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Belief polarization and Covid-19

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Belief polarization and Covid-19*

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Abstract

We document a remarkable increase in economic belief polarization - disagreement - regarding the future state of the economy across Europe during the Covid-19 pandemic. We find evidence suggesting that belief polarization may have impeded the implementation of pandemic response measures such as social distancing and teleworking as well as policies providing economic support. We find an association between belief polarization on the one hand and trust in the press, fake news, political polarization, and possibly also inequality on the other. These results indicate that belief polarization, by hindering the implementation of crisis response policies, may be one channel which could amplify the negative effects of large or unusual crises.

JEL Codes: E23, E66, E71, I12

Keywords: Polarization, consumer survey, Covid-19

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1 Introduction

Large crises tend to depress confidence and lower spirits. Take for instance confidence among European households which fell significantly during the Covid-19 pandemic as was the case during the previous large-scale global crisis, the Global Financial Crisis of 2008-09. However, and unlike the previous crisis, the Covid-19 pandemic has also brought about a large and unprecedented increase in belief polarization. European households disagreed about the future state of the economy more than ever during the Covid-19 pandemic. Understanding how and why households' views may differ from each other is even more important in an environment with widespread misinformation proliferating in social networks and where views on pandemic policy measures have been politicized. These make it more difficult for the average household to form objectively accurate opinions. In turn, it may affect the political and economic success of crisis mitigation and recovery policies given that these could depend on households' views on the state of the economy. In this regard, belief polarization may be a significant obstacle to the prompt and effective resolution of crises.

In this paper, we investigate the extent to which economic belief have polarized among European households during the Covid-19 pandemic as well as look into potential causes and consequences. As we elaborate in succeeding sections, we use both cross-country and individual survey data on European households' expectations to first document evidence of a large, widespread, and persistent increase in economic belief polarization at the onset of the Covid-19 pandemic. Second, we then show that increased belief polarization is associated with weaker social distancing and teleworking as well as less pandemic economic support policies. Third, we provide evidence suggesting a link between economic belief polarization on the one hand and political polarization, media consumption, and income inequality on the other.

Since the onset of the pandemic, a growing literature has studied the economic impact of the Covid-19 pandemic. For example, several have documented declines in consumption (e.g., [Andersen et al., 2020](#); [Bachas et al., 2020](#)) while others have looked at stock market responses (e.g., [Baker et al., 2020a](#); [Gormsen and Koijen, 2020](#); [Davis et al., 2021](#); [Acharya et al., 2022](#)). A strand of the literature focuses on the expectations channel to the economic transmission of the Covid-19 pandemic as we do in this paper. Most focus on confidence and uncertainty in expectations. For example, [Hodbold et al. \(2021\)](#) find that a Covid-19 induced fall in consumer confidence may in part explain the observed fall in consumption across several sectors during the pandemic. [Altig et al. \(2020\)](#) and [Meyer et al. \(2022\)](#) document an increase in uncertainty across a wide range of measures during the Covid-19 pandemic with one measure of uncertainty being disagreement

among professional forecasters.¹ In turn, [Pellegrino et al. \(2021\)](#) show that Covid-19 induced uncertainty lowers output and economic activity. We contribute to this strand of the literature by focusing on the effects of economic belief polarization - disagreement in economic expectations - among European households.

We start by documenting a large increase in economic belief polarization - expectations about the future state of the economy - by households in Europe since the onset of the Covid-19 pandemic.² This increase in belief polarization is significant at nearly 6 standard deviations above historical averages, widespread, and very persistent. We provide evidence that the increase in polarization is not due to technical disruptions to the survey process. Instead, we find that belief polarization is largely about diverging expectations regarding the economy as a whole and not of perceived individual circumstances. Nevertheless, we do find that personal financial circumstances matter for economic expectations during the pandemic. We also find that while belief polarization has increased nearly everywhere in Europe, there is also significant variation across countries regarding the degree to which polarization has increased.

We then show that increases in belief polarization have non-negligible effects on the successful implementation of pandemic measures. We document evidence that economic belief polarization hindered social distancing and teleworking and was also associated with lower degrees of pandemic economic support policies. We corroborate these findings with evidence from individual-level data wherein we find links between differences in economic expectations with differences in views on the personal and national consequences of the pandemic and on whether pandemic policies limiting personal liberties are justified.

Our next set of results pertain to factors associated with increases in belief polarization in Europe. Consistent with prior evidence in the literature regarding economic expectations, we find evidence suggesting a link between economic belief polarization during the pandemic on the one hand and media consumption, political polarization, and also income inequality on the other. Cross-country comparisons indicate that trust in institutions such as the media and national governments is an important factor which can mitigate belief polarization both before and during the pandemic. Further, lower levels of human capital are associated with higher belief polarization pre-pandemic while higher income inequality is associated with higher belief polarization at the onset of the pandemic. Evidence from individual-level data confirm the link between economic beliefs and media consumption along with fake news in particular, political views, and personal financial difficulties.

¹See [Born et al. \(2020\)](#); [Giordani and Soderlind \(2003\)](#); [Lahiri and Sheng \(2010\)](#); [Rich and Tracy \(2021\)](#) and [Zarnowitz and Lambros \(1987\)](#) for a comparison of forecast uncertainty and disagreement.

²Note that economic expectations refer to households' expectations over the coming year and not about households' beliefs about the current economic situation.

Our findings have important policy implications. Managing economic belief polarization is particularly important in crisis times. As our evidence indicates, the political and economic success of crisis policies may depend on how households view and therefore support them. Furthermore, the effective implementation of policies may also require participation and compliance from the general public which would also be hindered by economic belief polarization. Our results suggest that, through their effects on households' behavior particularly with respect to crisis policy measures, economic belief polarization may be another channel which could amplify the economic and financial impact of large crises such as the Covid-19 pandemic. Consequently, a clear and holistic communication regarding the state of the economy, ensuring that economic views by the general public are grounded on objective and factual information, would be an important component to crisis policy response packages.

[Dietrich et al. \(2022\)](#) also look at disagreement among households during the Covid-19 pandemic although they interpret it as a measure of household uncertainty. Along with another measure of subjective household uncertainty, they show that an increase in disagreement could partially account for the fall in observed output during the pandemic. A similar focus on disagreement among households is found in [Weber et al. \(2022\)](#) who also document an increase in disagreement specifically focusing on inflation expectations. Their evidence, however, points to differences in personal experiences as a key driver in disagreement in aggregate inflation expectations. [Fetzer et al. \(2021\)](#) document dispersion in US household views regarding pandemic risk factors. In this paper, we focus on disagreement in terms of economic expectations among European households and look at not only its effects on specific pandemic response policies, but also on its potential drivers.

Our use of individual survey response data to understand drivers of household economic beliefs relates us to studies such as [Andre et al. \(2022b\)](#) and [Macaulay \(2022\)](#) who show that differences in household economic views are shaped by differences in their mental frameworks about how the economy works. More importantly, [Andre et al. \(2022b\)](#) show that people can still disagree even when given the same information because of differences in their subjective views on how the economy works. Broadly speaking, these differences can be driven by socio-economic factors (see e.g. [Broer et al., 2021](#); [Das et al., 2020](#); [Kuhnen and Miu, 2017](#)) or even political views (e.g., [Benhabib and Spiegel, 2019](#); [Coibion et al., 2020](#); [Gillitzer and Prasad, 2018](#); [Guirola, 2021](#)).³ In particular, [Andre et al. \(2022a\)](#) find that US households' narratives about the economy often contain politically-loaded features.

³See also [Autor et al. \(2020\)](#) on how differences in economic situations can lead to political polarization, [Fos et al. \(2022\)](#) and [Colonnelli et al. \(2022\)](#) for political polarization in firms, as well as [Kempf and Tsoutsoura \(2021\)](#) on political partisanship among credit rating analysts.

Specific to the COVID-19 pandemic, Barrios and Hochberg (2021) find evidence of political partisanship in the perception of pandemic risk and the acquisition of information on the pandemic and its economic effects. Further, Allcott et al. (2020a) and Milosh et al. (2021) document evidence of partisan differences in social distancing, views regarding the risk and severity of the pandemic, and mask-use while Cookson et al. (2020) document a partisan slant to investor optimism during the Covid-19 pandemic. We complement this strand of the literature by documenting evidence that media consumption, political views, and socio-demographic factors including financial difficulties are key factors which could explain diverging economic beliefs by European households during the pandemic.

Our focus on media consumption as an important factor in driving economic belief polarization also relates us to the literature documenting the proliferation of misinformation and *fake news*.⁴ Vosoughi et al. (2018) document an increase in fake news in the *Twitter* social media platform. Barrera et al. (2020) find that fake news was highly persuasive during the 2017 French presidential elections. They also note that while fact checking improved knowledge, it did not change voter attitudes. Gorodnichenko et al. (2021) show that social media can be manipulated due to its echo chamber properties which could enhance political polarization.⁵ Allcott et al. (2020b) find that decreasing *Facebook* use also lowers political polarization. Chopra et al. (2022) find evidence suggesting a politically motivated confirmation bias in the demand for news among US respondents. Similarly and focusing on the Covid-19 pandemic, Faia et al. (2022) document a confirmation bias in the consumption of pandemic-related information and find that the source of information plays a role in how it is received. The proliferation of false information and the politicization of views about the state of the economy can make it difficult for households to form objectively accurate opinions. It can also lead to dispersion in how households behave. Roth and Wohlfart (2020) find that households extrapolate from their macroeconomic expectations to their own personal situations. In turn, these expectations influence both consumption and investment decisions.⁶

Finally, our results on how belief polarization may impede the successful implementation of pandemic measures relate our work to the literature on how views regarding pandemic policies affect household decisions. Using data from a new Euro area-wide survey of households, Georgarakos and Kenny (2022) find that beliefs about fiscal support during the pandemic affects consumer spending even among those that did not actually

⁴See also Carvalho et al. (2011) on fake news shocks and its persistent effects in the stock market.

⁵See e.g., Bowen et al. (2021) who show that belief polarization can occur with endogenous and selective information sharing in networks. See also Gerber et al. (2009); Gentzkow and Shapiro (2011); Falck et al. (2014), and Frick et al. (2022).

