayesian) updating of beliefs given new information, whereas motivated reasoning has focused on affective reasons for failing to update beliefs.

A second difference, more relevant to the current research, is that most research on causal reasoning has focused on the inferential process - how a learner infers a cause-effect relationship from a set of data. In contrast, research on motivated reasoning does not involve inference. Instead, participants are typically presented with a fact or a set of facts, and the question is whether participants accept or reject the facts (e.g., Ranney & Clark, 2016).

One recent study on motivated reasoning has investigated inference from data, similar to causal reasoning research. Kahan, Peters, Dawson, and Slovic (2017) presented participants with quantitative information in 2x2 contingency tables about the number of cities that did or did not ban handguns in public and whether there was an increase or decrease in crime, and participants were asked to infer the relation between gun bans and crime. Despite being presented with quantitative data, participants were more likely to make correct inferences when the data supported their prior attitudes about guns. The current research is in a similar vein—it investigates the role of political attitudes on inferences about economic trends.

### Motivated Reasoning about Economics

The political arena is an especially ripe medium for motivated reasoning to occur, and has been one of the most studied types of motivated reasoning. Politically-relevant stimuli also provides a unique opportunity to study the intersection of motivated and causal reasoning about objective quantitative data that has high ecological validity.

Politicians often make competing statements about the credit or blame for the same economic outcomes. For example, in a speech to democratic supporters, former President Obama said: "...when you hear how great the economy's doing right now, let's just remember when this recovery started" (USA Today, 2018). In contrast, Kevin Hassett, the Chairman of The White House Council of

Economic Advisers, has stated "I can promise you that economic historians will 100 percent accept the fact that there was an inflection at the election of Donald Trump and a whole bunch of data items started heading north" (Horsley, 2018). Similarly, citizens also interpret the same economic outcomes based on political lenses. For example, Republicans interpret the 2017 tax bill as having more personal benefit than Democrats (Bump, 2018).

The current experiment is a controlled study to understand how people view the exact same economic data in different ways based on political orientation. There is little research into the cognitive processes engaged in motivated reasoning about objective economic data. In this study, we assessed politically-motivated reasoning before and after participants viewed economic time-series graphs, and after making judgments about the impact of each president.

### **Backfire Effects**

One concern with the possibility of presenting participants with objective data is that it might actually produce a "backfire" effect in which the participant doubles-down and strengthen their prior belief. For example, Nyhan and Reifler (2015) found that participants who had previously held high levels of concern about potential side effects of flu vaccinations became less likely to get flu vaccinations after exposure to corrective information. However, evidence for the backfire is mixed. A more thorough investigation by Wood and Porter (2018) found no evidence of backfire effects. These two studies on backfire effects used text-based presentation of facts. In the current study we assess whether participants exhibit backfire effects when presented with economic time series data that require them to make an inference. Whether participants exhibit a backfire effect could help reveal whether such information might be useful for changing voters' opinions.

### **Current Study**

In the current study, participants were shown time series graphs of economic variables, and the graphs denote the times when Democratic vs. Republican presidents held office. Participants were asked questions about whether Democrats or Republicans were better for the economy. This study allowed us to ask a number of questions that provide insight into motivated causal reasoning.

First, will people learn from the time series graphs and change their beliefs about which party is better, or will they exhibit a 'backfire' effect? This question is especially relevant for political campaigns wondering how objective economic data changes voters' opinions. One reason that a backfire effect could happen is because quantitative graphs always ignore some contextual information, and people may latch onto such factors to reinforce their prior beliefs. For example, in the current study, presidents only have limited control of the economy and there are other external factors (e.g., Congress, the Federal Reserve, international politics).

Second, to what extent do people engage in motivated

reasoning even about highly objective, quantitative data? Participants were asked questions at multiple levels of granularity, from fairly general about Democratic vs. Republican presidents in general, to the influence of particular presidents, which could potentially show different degrees of motivated reasoning.

