

The Status Quo and Belief Polarization of Inattentive Agents: Theory and Experiment*



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In Novák, Matveenko, and Ravaioli (2024), we introduce a new mechanism showing how the combination of inattention and personal status quo perception can lead to belief polarization and disagreement. Our study reveals that rational, yet inattentive individuals exhibit a stronger degree of polarization than traditionally recognized. This polarization, named polarization ex-ante, occurs because different individuals pay attention to different information sources, based upon their perception of the status quo, leading them to become polarized in their opinions. Through a laboratory experiment, we validate the predictions about the mechanism and how it fosters systematic belief polarization. Significantly, the experiment reveals how the demand for information is influenced by a preference for simplicity and certainty.

*This Policy Brief is based on Novák, Matveenko and Ravaioli (2024). The views expressed are those of the authors and should not be attributed to the National Bank of Slovakia or Cornerstone Research.

Societies are polarized in their beliefs about the potential impact of newly proposed policies as well as they exhibit significant disagreement in the perception of reality, that is, in their evaluation of the current status quo (see, e.g., Alesina, Miano and Stantcheva 2020). Such heterogeneity in the perception of reality leads to differences in assessing the potential benefits and losses associated with adoption of new policies, for instance, policies to achieve climate neutrality, and therefore can significantly influence the demand for information, opinion polarization, and ultimately fundamental economic decisions.

In our paper (Novák, Matveenko and Ravaioli, 2024), we answer the question of how the perception of the status quo influences opinion polarization, when information is plentiful, but attention is scarce. Furthermore, we determine the extent to which demand for information is driven by the instrumentality of information – i.e., “usefulness” of new information in making decisions – and by the non-instrumental preferences – i.e., other characteristics that are irrelevant for a rational decision maker – mainly by preferences for “simplicity” and “certainty.” In the paper, we first introduce a new model of opinion polarization with agents, whose attention is a scarce resource, followed by a laboratory experiment that tests the predictions of the model while providing insights into the determinants of information demand.

In the rest of this brief, we describe in a nutshell the main results for both theory and experiment, emphasizing the added value to the existing literature.

Theory - Intuition for the model's mechanism

A key mechanism is that when people's attention is limited, the choice of information structure is determined by the relative value of the status quo for the individual, which can subsequently lead to systematic opinion polarization even among rational people with a priori similar expectations about the impacts of a new policy.

In particular, the mechanism of the model can be illustrated by the following simple example. Imagine two farmers, Will and Paul, affected by the decision to adopt/reject a new climate law, whose impact on the future of farming is uncertain. Both farmers are rationally inattentive, meaning that, they can seek any information they want before expressing support or opposition to the climate law. However, seeking information is costly because their attention is not unlimited, and they must decide how to allocate it. Suppose both farmers are willing to support the adoption of the climate law only if they expect it is likely to improve their business conditions, but the farmers differ in their current revenues. In particular, farmer Will is doing well under the current conditions, much better than farmer Paul, who instead is doing poorly. If the new climate law is implemented, they might end up having more similar revenues – both great if the law is successful or both poor otherwise.

What information will the farmers ultimately choose? Since acquiring information is costly, both will choose the simplest possible information necessary for their decision to support or oppose the new law and will not try to ascertain the precise impacts of the new law. Specifically, the more profitable farmer Will wants to find out if the new law might lead to extremely high revenues (and in that case will support it), whereas the less successful farmer Paul wants to determine if the new law might cause terribly low revenues (and in that case will oppose it). However, if the new law affects the farmers' operations only slightly and therefore does not bring neither existential problems nor significant additional profits, the two farmers will receive opposite signals about whether to support or oppose the adoption of the climate law. Subsequently, even if they originally had the same expectations about the climate law, they would adjust their opinion in opposite directions (to opposite extremes), and their opinions will thus diverge – generating polarization.