⁶See also Heffetz and Ishai (2021) who show that while beliefs about the severity of Covid-19 are relatively accurate, beliefs about likelihood of infection - which are better predictors of behavior - are not.

receive government support. Regarding expectations conditional on monetary policy in the US, [Binder \(2020\)](#) find that less than 40 percent of respondents in a US household survey were aware of the Federal Reserve’s policy response to the pandemic. When informed of the Fed’s policy, households became more optimistic about economic conditions. We complement these findings with results indicating that households’ views and expectations on the state of the economy, particularly in terms of polarization - can also affect the successful implementation of policies. Our results also complement those of [Bian et al. \(2022\)](#) who find that individualism in the United States had a negative effect on social distancing. Our results on the effects of belief polarization on compliance with social distancing and teleworking also relates us to [Baker et al. \(2020b\)](#) and [Goolsbee and Syverson \(2021\)](#) who specifically highlight the role of containment measures in depressing consumer spending.

The rest of the paper is organized as follows. Section 2 describes the data we use and describes the main features of economic belief polarization in Europe during the Covid-19 pandemic. Section 3 focuses on the results regarding the effects on pandemic response measures associated with increased belief polarization. Section 4 reports on factors associated with the increase in belief polarization both across countries and across individuals within countries. Finally, Section 5 concludes with some remarks.

2 Data and measurement of belief polarization

Our main source of data on household expectations is the European Commission’s harmonized monthly consumer survey. Our index of belief polarization is constructed by measuring the degree to which households views differ regarding the state of the economy over the coming year. In additional analyses, we also look into belief polarization in terms of views on unemployment, the households’ own financial situation, and the households’ likelihood to save all over the coming year. Specifically, the index is constructed by calculating the within-country cross-sectional variance of responses by individual households when asked about their views on the general economic situation over the next year for a given survey date and country. To do this, we assign numerical values to qualitative responses where a response of *Much better* or *More* takes the value of 1 and *Much worse* or *Less* takes the value -1.⁷ In contrast, sentiment or confidence indices are calculated as balance scores (the mean of responses).

We complement the data on household expectations with pandemic-related data from

⁷The numerical values are inverted for the question regarding the number of unemployed. Table A.6 in the Appendix provides some illustrations on how confidence (sentiment) and polarization would change given survey responses.

the European Centre for Disease Prevention and Control (ECDC). We also collect indicators of pharmaceutical, non-pharmaceutical and economic support measures from [Hale et al. \(2021\)](#) as well as information regarding mobility from the *Google Community Mobility Reports*.⁸ These are combined with monthly macroeconomic indicators (e.g. industrial activity) from *Eurostat* and country stock returns based on market indices from *Macrobond*, average country characteristics from the World Bank World Development Indicators, and finally average views on a range of issues from the joint European-World Values Survey ([EVS/WVS, 2020](#)). Our main sample covers monthly data on all European Union member countries, two candidate member countries, and the United Kingdom from January 2017 to June 2022. Pandemic related variables only become available in the early months of 2020.

We augment the monthly panel data of household expectations and socio-economic variables with individual response data from two rounds of the Standard Eurobarometer Survey. As our pre-pandemic sample we make use of responses to the Standard Eurobarometer Survey 92.3 conducted on November-December 2019 just before the outbreak of the pandemic. We complement this with responses to the Standard Eurobarometer Survey 93.1 which was conducted on July-August 2020, the first Standard Eurobarometer survey taking place during the pandemic in Europe. The two Standard Eurobarometer surveys, with about 30 thousand respondents per survey round covering all European Union member countries, four candidate member countries, and the United Kingdom, provide us with individual-level information regarding household expectations as well as a host of socio-economic and demographic factors for both pre-pandemic and pandemic periods. Tables [A.1](#) to [A.5](#) in the Appendix provide detailed descriptions of all the variables as well as information regarding the country coverages.

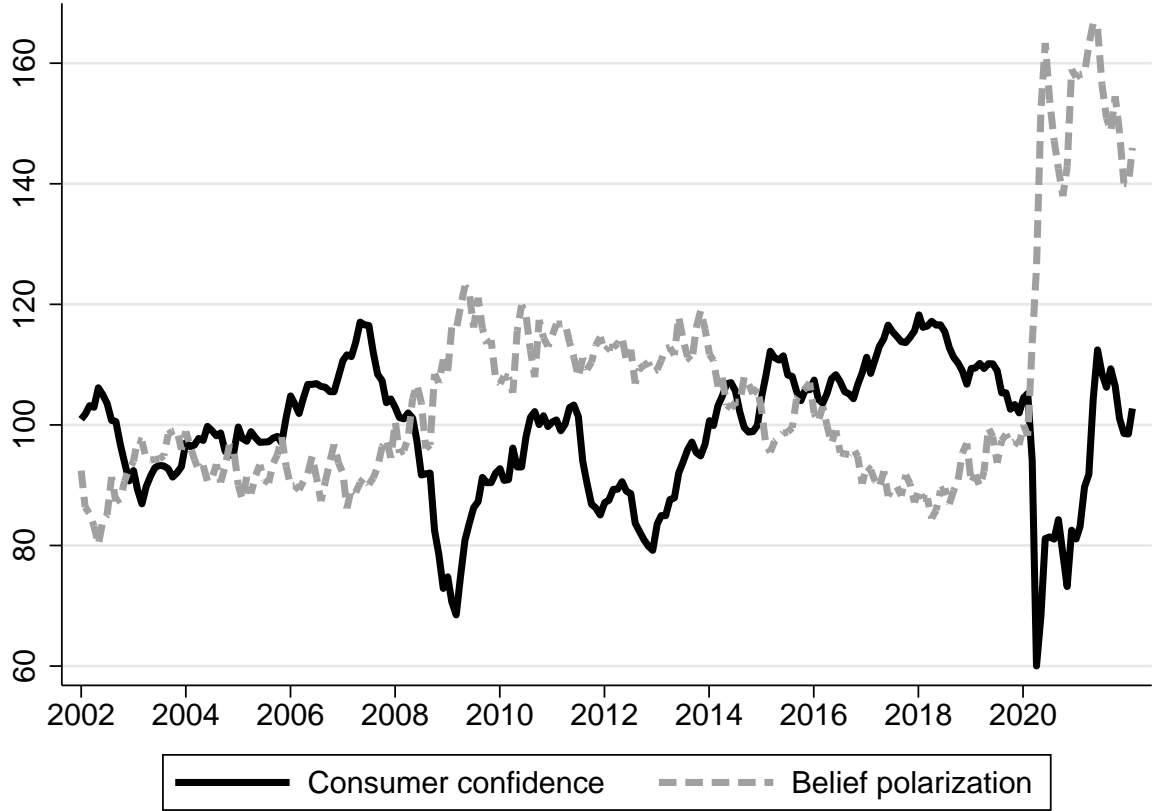
2.1 Belief polarization in Europe

In this section, we first document some stylized facts regarding household belief polarization during the Covid-19 pandemic. Household belief polarization reached all time highs during the onset of the Covid-19 pandemic. Belief polarization increased by nearly 6 standard deviations in the Spring of 2020. Figure [1](#) plots the time evolution of both consumer confidence (a balance score of responses) and belief polarization (cross-sectional dispersion of expectations regarding the economy) over the last two decades.

Such a large increase in belief polarization is unique to the Covid-19 pandemic. When compared to what happened during the 2009 Global Financial Crisis, households lost

⁸Google LLC "Google COVID-19 Community Mobility Reports". <https://www.google.com/covid19/mobility/>. Accessed: 18 November, 2021.

Figure 1: European household beliefs over time



The figures plot household confidence (solid black line) and belief polarization (dashed gray line) for the European Union for the period 2002-mid 2022. Household confidence is the consumer confidence index from the monthly harmonized EU business and consumer surveys and belief polarization is the cross-sectional variance of responses to the question on expectations regarding the general economy. The indices are standardized such that 100 reflects the historical average over the period January 2001-December 2019 and 10 points reflects one standard deviation.

confidence at about similar scales during both periods amounting to about 3 standard deviations below average but household belief polarization did not take place in 2009 to the same degree that it did in 2020. It is evident that the 6 standard deviation increase in belief polarization during the Covid-19 pandemic dwarfs that of previous crises episodes.

The increase in belief polarization is also observed using individual response data from the Standard Eurobarometer surveys. In Table 1, we compare polarization in views regarding the expected and current economic and personal situation in the November-December 2019 survey round (pre-pandemic) against polarization in views in the July-August 2020 wave (Covid-19) of the survey. Similar to what we find in the monthly European harmonized consumer survey, we find increased polarization in expectations regarding the national economy and employment but no significant increase in dispersion for views on personal situations or assessments of the current situation.

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Table 1: Belief polarization in the Eurobarometer survey

Panel A. Polarization (expectations)				
	National economy	Employment country	Job personal	HH Financial situation
Pre-pandemic	0.6790	0.6706	0.5718	0.5990
Covid-19	0.7683	0.7579	0.5817	0.6205

Panel B. Dispersion (current situation)				
	National economy	Employment country	Job personal	HH Financial situation
Pre-pandemic	0.5302	0.5481	0.5624	0.5247
Covid-19	0.5357	0.5430	0.5907	0.5338

