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Processing macroeconomic signals: Voter responses to growth, unemployment, inflation and stock markets

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Abstract

Economic voting theory suggests that voters reward incumbents for strong economic performance and punish them for weak performance. However, this view often ignores the multidimensional nature of the economy. Hence, we lack systematic evidence about how voters simultaneously process multiple economic signals. This study provides a comprehensive examination of how voters respond to four key economic dimensions: growth, unemployment, inflation, and stock markets. We develop a theoretical framework distinguishing between different types of economic reasoning: macroeconomic, egotropic, sociotropic, and distributive reasoning. We first use descriptive data from OECD countries to understand the economy's dimensionality and analyze survey data from national election studies to assess the impact on economic evaluations. Finally, we present findings from survey experiments conducted in Germany, Sweden, and the United States, tailored to analyze the impact of the four economic dimensions in an ideal information setting. Our results reveal interesting patterns in how voters process economic information. Voters can discern relationships between economic dimensions and their effects on personal and economic circumstances, and distributional outcomes. Subsequently, all four signals independently affect preferences for economic policy and voting intentions. Inflation emerges as a dominant factor, shaping personal and national economic evaluations. Our findings challenge traditional approaches to economic voting by exploring how voters integrate multiple economic signals. By emphasizing the multidimensionality of economic signals, we highlight implications for democratic accountability.

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Introduction

Economic voting has received considerable attention in political science research (Erikson, MacKuen and Stimson 2002; Fiorina 1981; Kinder and Kiewiet 1981; Duch and Stevenson 2006; Lewis-Beck and Paldam 2000). It is 'common wisdom' that voters reward incumbents for good economic development and punish them for poor economic performance (Lewis-Beck and Nadeau 2011). A central problem, which we address in this paper, is the field's focus on an oversimplified conception of 'the economy' (cf. Ansolabehere, Meredith and Snowberg 2014). However, the economy comprises multiple dimensions, such as economic growth, inflation, unemployment, and stock market development (Hibbs 1977; Palmer and Whitten 1999). A critical gap remains in our knowledge about how voters handle these kinds of economic information, in other words, how do voters process multiple economic signals? Previous research, primarily relying on observational data, has not been able to isolate how voters process these dimensions and how they influence their political decisions. Treating the economy as a single entity risks overlooking the complex interplay between different economic indicators.

We develop a theoretical framework of four distinct types of economic reasoning: (1) macroeconomic reasoning, i.e., whether citizens can recognize relationships between economic dimensions; (2) egotropic reasoning, focusing on whether economic conditions affect personal economic evaluations; (3) sociotropic reasoning, which regards the impact of national economic conditions on evaluations; and (4) distributive reasoning, which regards considerations of how economic dimensions affect different socioeconomic groups. We test whether voters process economic signal in accordance with these types of reasoning, and in addition we test the impact of economic signals on economic policy preferences and vote intentions. We make a crucial distinction between the capability to process economic signals according to these types of reasoning and whether one relies on them when forming policy preferences and voting decisions. For example, voters might be able to understand the impact of certain macroeconomic factors on the personal or national economy, while choosing to prioritize other aspects when voting. Previous studies often implicitly assume that voters' political behavior reflects their reasoning ability while our framework distinguishes between the two. This is important in order to understand the separate phenomena of voter competence and electoral

accountability.

Empirically, we first use descriptive data from OECD countries to assess the dimensionality of the economy. Subsequently, we analyze survey data from comparative national election studies to test how growth, unemployment, and inflation affect economic evaluations. After exhausting the observational historical data, we conclude that existing observational data lacks the necessary variation to identify the effects of different economic dimensions. This leads to the main part of the paper, in which we report results from a series of survey experiments conducted in Germany, Sweden and the US (consisting of 60 experimental rounds in total) where we manipulate changes in growth, unemployment, inflation, and the stock market, and measure citizens' reactions. Using these data, we attempt to paint a more comprehensive picture of the impact of macroeconomic dimensions and understand their heterogeneous effects on different groups of citizens. We are the first to experimentally study both multiple macroeconomic indicators and their perceived effects on the personal versus national economy, but also across socioeconomic groups. This is essential for evaluating whether citizens assign varying weight to macroeconomic indicators when using the four forms of economic reasoning. We identify systematic patterns in how voters respond to different economic indicators. Inflation consistently emerges as a significant factor, influencing both personal and national evaluations, while GDP growth, unemployment, and stock market performance exhibit more differentiated effects. These findings shed light on how voters process various types of economic information and contribute new insights to the economic voting literature. We also examine heterogeneities across countries, labor market positions, political knowledge, and household income. While no differences are observed across countries or labor market positions, household income and political knowledge moderate the results. Voters with higher incomes place greater weight on the stock market without assigning less importance to other economic indicators. Additionally, higher political knowledge tends to amplify the impact of positive perceptions of economic growth indicators, such as GDP and stock market performance.

This study contributes by a) developing a theoretical framework on types of reasoning in relation to economic signals, and b) providing the first comparative study on how voters process and respond to multiple economic signals using experimental data. Our findings challenge the economic voting research focusing on 'one economy' and provide insights into the complex interplay of economic

signals that influence political behavior.

It should be noted that the study is limited to changes in the macroeconomy. Naturally, individuals are also affected by economic factors more closely tied to personal finances, such as changes in personal income and wealth (Healy, Persson and Snowberg 2017; Persson and Martinsson 2018). However, this is not the focus of the study; instead, the emphasis is on signals of macroeconomic changes.

Economic Voting

Common wisdom in the literature on economic voting suggests that negative government performance reduces the chances of re-election for incumbents, while positive performance is rewarded (Campbell et al. 1960; Hibbs 1977). Early studies established that incumbents are less likely to win elections if the economy is not performing well, often measured by macro-level indicators such as unemployment, inflation, and economic growth rates (Campbell et al. 1960; Kramer 1971; Hibbs 1977; Hibbs, Rivers and Vasilatos 1982). Overall, research suggested that voting behavior is most affected by unemployment and growth (Powell and Whitten 1993; Fidrmuc 2000), with Chappell and Gonçalves Veiga (2000) being one of the few studies citing inflation as the most important factor driving economic voting. This research not only established that economic performance affects voting but also showed that this holds across various political systems and countries. The notion that different groups in society have distinct macroeconomic preferences was established already by Hibbs (1979), who found that blue-collar workers are more sensitive to increases in unemployment, as they are more exposed to the risk of becoming unemployed themselves. White-collar workers react more strongly to changes in inflation, as increases in inflation would devalue their savings and investments (cf. also Hibbs, Rivers and Vasilatos 1982; Hibbs and Vasilatos 1982). While this early work explored how different economic dimensions affect voter groups differently (Hibbs 1977), the economic voting literature later shifted focus. The current economic voting literature focuses more on, for example, whether voters are capable of retrospective voting, whether they are myopic and how institutional factors shape economic voting.[1] Our analysis returns to examining how voters

[1]For instance, Achen and Bartels (2016) suggest voters react myopically to election-year conditions through basic retrospective voting. Recent experimental evidence offers a different perspective. Healy and Lenz (2014) find that

respond to specific economic signals and how these responses vary systematically across groups.

The more recent studies that actually differentiate between different economic signals primarily draw on observational data. Lewis-Beck and Nadeau (2011) and Lewis-Beck and Martini (2020) find that the objective macroeconomic situation, specifically growth rates and the consumer price index, affect the evaluation of the economy. Fossati (2014) argues that individual-level risk exposure to unemployment moderates the effect between macroeconomic performance and incumbent voting. This aligns with the finding by Singer (2011) that unemployed individuals are more likely to perceive the economy as a salient issue for their voting decision. Moreover, Bojar and Vlandas (2021) shows that social groups are affected differently by various dimensions of economic performance. Specifically, they demonstrate that unskilled workers are more affected by levels of unemployment than others, that pensioners react more strongly to inflation, and that the stock market affects higher-income citizens but not low-income citizens. They conclude that "governments might not be effectively penalized for poor economic performance in some dimensions, even in a well-functioning democracy, if this does not primarily affect powerful social groups" (p. 542). Moreover, studies have found that more informed voters are assumed to hold more accurate views of the economy and to rely more strongly on economic performance as a basis for their voting decisions (Duch, Palmer and Anderson 2000; de Vries and Giger 2014; Gomez and Wilson 2006).

The broader economic voting literature frequently focuses on whether voters respond to national economic conditions (sociotropic voting) or personal conditions (egotropic voting), but most often without differentiating between how different kinds of economic signals affect these two kinds of conditions. Survey evidence suggests voters primarily consider national economic conditions rather than personal finances when voting (Fiorina 1981; Kiewiet and Lewis-Beck 2011; Kinder and Kiewiet 1981; Singer and Carlin 2013). Much of the research on sociotropic and egotropic voting relies on

voters process economic information meaningfully when it is clearly available. Similarly, Healy, Persson and Snowberg (2017) show that with accurate income data, voters weigh economic developments throughout a government's term, not just election years. These findings suggest information access, rather than voter capabilities, may drive economic voting patterns. Another perspective emphasizes institutional factors over voter capabilities. Economic voting requires voters to identify who is responsible for economic outcomes (Powell and Whitten 1993; Hellwig and Samuels 2008; Dassonneville and Lewis-Beck 2017; Royed, Leyden and Borrelli 2000). Government structure shapes this clarity of responsibility, with single-party governments enabling clearer assessment than coalitions (Debus, Stegmaier and Tosun 2014; Royed, Leyden and Borrelli 2000). Single-party majority governments facilitate blame assignment (Nadeau, Niemi and Yoshinaka 2002), while multi-party systems complicate it by offering more alternatives (Anderson 2000; Royed, Leyden and Borrelli 2000).

survey questions that ask respondents to evaluate 'the state of the national economy' or 'their personal economy.' These questions generally do not refer to specific aspects of the economy, but rather to the economy as a whole, disregarding the fact that different dimensions of the economy likely affect individuals in different ways. Examples of such questions include: "Would you say that over the past year the nation's economy has gotten better, stayed the same, or gotten worse?" and "We are interested in how people are getting along financially these days. Would you say that you are better off, worse off, or just about the same financially as you were a year ago?" as included in the ANES survey.[2]

Previous studies face key measurement challenges. Even with good survey data and economic data, we cannot observe what economic information voters actually encounter. When voters primarily see information about one economic dimension, like growth rates, their responses may reflect information exposure rather than processing capabilities. Economic dimensions present complex identification challenges. The macro-economy's interconnected causal structure creates model specification problems and risks of ecological fallacies (Kramer 1983). For example, when high growth decreases unemployment and both variables affect voting, including both in a model violates the backdoor criterion, biasing growth's estimated effect. Also with a theoretical motivated structural model, proper econometric estimation is hindered by infrequent measurement of both economic conditions and voter evaluations. Additionally, including all four macroeconomic indicators in the same linear model requires assuming causal independence among variables——an assumption clearly violated in historical data.

The experimental approach allows us to study how voters handle specific economic information while avoiding the identification challenges in observational data. But before the empirical analyses, we first develop a framework for analyzing different types of economic reasoning.

Types of Economic Reasoning

Economic performance strongly predicts incumbent voting, but the mechanisms linking economic conditions to vote choice remain unclear. While research shows that voters consider economic

[2]Recent research has started to pull the strong reliance on survey data into question, as it does not adequately capture sociotropic and pocketbook voting. Instead, it shows that pocketbook considerations matter equally when taking into account the economic situation of respondents (Healy, Persson and Snowberg 2017).

conditions, how do they process different economic signals? Do voters consider different aspects of the economy when evaluating personal impacts versus national conditions? And how do they process information about impacts on different social groups?

We present a framework to answer these questions. We examine four distinct types of economic reasoning: how voters process relationships between economic indicators, how they evaluate impact on the personal and national economy, and how they assess distributional consequences across social groups.