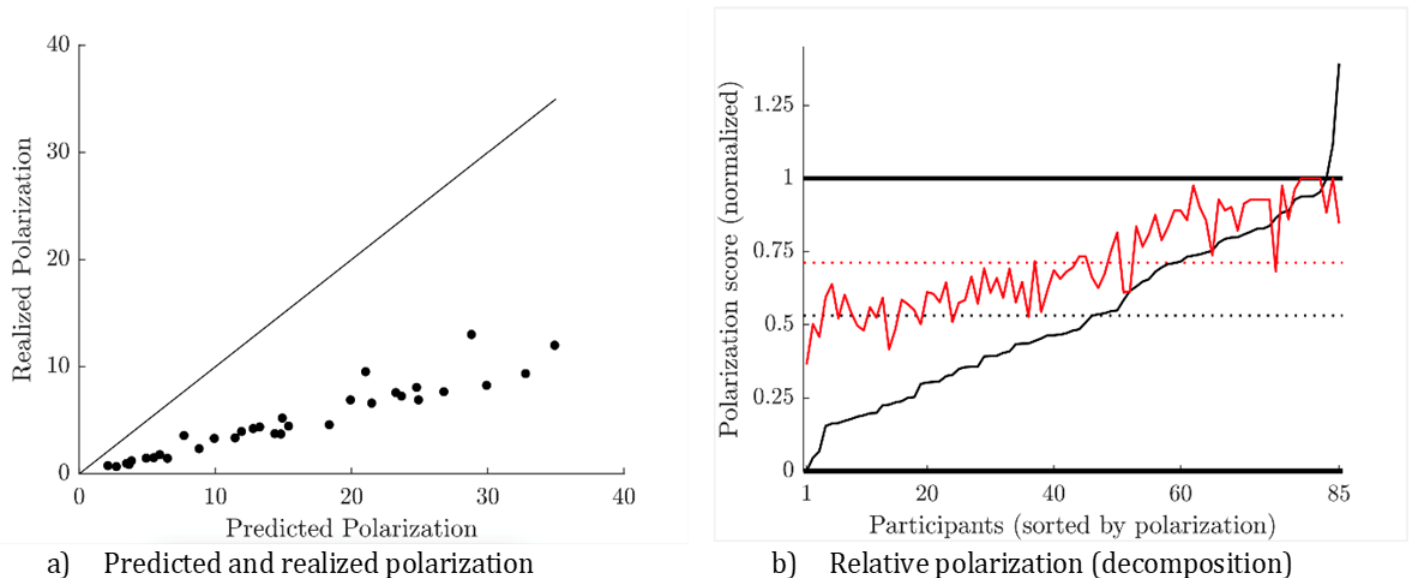
In our study, we show that similar behavior applies in much more complex situations with rationally inattentive agents and particularly, in comparison with other scientific articles studying polarization, we are able to show that agents can generally polarize across all possible signals they may receive, not just due to a specific signal realization. We refer to this polarization as *ex-ante* polarization because the perception of the status quo and initial expectations about the impacts of the new law determine which information an agent will seek. This mechanism allows us to determine whether polarization will occur between two different agents even before they receive specific signals.

Experiment - Design and main result

In our study, we also present a laboratory experiment that tests whether real people acquire information in accordance with the described mechanism, and whether this subsequently leads to the predicted opinion polarization. Our results confirm not only the main mechanism (the influence of the perception of the status quo on the information sought) but also the qualitative effect on opinion polarization.

The experiment comprises of four tasks and a final questionnaire. In the main task, subjects are presented with a binary *action choice*: get a sure prize (status quo) or change it to one with a variable value (new policy). Before the *action choice*, subjects make an *information choice* and acquire instrumentally valuable information from advisors (signal structures). For the *information choice*, they are presented with a pair of advisors and can select only one of them. After that, they indicate the chosen action (status quo or new policy) conditional on the observed signal. Our key manipulation consists of varying the value of the status quo, and we expect this to be sufficient to revert the choice of optimal advisor (given the model's prediction). In two separate tasks we measure subjects' beliefs, and these measures allow us to construct the distribution of beliefs and estimate the *ex-ante* polarization. In particular, we elicit for each participant, the subjective beliefs about the likelihood of each signal realization, and the likelihood of each state (conditional on the realized signal).

Figure 1



Notes: a) Polarization. Predicted polarization (for the Bayesian decision maker) and realized polarization (based on subjects' responses, $n=85$) in the 11 pairs of trials with predicted advisor switch generating polarization. b) Estimated polarization coefficient by subject, with 0 for no polarization and 1 indicating the magnitude of polarization predicted by our model (black line). Decomposition of the missing polarization, replacing subjective beliefs with unbiased ones (red line).

The magnitude of the polarization observed in the experiment is lower than the model's predictions, as it is influenced by some behavioral aspects. Specifically, in Figure 1a, we compare the predicted polarization computed based on the Bayesian agent's behavior and the realized polarization based on the subjects' behavior, aggregated across subject for each trial. Realized polarization is, on average, 32% of the predicted one, with little dispersion across pairs of trials.

We replicate the analysis for every participant, to investigate the heterogeneity of polarization. Figure 1b shows the estimated polarization coefficient for every subject across trials, with 0 for no polarization and 1 indicating the magnitude of polarization predicted by our model. We observe substantial heterogeneity, with an average polarization equal to 53% of the prediction. We even encounter a few values above 1; this is possible when subjective beliefs are overreacting to evidence.