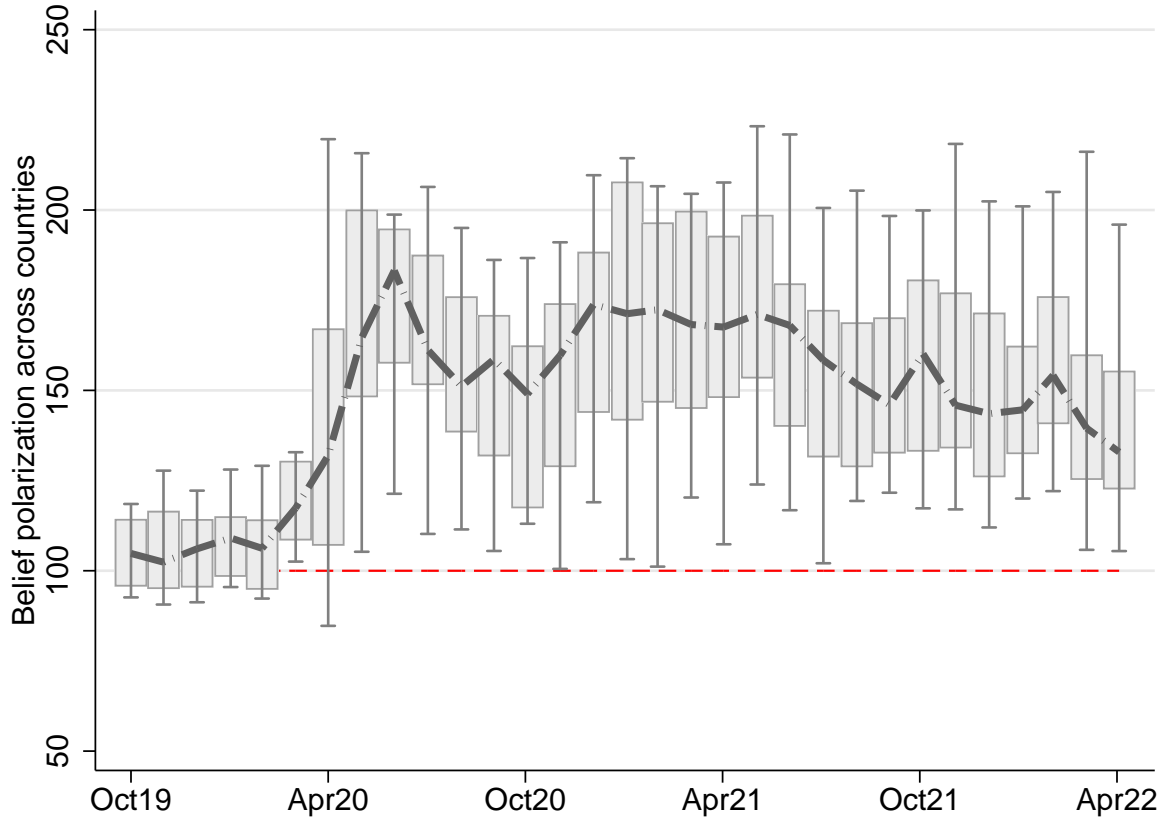
These are averages across countries of (weighted) standard deviations within countries of responses to both expectations about the future and the current situation in terms of four categories, the national economy, employment in the country, personal job situation, and household financial situation. When pertaining to the current situation, the standard deviation of responses within a country are referred to as dispersion of views in Panel B whereas responses to questions regarding expectations about the future are referred to as polarization in Panel A.

While belief polarization has increased nearly everywhere in Europe, there are nevertheless significant differences across countries in terms of the degrees by which polarization has increased since the start of the Covid-19 pandemic. Figure 2 plots the distribution of the change in belief polarization across 30 European countries relative to their average values in 2017-2019 (e.g., a value of 150 in the vertical axis would indicate a belief polarization index which is 50% higher than the 2017-2019 average). The shaded boxes represent the inter-quartile range of belief polarization across countries which covers half of the countries in the sample, the top and bottom *whiskers* represent the 10th and 90th percentiles, and the dashed line represents the median change in belief dispersion. As the figure indicates, not only has belief polarization increased nearly everywhere in Europe at the onset of the Covid-19 pandemic, the cross-country variation in the change in belief polarization has substantially increased as well.

2.2 Belief polarization and uncertainty

Is economic belief polarization an indicator of uncertainty? A strand of the macro-uncertainty literature uses disagreement among professional forecasters as a measure for uncertainty (see e.g. Bloom, 2014; Altig et al., 2020; Meyer et al., 2022). The logic behind this practice is straightforward. If the objectively accurate expectation is marred by uncertainty, then individual and subjective expectations are more likely to deviate from it. Consequently, an increase in uncertainty could manifest as an increase in the dispersion

Figure 2: Household belief polarization across European countries



The figure provides a box plot of the distribution of the change in belief polarization for each month in October 2019 to April 2022 relative to their country-specific averages over 2017-2019 for 30 European countries. The vertical axis plots the change relative to 100 which would indicate a similar value to the 2017-2019 average. The shaded boxes represent the inter-quartile range, the whiskers indicate the 10th and 90th percentiles, and the dashed line represents the median values.

of individual and subjective expectations. While the interpretation of disagreement as uncertainty may be intuitive, a strand of the literature has taken a more nuanced view.

Born et al. (2020) distinguish between disagreement and uncertainty among investors and find that an increase in uncertainty leads to investors paying close attention to new information while an increase in disagreement has the opposite effect. One interpretation of their result requires taking into account subtle differences in the source or type of uncertainty. Fundamental uncertainty would refer to an increase in the way that tomorrow's economic conditions could differ from today's. On the other hand, a weakening of the link between observable indicators and the state of the economy (i.e. *measurement error uncertainty*) would be another type of uncertainty. The former makes new information very valuable while the latter is likely to lead to increased disagreement and less attention to new releases of information. Alternatively, Cookson and Niessner (2020) break down investor disagreement as arising from differences in information and difference in the interpretation of information and find a near-equal split between the two. Similarly, Rich and Tracy (2021) distinguish between disagreement and uncertainty among professional

forecasters documenting a weak relationship between the two which echoes points raised in an earlier study by Zarnowitz and Lambros (1987).

We compare belief polarization with two other measures of household uncertainty, one based on the fraction of households who say they *don't know* when answering the survey questions and another based on responses on whether it is more difficult to predict one's financial situation over the next year. Simple correlations reported in Appendix Table A.7 indicate weak or even no correlation between belief polarization and these uncertainty measures for European households. In light of these, we take an agnostic stance in this paper. While acknowledging that belief polarization may represent an increase in (a particular type or form of) uncertainty, this need not be the only interpretation. In particular, as we show later on, other factors such as political views, media consumption, and personal situations can influence disagreement about the economy in household expectations.

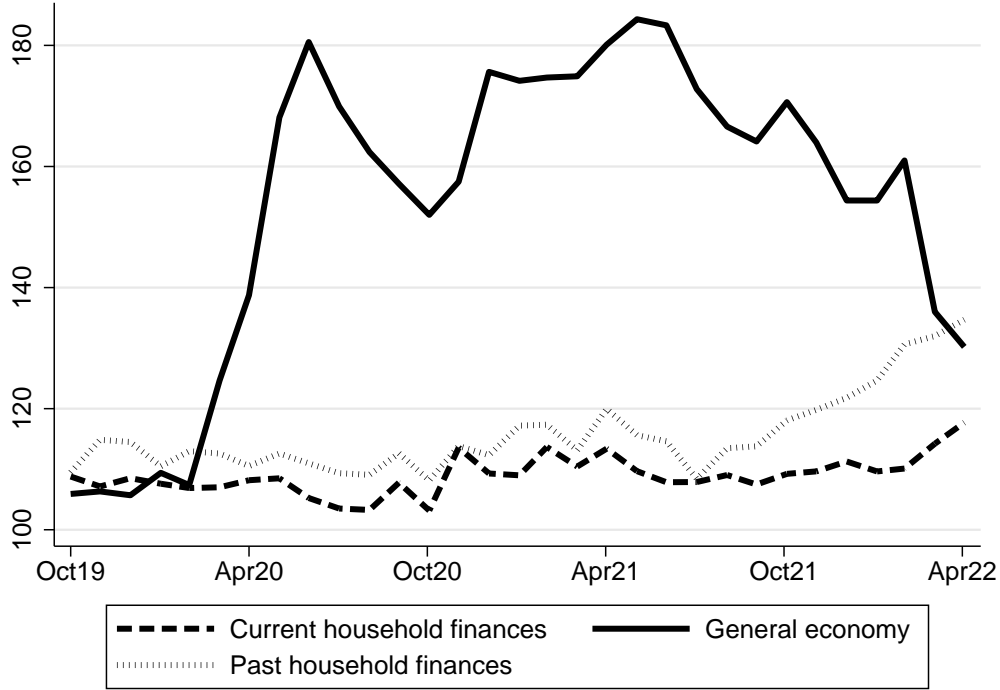
2.3 Robustness to Covid-19 induced survey disruption

As a first step, we address the possibility that the documented increase in belief polarization is an artifact of disruptions to the way the consumer surveys are conducted due to the pandemic. Indeed, some disruptions did occur during the initial phase of the pandemic. For instance, no data is available for Italy in April 2020. Further, the mode of conducting the survey switched from personal or face-to-face interviews to computer-aided telephone or web interviews in Bulgaria, Croatia, Hungary, Latvia, Lithuania, Poland, and the Slovak Republic. Whether or not these disruptions resulted in structural breaks in the time series of household responses needs to be investigated.

A simple test for structural breaks in the dispersion of household views due to disruptions in the way that the surveys are implemented is to check for structural breaks in the dispersion of household views on responses to questions for which the onset of the pandemic is unlikely to have had effects on. One example is dispersion regarding the change in households' financial situation over the *past* year. Figure 3 plots the evolution of the belief polarization index against dispersion on views regarding how households' financial situation is currently and how it has changed in the past year. Clearly, we see no change in the way that households' views are dispersed with respect to the past change in their current and past financial conditions. Households' views on this matter are equally dispersed before and after the onset of the pandemic. This indicates that the large increase in belief polarization regarding expectations of the economy as a whole over the next is unlikely to be the result of a change in the way that the surveys were conducted during the Covid-19 pandemic as the dispersion of responses to other questions about do not

feature similar increases.

Figure 3: Increased polarization and structural break



The figure plots, as a solid line, the European Union average household belief polarization based on the question pertaining to their views on the change in the general economic situation over the next year. Also plotted as dashed and dotted lines, are the dispersion of views regarding the current and change over the past year of households' own financial situations. All indices are standardized such that 100 reflects the 2017-2019 average.

We run several regressions to verify that the increase in belief polarization is indeed not driven by potential structural breaks due to disruptions in the conduct of the consumer survey. Given that it is unlikely that the dispersion of views regarding the question on how households' own financial situation has changed over the past year is affected by the Covid-19 pandemic at its onset, we can use this variable as a control as any increase (or change) in this variable is likely to be due to any disruptions in the way that the survey was conducted. We can then compare how our index of belief polarization evolves relative to this variable around the time of potential structural breaks due to Covid-19 disruptions. Such a comparison, if we account as well for differences across countries and time, essentially gives us a differences-in-differences estimate of whether belief polarization has increased due to the Covid-19 pandemic which would be robust to potential structural breaks in the way that the consumer surveys are conducted. Results reported in Table A.9 in the Appendix indicate that there is indeed a differential increase in our belief polarization measure. This leads us to conclude that the increase in belief polarization we document is not driven by disruptions to the conduct of the consumer survey.