It is important to clarify that voters' capabilities for macroeconomic, egotropic, sociotropic or distributional reasoning (i.e., their sophistication) should not be conflated with to the extent to which they rely on one or the other reasoning when casting their ballot. A voter can, for example, understand the negative implications of economic signals for the national or personal economy, but still choose to support the incumbent for unrelated reasons. Hence, being capable of, for example, egotropic or sociotropic reasoning does not necessarily translate into egotropic or sociotropic voting.

Macroeconomic Reasoning

We call the first type *macroeconomic reasoning*. This type concerns how voters process relationships between economic indicators. This involves recognizing patterns and connections between different economic dimensions, for instance, how unemployment relates to growth or how inflation connects to other indicators. One example is the Philips Curve, which explains how the level of decreasing unemployment is related to higher wages and inflation. Voters might either be able to acknowledge this trade-off or misinterpret the relationship to think that good things always go together. Understanding these relationships is central in understanding how they subsequently shape how voters evaluate economic conditions and attribute responsibility.

Previous research has not acknowledged that economic evaluations and voting patterns may reflect different approaches to processing these relationships. Some voters may weigh specific dimensions differently based on their understanding of economic relationships. Other voters might respond to general economic development without distinguishing much between the different economic indicators. These processing patterns might affect which aspects of economic performance voters prioritize when evaluating incumbents.

With this understanding, voters may cast an "economic vote" that ranges from unsophisticated, mindless retrospective voting (Achen and Bartels 2016), to more nuanced evaluations. In the unsophisticated form, voters blame politicians for negative economic events without distinguishing which aspects of the macro-economy affect their welfare. While this heuristic can incentivize incumbents to improve overall economic conditions, it may not ensure that voters select candidates who prioritize the economic dimensions most relevant to them (Mansbridge 2009).

Egotropic Reasoning

We term this second type *egotropic reasoning*, a form of reasoning under which voters assess how different economic aspects affect them directly and prioritize those that impact their personal welfare (Hibbs 1977). The existence of this kind of egotropic economic voting might incentivize politicians to target specific economic indicators beneficial to specific groups of voters. Although some literature suggests sociotropic considerations outweigh egotropic ones, measurement problems may drive this finding. Ignoring personal economic considerations seems counterintuitive, as voters likely care about their circumstances and find personal economic information easier to obtain as they constantly experience their living conditions. As Fiorina (1981, p. 5) notes, "In order to ascertain whether the incumbents have performed poorly or well, citizens need only calculate the changes in their own welfare." However, voters focusing solely on egotropic reasoning may lack broader economic insights. If voters can reason this way, they are able to put more emphasis on the indicators that matter much to them, for example, voters with unstable job conditions are more concerned about unemployment risk, voters who own a lot of stocks care more about the stock market, etc.

Sociotropic Reasoning

The third type—*sociotropic reasoning*—involves processing information about national economic conditions alongside personal circumstances. Extensive literature highlights the importance voters place on the national economy (Kiewiet and Lewis-Beck 2011; Kinder and Kiewiet 1979; Lewis-Beck and Stegmaier 2000). Explanations include voters' concern for the common good and the national economy serving as a clear signal of the incumbents competence that influence voting behavior (Lewin 1991; Ansolabehere, Meredith and Snowberg 2014; Elinder, Jordahl and Poutvaara 2015;

Peltzman 1990). A common interpretation of the strong support found for sociotropic voting is that it indicates that voters are driven primarily by the public interest rather than their own interests (Lewin 1991). Others contend that the significance of sociotropic assessments does not imply that voters lack self-interest, but rather that they prefer to use their assessments of the national economy to assess the performance of the government rather than their own financial situations (Kramer 1983; Peltzman 1990). One explanation might be that the signals coming from the personal economy are too loud, and that for changes in personal income to influence voting behavior, voters must perceive economic shifts brought about by governmental decisions (Elinder, Jordahl and Poutvaara 2015). However, from existing previous research we do not know if voters are able to draw different conclusions about how different economic signals impacts the national economy versus the personal economy. If they are able to reason in these ways, it would be likely that they believe that broad macroeconomic factors such as GDP growth has a stronger impact on the national economy, than factors like unemployment and inflation, that might more directly affect their pocketbooks.

Distributive Reasoning

The fourth type—*distributive reasoning*—regards reasoning around how changes in economic indicators affect different socioeconomic groups. This includes evaluating how economic dimensions such as inflation, unemployment, or stock market performance impact various segments of society differently. Studies on class-biased economic voting have showed that incumbents are rewarded differently for economic growth depending on which income groups benefit (Bartels 2016; Hicks, Jacobs and Matthews 2016). Using data from 15 advanced democracies, Hicks, Jacobs, and Matthews demonstrate that voters are more responsive to income growth at the top of the distribution than at the bottom, when casting their votes, suggesting skewed processing of economic information. However, we know less about how voters process information about distributional consequences.

We extend the research on class-biased economic voting by examining how voters reason about distributional consequences of multiple economic dimensions simultaneously. By evaluating this type of reasoning, our experimental design examines whether and how voters process information about economic effects across socioeconomic groups. Thereby it moves beyond both the standard

personal versus national distinction, while studying how voters process economic information before engaging in class-biased economic voting. Understanding these patterns helps explain why different voter groups may prioritize certain economic dimensions over others when evaluating incumbents. They might care less about some groups than others and thereby give less weight to the factors that they think mostly affect groups they care less about.

From Theory to Empirical Tests

Our theoretical framework suggest specific patterns in how voters process economic information. Testing these patterns presents substantial empirical challenges. Economic dimensions are inherently correlated, and voters receive economic information with varying salience and timing.

First, macroeconomic reasoning implies systematic relationships between different economic indicators. When voters receive information about one dimension, their expectations about other dimensions reveal their understanding of economic relationships. Second, egotropic and sociotropic reasoning suggest different patterns in personal versus national evaluations. While personal evaluations should respond strongly to immediately felt impacts (such as unemployment and inflation), national evaluations might weigh broader indicators (such as GDP and the stock market) more heavily. But again, there are no strict boundaries and there are likely heterogeneities across socioeconomic groups. Our approach is to some extent exploratory. We want to understand if voters weight economic dimensions differently for personal and national evaluations. Third, distributive reasoning implies systematic variation in how citizens believe that different groups respond to economic dimensions. We expect: 1) that citizens consider stronger responses to unemployment from economically vulnerable groups, 2) that they consider larger effects of the stock market for high-income voters, and 3) universal inflation effects but varying intensities across groups.

Our experimental design explicitly tests these patterns by: a) varying single vs. multiple indicator presentation, b) measuring personal and national evaluations separately, and c) examining responses across socioeconomic groups.

Empirical Background: Economic Dimensions

In a methodological critique of the economic voting literature, Kramer (1983) pointed out that, in any cross-section of the economy, variation in economic perceptions will be dominated by error and idiosyncrasies. This is because, at any fixed time-point, there is, in a sense, only *one* economy, and any variation in individual perceptions of this economy must therefore originate from the individual voter. However, meaningful variation may arise from how voters process different economic dimensions and how their circumstances affect which dimensions they prioritize.

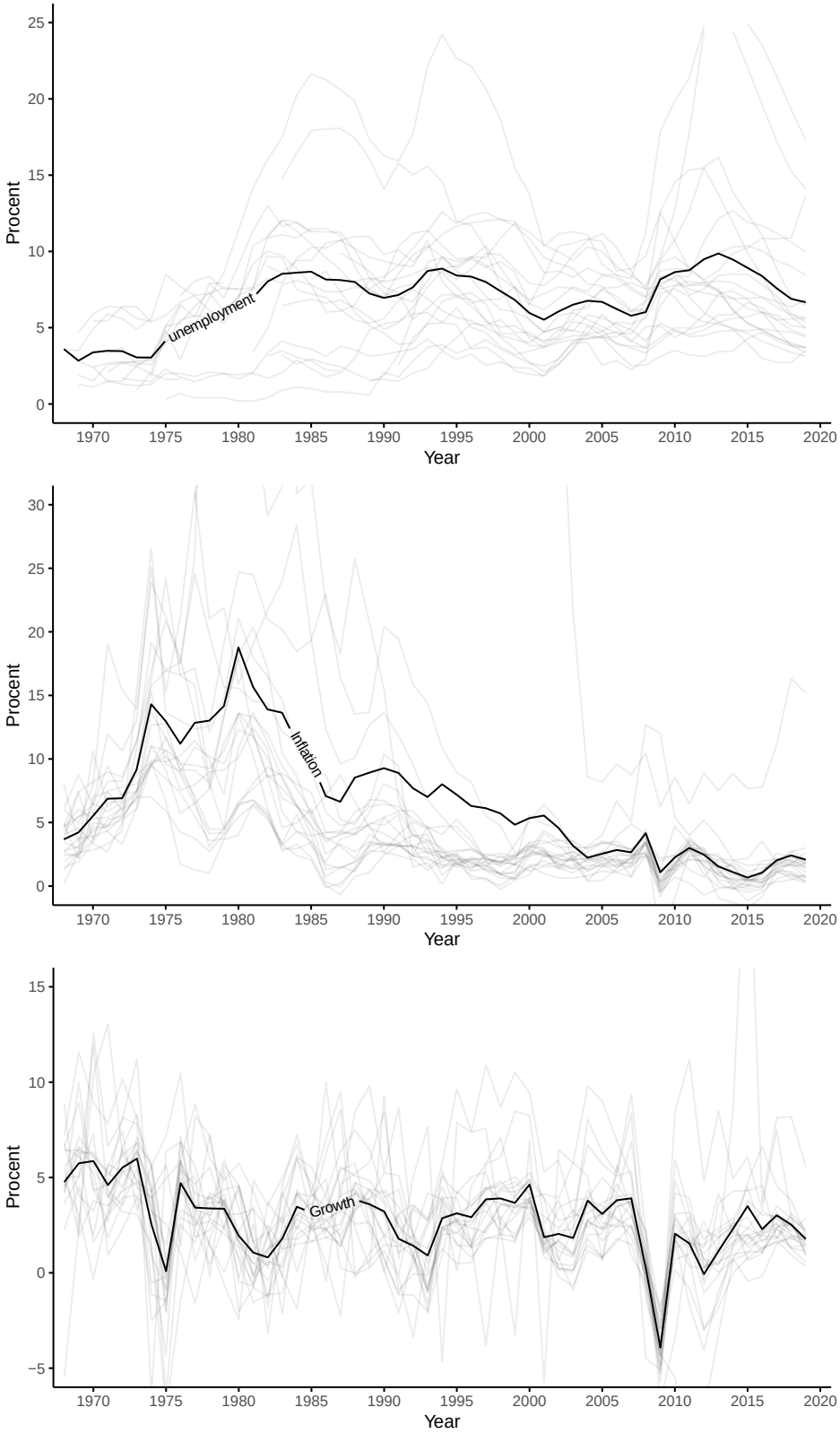
To examine relationships between economic dimensions, we analyze inflation, growth, and unemployment patterns across 20 OECD countries from 1970-2020 (unfortunately we lack comparative data on stock market development).[3] Rather than constructing a structural economic model, we examine simple relationships between indicators to understand how voters might process economic information.

Figure 1 shows how unemployment, growth, and inflation evolved over recent decades. It demonstrates the divergence between inflation and growth over time, demonstrating the multidimensional nature of macroeconomic indicators. These patterns emphasize the need to analyze how voters integrate distinct economic signals rather than relying on aggregate measures. Inflation peaked in the 1970s before declining, growth fluctuated between zero and five percent with major drops in the 1970s and 2008, while unemployment generally rose since the 1970s despite some periodic declines. Significant diversity may be seen among individual nations (represented in grey), especially with regard to unemployment and inflation rates. Over time, the connections between these dimensions changed. While unemployment and inflation continued to have stable correlations, growth and inflation moved in tandem until the early 2000s before diverging.