We identify two behavioral aspects that reduce the magnitude of the realized polarization: participants switch advisors less than predicted (72,1% of the predicted times), and update their beliefs slightly less than predicted (87,2% of the predicted magnitude). If we replaced the subjective (inaccurate) posterior beliefs by the predicted (accurate) beliefs, the average polarization score would jump from 53% to 71%, reducing the missing polarization by over one-third (Figure 1b – red line). Thus, majority of missing polarization arises from suboptimal choice of information sources, that we investigate further.

Preference for simple and certain information

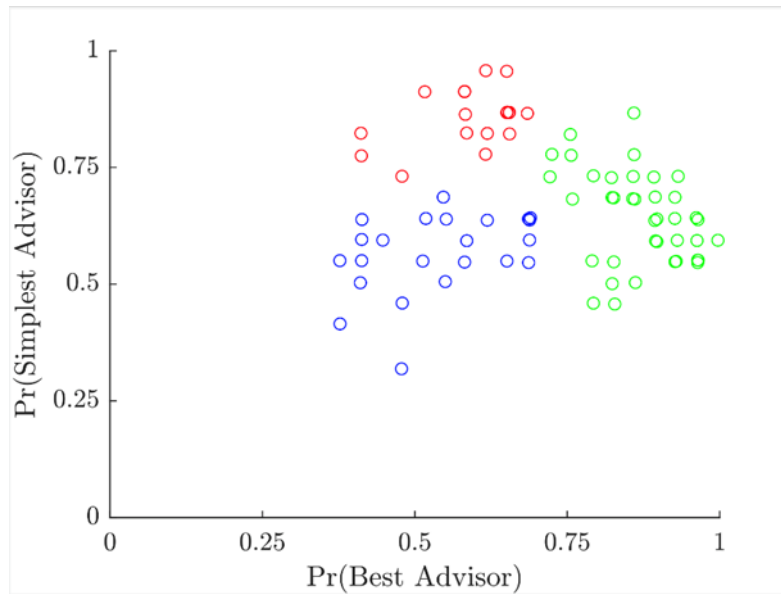
We document that the lesser polarization is primarily caused by people's preference for simple signals and/or signals providing certainty, which are, however, suboptimal. Other factors, such as risk preferences and subjectively biased beliefs, are not sufficient to explain the observed deviations from the model's predictions.¹

This observation in our experiment generalizes the previously documented preference for information that guarantees certainty in more traditional choice setting with two states and two actions (see, e.g., Ambuehl and Li, 2018). Compared to the two-states setting, we are considering a more complex setting with more than two states, and this requires to distinguish between two features of the information (simplicity and certainty) that would coincide in two states setting. We thus provide two novel separate measures, where a *certain* advisor always removes uncertainty about one specific state, whereas a *simple* advisor refines the posterior beliefs by removing a number of impossible states.

After showing that preference for both simplicity and certainty play a major role in mitigating the predicted polarization on the aggregate level, we turn to the analysis of the prevalence of this preference at the individual level. Thus, in Figure 2, we classify participants into three clusters: a cluster of accurate participants that display little or no preference for simplicity (green), a cluster of simplicity-driven participants consistently selecting the advisor with lower complexity (red), and a cluster of participants whose advisor choices are close to random (blue).

¹ See Novák, Matveenko and Ravaioli (2024) for full details.

Figure 2



Notes: Clustered distribution of participants' advisor choices: probability of choosing the best advisor (x -axis, based on instrumental value) and simplest advisor (y -axis, based on the complexity score). Colors indicate three clusters of participants. A green cluster of accurate participants with little or no preference for simplicity, a red cluster of simplicity-driven participants, and a blue cluster of participants whose advisor choices are close to random.

Policy implications

Our model can be applied to a wide range of real-world situations where there is a binary choice between maintaining the current state and implementing a different new policy, whose impact is uncertain. At the same time, we present rational inattention as a new mechanism leading to polarization, which differs from “confirmation bias,” an often-mentioned reason for polarization. Therefore, if the goal is to reduce polarization, it is important to first determine which of these two mechanisms was the main driver of polarization in a given situation, as each mechanism requires different mitigating measures. However, distinguishing empirically between these mechanisms is possible only by collecting simultaneously data on expectations and perceptions of the current state, which is not the case for most surveys.

Our paper sheds new light on the problem of opinion polarization in society. Although our study focuses on beliefs evolution, our framework can be used backward to infer subjects' evaluation of the current status quo from search behavior. In the paper, we consider the example of a social media platform that can access both actions (e.g., likes) and information collection (e.g., search data) of its users, and we show that the search behavior can be a powerful predictor of the agent's private type, represented by the agent-specific valuation of the status quo. ■

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