Third, the current research also provides a unique opportunity for research on causal reasoning. Recently there has been more research on causal reasoning about time series data (Rottman, 2016; Soo & Rottman, 2018). One of the challenges involved in making causal inferences in general, and from time series data in particular, is that the data are often ambiguous and can be interpreted in multiple ways. The current study extends prior research in two ways. First, it provides new methods for studying how people reason about real-world time-series data (as opposed to researcher-generated data). Second, it is the first causal reasoning study we know of that explicitly studies the role of motivated reasoning in causal attribution.

## **Methods**

### **Participants**

On November 5<sup>th</sup>, the day before the 2018 United States midterm election, 403 participants were recruited via Amazon's Mechanical Turk. They were paid \$4 for participating in this study. Mechanical Turk premium qualifications were used to sample 200 individuals who had previously identified as liberals, and 200 who identified as conservatives. Three participants completed the study without accepting the HIT, resulting in 403 participants.

### **Stimuli and Design**

Participants reasoned about time series graphs of four economic variables (Figure 1), within-subjects. Each graph depicted the period from 1977 through the most recent economic data when the study was conducted. We had to choose a year to begin the graphs. We wanted to include Reagan because of his important role in current political-economic debates, but we figured that the current electorate would probably have less partisan views about Carter and earlier presidents. Carter was included because one of the questions about Reagan requires having a trend line before Reagan took office. The graphs were accompanied with hyperlinks to the data sources to increase transparency. Unlike Figure 1, the colors of the two parties were red and blue for the Republican and Democratic parties. A brief explanation of each economic variable was included.

We desired to be able to compare participants' motivated reasoning against a more objective condition in which motivated reasoning is eliminated. To do this, half of the participants were presented with 'authentic' graphs like those in Figure 1. The other half saw graphs just like Figure 1, except the origin of the data was disguised; participants were told that the data came from a fictional alien society. Made-up alien names were used for the political parties and