Figure 2 examines these relationships more systematically through country-specific regressions of unemployment and inflation on lagged GDP growth. To reflect voter information processing, we analyze each country separately rather than pooling data. Results show GDP growth generally associates with lower unemployment and higher inflation, but relationships vary substantially across

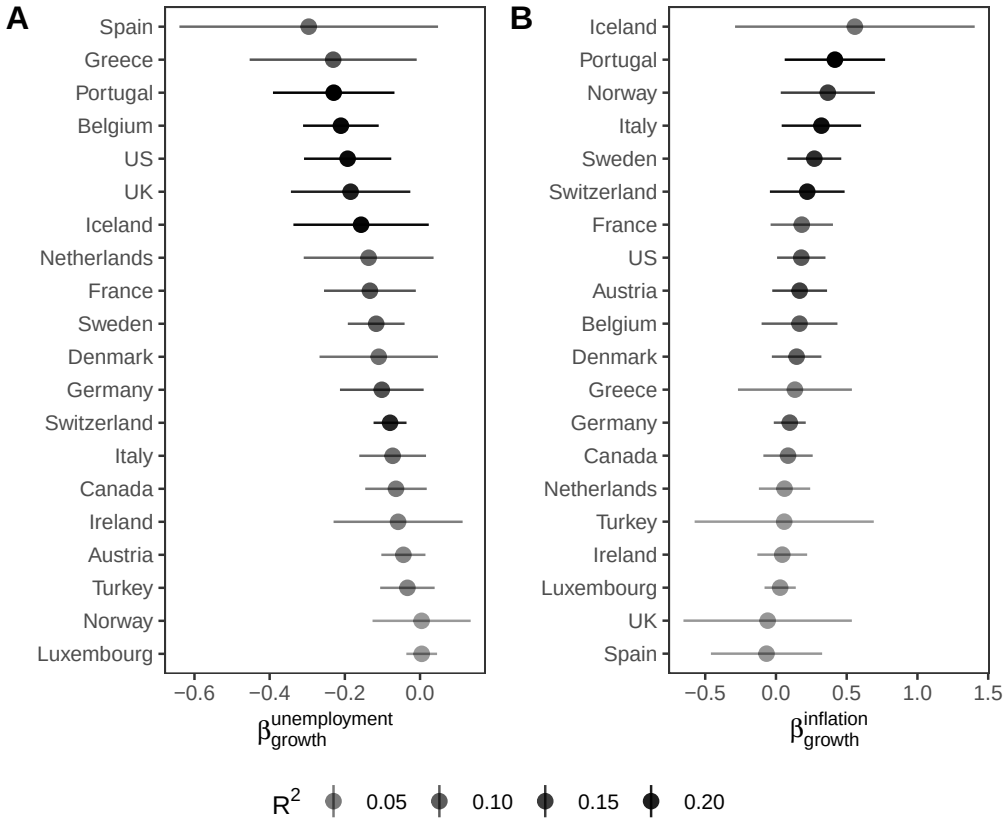
[3]The countries included are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States.

Figure 1: Development of inflation, growth and unemployment in OECD countries



Notes: The solid dark line shows the average development while the grey lines illustrate the development in each country.

Figure 2: Association between GDP Growth and (A) Unemployment and (B) Inflation



Notes: Coefficients from regressing first differences of unemployment and inflation on growth separately for each country and outcome variable. Bars indicate 95%-confidence intervals

countries. The model explains only about 20% of variation in unemployment and inflation changes, with particularly weak associations in some countries (e.g., unemployment in Norway and inflation in Netherlands). This variation suggests voters facing different economic circumstances may reasonably develop different evaluations based on their exposure to specific economic dimensions.

While this does lend weight to our argument that not all economic indicators develop in tandem, and thus, individuals at least have the possibility to perceive the economy differently, it still remains an open question which aspects of the economy voters focus on in their evaluation and whether income groups weigh the dimensions of the economy in different ways.

Observational Evidence of Economic Evaluations

Before turning to our experimental analysis, we examine observational evidence using the Comparative Study of Electoral Systems (CSES). We analyze how economic dimensions relate to national economic evaluations, focusing on inflation, GDP growth, and unemployment effects across income groups.

Table 1: The relationship between macroeconomic evaluations and economic indicators.

	All Income Groups	Lowest Income Quintile	Second Income Quintile	Third Income Quintile	Fourth Income Quintile	Highest Income Quintile
Income	0.023***					
	(0.00)					
Inflation	-0.005***	-0.008***	-0.005***	-0.002	-0.006***	-0.009***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP Growth	0.019***	0.015***	0.016***	0.014***	0.028***	0.029***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment	-0.001*	-0.003**	-0.001	-0.003**	-0.002	0.001
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	76,515	14,888	16,234	16,477	14,830	14,086
Countries	30	30	30	30	30	30
Log restricted-likelihood	-26494.28	-5165.20	-5701.38	-5678.34	-5061.89	-5053.20

Notes: $*$ denote statistical significance at the 10%. $**$ denote statistical significance at the 5%, $***$ denote statistical significance at the 1% level. Entries are from mixed-effects linear regression models with countries as levels and with fixed effects for year. The dependent variable is evaluations of the national economy during the last 12 months. The models include controls for age and gender.

To better understand which dimensions of the economy matter for people's evaluations, we regressed sociotropic evaluations of the economy during the last 12 months on the three macroeconomic indicators together with controls for income, age, and gender (using multilevel models at the country level, with fixed effects for election year). The results for the full sample are presented in the leftmost column in Table 1. Both personal income and the macroeconomic indicators—growth, inflation, and unemployment —— contribute to sociotropic economic evaluations. Higher personal income and national growth contribute positively, while inflation and unemployment contribute negatively. The five rightmost columns report results from regressions estimated separately in the five income groups. The results show that the estimate for growth is about twice as large in the high-income group as in the low-income group, whereas unem-

ployment matters more in low-income groups than in high-income groups. The coefficient for inflation is negative in all groups.[4]

Observational data have significant limitations. The analyses presented here lack statistical power due to the limited number of country-years, the survey items do not differentiate between different economic indicators, and historical data only provides a restricted range of conditions since economic dimensions are inherently correlated in real-world data. In addition to that, identification is made more difficult by country-specific characteristics. To better study how voters process different economic signals, we thus turn to experimental designs.[5]

Experimental Designs

Our experimental design addresses the identification challenges just mentioned. By independently manipulating information about growth, unemployment, inflation, and stock market performance, we can identify, a) how voters process each dimension independently, b) how they weigh multiple dimensions simultaneously. and c) how different groups respond to identical economic information. This design isolates voter information processing from institutional complexity and overcomes the fundamental correlation of economic indicators in observational data.

We conducted a number of survey experiments, which we fielded in the USA, Germany, and Sweden via YouGov in 2023.[6] This allows us to examine whether the heterogeneity of the economic vote generalizes to countries with different macroeconomic profiles. Our choice of countries is motivated by covering different political systems and different sized economies within the set of industrialized Western countries.[7]

We designed two sets of experiments, in which we presented the respondents with information about

[4]We present analyses from regressions with incumbent voting as the dependent variable in Table B in the Appendix.

[5]We included survey questions on the macroeconomy in the Swedish National Election Studies (2018). Perceptions of growth positively influence evaluations of the national and personal economy and support for the incumbent, while unemployment shapes vote choice most strongly, and inflation—despite its lower salience—has a greater impact on voting than growth, highlighting voters' ability to distinguish the macroeconomy's effects on personal and national evaluations and voting. For the full results see Appendix Section C.

[6]Additonal information about the data is available in Section D in the Appendix. Participants were recruited via YouGov's panels in the respective countries. The target group was persons aged 18 and older with the right to vote. We used quotas for education, age, gender and region in Sweden and Germany, and quotas for education, age, gender, region and race in the US. These quotas were designed to align with national demographics.

[7]While it is not obvious whether voters in these three countries might react to macroeconomic information in different ways, the few observational analyses that are available suggest that citizens in these countries might differ in their macroeconomic preferences. Previous studies indicate that while US voters appear to be more concerned with growth and Swedish voters care more about unemployment, German voters are strongly averse to inflation (Hibbs and Vasilatos 1982; Scheve and Slaughter 2004). But these studies are rather dated and we have no clear hypotheses about different country specific effects.

the four main dimensions of the macroeconomy (GDP growth, unemployment, inflation, and the stock market). In the first experiment, we only presented respondents with one aspect of the economy, while we presented all aspects of the economy simultaneously in the second experiment. In other words, in the single indicator experiments, participants were exposed to hypothetical scenarios describing how one specific economic indicator changed over the last year. For the multiple indicator experiment, participants were presented with all four indicators simultaneously. We use the first, single-treatment experiment, specifically to study 'macroeconomic reasoning' (what goes with what), while the second experiment is leveraged to evaluate the remaining research questions.

In both the single- and multiple treatment experiments, participants completed four tasks in each experiment (i.e., responded to questions about the hypothetical economy four times with randomly assigned values on the indicator(s) each time). The numbers respondents were presented with were randomized, and the end points represent real historical change rates from the past 40 years of the countries under investigation.[8] The values of the indicators were integers randomly drawn from the following distributions and presented with the following phrasing:[9]

- Imagine that, during the last year, the unemployment rate [increased/decreased] by (-2, -1, ..., 4) percentage point(s)
- Imagine that, during the last year, the inflation rate was (0, 1, ..., 10)%
- Imagine that, during the last year, the GDP [grew/fell] by (-5, -4, ..., 7)%
- Imagine that, during the last year, the stock market [grew/fell] by (-42, ..., 65)%

We included two attention checks to screen out inattentive respondents and did not collect responses from participants who did not pass the screeners. In total, we collected approximately 3,000 attentive respondents from each country. One-third of the participants were enrolled in the experiment that evaluates multiple indicators. The remaining participants were split evenly across four separate treatments, each focusing on a single economic indicator: inflation, unemployment, GDP, and stock market performance. Each of these four treatments included one-sixth of the total participants.

[8]Note that none of the GDP growth, unemployment, or the stock market variables include a no-change condition, e.g., 0% growth

[9]Note that the phrasing of the multiple indicator treatment diverges slightly for easier readibility, however, the range of the variables is the same. The complete phrasing of the experiment can be found in the appendix

This can thus be seen as five experiments (four single-treatment and one multi-treatment) conducted in the three countries. Given that each experiment includes four steps (everyone responded to questions about the hypothetical economy four times), the study consists of 60 experimental rounds in total (five experiments with four rounds in three countries). We thus use variation both within and between respondents, which ensures sufficient statistical power.

In the single-indicator experiment, we asked participants to predict the levels of the three other dimensions they did not receive information about. We asked: "How do you think that the following aspects of the economy developed over the same time period?" and then asked participants to predict the development of the three dimensions they were not shown, on a five-point scale from "Definitely increased" to "Definitely decreased."

After both the single- and multiple-treatment experiments, we asked a number of questions related to our theoretical framework. To evaluate egotropic reasoning, we used the standard question: "Given this economic development, would you say that your own economy got better, stayed about the same, or got worse during this time period?", with response alternatives ranging from "Much better" to "Much worse" on a five-point scale. To study sociotropic reasoning, we asked: "Would you say that the state of the economy in the country got better, stayed about the same, or got worse during this time period?", with the same response alternatives as for the previous question. To study distributive reasoning, we asked respondents the following question: "Based on the description above, would you say that the following groups would have been hurt or would have benefited from this economy?" and specified the groups "the working class," "the middle class," and "the rich," all evaluated on five-point scales from "Definitely hurt" to "Definitely benefited."

To study preferences for economic policies we asked: "Given this economic development, do you think that the government should do more to stimulate the economy or do less to cool down the economy?" with responses options on five point scales from "Stimulate the economy a lot" to "Cool down a lot". And finally to study voting we asked US respondents "Would you vote for a president responsible for this economic development?" with five point response options ranging from "Definitely vote for the president". In Sweden and Germany we instead asked "Would you vote for a party responsible for this economic development?"