2.4 Polarization in expectations of aggregate or individual conditions

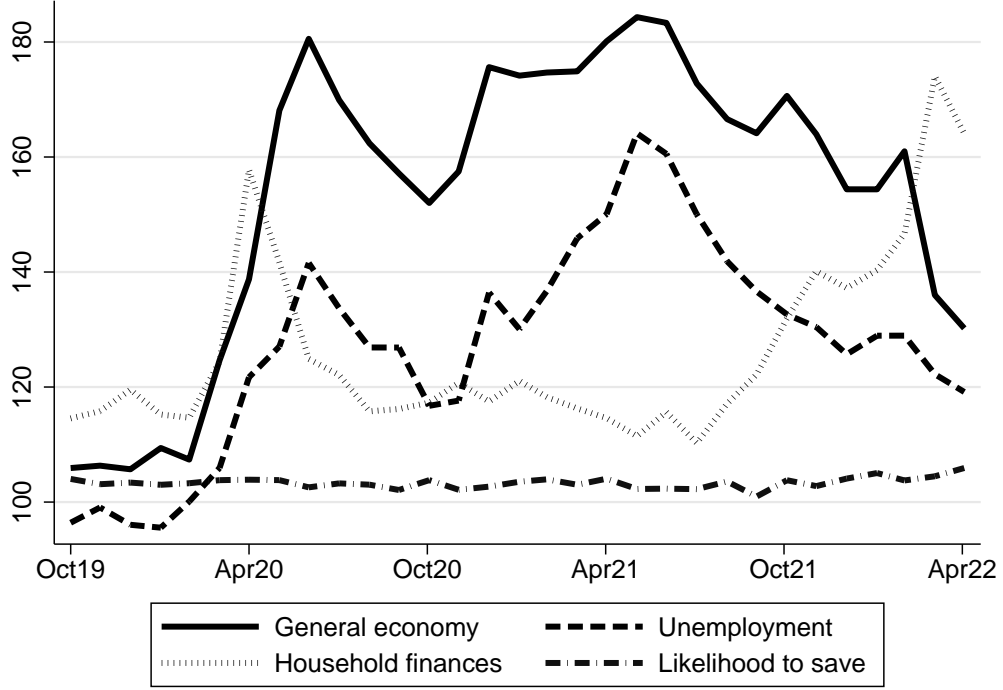
We next want to check whether the increase in belief polarization was due to an increase in the dispersion of individual recent experiences either with respect to general economic conditions or personal situations. [Furceri et al. \(2021\)](#) show that past pandemics have led to increased inequality. Further and using detailed data from a county in Illinois, USA, [Bertocchi and Dimico \(2021\)](#) show that Covid-19 disproportionately affected black women and associate the result with poverty and occupational segregation into healthcare and transportation sectors. Given that belief polarization may also be driven by increases in income and wealth inequality during the Covid-19 pandemic, we next examine whether belief dispersion during the onset of the pandemic is driven by differences in households' individual situations when the pandemic hit. For example, a household where the primary breadwinner has been laid off or faced reduced wage income due to the pandemic (restrictions) may see things differently than a household who has largely been able to secure a stable income stream during the pandemic. A divergence in views may even materialize among those who are able to and have been asked to work from home and those who either by choice or by necessity continued to work under pre-Covid conditions.

Our next set of exercises tests whether the increase in belief polarization is solely driven by an increase in the dispersion of personal circumstances - an increase in inequality. This hypothesis already seems to be unlikely when looking at belief dispersion on specific questions pertaining to the general economic situation vis-a-vis a households' own situation. We find that the increase in belief polarization during the pandemic is largely with regard to views on the general economy and unemployment. [Figure 4](#) plots the evolution of belief dispersion across the responses to four questions, two of which are about general conditions while the other two are about personal situations.

In contrast to the rise in polarization of views regarding the general economy and unemployment, we see no change in the dispersion of views regarding the likelihood to save and only a temporary increase in polarization with regards to views on households own future financial conditions. We do note that polarization regarding household financial situations increased again beginning late 2021. However, this may be driven by the resurgence of (high) inflation in Europe as well as the war in Ukraine in early 2022. The figure shows that the increase in belief polarization at the onset of the pandemic is more evident when households are asked about their thoughts on the general economy relative to when asked about their own household's finances.

We also test whether the increase in belief polarization due to Covid-19, as captured

Figure 4: Polarization regarding the whole economy vis-a-vis personal circumstances



The figure plots average household belief polarization in the European Union across four individual questions in the survey pertaining to their views on (i) the change in the general economic situation over the next year, (ii) the change in the number of unemployed over the next year, (iii) their likelihood of saving over the next year, and (iv) their financial situation over the next year. All indices are standardized such that 100 reflects the 2017-2019 average.

by several dummy variables, is robust to the inclusion of lagged belief polarization, the dispersion of views regarding current and past household conditions, and current and lagged measures of economic activity in terms of industrial production and unemployment rates. We adopt several indicators for the onset of the Covid-19 pandemic such as a dummy variable equal to one from April 2020 onwards, *thresh_ox25* which indicates when the Oxford containment and health index first exceeds the 25th percentile of its country-specific historical distribution over 2020-21, and *thresh_gmr25* which indicates when the Google Mobility index for Transit first falls below the 75th percentile of its historical distribution over February 2020 to October 2021.

Regression results are reported in Table 2. We find that in all cases, the increase in belief polarization around these indicators remains statistically significant even after including control variables related to the dispersion of responses to past and current household financial conditions as well as aggregate conditions in terms of industrial production and unemployment.

We also verify whether belief polarization is a reflection of increased divergence in household conditions driven by differences in the sectoral impact of the Covid-19 pandemic. Specifically, we check whether the differential effect of the pandemic on various

Table 2: The onset of the pandemic and belief polarization

Dep. var.: Polarization: General economic	(1)	(2)	(3)	(4)	(5)	(6)
Dummy: Post April 2020	1.455*** (0.29)	2.742*** (0.32)				
Dummy: Post increase in Oxford containment			0.876*** (0.20)	2.905*** (0.31)		
Dummy: Post drop in Google mobility					0.954*** (0.25)	2.840*** (0.32)
L.Polarization: General economic	0.825*** (0.03)	0.604*** (0.04)	0.878*** (0.02)	0.594*** (0.04)	0.859*** (0.02)	0.597*** (0.04)
Dispersion: Past household finances		0.359*** (0.05)		0.356*** (0.05)		0.380*** (0.05)
Dispersion: Current household finances		0.197*** (0.06)		0.210*** (0.06)		0.180*** (0.06)
Unemployment		0.744** (0.35)		0.751** (0.34)		0.637* (0.35)
L.Unemployment		-0.831** (0.36)		-0.824** (0.34)		-0.673* (0.35)
Industrial production		0.021 (0.03)		0.039 (0.03)		0.036 (0.04)
L.Industrial production		-0.059 (0.04)		-0.074** (0.04)		-0.076* (0.04)
Fixed effects	C	C	C	C	C	C
Observations	1755	1644	1885	1644	1885	1581
Adj. R-sq.	0.859	0.880	0.859	0.882	0.851	0.884

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses. The dependent variable is belief polarization in terms of views regarding the general economy.

sectors (e.g. service sectors, manufacturing, etc.) can account for the observed increase in economic belief polarization. Using estimates of the sectoral impact of the pandemic from [Gourinchas et al. \(2021\)](#) combined with sector shares in terms of value-added to GDP, we construct indices of the dispersion of the sectoral impact of the pandemic across European countries which we then compare with belief polarization at the onset of the pandemic. Results reported in Table A.10 in the Appendix indicate no significant correlation between polarization and the dispersion of the sectoral impact of the pandemic.

Altogether, the results reported in this section indicate that the increase in belief polarization that we observe was largely driven by the dispersion of views regarding the economy as a whole and not necessarily differences in views on how households were personally faring during the pandemic. While these results do not rule out that differences in personal experiences can generate an increase in polarization at the onset of the pandemic, they do indicate that increased dispersion in personal economic situations - inequality - is not the only potential source of increased belief polarization and it is very likely that other factors are also involved.

3 Consequences of belief polarization

In this section, we evaluate the consequences of increased belief polarization during the Covid-19 pandemic. We test several channels through which belief polarization may have affected the implementation and the effectiveness of pandemic response measures. Given recent evidence, we are interested in self-isolation and social distancing measures, economic support policies, as well as Covid-19 vaccinations rates. We pay particular attention to social distancing given that [Baker et al. \(2020a\)](#) have shown that US stock markets were affected by the pandemic through containment measures and social distancing likely due to their disruptive effect on the services sector. [Gormsen and Koijen \(2020\)](#) and [Davis et al. \(2021\)](#) also document similar declines in stock markets in several other countries. We also focus on economic support policies as these directly impact economic conditions. Finally, we also consider vaccinations as a potentially relevant channel given that [Acharya et al. \(2022\)](#) and [Kucher et al. \(2022\)](#) show that news about the progress of a vaccine also had an impact on financial markets.

3.1 Belief polarization and pandemic policies

In order to cleanly account for the impact of belief polarization on the variables of interest, we need to take into account other channels through which the pandemic may affect social distancing, economic support policies, and vaccinations. We control for several factors such as lagged Covid-19 cases and deaths, the testing rate and positivity rate of Covid-19 testing, industrial production, and consumer confidence.⁹ We also include lags of the dependent variable and run dynamic panel data regressions. We consider the effects of belief polarization along three dimensions which exhibited an increase at the onset of the pandemic: views on the general economy, unemployment, and household finances. The results are reported in Table 3.

Focusing first on the combined effects of all three dimensions to belief polarization (reported as sum of coefficients in the bottom row), the results indicate that increased belief polarization resulted in more mobility in the workplace or equivalently less teleworking (column 1), less stringent containment measures (column 2), and less economic support policies (column 3). On the other hand, we find no statistically significant effect of belief polarization on vaccination rates (column 4). Looking at the individual coefficient esti-

⁹See also [Algan et al. \(2021\)](#) who show that trust in scientists is a key factor regarding compliance with non-pharmaceutical measures. They also find, paradoxically, that general trust in others tend to have the opposite effect while trust in government has ambiguous effects. Given the first differencing involved in the dynamic panel regression framework, we do not expect these and other slow-moving or country-specific factors to confound our estimates.

Table 3: Belief polarization and pandemic responses

Dep. var.:	(1) Mobility: workplace	(2) Oxford stringency	(3) Oxford econ support	(4) Cumulative vaccinations
L.Polarization: General economic	-0.228 (0.16)	0.087 (0.20)	0.594*** (0.21)	-0.051 (0.03)
L.Polarization: Unemployment	0.441*** (0.13)	0.138 (0.19)	-0.672*** (0.22)	0.086** (0.04)
L.Polarization: Future household finances	0.513*** (0.16)	-0.641*** (0.19)	-0.690** (0.34)	-0.005 (0.05)
Observations	434	462	462	216
Num. lagged dep.	2	2	2	2
Additional controls	Y	Y	Y	Y
AR(1) p-value	0.000	0.000	0.007	0.001
AR(2) p-value	0.640	0.712	0.881	0.632
Sum of coefficients (std. err.)	0.726*** (0.193)	-0.415** (0.208)	-0.768*** (0.256)	0.030 (0.048)

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses. The table reports Arellano-Bover/Blundell-Bond dynamic panel regressions using data on 30 countries from January 2020 to June 2022. Two lagged dependent variables are included. Additional controls are lagged Covid-19 cases, Covid-19 deaths, the positivity rate of testing, the testing rate, and lagged industrial production and consumer confidence. Sum of coefficients refer to the sum of the three coefficients associated with lagged belief polarization variables.

mates, we find that all three dimensions to belief polarization affect the implementation of economic support policies although polarization regarding the general economy has the opposite sign. Second, we find that polarization regarding unemployment and household finances also have statistically significant positive effects on mobility in the workplace (i.e. less teleworking). Further, we find that polarization regarding unemployment also seems to positively correlate with vaccination rates while polarization regarding household finances is negatively associated with the stringency of containment measures.