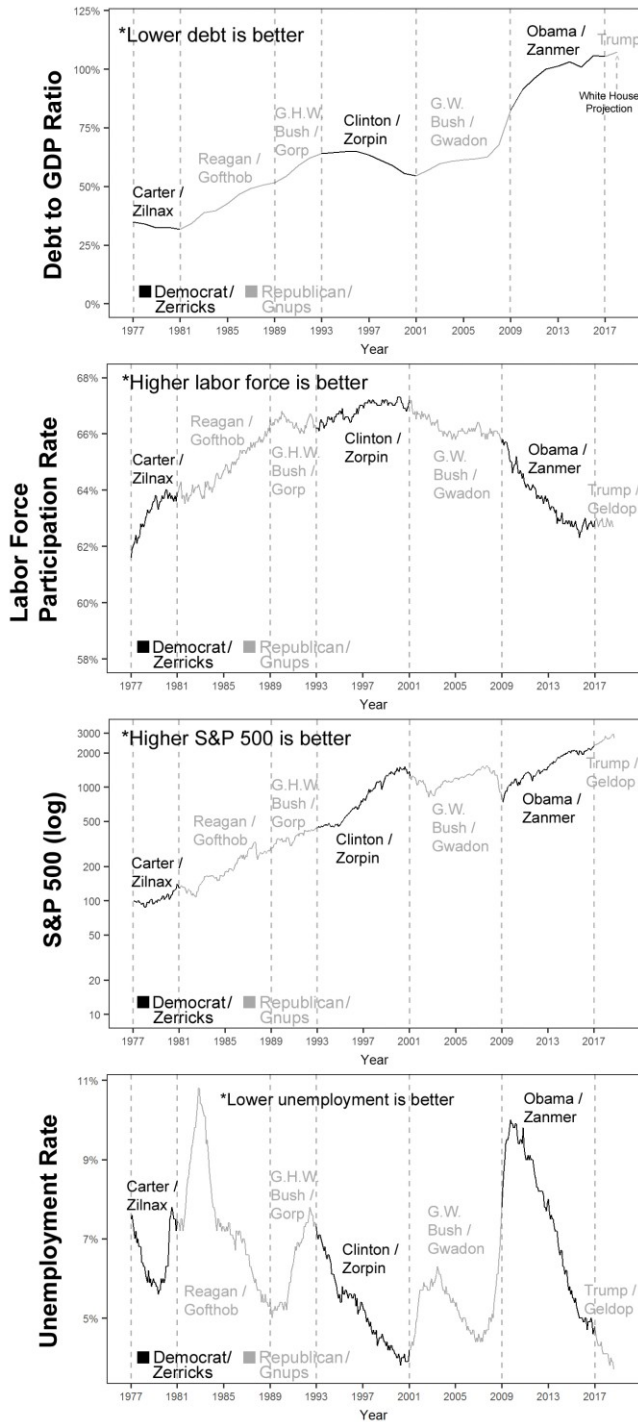


Figure 1: Stimuli for Authentic and Alien conditions combined together. The text "White House Projection" on Debt to GDP Ratio graph was only present for the Authentic condition. Alien graphs had a range of 3061-3621 years.

presidents. The alien graphs did not include the hyperlinks, and the colors of the two parties were green and orange (not red and blue) to reduce suspicion.

### Procedure

Figure 2 provides a summary of the procedural flow of the

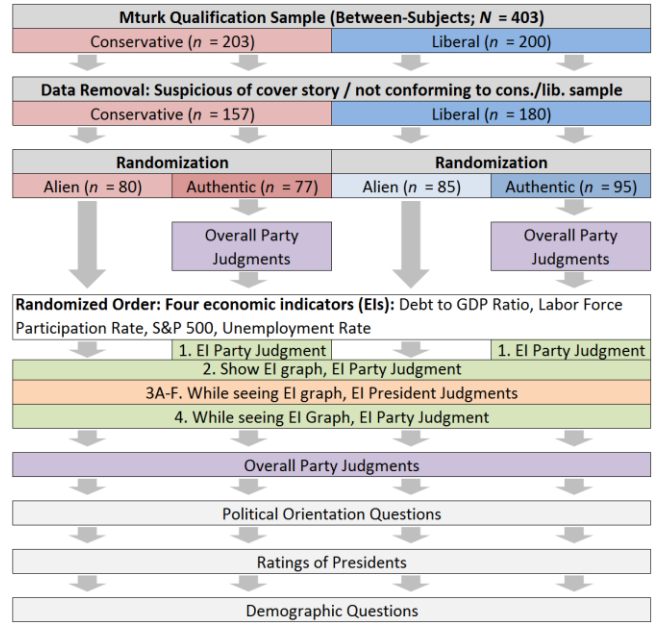


Figure 2: Study procedure flow. "EI" = economic indicator.

study. First, participants from both the liberal and conservative samples were randomized to either 'Authentic' or 'Alien cover story' conditions. Participants in the Alien condition were told to "Please imagine that in roughly 1,000 years, there is an alien society on another planet. The government of this society has two political parties, Zerricks, and Gnups. Your goal for this study is to figure out whether the Zerricks or Gnups parties generally do a better job of handling the society's economy..." Participants in the Authentic condition were not provided with an introduction, as we presumed that participants were acquainted with the major US political parties.

Next, participants in the Authentic condition completed an "Overall Party Judgment" ("Which political party do you believe is better for the economy overall?": 1 = strongly believe Rep., 4 = neutral, no opinion, 7 = strongly believe Dem.). Alien condition participants did not make this judgment as they had no prior beliefs about the fictional aliens.