A key aspect in both experiments is to examine how the respondent's macroeconomic exposure conditions how they evaluate the economy and how this may affect their vote intentions. In our analysis, we focus

on the respondent's income and labour market position as indicators for their individual socioeconomic status. Income is operationalized by asking respondents to estimate their monthly household income before taxes in the post-experiment survey. We use both the raw indication and a categorization of income based on the respondent's country income quintiles. As for labour market position we asked whether respondents were employed, and if so if they were worried of losing their job in the future. In the analyses we use the categorization "'unemployed", "'employed but worried about losing job" and "employed but not so worried".

Finally to study political knowledge we use a set of factual knowledge questions in each country inspired by the optimal set of questions recommended by Delli Carpini and Keeter (1996). In the US we ask which institution that determine if a law is constitutional, how much of a majority is required to override a presidential veto, which party has most members in the House of Representatives, how many members there are of the supreme court and which party is considered the most conservative at the national level. In Sweden, we ask what the threshold (in percentage) for parties to enter the parliament is, which party Mikael Damberg belongs to, when Sweden introduced women's suffrage, which political level is responsible for primary education, and who the current Minister of Finance is. In Germany, we ask at what percentage of second votes (Zweitstimmen) a party can definitely send representatives to the Bundestag, which of the two votes in Bundestag elections is decisive for the distribution of seats, by whom the Chancellor is elected, which party Katrin Göring-Eckardt belongs to, and which institution is tasked with determining whether laws are constitutional. In all three countries we also ask respondents about their best estimates of the current unemployment rate, inflation rate, GDP growth rate and stock market development.

The full question wordings of the experiment are available in section E in the Appendix.[10]

Results

Macroeconomic Reasoning: Can citizens make inferences about what goes with what in the macroeconomy?

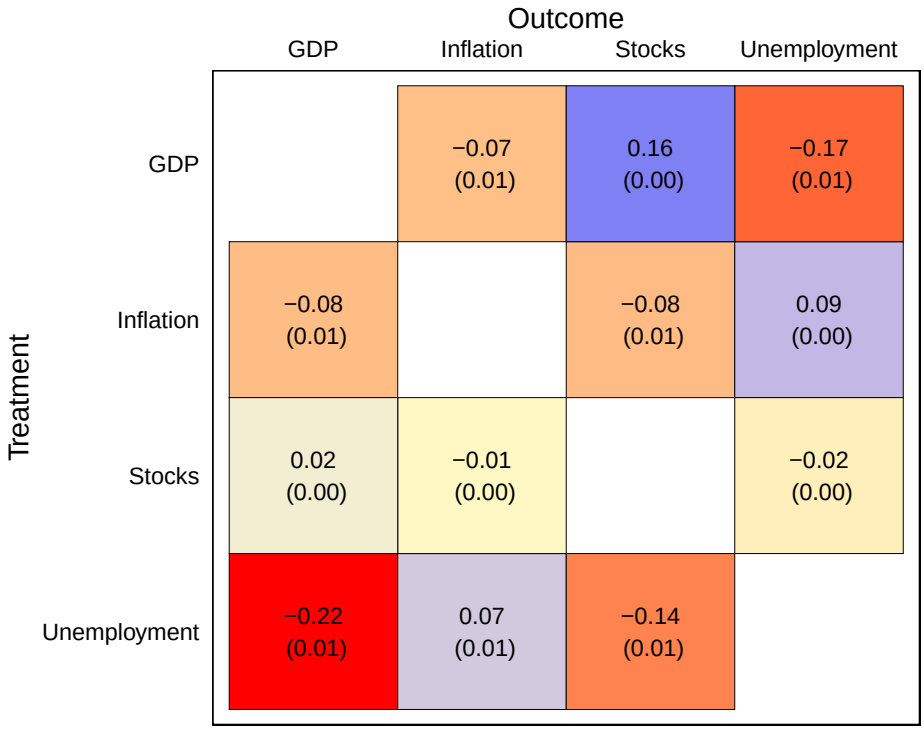
We first analyze how voters understand relationships between different macroeconomic indicators. To mimic imperfect information, we present respondents with one aspect of the economy at a time. After each economic trajectory, we measure the respondent's belief about how the other economic indicators, not

[10]The pre-registration for the experiment is available at `https://aspredicted.org/VS8_7G7`. The study was approved by the Swedish Ethical Review Authority, 2022-02050-01.

shown in the experiment, developed during the same period. To circumvent issues of numerical literacy, we ask about these beliefs using an ordinal five-point response scale, ranging from "decreased a lot" to "increased a lot".

Figure 3 shows unstandardized beta coefficients from regression models on the pooled data from the three countries, with standard errors clustered at the respondent level. Shades of red indicate negative relationships, while shades of blue indicate positive relationships. The intensity of the coloration signals the strength of the association. The results reveal systematic patterns in how voters connect different economic dimensions. We observe strong negative associations between unemployment and both stocks and GDP. Conversely, there are positive associations, especially between GDP and stocks. Notably, treatments providing information about GDP and unemployment generate the strongest associations with the other factors, while information about inflation and, in particular, stocks results in weaker associations when respondents predict the effects on other economic dimensions.

Figure 3: Beliefs about what goes with what in the economy (pooled)



Notes: Unstandardized beta coefficients (with standard errors in parantheses) from regression models using respondent fixed effects.

Citizens believe that good things go together. This is most evident in citizens' inferences about the other macroeconomic indicators when inflation increases. Contrary to any Philips' Curve reasoning, citizens infer that when inflation increases, both GDP growth and the stock market decreases, while unemployment increases. And, vice versa, when unemployment decreases, or GDP growth or the stock market increases, inflation is expected to decrease. Citizens' mental processing of economic information, thus, appears to be more mood or valence based, rather than grounded in orthodox macroeconomic thinking. This is potentially a politically challenging result for incumbents, as voters expect high growth and low unemployment to go together with low inflation. It also suggests that imperfect information about the macroeconomy might have an augmenting effect, as citizens infer that if one part of the macroeconomy is doing poorly, the other parts are likely as well.

In Section A of the online appendix, we provide tables with full results, including those divided by country. The associations point in the same directions across all three countries, with some minor variations. For instance, there is a stronger association between GDP and unemployment in Sweden and Germany, and generally weaker associations between the dimensions in the US data.

Egotropic and Sociotropic Reasoning: Can citizens make inferences about how different aspects of the economy would affect their own personal economy and the national economy?

After examining how voters relate different economic indicators to each other, we now turn to analyze how they process macroeconomic information when evaluating national and personal economic conditions. How do voters integrate economic information into their egotropic and sociotropic assessments? Here after we now turn to the multiple treatment experiment, where information about all four macroeconomic indicators are shown simultaneously.

To study this, we examine how voters evaluate the economy in an environment where we try to approximate ideal information. We leverage this using the multiple-indicator experiment. We present respondents with all dimensions of the economy simultaneously to observe how they evaluate the state of their own and the national economy.

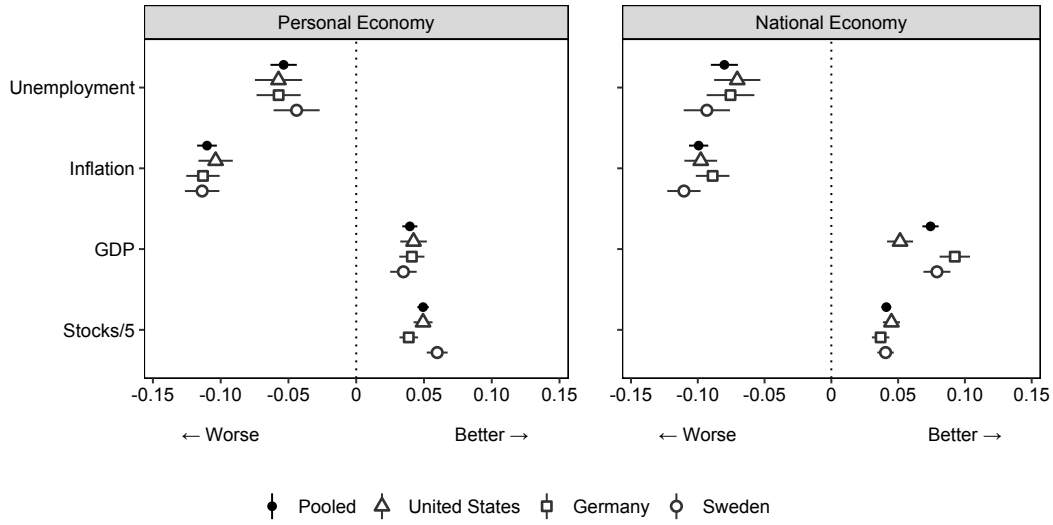
Figure 4 shows the effects of our four economic indicators on the evaluation of the personal economy (left panel) and national economy (right panel). We present the results both from a regression analysis pooling all countries (the black point) and separately for each country (the grey points). Higher values

mean more favorable evaluations.[11]

The results reveal systematic patterns in how economic dimensions shape evaluations. In all three countries, both personal and national economic evaluations are negatively affected by increasing unemployment and inflation while positively influenced by increasing GDP and stock market performance.

To put these effects in perspective: a one percentage point increase in inflation reduces personal economic evaluations by about 0.15 points on the five-point scale, comparable to the negative effect of a two percentage point increase in unemployment. For national evaluations, a one percentage point increase in GDP growth has an effect (0.12 points) similar to the negative impact of a one point rise in unemployment (-0.10 points).

Figure 4: How Macroeconomic Signals Impact Evaluations of the Personal and National Economy



Notes: Unstandardized beta coefficients with errors bars illustrating 95% confidence levels from regression models using respondent fixed effects. The stock market indicator is divided by five to increase legibility.

Two key patterns emerge. First, voters differentiate between personal and national economic conditions in their evaluations. The effect of GDP is especially strong for national economy evaluations but weaker for personal economic assessments. Meanwhile, inflation and stock market effects are about similar across both types of evaluations. The estimates for unemployment are somewhat stronger for the national economy than the personal economy.

[11]The full regression models can be found in section A in the Appendix.

To further substantiate this, Table 2 shows standardized Shapley values for the economic indicators on our two economies. Shapley values shows the marginal improvement of including an independent variable on the regression models' prediction accuracy. Standardized Shapley values normalize these statistics, allowing us to examine the relative contribution of a variable against the other variables in improving the predictive accuracy of the model. For GDP, for instance, we see that the standardized Shapley value only accounts for 10% of the predictive improvement for the personal economy, but 33% for the national economy.

Table 2: Standardized Shapley Values for Personal and National Economy

	Personal Economy	National Economy
Inflation	0.49	0.33
Unemployment	0.06	0.10
GDP	0.10	0.33
Stocks	0.35	0.24

Note: Shapley values for pooled regression models.

Second, inflation consistently has the strongest effect of all economic indicators for both the personal and the national economy. This is evident both from Figure 4 and Table 2. The marginal improvement in predictive accuracy of inflation on the personal economy is of the same magnitude as the other three indicators together. This, very likely, reflects the salience of inflation and the cost of living crisis in recent years.