3.2 Supporting evidence from individual responses

We complement these results with analysis using individual survey responses from the Standard Eurobarometer 93 survey conducted in July-August of 2020. We want to test the hypothesis that the main channel through which belief polarization hinders the successful implementation of pandemic policies is because polarization lowers public support and participation in said policies. In particular, we are interested in the effect of stated expectations on the economic and unemployment situation (3-point scale with -1 being worse, 0 is same, and 1 is better) on several Covid-19 related questions. We consider six outcome variables. The first variable of interest is on views on whether Covid-19 measures are too much focused on health or the economy. Next, we also consider views on whether policies limiting personal liberties (e.g. containment measures) are justified. Third, fourth, and fifth are views on the perceived consequences of the pandemic on

personal finances, the economy in general, and on whether the pandemic will lead to increased teleworking. Finally, our sixth variable of interest is views on when the country is likely to recover from the pandemic. As control variables, and along with country fixed effects to absorb country differences, we include internet usage, self-reported position on the left-to-right political scale, an index of political interest as well as a multitude of socioeconomic factors such as age, occupation, education, and personal financial conditions.

Table 4: Consequences of belief polarization from individual responses

Panel A. Expectations about the national economy						
Dep. var.:	(1) Covid measures focus	(2) Limit liberties justified	(3) Conseq: Personal finances	(4) Conseq: Country economy	(5) Conseq: Incr. teleworking	(6) When country recover
Expectations: Economic situation	0.000 (0.01)	0.063*** (0.01)	-0.037*** (0.01)	-0.058*** (0.01)	0.016** (0.01)	-0.232*** (0.02)
Fixed effects	C	C	C	C	C	C
Additional controls	Y	Y	Y	Y	Y	Y
Observations	22762	22951	22399	22823	22062	22632
Adj. R-sq.	0.073	0.182	0.257	0.082	0.061	0.111

Panel B. Expectations about the unemployment situation						
Dep. var.:	(1) Covid measures focus	(2) Limit liberties justified	(3) Conseq: Personal finances	(4) Conseq: Country economy	(5) Conseq: Incr. teleworking	(6) When country recover
Expectations: Employment situation	-0.010 (0.01)	0.053*** (0.01)	-0.039*** (0.01)	-0.053*** (0.01)	0.014* (0.01)	-0.212*** (0.02)
Fixed effects	C	C	C	C	C	C
Additional controls	Y	Y	Y	Y	Y	Y
Observations	22555	22744	22211	22622	21890	22431
Adj. R-sq.	0.074	0.180	0.257	0.080	0.061	0.104

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The key explanatory variables are expectations regarding the economic situation and the unemployment situation (3 category scale coded as -1=Worse, 0=Same, 1=Better). The sample of responses is from the Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type (3 categories), reported difficulties in paying bills in the previous year (4 categories), the main source of information regarding Covid, internet use, self-reported position on the Left-Right political scale, political interest, and trust in the police, health and medical staff, and the judicial system. All specifications include country fixed effects.

The results reported in Panel A of Table 4 indicate that personal expectations regarding the economic situation (in deviations from country averages) positively affects views on whether policies limiting personal liberties (i.e. containment measures) are justified (column 2) and whether teleworking will increase due to the pandemic (column 5). Further, and as would be expected, more optimistic expectations about the economic situation also lead to views that the pandemic will not have significant consequences on personal finances and the national economy. Further, optimistic households are also more likely to believe that the country will recover much sooner from the pandemic. We find similar results when considering personal expectations regarding unemployment as the key explanatory variable (Panel B of Table 4).

We also run the same exercise using views on personal financial and job situations. We find that positive views about one's own financial and job situation are associated with more support for policies limiting liberties and that the view that the pandemic is likely to increase teleworking. We also find that those who view their personal situations positively are less likely to think that the pandemic will have consequences on personal finances and that the country will recover sooner from the pandemic. The results from

these regressions are reported in Appendix Table [A.12](#).

3.3 Discussion of results regarding the effects of polarization

The results using individual response data show that disagreement about the expected economic situation and unemployment - belief polarization - leads to disagreement on views regarding policies limiting personal liberties and on the personal and national economic consequences of the pandemic.¹⁰ Consequently, these results suggest that a leading explanation for why economic belief polarization is associated with weaker implementation of pandemic policies is because economic beliefs influence views on whether these policies are necessary in the first place.

Interestingly, we do not find a significant link between economic views on the one hand and views on whether pandemic policies focus too much on either the economy or health. It may be the case that differences in relative personal values regarding health and economic outcomes (not captured by our control variables) confound the estimates. Alternatively, it may also be the case that health and the economy are parallel concerns in people's minds. This is supported by our finding that economic belief polarization also do not have strong and significant effect on vaccinations in the dynamic panel regressions.

To sum up, we show in this section that belief polarization is associated with less teleworking and lower degrees of pandemic economic support policies. We then find suggestive evidence supporting the notion that one explanation for this is that economic beliefs affect views on whether these types of policies were needed in the first place. Therefore, polarization in economic views can lead to lower public support for these policies which in turn are implemented at lower degrees. As the literature has shown, these have important consequences for economic activity and financial markets. For instance [Baker et al. \(2020a\)](#); [Gormsen and Koijen \(2020\)](#), and [Davis et al. \(2021\)](#) link social distancing with stock market outcomes while [Baker et al. \(2020b\)](#) and [Goolsbee and Syverson \(2021\)](#) link social distancing to consumer spending. Further, [Georgarakos and Kenny \(2022\)](#) provide evidence on the effects of (beliefs about) economic support policies and spending. Our evidence suggests that economic belief polarization may be another link higher up in this chain of consequences. Understanding why belief polarization has (differentially) increased across countries is considered in the next section.

¹⁰We find additional support for this line of thinking with a second set of regressions which uses absolute deviations (from the country average) of the dependent variables on absolute deviations of expectations regarding the economic situation. The results reported in Appendix Table [A.11](#) indicate that more extreme views regarding the economic situation (larger absolute deviations from the country average) also lead to more extreme views regarding whether policies limiting personal liberties are justified and more extreme views on the consequences of the pandemic in terms of teleworking.

4 Factors associated with belief polarization

In this section we investigate the role of several factors which may be associated with increases in belief polarization. Specifically, the literature has identified political polarization, personal circumstances, and media consumption as key factors which may affect the way that households perceive the economy. We verify the role that these factors play in shaping belief polarization both before and during the pandemic. We do this in two parts. First, to examine the role of slow-moving country-specific factors, we do cross-country analysis looking at country characteristics that are associated with belief polarization in the pre-pandemic and Covid-19 periods. Second, we use detailed individual-level survey data from two waves of the Standard Eurobarometer survey conducted immediately before and after the onset of the Covid-19 pandemic in Europe to look at other factors while controlling for country differences.

4.1 Cross-country factors associated with belief polarization

We first investigate which factors matter for cross-country differences in belief polarization in non-crisis periods. The first potential factor is income inequality which we approximate with measures of the GINI index and the income share of top 10% from the World Bank (averages over 2014-2018). The second factor for consideration is political polarization. In this regard, we look at the (pre-pandemic) dispersion of self-reported responses to their position on the (left-right) political scale taken from the joint European-World Values Survey within countries as a measure of political polarization in a country. The third potential channel is with regard to trust in institutions which serve as a primary source of pandemic-related information. This is motivated by assertions of *fake news*, a *deep state*, and general misinformation that seem to have gained traction in some areas and for some groups around the globe in recent years. In this regard we look at (pre-pandemic) average trust in the press and the government across countries also from the joint European-World Values Survey. When using these trust variables as explanatory variables, we include average responses to whether most people can be trusted as an additional control variable. In addition, we control for differences in country levels of development, wealth, economic, and demographic structure and institutional quality with Real GDP per capita, the World Bank human capital index, the World Bank Ease of Doing Business index, the share of rural to total population, and the share of Services sector output to GDP. We use 2017-19 average belief polarization as the dependent variable and results are reported in Panel A of Table 5.

Columns 1 to 5 of Panel A in Table 5 introduce our key explanatory variables one at a

Table 5: Cross-country determinants of pre-pandemic polarization

Panel A. Determinants of pre-pandemic polarization						
	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.: Polarization ave. 2017-19						
GINI coefficient	0.093 (0.37)					
Income share top 10%		0.076 (0.62)				-0.394 (0.58)
Dispersion of self position political scale			-7.944 (6.12)			-2.726 (3.38)
Confidence: The Government				-14.241*** (4.78)		-6.167 (5.94)
Confidence: The Press					-17.320*** (3.87)	-13.333** (4.87)
Most people can be trusted				-4.582 (18.59)	-5.952 (9.54)	-15.678 (12.28)
Human capital index	-41.718* (22.74)	-43.676** (19.79)	-63.291** (24.17)	-35.213 (22.89)	-51.338*** (15.63)	-48.028*** (16.01)
Additional controls	Y	Y	Y	Y	Y	Y
Observations	30	30	25	25	25	25
Adj. R-sq.	0.045	0.044	0.297	0.407	0.621	0.612
Panel B. Determinants of pandemic onset polarization						
	(1)	(2)	(3)	(4)	(5)	(6)
Dep.var.: Polarization Spring 2020						
GINI coefficient	0.371 (0.27)					
Income share top 10%		0.452 (0.40)				1.032** (0.43)
Dispersion of self position political scale			3.332 (3.95)			3.664 (3.66)
Confidence: The Government				-16.304*** (4.83)		-17.115*** (5.28)
Confidence: The Press					2.219 (8.34)	2.898 (6.37)
Most people can be trusted				-31.190** (11.27)	-12.719 (17.87)	-20.619* (11.40)
Polarization ave. 2017-19	0.586** (0.25)	0.592** (0.25)	0.561** (0.20)	0.207 (0.14)	0.605 (0.38)	0.425 (0.26)
Human capital index	34.955** (16.21)	28.304* (16.20)	-0.114 (19.84)	-4.199 (14.23)	-3.344 (18.98)	13.779 (21.86)
Additional controls	Y	Y	Y	Y	Y	Y
Observations	30	30	25	25	25	25
Adj. R-sq.	0.251	0.236	0.351	0.582	0.323	0.603

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses. The dependent variable is the average polarization of expectations on the general economic situation over 2017-2019 for Panel A and the maximum polarization of expectations on the general economic situation over April to June of 2020 for Panel B. Note that confidence variables have been recoded to an increasing scale such that a higher value indicates more confidence. Additional control variables are real GDP per capita, share of rural to total population, share of services value added to total GDP, and the World Bank Ease of Doing Business index.

time. We find no statistically significant relationship for variables related to inequality and political polarization. On the other hand, the results from columns 4 and 5 indicate that trust in the press and the national government are associated with lower levels of belief polarization across countries. In the last column, we report results from a regression with all of the key variables (using only one measure for income inequality). The results from column 6 indicate that a lack of confidence in the press is the one remaining statistically significant predictor of high belief polarization across countries. Incidentally, we also find

that higher human capital is associated with lower belief polarization.