Next, participants completed blocks of judgments about each of the four economic indicators in a random order. In Step 1, participants in the Authentic but not Alien condition made the Economic Indicator Party Judgment ("Which political party do you believe is better for [econ. indicator]?": 1 = strongly believe Rep., 4 = neutral, no opinion, 7 = strongly believe Dem.). Then, in Step 2, participants were shown an economic indicator graph like in Figure 1. With the graph still visible, they made another Economic Indicator Party Judgment.

In Step 3 (sub-steps: A-F), with the graph still visible, participants made judgments about the influence of each president (from Reagan to Trump; Figure 3). This 14-option question allowed participants to make precise judgments about the nature of the change in the trend line. If participants' judgments are still influenced by their political

Which of the following best represents the influence [president/chancellor] had on the [econ. indicator]?

Bad Outcomes	Good Outcomes	Neutral Outcomes
<input type="radio"/> turned a <b>good</b> trend into a <b>bad</b> trend	<input type="radio"/> turned a <b>bad</b> trend into a <b>good</b> trend	<input type="radio"/> turned a <b>bad</b> trend into a <b>neutral</b> trend
-5	5	1
<input type="radio"/> turned a <b>neutral</b> trend into a <b>bad</b> trend	<input type="radio"/> turned a <b>neutral</b> trend into a <b>good</b> trend	<input type="radio"/> turned a <b>good</b> trend into a <b>neutral</b> trend
-4	4	-1
<input type="radio"/> made a <b>bad</b> trend <b>worse</b>	<input type="radio"/> made a <b>good</b> trend <b>better</b>	<input type="radio"/> continued a <b>neutral</b> trend
-4	4	0
<input type="radio"/> continued a <b>bad</b> trend	<input type="radio"/> continued a <b>good</b> trend	<input type="radio"/> too complex - does not fit any of these categories
-3	3	n/a
<input type="radio"/> continued a <b>bad</b> trend, but not quite as <b>bad</b>	<input type="radio"/> continued a <b>good</b> trend, but not as <b>good</b>	
-2	2	

Figure 3: Economic Indicator President Judgments. The numerical coding scale was hidden during the study.

orientation, it would mean that motivated reasoning has an influence on even very low-level causal reasoning. Because prior research (Soo & Rottman, 2018) has found that people focus on changes in trends more than absolute levels, this question asked how trend in the variable changed during the president's time in office compared to before. To analyze these judgments, we turned the 14-option scale into a -5 to +5 scale, where +5/-5 means that the president had a very good/ bad influence on the trend. The numbers in Figure 3 display this scale mapping.

In Step 4, participants made the Economic Indicator Party Judgment one last time with the graph still present. The reason for asking this question three times was to see if participants' judgments become less biased with more exposure to the data and thinking about the data.

After completing the questions about the four economic indicators, participants made a final Overall Party Judgment without any graphs presented alongside this question.

Participants went on to complete four questions on political orientation. We used one of these questions (1 = extremely liberal, 4 = moderate/middle of the road, 7 = extremely conservative) to ensure that the participants' current political orientation matched the MTurk Qualification. Afterwards, participants rated how much they "liked" each of the presidents and completed demographics.

## Results

### Participants

Participants in the Alien condition were asked about degree of suspicion for the cover story after completing the study. Fifteen participants were dropped from analyses due to selecting that they "strongly suspected that the data reflected the United States." The remaining participants were included in analysis. Fifty-seven participants selected "I was

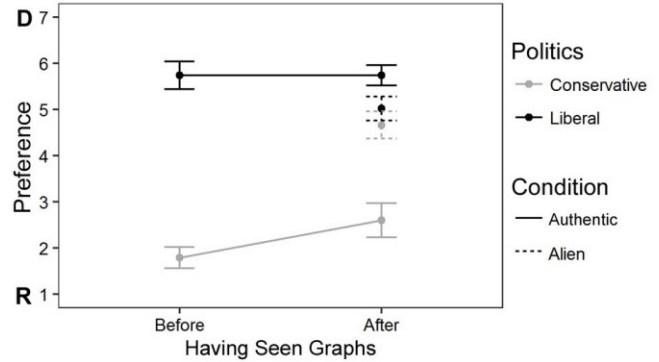


Figure 4: Overall party judgments before and after seeing time series graphs. Error bars are 95% confidence interval. D/R denote Dem./Rep. leaning judgments.

a bit suspicious, but I didn't think much of it." The majority ( $n = 108$ ) selected "No, I did not suspect that the data reflected the United States."