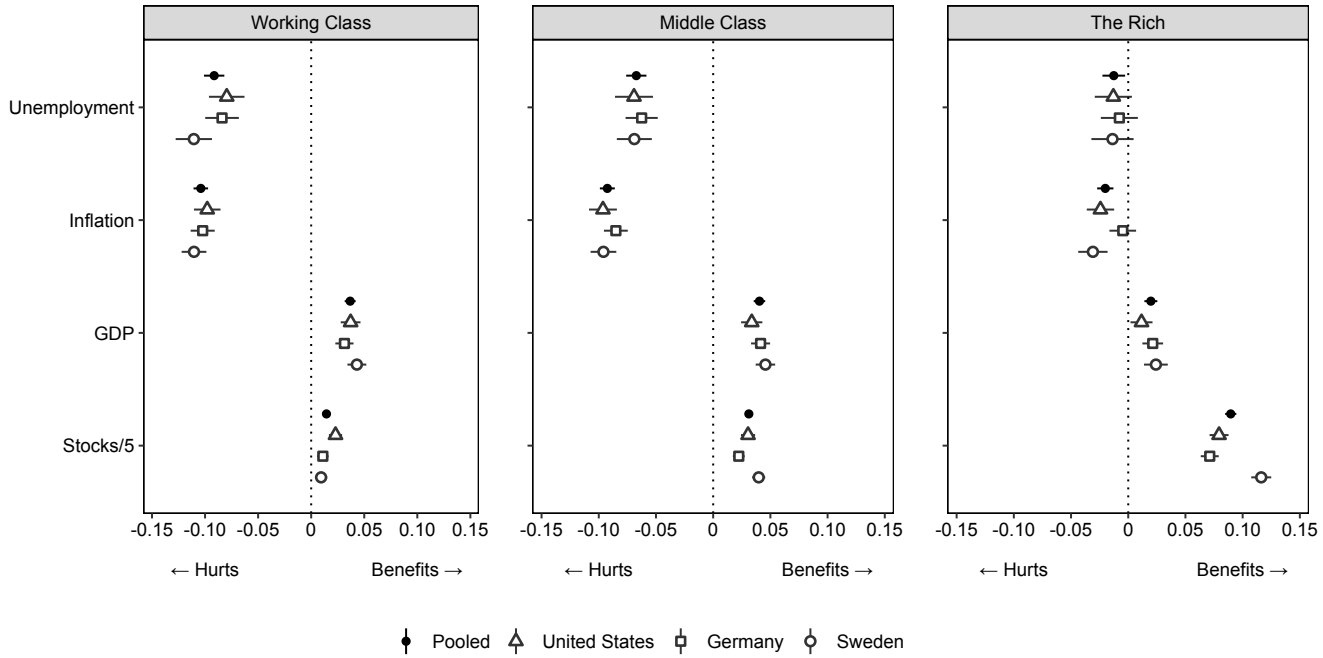
These results reveal systematic patterns in how voters process different economic dimensions. The strongest impact on personal economic evaluations come from inflation and stocks—variables directly tied to household expenses and wealth. In particular GDP, but also to some extent unemployment, show weaker effects on the personal economy, but stronger impact on evaluations of the national economy.

Distributive Reasoning: Can citizens make inferences about how different dimensions of the economy affect different socioeconomic groups?

We have now established that citizens are able to make separate evaluations of the impact of the macroeconomy on the personal and the national economy. Are they also capable of reasoning about how the macroeconomy affects different socioeconomic groups? We examine this by determining how respondents

evaluate the impact of the macroeconomy on 'the working class', 'the middle class', and 'the rich'. Specifically, respondents rated how these groups would be affected by the indicators on a five-point scale ranging from 'definitely hurt' to 'definitely benefited.'

Figure 5: Evaluations of How the Economy Affects Different Socioeconomic Groups



Notes: Unstandardized beta coefficients with errors bars illustrating 95% confidence levels from regression models using respondent fixed effects.

Figure 5 shows systematic variation in how citizens believe that economic dimensions affect different socioeconomic groups. The four dimensions are thought to have distinct different effects across groups. It is believed that GDP growth benefits all three groups more or less similarly. Citizens believe that unemployment has a strong negative effect on the working class, moderate effects on the middle class, and minimal impact on the rich. Inflation is believed to affect the working-class and middle-class more negatively than the rich. Stock market effects show the opposite pattern—citizens believe that they have a minimal impact on the working class, moderate effects on the middle class, and strongest benefits for the rich. These patterns are largely consistent across countries, with some minor expected variations.

Table 3: Standardized Shapley Values for Distributional Effects on Groups

	Working Class	Middle Class	The Rich
Inflation	0.62	0.50	0.01
Unemployment	0.22	0.12	0.00
GDP	0.12	0.15	0.02
Stocks	0.04	0.22	0.97

Note: Shapley values from pooled data.

We present the standardized Shapley values in Table 3. The contribution of inflation to the predictive accuracy is 62% and 50% for the working class and the middle class, respectively, but virtually non-existent for the rich. The reverse is the case for stocks. The rich are perceived to be isolated from much of the macroeconomy, but heavily exposed to the financial market. The working class, on the other hand, are more or less considered to be unaffected by the financial market, and are primarily affected by inflation and unemployment. The middle class falls inbetween these two extremes, yet more closely to the working class. It is perhaps surprising that the unemployment rate appears to be much less important than inflation also for the working and middle class, but this might reflect that the problems of unemployment are concentrated to a minority of the population, while inflation affects more or less all individuals regardless of unemployment risk.

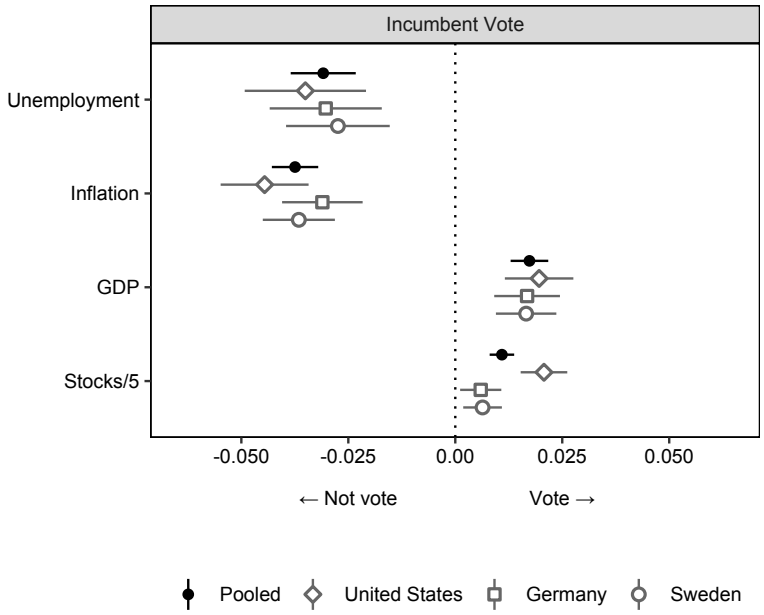
Do the dimensions of the economy affect voting and opinions on economic policies?

Our analyses show systematic patterns in how voters process economic information, but do these evaluations translate into political decisions? Specifically, do they affect vote intentions and opinions on economic policies? To study this, we ask respondents, after having been presented with the treatments, whether they would a) vote for an incumbent government responsible for this economic development, and b) whether they would, based on the information they received, favor more expansive or restrictive economic policies.

We begin by presenting the effects of the treatments on voting intentions. This is also measured on a five-point scale, where higher values equals more positive vote intentions. Figure 6 shows clear effects of macroeconomic indicators on voting intention. Unemployment and inflation are negatively associated with vote intentions for the responsible incumbent government, while growth in GDP, and to a lesser extent, the stock market, are positively associated. The country differences are again generally small, but there

is a stronger association between the stock market and vote intentions in the US than in the two other countries.

Figure 6: Evaluations of Macroeconomic Signals on Incumbent Vote Intention



Notes: Unstandardized beta coefficients with errors bars illustrating 95% confidence levels from regression models using respondent fixed effects.

Of course, one could argue that we here prime the respondents to consider the impact of economic signals on vote intentions, and in a real world contexts, effects might not be this strong. We do of course agree with that, but still believe that the analyses can be useful to study the relative importance of the four economic signals. Table 4 shows the corresponding standardized Shapley values for vote intention. Strikingly, the Shapley values for vote intention differ quite substantially from the Shapley values for evaluating the personal economy. In particular, both unemployment and GDP appears to be much more important when considering how to vote, than when evaluating the impact on the personal economy. Likewise, the development of the stock markets appears to be much less important. This shows how voters process economic information differently when considering personal impacts versus voting decisions. One possible interpretation of these results is that indicators that the incumbent has less control over, such as the stock market, have less influence on voting behavior than on personal economic evaluations. But on the other hand, inflation also has a strong effect on incumbent voting, even though all three countries have

independent central banks with a primary objective of inflation control. However, the government have also increasingly tried to take responsibility for inflation with attempts like the 'Inflation Reduction Act' in the US. Hence the interpretation of how responsibility attribution affects the results is not straightforward.

Table 4: Standardized Shapley Values for Voting and Stimulating the Economy

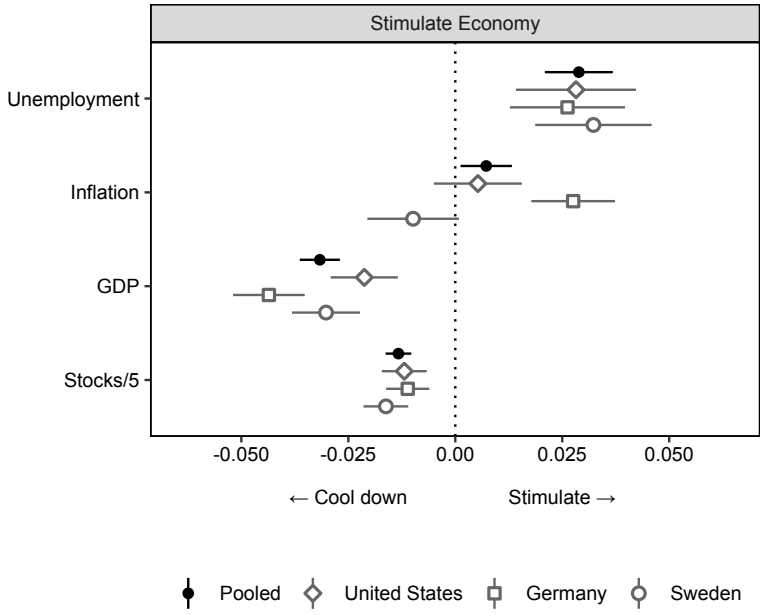
	Vote	Stimulate Economy
Inflation	0.46	0.01
Unemployment	0.16	0.12
GDP	0.24	0.58
Stocks	0.14	0.29

Note: Shapley values from pooled data.

In Figure 7, we shift our focus beyond the evaluation of the incumbent, to examine how voters want incumbents to respond to economic conditions. Specifically, when do they want the incumbent to take action and stimulate the economy, and when should they instead try to cool down the economy?

Here, the results, for the first time, for some indicators, are less homogenous across countries. We should, however, keep in mind that this is a more cognitively demanding task and there are no objective straightforward 'correct answers'. While research on fiscal preferences has found that voters tend to consistently oppose government spending increases (Peltzman 1992), more recent evidence from the Great Recession suggests that support for fiscal contraction depends heavily on the broader economic context (Bojar et al. 2022). Our results show that respondents in all three countries agree that unemployment should lead to economic stimulus, while stock market growth is associated with preferences for less economic stimulus. They also agree that GDP growth should, all else equal, warrant the incumbent to cool down the economy, although there is quite some variation on the size of this effect, with a larger estimate in Germany and the US, while Sweden is found in between. On these three indicators, voters in Germany, the US and Sweden appear to share countercyclical economic preferences.

Figure 7: Evaluations of Macroeconomic Signals on Economic Stimulus



Notes: nstandardized beta coefficients with errors bars illustrating 95% confidence levels from regression models using respondent fixed effects.

Heterogeneity analyses: Do different groups ascribe different weight to the dimensions?

While we have seen quite consistent results across countries, the average estimates reported might still hide underlying heterogeneities. Do voters process economic information differently based on their socioeconomic circumstances or political sophistication? Relating back to Kramer's problem, even though there is only one economy at any point in time, citizens may weight economic dimensions differently based on their circumstances. Consider a scenario where the economy is experiencing jobless growth. Both the unemployed and high-income earners have the same economic information. Despite having the same information, they may evaluate economic conditions differently because they prioritize different dimensions based on their circumstances. Moreover, some individuals, especially those interested in politics, might process macroeconomic information differently when evaluating economic signals.