Next, we focus on factors related to the *increase* in belief polarization brought about by the Covid-19 pandemic. As before, we are interested in channels relating to income inequality, political polarization, and trust in institutions such as the government and the press. However, when looking at belief polarization in the Spring of 2020, we also include average belief polarization in 2017-2019 as an additional control variable. In the results reported in Panel B of Table 5, we find that income inequality in terms of the income share of the top 10% as well as (lack of) trust in the government correlate well with the increase in belief polarization during the Spring of 2020. These results specifically highlight trust in institutions and possibly income inequality, as important factors in explaining economic belief polarization across countries during the Covid-19 pandemic.¹¹ To dig deeper into the drivers behind individual household economic expectations, we make use of individual-level data in the next section.

4.2 Evidence from individual-level data

In this section, we use individual-level survey responses to two waves of the Standard Eurobarometer survey to determine factors associated with belief polarization. Our goal is to verify at the individual level whether factors related to media consumption and political polarization are associated with relatively extreme views regarding the economic situation. Given that Das et al. (2020) and Kuhnen and Miu (2017) find that macroeconomic expectations are influenced by social status in terms of income and education while Broer et al. (2021) find a link between the accuracy of economic expectations and wealth and employment status, our analysis includes a host of socio-demographic factors as potential additional determinants to European household economic expectations.

We consider both expectations regarding the economic situation (in deviations from the country average) as well as absolute deviations of these expectations from the country average as dependent variables. Our key explanatory variables are trust in various institutions, the main source of Covid-19 information, general media consumption, views about fake news, and political views in terms of both the level of political interest and self-identified position on the left-to-right political scale. As control variables, we include a host of socio-economic factors such as age, education, marital status, occupation, and financial difficulties among others.

The regression results are reported in Table 6. The first two columns have expectations about the economy as the dependent variable while the last two columns use absolute

¹¹See also Table A.13 in the Appendix for the determinants of polarization regarding personal situations.

deviations of expectations. Columns 1 and 3 report results based on data from the July-August 2020 survey round while columns 2 and 4 report results based on data from the November-December 2019 survey round. As there are a significant number of control variables included in our regression specifications, we only report coefficient estimates we would like to highlight in Table 6.¹² The rest of the coefficients are nevertheless available in Appendix Table A.14.

The results reported in the first two columns of Table 6 indicate that trust in the media is associated with a more optimistic outlook before and during the Covid-19 pandemic. Similarly, trust in the national government is associated with more optimistic views in both periods. On the other hand, the results reported in columns 3 and 4 of Table 6 regarding effects on absolute deviations of views indicate find no statistically significant relationship between trust in the media and the extremeness of economic outlooks. However, trust in the national government is associated with more extreme outlooks in the Covid-19 period. These results indicate that the effect of trust in institutions such as the media and the government on expectations of the economy is largely sign-dependent and the magnitude of the effect is not necessarily linear around the country averages.

We also find that for the pre-pandemic survey round estimates in column 2, those who think that fake news appear often tend to have more pessimistic views while at the same time those who think fake news are a problem for the country tend to be more optimistic. Internet use is also associated with more pessimistic views pre-pandemic. Further, focusing on absolute deviations of expectations in column 4, those who agree with the statement that fake news are seen often tend to have more extreme views regarding the economic situation. The same seems to hold for increased internet usage.

These results are indicative of a role for misinformation and possibly confirmation bias in the search for information as an important factor in generating belief polarization. This hypothesis is consistent with estimated coefficients on the main sources of Covid-19 information reported in column 3. Relative to those who don't know their main source of information regarding Covid-19 (the omitted category), those who source their information from various media outlets tend to have more extreme views also relative to those who do not explicitly look for Covid-19 information. Given that knowing your main source of Covid-19 information is indicative of searching for and acquiring Covid-19 information, the result that this correlates positively with more extreme economic expectations indicate that households may be obtaining conflicting information regarding the pandemic. This is supported by the corresponding and statistically insignificant coefficient estimates reported in column 1.

¹²See also Tables A.15 and A.16 in the Appendix for similar regressions focusing on views regarding unemployment and personal situations.

Table 6: Belief polarization determinants from individual responses

Dep. var.:	(1)	(2)	(3)	(4)
Expectations:	Econ. sit.	Absol. Expectations		
TRUST IN INST: MEDIA	0.062** (0.02)		0.008 (0.01)	
TRUST IN INST: MEDIA TRUST INDEX		0.065*** (0.01)		-0.007 (0.01)
TRUST IN INST: NATIONAL GOVERNMENT	0.287*** (0.03)	0.248*** (0.03)	0.043*** (0.01)	0.004 (0.01)
COVID INFO: Television	-0.023 (0.20)		0.252** (0.09)	
COVID INFO: The written press	-0.084 (0.20)		0.260*** (0.09)	
COVID INFO: Radio	-0.073 (0.19)		0.261*** (0.09)	
COVID INFO: Websites	-0.060 (0.20)		0.257*** (0.09)	
COVID INFO: Online social networks	-0.036 (0.19)		0.263*** (0.09)	
COVID INFO: Other (SPONTANEOUS)	-0.033 (0.21)		0.044 (0.17)	
COVID INFO: Did not look	-0.109 (0.21)		0.235** (0.09)	
FAKE NEWS: SEE OFTEN		-0.041*** (0.01)		0.017** (0.01)
FAKE NEWS: EASY TO IDENTIFY		0.013 (0.01)		-0.001 (0.01)
FAKE NEWS: ARE A PROBLEM IN CNTR		0.030*** (0.01)		0.007 (0.01)
FAKE NEWS: ARE A PROBLEM FOR DEMOCRACY		-0.017 (0.01)		-0.008 (0.01)
MEDIA USE: INDEX		0.017 (0.01)		0.006 (0.01)
MEDIA USE: INTERNET	0.001 (0.01)	-0.011** (0.00)	0.002 (0.00)	0.008** (0.00)
MEDIA USE: ONLINE SOCIAL NETWORKS		0.005 (0.00)		-0.003 (0.00)
Left-Right Political scale	0.002 (0.01)	0.005 (0.01)	0.003 (0.00)	0.005* (0.00)
Left-Right Political scale (abs)	0.014** (0.01)	0.009* (0.01)	0.006** (0.00)	0.009** (0.00)
POL INTEREST: Low	-0.119*** (0.03)	-0.078** (0.03)	0.010 (0.01)	0.033** (0.01)
POL INTEREST: Medium	-0.061** (0.03)	-0.048* (0.03)	0.016 (0.01)	0.018 (0.01)
POL INTEREST: Strong	-0.103*** (0.02)	-0.076** (0.03)	0.042*** (0.01)	0.060*** (0.02)
Sample	Pandemic	Pre-pandemic	Pandemic	Pre-pandemic
Fixed effects	C	C	C	C
Additional controls	Y	Y	Y	Y
Observations	22438	18723	22438	18723
Adj. R-sq.	0.071	0.081	0.036	0.055

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The dependent variables are the deviation and absolute deviation of responses to expectations regarding the economic situation (3 category scale coded as -1=Worse, 0=Same, 1=Better) relative to the (weighted) country average response. The pre-pandemic sample refers to Standard Eurobarometer 92 (November-December 2020). The Covid-19 sample refers to Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type category (3 categories), reported difficulties in paying bills in the previous year (4 categories), and trust in the police and the judicial system. Note that False/misleading news variables are agree/disagree questions with higher values indicating agreement and the political scale is a 10 point scale indexed from 1=Left to 10=Right and absolute deviations are relative to the central value of 5. All specifications include country fixed effects.

Finally, we find that those who tend to associate themselves more towards extreme political views on a left-to-right spectrum tend to be more optimistic while stronger political interest seems to lead to more pessimistic views (columns 1 and 2). Further, the corresponding estimated coefficients in columns 3 and 4 indicate that those with relatively extreme positions in the political left-to-right scale also tend to have more extreme economic expectations in both periods. Lastly, more extreme views regarding the economic situation also tend to increase with political interest.

4.3 Discussion of results regarding the causes of polarization

Taken together, the results reported in this section are suggestive of a link between economic expectations on the one hand and trust in institutions which provide pandemic-related information, media consumption, and the perceived proliferation of fake news on the other. We also find evidence suggesting a link between political and economic views such that political polarization may also lead to belief polarization about economic conditions. Further, in support of the notion that people project their personal circumstances on to the economy at large, we also find evidence indicating that personal financial circumstances (and income inequality in the aggregate) affect economic expectations (and belief polarization).¹³

Our results show that societal fragmentation in non-economic spheres such as in politics and media consumption can also lead to polarization in economic views. Our findings on the role of media consumption on the polarization of views regarding economic conditions are consistent with findings in the literature emphasizing confirmation bias and information echo chambers due to fragmented social networks (see e.g., [Faia et al. \(2022\)](#); [Gorodnichenko et al. \(2021\)](#) and [Chopra et al. \(2022\)](#)). Further, our results linking political polarization with economic belief polarization echo those of [Guirola \(2021\)](#) and [Coibion et al. \(2020\)](#). Further, these results may be the intermediate link in the documented relationship between political partisanship and pandemic response behavior (e.g., social distancing and mask use) in [Allcott et al. \(2020a\)](#) and [Milosh et al. \(2021\)](#). Finally, our results indicate that differences in personal financial situations - income inequality - can spill over to differences in economic expectations.