Another 53 participants were dropped because their responses to a question about whether they identified as conservative or liberal did not conform to how they previously identified according to the qualification. Thus, 337 participants were included in the analyses.

Conservative ( $M = 43$ ;  $SD = 12$ ) and liberal ( $M = 38$ ;  $SD = 11$ ) participants had similar ages. Conservative and liberal samples were predominately white (91% & 83%, respectively). Liberals were a bit more educated. The education breakdown was as follows for conservatives and liberals, respectively: high school or lower (19% vs. 9%), some college but no degree (23% vs. 27%), associate's or bachelor's (47% vs. 54%), and master's or higher (11% vs. 9%).

### Statistics

For all the following analyses that used mixed-effect models, we used the *R* packages 'lme4', 'lmerTest' for *p*-values, and 'r2glmm' for  $R^2_{NSJ}$  effect sizes (Jaeger, 2017). Effects coding was also used for all mixed-effect models.

### Overall Party Judgments

Figure 4 presents the overall party judgments. The overall impressions of the graph are as follows. First, there do not appear to be differences in the Alien condition by politics. We note that participants' ratings in the Alien condition are more favorable to Democrats (the means of the Alien condition are above the midpoint of the scale).<sup>1</sup> This suggests that we should expect to see more changes in beliefs for conservatives rather than liberals. Second, in the Authentic condition, there are large differences between

<sup>1</sup> The fact that participants in the Alien condition tended to believe that the Democrats (disguised as aliens) were better for the economy than Republicans (disguised as aliens) is intended merely as a summary of the stimuli used in this experiment, not as a political statement. There are many other economic indicators aside from these four, and there are historical events not depicted on the graphs that could affect their interpretation.

conservatives and liberals, though the difference appears to become somewhat smaller suggesting that participants are learning rather than having a backfire effect. Third, even after seeing the graphs, there still appear to be large differences by political orientation in the Authentic condition. We now assess these questions statistically.

First, overall party judgments between liberal and conservative participants were not significantly different after seeing the graphs for the Alien condition,  $t(159.05) = 1.80, p = .074, d = .28$ . The remaining analyses focus on the Authentic condition.

Second, we tested whether the judgments changed over time by doing a regression with time (before vs. after seeing the graphs), political orientation, and the interaction, and a by-subject random intercept. There was a main effect of politics ( $\beta = 3.54, SE = .18, t = 19.71, p < .001, R^2_{NSJ} = .635$ ) implying strong politically-motivated reasoning. There was a significant effect of time ( $\beta = .40, SE = .10, t = 4.08, p < .001, R^2_{NSJ} = .022$ ). Most importantly, there was a significant interaction between politics and time ( $\beta = -.81, SE = .20, t = 4.08, p < .001, R^2_{NSJ} = .022$ ), implying that the two groups moved *closer together* after seeing the graphs. Third, even after seeing the graphs, overall party judgments between liberal and conservative participants were still significantly different,  $t(125.66) = 14.33, p < .001, d = 2.13$ .

### Economic Indicator Party Judgments

Figure 5 shows graphs of the judgments of which party is better at controlling each of the four economic indicators. These judgments were made at three timepoints in the Authentic condition, and at two timepoints in the Alien condition. The overall impressions of the graphs are as follows. First, for the most part, the differences in the Alien condition by politics are small, if present at all.<sup>2</sup> Second, there appear to be some changes in beliefs after seeing the graph (Step 1 to Step 2), but there are few changes after making the president judgments (Step 2 to Step 4). For this reason, we just focus our analyses below on Steps 1 and 2. Third, even after seeing the graphs, there are still substantial differences between liberals and conservatives. We now test these impressions statistically.