To analyze this, we perform heterogeneity analyses, focusing on personal vulnerability to becoming unemployed, household income, and political knowledge. In Table 5, we examine results across groups with different levels of job security: respondents who are a) unemployed, b) employed but worried about unemployment, c) employed and not worried about unemployment or d) not participating in the labor

market (the reference category). We present results for all dependent variables analyzed so far, including evaluations of the national and personal economy, distributive effects for the working class, the middle class, and the rich, vote intentions, and opinions on economic stimulus. Overall, we find very few moderating effects of labor market position. For the vast majority of the estimates, there is no moderation in relation to labor market position. If anything, those who are unemployed appear to react less to information on unemployment compared to those not in the labor market. There is essentially no evidence that labor market position affects how voters process different types of economic information.

Table 5: Heterogeneous Effects of Labor Market Status

	Personal Economy	National Economy	Working Class	Middle Class	Rich	Stimulus	Vote
Inflation	-0.12***	-0.11***	-0.11***	-0.10***	-0.03***	0.00	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Unemployment	-0.05***	-0.09***	-0.10***	-0.07***	-0.01	0.04***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP	0.04***	0.08***	0.04***	0.04***	0.02***	-0.04***	0.02***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Stocks	0.05***	0.04***	0.01***	0.03***	0.10***	-0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Inflation × Not so worried	0.02*	0.01	0.01	0.01	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Inflation × Worried	-0.01	0.01	0.02	0.02	0.02	0.03*	0.01
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Inflation × Unemployed	0.02	0.03*	0.02	0.03	0.03*	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × Not so worried	-0.00	0.01	0.01	-0.00	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × Worried	-0.02	0.01	0.03	0.01	-0.01	-0.02	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Unemployment × Unemployed	0.02	0.06**	0.04*	0.03	0.04*	-0.01	0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Inflation × Not so worried	-0.01	-0.01*	0.00	-0.00	0.00	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Inflation × Worried	0.00	-0.01	-0.02	-0.00	0.01	0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Inflation × Unemployed	-0.01	-0.03**	-0.00	-0.01	-0.01	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Stocks × Not so worried	0.01*	-0.00	0.00	0.01	-0.01	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Stocks × Worried	-0.02*	-0.02*	-0.00	-0.01	-0.04***	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Stocks × Unemployed	-0.01	-0.00	0.00	0.01	-0.03**	0.01*	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	11252	11252	11252	11252	11252	11252	11248

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. We categorize respondents as being unemployed, employed but worried about unemployment, employed and not worried about unemployment or not participating in the labor market. Not active in the labor market is the reference category.
$^{*}p < 0.05$,$^{**}p < 0.01$,$^{***}p < 0.001$

A potentially important moderator for what part of the economy matters most to voters is their income.

A high income earner, compared to a low income earner, for instance, will have greater opportunities to save and invest more, making them more dependent on the performance of the stock market and less dependent on price increases. We examine this by partitioning the respondents into three groups: low, middle and high income earners based on their household income relative to other respondents in their country.

Table 6: Heterogeneous Effects of Household Income

	Personal Economy	National Economy	Working Class	Middle Class	Rich	Stimulus	Vote
Inflation	-0.10***	-0.09***	-0.10***	-0.08***	-0.02**	0.01	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment	-0.05***	-0.07***	-0.08***	-0.06***	-0.01	0.02***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP	0.04***	0.07***	0.03***	0.04***	0.02***	-0.03***	0.02***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Stocks	0.03***	0.03***	0.01*	0.02***	0.07***	-0.01***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Inflation × Middle	-0.02	-0.02	-0.02	-0.01	0.01	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Inflation × High	-0.00	-0.01	-0.01	-0.02*	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × Middle	-0.01	-0.02	-0.00	-0.01	-0.01	0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × High	-0.00	-0.03*	-0.02	-0.01	-0.01	0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP × Middle	0.01	0.01	0.00	0.00	0.01	-0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP × High	0.01	0.02	0.02*	0.01	-0.00	-0.01*	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Stocks × Middle	0.03***	0.01*	0.01**	0.02***	0.02***	-0.01	0.01*
	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Stocks × High	0.04***	0.02***	0.01*	0.02***	0.04***	-0.01*	0.01***
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Observations	9716	9716	9716	9716	9716	9716	9712

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. We categorize respondents as having low, middle, or high household income relative to other respondents in their country. Low household income is the reference category.
$^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$

Table 6 shows the results. Here, we see clear evidence of the moderating effect of household incomes. Respondents in the middle, and especially high, household income group, consistently place greater weight on the stock market compared to respondents in the low income group. Importantly, however, they do not appear to place less weight on the other economic indicators. Quite the opposite, the place more weight on GDP growth when inferring the impact on the working class and the national economy and more weight on inflation when inferring the impact on the middle class, compared to the low income group. This result

directly challenges Kamer's problem, questioning whether the variation in the perception of the economy that we observe in any given cross-section is just perceptual error. Instead, this variation might mask meaningful differences in how citizens weight different aspects of the economy.

The results for political knowledge, shown in Table 7, also shows clear evidence of heterogeity. Here, we find that political knowledge significantly affects how voters process economic information. For evaluations of the personal and national economy, increased political knowledge amplifies the negative effects of inflation and unemployment while enhancing the positive effects of stock market performance and GDP growth. These results also indicate that political knowledge moderates how economic indicators affect voting behavior. Higher political knowledge tends to mitigate negative perceptions related to economic downturns (such as inflation and unemployment) and enhance positive perceptions of economic growth indicators (such as GDP and stock market performance).

Table 7: Heterogeneous Effects of Political Knowledge

	Personal Economy	National Economy	Working Class	Middle Class	Rich	Stimulus	Vote
Inflation	-0.14***	-0.14***	-0.14***	-0.13***	-0.03***	-0.00	-0.05***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment	-0.07***	-0.12***	-0.13***	-0.09***	-0.02	0.04***	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP	0.05***	0.12***	0.05***	0.06***	0.03***	-0.05***	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Stocks	0.06***	0.05***	0.01***	0.04***	0.14***	-0.02***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Inflation × Low	0.08***	0.08***	0.10***	0.09***	0.02*	0.01	0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Inflation × Medium	0.03**	0.04***	0.04***	0.03***	0.01	0.02*	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × Low	0.04**	0.09***	0.08***	0.06***	0.01	-0.02	0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment × Medium	0.02	0.04**	0.04***	0.02*	0.00	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP × Low	-0.03***	-0.09***	-0.03***	-0.04***	-0.01	0.04***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
GDP × Medium	-0.01	-0.05***	-0.02**	-0.02***	-0.00	0.03***	-0.02**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Stocks × Low	-0.04***	-0.03***	-0.00	-0.03***	-0.10***	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Stocks × Medium	-0.01*	-0.01*	0.00	-0.01**	-0.05***	0.01*	0.00
	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Observations	11248	11248	11248	11248	11248	11248	11248

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. We categorize respondents as having low, medium, or high political knowledge relative to other respondents in their country. High political knowledge is the reference category.
$^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$

Returning to Fiorina's argument that net changes in personal welfare might guide vote choice, these results offer a insights about the role of the economy in politics. To the extent that economic voting relies on information about how the economy at large is doing, our results suggests that citizens with lower levels of political knowledge might be less apt at using the economic vote. Instead, the citizens who appear to be most skilled in making inferences and evluations based on information on the macroeconomy—citizens with high levels of political knowledge—might be the ones who are least in need of heuristics as these.

Discussion

While much of the economic voting literature often relies on an oversimplified concept of 'one economy', we show that when examining various economic dimensions, a more nuanced picture emerges. The consistent patterns observed across Germany, Sweden, and the United States suggest that voters process economic signals rather similarly, regardless of institutional and cultural differences. Voters process multiple aspects of economic information and their interconnections within the macroeconomy, evaluate how it affects themselves and the national economy, and assess impacts on different socioeconomic groups. The macroeconomic dimensions further influence how voters evaluate incumbent governments and affect voters support for economic policies. And these effects are amplified by political knowledge. While the experimental design isolates specific economic signals in a close to ideal information framework, it is important to keep in mind that in real-world contexts voters do not have such ideal information but rather selective exposure to economic signals. And in addition, real-world settings do of course involve many complicating factors such as competing information and institutional constraints.

It is striking that no single factor, such as GDP or unemployment levels, solely drives people's perceptions of the economy and their subsequent reasoning, attitudes and behavioral intentions. The findings have important implications for our understanding of how voters process information and hold politicians accountable. Manipulating voters with a booming economy immediately before an election may be less straightforward than some might assume, since voters take several economic dimensions into account. If voters did perceive a single economy primarily driven by one factor such manipulation might be easier. However, voters consider multiple factors when processing economic information, making it challenging to optimize all economic dimensions just before an election. For incumbent politicians to receive full credit for a well-managed economy, they must ensure not only steady GDP growth but also robust stock market performance, combined with low inflation and low unemployment. A combination that is challenging to

accomplish.

Our findings about inflation's central role have particular relevance for democratic accountability in an era of independent central banks. While central banks control monetary policy, inflation heavily affects vote intentions. This creates a challenging dynamic: voters punish incumbents for price changes, while central banks pursue price stability independent of electoral pressures. The strong effects of inflation we observe likely reflect contemporary cost-of-living pressures rather than wage-price dynamics. Our experimental setup presents inflation signals without corresponding wage information. Future research could explicitly differentiate between wage-eroding inflation and inflation that is met by corresponding wage increases to understand the phenomenon better. The finding that voters seem to expect that 'good things go together' and do not seem to understand trade-offs such as those highlighted by the Philips Curve is a challenging result for policy makers. If voters expect good things to go together, it might be hard to appreciate that policy makers must make hard decisions where one dimension of the economy is developing well at the expense of another dimension. In the worst case scenario this could pressure policy makers to pursue unsustainable policies that are at odds with each other. This kind of complex processing of different economic signals and their consequences has not been visible studies of economic voting using the dominant 'one economy' approach.

The consistency of our findings across the three countries—the United States, Sweden, and Germany—strengthens the credibility of our results. In most analyses, respondents from these nations react to and draw conclusions about the economy in remarkably similar ways. This consistency holds not only for the main findings but also for distributive reasoning about how the economy affects different socioeconomic groups. The findings are indicative the universal cognitive processes might be more important than institutional and country specific factors. However, we acknowledge that the data were collected during a particular historical period, i.e., the post-pandemic era characterized by high inflation. We encourage further studies on this matter in different settings and under varied economic circumstances.

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Online Appendix—Not Intended for Publication

A Additional analyses

Table A.1: Beliefs about What Goes With What in the Macroeconomy (Pooled)

	Inflation			Unemployment			GDP			Stocks		
Inflation				0.09***			-0.08***			-0.08***		
				(0.00)			(0.01)			(0.01)		
Unemployment	0.07***							-0.22***			-0.14***	
	(0.01)							(0.01)			(0.01)	
GDP		-0.07***			-0.17***							0.16***
		(0.01)			(0.01)							(0.00)
Stocks			-0.01***			-0.02***			0.02***			
			(0.00)			(0.00)			(0.00)			
Observations	6296	6280	6432	6184	6280	6432	6184	6296	6432	6184	6296	6280

Notes: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05$,** $p < 0.01$,*** $p < 0.001$.

Table A.2: Beliefs about What Goes With What in the Macroeconomy (United States)

	Inflation			Unemployment			GDP			Stocks		
Inflation				0.08***			-0.06***			-0.08***		
				(0.01)			(0.01)			(0.01)		
Unemployment	0.07***							-0.16***			-0.11***	
	(0.01)							(0.01)			(0.01)	
GDP		-0.06***			-0.12***							0.14***
		(0.01)			(0.01)							(0.01)
Stocks			-0.01***			-0.02***			0.02***			
			(0.00)			(0.00)			(0.00)			
Observations	2140	2132	2140	2088	2132	2140	2088	2140	2140	2088	2140	2132

Notes: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05$,** $p < 0.01$,*** $p < 0.001$.