Altogether, heterogeneity in these socio-political-economic factors appear to translate to economic belief polarization. In turn, as we document in the previous section, economic belief polarization can hinder the implementation of crises response policy measures. Con-

¹³See Table [A.14](#) in the Appendix for coefficient estimates on the control variables used in Table [6](#). We find that those who have experiences difficulties in paying bills the previous year also tend to have pessimistic expectations regarding the general economic situation in their countries.

sequently, our findings support the notion that heterogeneity (in various dimensions) can have meaningful aggregate economic consequences especially during large and unusual crisis episodes.

5 Conclusion

The Covid-19 pandemic has had a large impact on many countries around the world with potentially lasting effects. In this paper, we show that an increase in belief polarization is one aspect to the effects of the Covid-19 pandemic in Europe. Using cross-country and monthly data on household economic expectations as well as individual survey responses of European households, we first show that economic belief polarization has sharply increased during the Covid-19 pandemic. The increase in belief polarization is particularly important in crisis times as the political and economic success of proposed crisis mitigation and recovery policies may depend on how households view and therefore support them. In turn, the literature has shown that the implementation of these policies have substantial effects on both economic activity and financial markets.

We document evidence that economic belief polarization matters for pandemic policies such as social distancing and teleworking as well as in the implementation of pandemic economic support policies. Using individual survey responses, we find corroborating evidence linking economic expectations with views on whether pandemic policies limiting personal liberties are justified and on the personal and national economic and financial consequences of the pandemic. Looking into factors that are associated with increases in belief polarization, we find evidence suggesting a link between economic belief polarization and media consumption, political polarization, and also to some extent income inequality. These results show that economic belief polarization through its effects on pandemic policy implementation may be another link between political polarization, media consumption, and inequality on the one hand and the economic consequences of the pandemic on the other.

These results highlight that a crucial aspect to formulating and implementing crisis policy responses is effective and clear communication raising awareness of key issues. In order to get a consensus on what must be done, a crucial first step for policymakers is to garner a consensus on the state of affairs and the likely consequences of action and inaction. Our results suggest that addressing inequality, building strong institutions which the general public hold in high regard and which can facilitate the dissemination of factual and objective information, are highly useful assets to have for crisis management also because of their consequences on belief polarization.

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Appendix

Data sources and descriptive statistics

Table A.1: Descriptive statistics: pandemic variables

Variable	Obs.	Mean	St. dev.	Description	Source
Polarization: General economy	1980	23.49	8.29	Dispersion of responses to 1 year ahead expectation of general economic situation	Authors' calculations, Household survey
Polarization: Unemployment	1980	21.80	7.93	Dispersion of responses to 1 year ahead expectation of unemployment	
Polarization: Household finances	1980	15.97	6.79	Dispersion of responses to 1 year ahead expectation of own finances	
Polarization: Likelihood Save	1980	45.67	10.80	Dispersion of responses to 1 year ahead expectation of likelihood to save	
Consumer confidence	1934	-7.82	17.06	Mean response to four questions	
Dispersion: Current household finances	1980	17.74	5.31	Dispersion of responses to current household financial situation	
Dispersion: Past household finances	1980	17.10	5.42	Dispersion of responses to past household financial situation	
Covid-19 cases	810	549.43	999.60	Monthly average of 14-day Covid-19 cases per 100k	European Centre for Disease Prevention and Control
Covid-19 testing rate	747	5074.85	10311.75	Monthly average of Covid-19 tests per 100k	
Covid-19 positivity rate	746	9.84	12.10	Monthly average percent of positive to total Covid-19 tests	
Vaccinations (1st dose)	508	1.00	1.33	Monthly average of Covid-19 vaccinations to population	Google Mobility Reports
Mobility: workplace	841	-20.23	11.93	Index of mobility in the workplace	
Oxford economic support index	866	60.41	31.95	Index of government economic support policies	Hale et al. (2021)
Oxford stringency index	867	47.92	21.65	Index of strictness of lockdown policies	
Dummy: Post April 2020	1782	0.41	0.49	Dummy variable equal to 1 beginning April 2020	Authors' calculations
Dummy: Post drop in Google mobility	1914	0.42	0.49	Dummy variable equal to 1 the first time mobility falls below 75th percentile	
Dummy: Post increase in Oxford containment	1914	0.42	0.49	Dummy variable equal to 1 the first time containment index goes above 25th percentile	
Industrial production	1846	111.58	11.64	Industrial production index (seasonal and calendar adjusted)	Eurostat
Unemployment	1754	6.81	3.44	Unemployment rate in % (seasonal adjusted)	

The data is monthly and covers the period January 2017 (2020 for some variables) up to June 2022. The sample covers 30 European countries listed in Table A.2. The four questions for the belief polarization and confidence indices are on expectations about the economic situation, unemployment in the country, the household financial situation, and the likelihood to save all over the next year.

Table A.2: Observations by country: pandemic variables

	Polarization: General economic	Covid-19 cases	Mobility: workplace	Oxford economic support index	Oxford stringency index	Industrial production	Unemployment rate
AT	66	30	29	30	30	64	65
BE	66	30	29	30	30	64	65
BG	66	30	29	30	30	64	65
CY	66	30	0	30	30	64	65
CZ	66	30	29	29	29	64	65
DE	66	30	29	30	30	64	65
DK	66	30	29	29	30	64	65
EE	66	30	29	30	30	65	65
ES	66	30	29	30	30	64	65
FI	66	30	29	30	30	64	65
FR	66	30	29	30	30	65	65
GB	66	0	29	30	30	46	0
GR	66	30	29	30	30	64	64
HR	66	30	29	30	30	65	65
HU	66	30	29	30	30	64	65
IE	66	30	29	29	29	0	65
IT	66	30	29	30	30	64	65
LT	66	30	29	30	30	64	65
LU	66	30	29	30	30	64	65
LV	66	30	29	30	30	65	65
MK	66	0	29	0	0	65	0
MT	66	30	29	30	30	64	65
NL	66	30	29	30	30	64	65
PL	66	30	29	30	30	65	65
PT	66	30	29	30	30	65	65
RO	66	30	29	30	30	64	65
RS	66	0	29	29	29	65	0
SE	66	30	29	30	30	64	65
SI	66	30	29	30	30	64	65
SK	66	30	29	30	30	64	65
Total	1980	810	841	866	867	1846	1754

The table reports the number of observations for selected variables by country. Countries are identified with ISO-3166-1 alpha-2 country codes. The data is monthly and covers the period January 2017 (2020 for some variables) up to June 2022.

Table A.3: Descriptive statistics: cross-country variables

Variable	Obs.	Mean	St. dev.	Description	Source
Polarization ave. 2017-19	30	20.69	5.67	Average belief polarization (econ. sit.) 2017-19	Authors' calculations,
Polarization Spring 2020	30	33.72	5.85	Maximum of belief polarization (econ. sit.) April-June 2020	Household survey
Most people can be trusted	25	1.61	0.18	Weighted country average response (1=can be trusted, 2=can't be too careful)	Authors' calculations, EVS/WVS (2020)
Confidence: The Press	25	2.24	0.22	Weighted country average response (4=a great deal, 1=none at all)	
Confidence: The Government	25	2.23	0.24	Weighted country average response (4=a great deal, 1=none at all)	
Dispersion of self position political scale	25	3.35	0.54	Weighted country dispersion of responses (1=left, 10=right)	
Business failure: sectoral dis	28	87.74	6.73	Dispersion of pandemic sectoral impact weighted by 2019 sector value-added shares	Authors' calculations,
Business failure: sectoral ave	28	19.18	0.67	Average pandemic sectoral impact weighted by 2019 sector value-added shares	Gourinchas et al. (2021)
Ease of doing business	30	36.67	20.40	World Bank Ease of Doing Business Index (higher is better), average over 2014-18	Authors' calculations, World Bank WDI
GINI coefficient	30	31.81	3.60	GINI coefficient, average over 2014-2018	
Human capital index	30	0.74	0.06	Human capital index, average over 2014-18	
Income share top 10%	30	24.64	2.10	Income share of the top 10%, average over 2014-18	
Real GDP per capita	30	32514.77	22335.34	Real GDP per capita, average over 2014-18	
Share of rural pop.	30	27.75	13.24	Share of population in rural areas, average over 2014-18	
Share of Services to GDP	30	62.96	7.18	Share of Services value-added to GDP, average over 2014-18	

The data covers country averages (see descriptions) for 30 European countries listed in Table A.2. The confidence in institution indices have been inverted from the original quantification for ease of interpretation.