First, at Step 2, we tested whether there are any differences based on political orientation within the Alien condition. We conducted a linear regression with a by-subject random intercept and a by-economic-indicator random intercept. There was no significant effect of politics ( $\beta = .29, SE = .23, t = 1.28, p = .278, R^2_{NSJ} = .01$ ).

We then tested for motivated reasoning within the Authentic condition in Steps 1 and 2. We tested for the main effects and interaction of Time and Politics. We used a linear regression with by-subject random intercepts and

<sup>2</sup> Three of these economic indicators were more favorable for Democrats (the judgments in the Alien condition are higher than the midpoint of the scale for all but the Labor Force Participation Rate). This means that we would expect more changes in beliefs for Republicans than for Democrats in all but the Labor Force Participation Rate judgments.

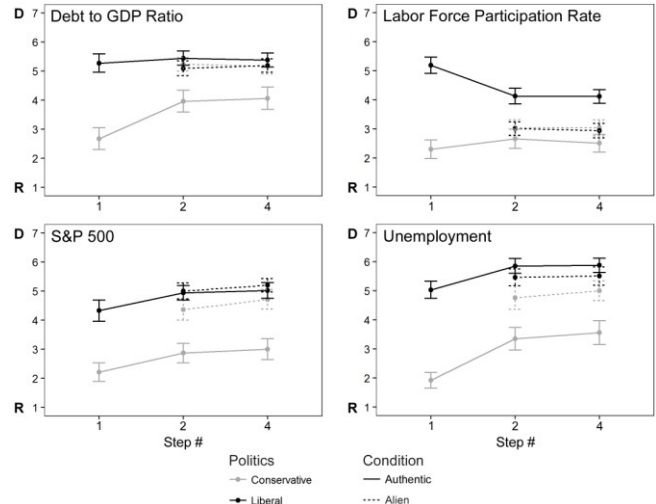


Figure 5: Mean economic indicator party judgments and 95% CIs. D/R denote Dem./Rep. leaning judgments.

slopes for time. The model also had by-economic-indicator random intercepts with random slopes for time and politics, and the interaction. We found significant differences in economic indicator party judgments based on participants' political orientation ( $\beta = 2.28, SE = .22, t = 10.23, p < .001, R^2_{NSJ} = .344$ ), implying politically-motivated reasoning. There was not an effect of Time from Step 1 to Step 2 ( $\beta = .54, SE = .32, t = 1.69, p = .188, R^2_{NSJ} = .028$ ). There was a marginal interaction between politics and Time ( $\beta = -.80, SE = .32, t = 2.48, p = .082, R^2_{NSJ} = .016$ ). Perhaps there was a trend that conservatives and liberals' beliefs moved closer together after seeing the graphs, though this was only evident for some of the economic indicators (Figure 5).

Lastly, we tested for differences in economic indicator party judgments for the Authentic condition at Step 2 (after seeing graphs). This model included a by-subject random intercept and a by-economic-indicator random intercept and slope for politics. There was still a significant effect of politics on economic indicator party judgments ( $\beta = 1.88, SE = .28, t = 6.71, p = .001, R^2_{NSJ} = .260$ ).

In sum, participants' judgments were biased by politics, and there was a trend of becoming less biased after seeing the graphs.

### Economic Indicator President Judgments

Participants judged how each president influenced each EI. Because these judgments were very specific, they should be less open to interpretation than the other judgments. We wanted to test whether participants' political motivations would still affect these judgments. To test this, we reverse coded the judgments about Republican presidents. This means that judgments that are higher on the -5 to +5 scale are more positive towards Democrats, and judgments that are lower are more positive towards Republicans.