Table A.3: Beliefs about What Goes With What in the Macroeconomy (Germany)

	Inflation			Unemployment			GDP			Stocks		
Inflation				0.09***			-0.07***			-0.07***		
				(0.01)			(0.01)			(0.01)		
Unemployment	0.09***							-0.24***			-0.13***	
	(0.01)							(0.01)			(0.01)	
GDP		-0.11***			-0.19***							0.17***
		(0.01)			(0.01)							(0.01)
Stocks			-0.01***			-0.02***			0.02***			
			(0.00)			(0.00)			(0.00)			
Observations	2144	2112	2112	2088	2112	2112	2088	2144	2112	2088	2144	2112

Notes: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$.

Table A.4: Beliefs about What Goes With What in the Macroeconomy (Sweden)

	Inflation			Unemployment			GDP			Stocks		
Inflation				0.11***			-0.09***			-0.09***		
				(0.01)			(0.01)			(0.01)		
Unemployment	0.04**							-0.26***			-0.17***	
	(0.01)							(0.01)			(0.01)	
GDP		-0.05***			-0.19***							0.18***
		(0.01)			(0.01)							(0.01)
Stocks			-0.01***			-0.02***			0.02***			
			(0.00)			(0.00)			(0.00)			
Observations	2012	2036	2180	2008	2036	2180	2008	2012	2180	2008	2012	2036

Notes: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$.

Table A.5: Evaluations of the Economy

	Personal Economy		National Economy		Vote	
Inflation	0.11***	0.10***	0.10***	0.10***	0.04***	0.04***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
Unemployment	0.05***	0.06***	0.08***	0.07***	0.03***	0.04***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
GDP	-0.04***	-0.04***	-0.07***	-0.05***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Stocks	-0.01***	-0.01***	-0.01***	-0.01***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Inflation × DE		0.01		-0.01		-0.01
		(0.01)		(0.01)		(0.01)
Inflation × SE		0.01		0.01		-0.01
		(0.01)		(0.01)		(0.01)
Unemployment × DE		-0.00		0.01		-0.00
		(0.01)		(0.01)		(0.01)
Unemployment × SE		-0.01		0.02		-0.01
		(0.01)		(0.01)		(0.01)
GDP × DE		0.00		-0.04***		0.00
		(0.01)		(0.01)		(0.01)
GDP × SE		0.01		-0.03***		0.00
		(0.01)		(0.01)		(0.01)
Stocks × DE		0.00*		0.00		0.00***
		(0.00)		(0.00)		(0.00)
Stocks × SE		-0.00*		0.00		0.00***
		(0.00)		(0.00)		(0.00)
Observations	11252	11252	11252	11252	11248	11248

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$

Table A.6: Perceptions of the Distributional Impact on Socioeconomic Groups

	Working Class		Middle Class		The Rich	
Inflation	-0.10***	-0.10***	-0.09***	-0.10***	-0.02***	-0.02***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
Unemployment	-0.09***	-0.08***	-0.07***	-0.07***	-0.01*	-0.01
	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
GDP	0.04***	0.04***	0.04***	0.03***	0.02***	0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Stocks	0.00***	0.00***	0.01***	0.01***	0.02***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Inflation × DE		-0.00		0.01		0.02*
		(0.01)		(0.01)		(0.01)
Inflation × SE		-0.01		0.00		-0.01
		(0.01)		(0.01)		(0.01)
Unemployment × DE		-0.00		0.01		0.01
		(0.01)		(0.01)		(0.01)
Unemployment × SE		-0.03*		0.00		-0.00
		(0.01)		(0.01)		(0.01)
GDP × DE		-0.01		0.01		0.01
		(0.01)		(0.01)		(0.01)
GDP × SE		0.01		0.01		0.01
		(0.01)		(0.01)		(0.01)
Stocks × DE		-0.00**		-0.00*		-0.00
		(0.00)		(0.00)		(0.00)
Stocks × SE		-0.00**		0.00*		0.01***
		(0.00)		(0.00)		(0.00)
Observations	11252	11252	11252	11252	11252	11252

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects. $^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$

Table A.7: Preferences for Economic Stimulus

	Stimulus	
Inflation	-0.01*	-0.01
	(0.00)	(0.01)
Unemployment	-0.03***	-0.03***
	(0.00)	(0.01)
GDP	0.03***	0.02***
	(0.00)	(0.00)
Stocks	0.00***	0.00***
	(0.00)	(0.00)
Inflation × DE		-0.02**
		(0.01)
Inflation × SE		0.02*
		(0.01)
Unemployment × DE		0.00
		(0.01)
Unemployment × SE		-0.00
		(0.01)
GDP × DE		0.02***
		(0.01)
GDP × SE		0.01
		(0.01)
Stocks × DE		-0.00
		(0.00)
Stocks × SE		0.00
		(0.00)
Observations	11252	11252

Note: OLS estimates with robust standard errors clustered on respondents and respondent fixed effects.
$^{*}p < 0.05,^{**}p < 0.01,^{***}p < 0.001$

B Additional analyses from CSES data

Tables B.8 and B.9 show results from regression models where incumbent individual-level voting for left- and right-wing governments separately are the dependent variables. Since individual level income is supposed to have a positive effect on voting leftist government but a negative effect on voting for a rightist government we perform the analyses separately. And expected, personal income is positively associated with voting for incumbent leftist governments and negatively associated with voting for rightist incumbent parties. GDP growth is positively associated with voting for both left- and right-wing governments in all income groups. The results for inflation and unemployment are less straightforward. Inflation is negatively associated with voting for both left and right governments. While the estimates for unemployment are small, it seems to be somewhat more negatively associated with voting for left-wing parties. While the results are indicative of the effects of macroeconomic factors on voting, they also illustrate the limitiations of existing desriptive historical data.

The included country-years are from CSES modules 1-5 and include: Australia (1996, 2013), Austria (2013), Belgium (1999), Canada (1997, 2011, 2015), Czech$_R$*epublic*(1996, 2013), *Denmark*(1998), *Finla*

Table B.8: The relationship between incumbent voting (right-governments) and economic indicators.

	All Income Groups	Lowest Income Quintile	Second Income Quintile	Third Income Quintile	Fourth Income Quintile	Highest Income Quintile
Income	0.025***					
	(0.00)					
Inflation	-0.006***	-0.002	-0.007**	-0.010***	-0.010***	0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP Growth	0.015***	0.017***	0.013***	0.016***	0.014***	0.009***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Unemployment	0.001	0.002	0.002	-0.000	-0.001	-0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	63,104	11,248	12,442	13,026	13,129	13,259
Countries	23	23	23	23	23	23
Log restricted-likelihood	-43439.65	-7579.17	-8524.67	-8949.29	-9175.49	-9342.00

Notes: $*$ denote statistical significance at the 10%. $**$ denote statistical significance at the 5%, $***$ denote statistical significance at the 1% level. Entries are from multilevel regression models with countries as levels and with fixed effects for year. The dependent variable is voting for incumbent government (right-governments). The models include controls for age and gender.

Table B.9: The relationship between incumbent voting (left-governments) and economic indicators.

	All Income Groups	Lowest Income Quintile	Second Income Quintile	Third Income Quintile	Fourth Income Quintile	Highest Income Quintile
Income	-0.008***					
	(0.00)					
Inflation	0.003**	0.013***	0.002	0.004	0.003	-0.007**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GDP Growth	0.036***	0.041***	0.032***	0.035***	0.035***	0.026***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Unemployment	-0.001	-0.004	-0.003	0.002	-0.005*	-0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
N	59,361	11,081	12,925	13,048	11,741	10,566
Countries	25	25	25	25	25	25
Log restricted-likelihood	-39374.80	-7374.56	-8674.28	-8650.64	-7880.87	-7006.18

Notes: $*$ denote statistical significance at the 10%. $**$ denote statistical significance at the 5%, $***$ denote statistical significance at the 1% level. Entries are from multilevel regression models with countries as levels and with fixed effects for year. The dependent variable is incumbent voting (left-governments). The models include controls for age and gender.

C Results using survey question on the macroeconomy

Table C.10 shows OLS regression results based on questions from the Swedish National Election Studies (SNES) in 2018, before inflation became politically salient. We included questions on the macroeconomy and asked respondents assessed changes in growth, unemployment, and inflation over the past year on five-point scales. The dependent variables — evaluations of the national and personal economy, and incumbent voting — are scaled 0–1. The models also include controls for age, age squared, gender, income and employment status.

Perceptions of growth have a clear, positive effect on national and personal economic evaluations and on support for the incumbent. Unemployment negatively affects national evaluations and emerges as the dominant factor shaping vote choice. Inflation — despite being less salient at the time — has a stronger impact on voting than growth. These results illustrate a snapshot of how voters processed economic signals in a low-inflation context. These results emphasize the finding that voters can distinguish between the effect of the macroeconomy on the personal and national economy as well as for voting.

Table C.10: Results using survey question on the macroeconomy

	National	Personal	Voting
Growth	0.547***	0.221***	0.193**
	(0.026)	(0.032)	(0.064)
Unemployment	0.163***	0.044	0.406***
	(0.024)	(0.029)	(0.059)
Inflation	0.047	-0.011	0.214**
	(0.032)	(0.037)	(0.078)
Constant	0.071	0.778***	-0.399**
	(0.049)	(0.070)	(0.141)
r2	0.350	0.131	0.060
Observations	1722	1718	1618

Notes: OLS estimates with robust standard errors.
$^{*}p < 0.05, ^{**}p < 0.01, ^{***}p < 0.001$

D Information about the Survey Experiment

The German Data

The survey was conducted pilot study from November 2nd to November 3rd. Main survey were conducted from November 28th to December 19th 2023 via the Internet and the respondents were members of The YouGov's Panel in Germany.

The target group of the survey is German people aged 18+ who agreed to share personal information in relation to this research project. A total size of 4180 interviews were conducted within the target group. 3051 completed the survey and 1129 were screened out, either because they don't have the right to vote, didn't want to participate or failed the attention check.

The following quotas where used:

- Education (Low, Medium, High)
- Age (18-34, 35-54, 55+)
- Gender (Male, Female)
- Region (Nielsen 1: Bremen, Hamburg, Lower Saxony, Schleswig-Holstein; Nielsen 2: North Rhine-Westphalia; Nielsen 3: Hesse, Rhineland-Palatinate, Saarland; Nielsen 4: Baden-Württemberg; Nielsen 4: Bayern; Nielsen 5: Berlin; Nielsen 6: Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt; Nielsen 7: Saxony, Thuringia)

The US Data

The survey was conducted pilot study from May 29th and again August 22nd to August 24th. Main survey were conducted from November 28th to December 18th 2023 via the Internet and the respondents were members of The YouGov's Panel in USA.

The target group of the survey is American people aged 18+ who agreed to share personal information in relation to this research project. A total size of 4441 interviews were conducted within the target group. 3040 completed the survey and 1401 were screened out, either because they don't have the right to vote, didn't want to participate or failed the attention check.

The following quotas where used:

- Gender (Male, Female)
- Education (No HS, HS graduate, Some college, 2-year, 4-year, Post-grad)
- Age (18-29, 30-44, 45-64, 65+)
- Division (New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, Pacific)
- Race (White, Asian, Native American, Mixed, Other, Middle Eastern, Black, Hispanic)

The Swedish Data

The survey was conducted pilot study from August 22nd to August 31st. Main survey were conducted from November 28th to December 20th 2023 via the Internet and the respondents were members of The YouGov's Panel in Sweden.

The target group of the survey is Swedish people aged 18+ who agreed to share personal information in relation to this research project. A total size of 4077 interviews were conducted within the target group. 3002 completed the survey and 1075 were screened out, either because they don't have the right to vote, didn't want to participate or failed the attention check.

The following quotas where used:

- Education (Short/Medium, Long)
- Gender (Female, Male) X Age (18-34, 35-54, 55+) X Region (Stockholm, Norra mellersta Sverige, Norra Sverige, Södra mellersta Sverige, Skåne, Halland och Blekinge)

E Survey instruments

Introduction

The survey is part of a research project at the Department of Political Science at the University of Gothenburg and aims to create a better understanding of how people think about the economy. The survey will take just over 10 minutes to complete. We are interested in your thoughts on different aspects of the economy. We will present a few different hypothetical scenarios about the economic development and ask you to answer some questions about how different groups would fare under these scenarios and how different parts of the economy are connected. There are no wrong answers in this survey. We are simply interested in what conclusions you draw from the information we provide you. However, it is important for the quality of the survey that your answers are well thought through. We therefore ask you to carefully read through all information. We will check the survey responses to ensure that the people participating in the survey have read and understood the instructions. Among the upcoming questions are a couple of simple questions that check this. If you do not answer these questions correctly, it is not certain that we will be able to use your answers in the survey.

Do you agree to participate in this survey?

- Yes
- No

For our research, careful attention to survey questions is critical! We thank you for your care. .

- I understand
- I do not understand

People are very busy these days and many do not have time to follow what goes on in politics or the economy. We are testing whether people read questions. To show that you have read this much answer both "extremely interested" and "very interested."

- Extremely interested
- Very interested
- Moderately interested
- Slightly interested
- Not interested at all

Political Questions US

FOR US RESPONDENTS: Generally speaking, do you usually think of yourself as a Democrat, a Republican, an Independent, or something else?

- Democrat
- Republican
- Independent
- Something else

FOR US RESPONDENTS: Would you consider yourself a strong Democrat/Republican or a not very strong Democrat/Republican?

- Strong
- Not very strong

FOR US RESPONDENTS: Do you think of yourself as closer to the Republican or the Democratic Party?

- Closer to Republican Party
- Closer to Democratic Party
- Neither

FOR US RESPONDENTS: Where would you place yourself on the scale below ranging from 'extremely liberal' to 'extremely conservative'?

- Extremely liberal
- Liberal
- Somewhat liberal
- Neither liberal nor conservative
- Somewhat conservative
- Conservative
- Extremely conservative

Political Questions SWE

FOR SWE RESPONDENTS: Do you usually consider yourself a supporter of any party?

- Left Party
- Social Democrats
- Green Party
- Centre Party
- Liberals
- Christian Democrats
- Moderate Party
- Sweden Democrats
- No
- Other party
- Don't know

FOR SWE RESPONDENTS: Do you feel like a strong supporter of your party?

- Strong supporter
- Not a strong supporter

FOR SWE RESPONDENTS: Is there any party that you feel closer to than the others?

- Left Party
- Social Democrats
- Green Party
- Centre Party
- Liberals
- Christian Democrats
- Moderate Party
- Sweden Democrats
- No
- Other party
- Don't know

Political Questions DE

FOR DE RESPONDENTS: Do you usually consider yourself a supporter of any party?

1. Die Linke
2. Bündnis 90/Die Grünen
3. SPD
4. CDU/CSU
5. FDP
6. AfD
7. No
8. Other party
9. I don't know

FOR DE RESPONDENTS: Do you feel like a strong supporter of your party?

- Strong supporter
- Not a strong supporter

FOR DE RESPONDENTS: Is there any party that you feel closer to than the others?

- Die Linke
- Bündnis 90/Die Grünen
- SPD
- CDU/CSU
- FDP
- AfD
- No
- I don't know

Questions on Labor Market Position

Are you currently out of work or have you been out of work during the last six months?

- Currently employed, not out of work in the last six months
- Currently employed, out of work in the last six months
- Currently out of work
- Not applicable (not active on the labor market)

How worried are you about losing your job in the near future?

- Extremely worried
- Very worried
- Moderately worried
- A little worried
- Not at all worried

How much do you agree with the following statement: "My job is secure"?

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

If you were to lose your job in the near future, how difficult would it be for you and your family/household to get by?

- Very difficult
- Somewhat difficult
- Not very difficult
- Not difficult at all

Demographic Questions

FOR US RESPONDENTS: Which one of these best describes you?

- Asian or Pacific Islander
- Black or African American
- Hispanic or Latino/a
- Native American or Alaskan Native
- White or Caucasian
- Biracial or multiracial
- Other Ethnicity

FOR SWE RESPONDENTS: Indicate which of the following options best describes you:

- I was born in Sweden and both of my parents have Swedish citizenship
- I was born in Sweden and one of my parents has Swedish citizenship
- I was born in Sweden and neither of my parents have Swedish citizenship
- I was not born in Sweden and neither of my parents have Swedish citizenship

DE SWE RESPONDENTS: Indicate which of the following options best describes you:

- I was born in Germany and both of my parents have German citizenship.
- I was born in Germany and one of my parents has German citizenship.
- I was born in Germany and neither of my parents has German citizenship.
- I was not born in Germany and neither of my parents has German citizenship.

Introduction to the treatments

We will now present you with some different hypothetical scenarios about how the economy has developed during the last year. After each scenario, we will ask you a couple of questions about what you make of this economic development, and how you think that a few different groups would be affected by it.

In the scenarios, we will ask you questions about four aspects of the economy: unemployment, GDP, inflation, and the stock market. To make sure that we are on the same page, please read the description of these aspects.

The unemployment rate is a measure of the percentage of the total labor force that is unemployed but actively seeking employment and willing to work. A higher unemployment rate means that more people are unemployed and looking for jobs.

The inflation rate is the rate at which the level of prices for goods and services in general is rising. A higher inflation rate means that goods and services are becoming more expensive, and that purchasing power is decreasing.

GDP (Gross Domestic Product) growth is a measure of the increase in the value of all goods and services produced in a country from one year to another. Higher GDP growth means that more goods and services are being produced.

Stock market growth refers to the increase in the value of the stock market, as measured by a stock market index. Higher stock market growth means that the general value of stocks is increasing.

Please read the following statements carefully and determine for each of them whether the statement is true or false based on the information you just read.

If the inflation rate is 4%, this means that the general level of prices in the economy increased during last year

- True
- False

If the stock market grew by 2%, this means that the value of stocks decreased

- True
- False

If the unemployment rate increased by 5 percentage points, this means that less people are looking for a job now.

- True
- False

If the unemployment rate increased by 5 percentage points, this means that less people are looking for a job now.

- True
- False

Hypothetical Scenarios: Single Treatment

Respondents get one of the four possible treatments:

- **Imagine that, during the last year, the inflation rate was X%, meaning that prices on average increased. Given that the inflation rate was X, how do you think that the following aspects of the economy developed over the same time period?**
- **Imagine that, during the last year, the unemployment rate increased / decreased by X percentage points. Given that the unemployment rate increased / decreased by X percentage points, how do you think that the following aspects of the economy developed over the same time period?**
- **Imagine that, during the last year, GDP grew by / fell by X. Given that the GDP grew by / fell by X, how do you think that the following aspects of the economy developed over the same time period?**
- **Imagine that, during the last year, the stock market fell by / grew by X %. Given that the stock market fell by / grew by X %, how do you think that the following aspects of the economy developed over the same time-period**

We ask about the three dimensions that were not given information about:

- GDP
- Unemployment
- Stock market
- Inflation rate
  - Definitely increased
  - Somewhat increased
  - Stayed about the same
  - Somewhat decreased
  - Definitely decreased

Hypothetical Scenarios: Multiple Treatment

Respondents get the following information:

Imagine that, during the last year:

- **the inflation rate was X%, meaning that prices on average increased / decreased.**
- **the unemployment rate increased / decreased by X percentage points.**
- **GDP grew by / fell by X.**
- **the stock market fell by / grew by X %.**

Questions after both single and multiple treatments

Given this economic development, would you say that your own economy got better, stayed about the same, or got worse during this time period?

- Much better
- Somewhat better
- Stayed about the same
- Somewhat worse
- Much worse

Would you say that the state of the economy in the country got better, stayed about the same, or got worse during this time period?

- Much better
- Somewhat better
- Stayed about the same
- Somewhat worse
- Much worse

Based on the description above, would you say that the following groups would have been hurt or would have benefited from this economy?

- The working class:
  - Definitely hurt
  - Somewhat hurt
  - Neither hurt nor benefited
  - Somewhat benefited
  - Definitely benefited
- The middle class:
  - Definitely hurt
  - Somewhat hurt
  - Neither hurt nor benefited
  - Somewhat benefited
  - Definitely benefited
- The rich:
  - Definitely hurt
  - Somewhat hurt

  - Neither hurt nor benefited
  - Somewhat benefited
  - Definitely benefited

Given this economic development, do you think that the government should do more to stimulate the economy or do less to cool down the economy?

- Stimulate the economy a lot
- Stimulate the economy a little
- Neither stimulate nor cool down the economy
- Cool down the economy a little
- Cool down the economy a lot

FOR US RESPONDENTS: Would you vote for a president responsible for this economic development?

- Definitely vote for the president
- Probably vote for the president
- Not sure whether to vote or not vote for the president
- Probably not vote for the president
- Definitely not vote for the president

FOR SWE RESPONDENTS: Would you vote for a party responsible for this economic development?

- Definitely vote for the party
- Probably vote for the party
- Not sure whether to vote or not vote for the party
- Probably not vote for the party
- Definitely not vote for the party

Knowledge Questions: US

Please give your best estimate on each of the following:

- How high is the unemployment rate currently?
- What is the current inflation rate?
- What was the GDP growth rate during the last year?
- How much did the stock market (Dow Jones Industrial Average) grow or fall last year?

Whose responsibility is it to determine if a law is constitutional or not: is it the President, the Congress, or the Supreme Court?

- President
- Congress
- Supreme Court
- Don't know

How much of a majority is required for the U.S. Senate and House to override a presidential veto?

- They cannot override
- 1/3
- 1/2
- 2/3
- 3/4
- Don't know

Do you happen to know which party had the most members in the House of Representatives in Washington DC prior to the 2022 elections?

- Democrats
- Republicans
- They were tied
- Don't know

Would you say that one of the major parties is more conservative than the other at the national level? If so which party is more conservative?

- Democrats
- Republicans
- Neither
- Don't know

How many members of the U.S. Supreme Court are there?

Knowledge Questions: SWE

Please give your best estimate on each of the following:

- How high is the unemployment rate currently?
- What is the current inflation rate?
- What was the GDP growth rate during the last year?
- How much did the OMX Stockholm 30 grow/fall last year?

What is the threshold (in percentage) for parties to enter the parliament?
Which party does Mikael Damberg belong to?

- Left Party
- Social Democrats
- Green Party
- Centre Party
- Liberals
- Christian Democrats
- Moderate Party
- Sweden Democrats
- Don't know

When did Sweden introduce women's suffrage?

- 1905
- 1921
- 1932
- 1947
- Don't know

Which political level is responsible for primary education?

- State
- County Administrative Board
- Regions
- County Councils
- Municipalities

- Don't know

Who is the current Minister of Finance?

- Mikael Damberg
- Elisabeth Svantesson
- Jimmie Åkesson
- Jessika Roswall
- Anders Ygeman
- Don't know

Knowledge Questions: DE

Please give your best estimate on each of the following:

- How high is the unemployment rate currently?
- What is the current inflation rate?
- What was the GDP growth rate during the last year?
- By how much did the stock market index (DAX) rise or fall last year?

At what percentage of second votes (Zweitstimmen) can a party definitely send representatives to the Bundestag?

Regarding Bundestag elections, which of the two votes is decisive for the distribution of seats in the Bundestag?

- The first vote (Erststimme)
- The second vote (Zweitstimme)
- Both are equally important
- I don't know

By whom is the Chancellor of the Federal Republic of Germany elected?

- The Bundesrat
- The Federal Convention (Bundesversammlung)
- The Bundestag
- The people
- I don't know

Which party does Katrin Göring-Eckardt belong to?

- CDU
- CSU
- SPD
- FDP
- The Greens (GRÜNE)
- The Left (DIE LINKE)
- AfD
- I don't know

Whose task is it to determine whether laws are constitutional?

- Bundestag
- Bundesrat
- Federal President (Bundespräsident)
- Federal Constitutional Court (Bundesverfassungsgericht)
- Federal Court of Justice (Bundesgerichtshof)

Conclusion

Thank you very much for participating in this survey. If you had any issues filling out the survey or if something was hard to understand please let us know by filling out the text box below.