Participants made 24 judgments (6 presidents x 4 EIs). There were large differences across these 24 items because certain indicators performed very well or very poorly during

certain presidencies. We used mixed effects models with by-item random intercepts and slopes for politics to account for the 24 items and by-subject random intercepts.

There was a significant effect of political orientation in the Authentic condition ( $\beta = .97$ ,  $SE = .17$ ,  $t = 5.87$ ,  $p < .001$ ,  $R^2_{NSJ} = .016$ ). However, there was also a significant effect of political orientation in the Alien condition ( $\beta = .38$ ,  $SE = .13$ ,  $t = 2.96$ ,  $p = .004$ ,  $R^2_{NSJ} = .002$ ). It is possible that some participants in the Alien condition realized that the alien chancellors were actually American presidents but did not report being highly suspicious.

To test whether there was more political bias in the Authentic condition than the Alien condition, we ran a model that also included condition and politics and their interaction as a by-item random slopes. There was no significant effect of condition ( $\beta = .17$ ,  $SE = .11$ ,  $t = 1.50$ ,  $p = .138$ ,  $R^2_{NSJ} = .001$ ). We found a significant effect of politics; the judgments in the Liberal sample were a bit more favorable to Democrats ( $\beta = .68$ ,  $SE = .12$ ,  $t = 5.63$ ,  $p < .001$ ,  $R^2_{NSJ} = .008$ ). Most importantly, there was a significant interaction between condition and politics, ( $\beta = .59$ ,  $SE = .19$ ,  $t = 3.14$ ,  $p = .002$ ,  $R^2_{NSJ} = .001$ ). This suggests that economic indicator president judgments of conservatives and liberals were farther apart for the Authentic condition, and that there still is an effect of motivated reasoning even for judgments about specific presidents and specific economic indicators.

## Discussion

Previous research has shown that individuals tend to preferentially view evidence congruent with prior beliefs and de-emphasize incongruent evidence. Our findings support that perceptions of quantitative information are influenced by the presence of prior beliefs. When prior beliefs were absent in the Alien condition, participants' judgments were largely in agreement with one another. However, when making judgments about US political parties, our participants' judgments were strongly influenced by their political beliefs.

The Economic Indicator President Judgments may offer the most supportive evidence of motivated reasoning as participants engaged in belief maintenance even when making very specific judgments (e.g., President X "changed a neutral trend into a bad trend"), implying that prior beliefs can influence even low-level perceptual judgments. However, the bias for these very specific judgments were not as strong as for the overall party judgments and economic indicator party judgments.

Despite the evidence of motivated reasoning, our participants did change their initial beliefs after viewing an objective graph, at least for the overall judgments. This suggests that presenting people with objective time series graphs of the economy might be a useful strategy for changing voters' minds. Perhaps another more radical strategy to change opinions is to show voters time series graphs with the political parties disguised, like in the Alien condition, to help them make judgments in a bias-free

context, before revealing the political parties. In future research we plan to test whether this strategy is effective.

It is important to note that even though we have been calling the effects in the paper "politically motivated," the current results cannot distinguish between rational use of prior beliefs versus self-protective motivational forces. One view is that the liberal versus conservative participants have different prior knowledge (e.g., about other relevant economic factors that could have been causes of changes in the graphs), and interpret the graphs differently based on their different knowledge (Jern, Chang, & Kemp, 2014). The other view, which is traditionally called 'motivated reasoning' is that they interpreted the graphs differently simply to support self-serving desirable outcomes (i.e., protecting their political self-identity).

However, we believe the current results are still useful in that they show how disparate of views people can have making judgments from quantitative data (as opposed to prior research that used text-based stimuli). Another novel feature of this study is that it involved making inferences or generalizations, whereas prior research has focused simply on subjects acceptance of a textual argument.

More generally, given the current time of heightened polarization and misinformation, more research is needed to understand biased reasoning and find interventions to reduce biased reasoning about quantitative information.

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