Table A.4: Descriptive statistics: Eurobarometer survey variables

Variable	Obs.	Mean	St. dev.	Description	Source
Expectations: Economic situation	60220	-0.17	0.75	Expected 1-year ahead economic situation (1=Better,0=Same,-1=Worse)	Eurobarometer 92.3 and 93.1
Absol. Expectations: Economic situation	60220	0.60	0.41	Absolute deviation of expected economic situation	Eurobarometer 92.3 and 93.1
Expectations: Employment situation	59632	-0.14	0.74	Expected 1-year ahead economic situation (1=Better,0=Same,-1=Worse)	Eurobarometer 92.3 and 93.1
Expectations: Own job	55232	0.08	0.58	Expected 1-year ahead own job situation (1=Better,0=Same,-1=Worse)	Eurobarometer 92.3 and 93.1
Expectations: Own financial	60866	0.05	0.61	Expected 1-year ahead own financial situation (1=Better,0=Same,-1=Worse)	Eurobarometer 92.3 and 93.1
Covid measures focus	30945	0.12	0.76	Focus of Covid-19 measures (-1=Economy,0=Balanced,1=Health)	Eurobarometer 93.1
Limit liberties justified	31373	0.51	0.60	Limiting liberties is justified(1=Justified,...,-1=Not justified)	Eurobarometer 93.1
Conseq: Personal finances	30439	0.06	0.73	Covid-19 impact on personal finances (-1=Totally disagree,...,1=Totally agree)	Eurobarometer 93.1
Conseq: Country economy	31035	0.67	0.44	Covid-19 impact on national economy (-1=Totally disagree,...,1=Totally agree)	Eurobarometer 93.1
Conseq: Incr. teleworking	25052	0.58	0.50	Covid-19 increase teleworking (-1=Totally disagree,...,1=Totally agree)	Eurobarometer 93.1
When country recover	30672	3.36	0.96	When will country recovers from pandemic (1=Before end 2020,...,5=Never)	Eurobarometer 93.1
TRUST IN INST: MEDIA	30739	0.45	0.50	Trust in media (1=Tend to trust, 0=Not to trust)	Eurobarometer 93.1
TRUST IN INST: MEDIA TRUST INDEX	31000	-0.12	0.76	Trust in media (1=High, 0=Medium, -1=Low)	Eurobarometer 92.3
TRUST IN INST: NATIONAL GOVERNMENT	56033	0.42	0.49	Trust in government (1=Tend to trust, 0=Not to trust)	Eurobarometer 92.3 and 93.1
TRUST IN INST: POLICE	56897	0.72	0.45	Trust in police (1=Tend to trust, 0=Not to trust)	Eurobarometer 92.3 and 93.1
TRUST IN INST: JUSTICE / LEGAL SYSTEM	56103	0.53	0.50	Trust in justice/legal system (1=Tend to trust, 0=Not to trust)	Eurobarometer 92.3 and 93.1
TRUST IN INST: HEALTH & MEDICAL STAFF	27315	0.80	0.40	Trust in health/medical staff (1=Tend to trust, 0=Not to trust)	Eurobarometer 93.1
COVID INFO	31540	2.25	1.60	Primary source of Covid-19 information (categorical)	Eurobarometer 93.1
MEDIA USE: INDEX	27382	3.35	0.84	Media use index (1=None,...,4=Very high)	Eurobarometer 92.3
MEDIA USE: ONLINE SOCIAL NETWORKS	27148	4.98	2.30	Online social network use (1=Never,...,7=(Almost) everyday)	Eurobarometer 92.3
MEDIA USE: INTERNET	62543	6.04	1.91	Internet use (1=No access,...,7=(Almost) everyday)	Eurobarometer 92.3 and 93.1
FAKE NEWS: SEE OFTEN	25658	2.86	0.79	Fake news seen often (1=Totally disagree,...,4=Totally agree)	Eurobarometer 92.3
FAKE NEWS: EASY TO IDENTIFY	25456	2.72	0.81	Fake news easy to identify (1=Totally disagree,...,4=Totally agree)	Eurobarometer 92.3
FAKE NEWS: ARE A PROBLEM IN CNTR	25228	2.97	0.82	Fake news are a problem in the country (1=Totally disagree,...,4=Totally agree)	Eurobarometer 92.3
FAKE NEWS: ARE A PROBLEM FOR DEMOCRACY	25319	3.18	0.77	Fake news are a problem for democracy (1=Totally disagree,...,4=Totally agree)	Eurobarometer 92.3
Left-Right Political scale	55966	5.28	2.16	Left-right political scale(1=Left,...,10=Right)	Eurobarometer 92.3 and 93.1
Left-Right Political scale (abs)	55966	1.59	1.48	Absolute deviation of left-right political scale from 5	Eurobarometer 92.3 and 93.1
POLITICAL INTEREST INDEX	62544	2.75	0.94	Political interest index (1=Not at all,...,4=Strong)	Eurobarometer 92.3 and 93.1
AGE EXACT	62544	50.69	17.90	Respondent age	Eurobarometer 92.3 and 93.1
AGE EXACT Squared	62544	2889.51	1815.16	Respondent age squared	Eurobarometer 92.3 and 93.1
AGE EDUCATION (RECODED 5 CAT)	62543	2.46	0.97	Age finished education (categorical,j16,16-19,i19,etc)	Eurobarometer 92.3 and 93.1
GENDER	62544	1.54	0.50	Gender (categorical,Male,Female,Other)	Eurobarometer 92.3 and 93.1
Respondent occupation (recoded)	62543	4.70	2.18	Occupation (categorical, Self-employed,Manager,Manual, etc)	Eurobarometer 92.3 and 93.1
Social class	62543	2.35	1.02	Self reported social class (categorical)	Eurobarometer 92.3 and 93.1
Marital status	61378	2.70	0.96	Marital status (categorical)	Eurobarometer 92.3 and 93.1
Children status	61378	0.38	0.50	Children status (categorical)	Eurobarometer 92.3 and 93.1
TYPE OF COMMUNITY	62540	1.96	0.80	Type of local community (categorical)	Eurobarometer 92.3 and 93.1
DIFF BILLS	62543	2.58	0.79	Difficulties paying bills in past year (1=Most,...,3=Never)	Eurobarometer 92.3 and 93.1

Unit of observation is an individual respondent (unweighted). The sample covers respondents from 32 European countries listed in Table A.5. When constructing country averages, post-stratification weights are used. Some variables have been recoded for ease of interpretation.

Table A.5: Observations by country: Eurobarometer survey variables

	Expectations: Economic sit.	Internet use	Social media	Fake news: See often	Left-Right Pol. scale	Covid-19 Info source
AL	2052	2089	0	0	2056	1043
AT	1988	2028	1018	985	1858	1010
BE	1980	2020	1006	988	1980	1008
BG	1897	2096	1033	904	1896	1057
CY	974	1010	504	474	676	505
CZ	1961	2022	1005	938	1942	1009
DE	2974	3054	1510	1424	2926	1514
DK	1948	2012	1016	967	1938	990
EE	1926	2007	980	889	1762	1006
ES	1936	2020	1002	943	1789	1012
FI	1990	2029	992	963	1921	1028
FR	1901	2020	1004	989	1667	1006
GB	2002	2163	1000	921	1999	1153
GR	1997	2024	1007	991	1751	1016
HR	2027	2043	1009	968	1909	1030
HU	2007	2070	1008	985	1975	1059
IE	1968	2018	1005	955	1893	1005
IT	2005	2050	1009	956	1714	1027
LT	1949	2013	1000	930	1496	1005
LU	1036	1060	509	461	947	550
LV	1896	1996	981	924	1580	996
ME	1051	1070	0	0	971	541
MK	1972	2078	0	0	1826	1052
MT	837	1003	481	427	774	502
NL	1978	2010	1002	980	1983	1004
PL	1934	2039	1004	921	1803	1031
PT	1880	2059	997	909	1743	1053
RO	2095	2170	1050	1013	1944	1112
RS	2021	2090	0	0	1747	1073
SE	2046	2077	1021	998	2055	1054
SI	1969	2019	1004	952	1547	1012
SK	2023	2084	991	903	1898	1077
Total	60220	62543	27148	25658	55966	31540

The table reports the number of observations for selected variables by country. Countries are identified with ISO-3166-1 alpha-2 country codes. The data covers the Eurobarometer 92.3 and 93.1 survey rounds.

Illustration of how the Belief Polarization index is constructed

Table A.6: Confidence and Belief Polarization from survey responses

Panel A. Increase in Confidence			
Answer category	Num. value	% of Respondents	
Much Better	1.0	0	25
Somewhat Better	0.5	25	50
About the Same	0.0	50 \Rightarrow	25
Somewhat Worse	-0.5	25	0
Much Worse	-1.0	0	0
Confidence (Mean)		0.0	0.5
Polarization (Variance)		12.5 \Rightarrow	12.5
Panel B. Increase in Belief Polarization			
Answer category	Num. value	% of Respondents	
Much Better	1.0	0	10
Somewhat Better	0.5	25	25
About the Same	0.0	50 \Rightarrow	30
Somewhat Worse	-0.5	25	25
Much Worse	-1.0	0	10
Confidence (Mean)		0.0	0.0
Polarization (Variance)		12.5 \Rightarrow	32.5
Panel C. Decrease in Confidence and increase in Belief Polarization			
Answer category	Num. value	% of Respondents	
Much Better	1.0	0	0
Somewhat Better	0.5	25	10
About the Same	0.0	50 \Rightarrow	50
Somewhat Worse	-0.5	25	25
Much Worse	-1.0	0	15
Confidence (Mean)		0.0	-0.2
Polarization (Variance)		12.5 \Rightarrow	18.7

Correlation of belief polarization and uncertainty

Table A.7 reports correlations between economic belief polarization and two measures of household uncertainty derived from the same household survey. *EC-Unc* is based on responses to the question on whether it is easier or more difficult to predict a household’s financial situation over the next year. *HUN* is based on the fraction of respondents who say they *don’t know* to four questions for which we also construct belief polarization indices. The survey question underpinning *EC-Unc* was introduced in May 2021 although it has been pilot tested in several countries since 2019. The pilot sample refers to data from five countries (Albania, Austria, Finland, Luxembourg, and Poland) for which a consistent number of observations has been available since 2019.

Table A.7: Correlations between household belief polarization and uncertainty in Europe

Full sample		Pilot sample		Rollout sample	
HUN	EC-Unc	HUN	EC-Unc	HUN	EC-Unc
0.010	0.221	0.317	0.041	0.137	0.279
(1254)	(619)	(210)	(185)	(419)	(419)

Full sample covers the period January 2019-June 2022 for 30 countries. Pilot sample restricts observations to 5 countries (Albania, Austria, Finland, Luxembourg, and Poland). Rollout sample restricts observations to begin on May 2021. Number of observations in parentheses.

Test for Covid-induced structural breaks in the survey

We construct several variables to capture potential dates for a structural break. First, *covid_mar20* and *covid_apr20* are dummy variables which take the value of one for all countries beginning on March 2020 and April 2020 respectively. The variables *covid_first001*, *covid_first100*, and *covid_first1k* take the value of one for the month where a given country had its first, 100th, and 1000th confirmed Covid-19 cases. The variables *thresh_ox50* and *thresh_ox25* take the value of one beginning the month where the Oxford containment and health index exceeds the 50th percentile and 25th percentiles respectively of its country-specific historical distribution (covering the years 2020-2021). Similarly *thresh_gmr50* and *thresh_gmr25* are dummy variables which take the value of 1 beginning the month that the Google Mobility index for Transit has fallen below the 50th and 75th percentile respectively of its country-specific historical distribution (covering February 2020 onwards). Table A.8 reports the number of countries in each month from January to September 2020 for which our structural break variables take the value of one. For instance, the table shows that 8 countries had confirmed cases in February 2020 and 24 countries had over 100 by March. On the other hand, 19 countries exceeded the 25th percentile of the Oxford containment index by March of 2020 while 28 countries went below the 75th percentile of the Google Mobility index for transit.

Table A.8: Structural break indicators

	covid_mar20	covid_apr20	covid_first001	covid_first100	covid_first1k	thresh_ox50	thresh_ox25	thresh_gmr50	thresh_gmr25
Jan2020	0	0	5	0	0	0	0	0	0
Feb2020	0	0	8	0	0	0	0	0	2
Mar2020	27	0	26	24	11	5	19	26	28
Apr2020	27	27	27	26	21	27	29	29	29
May2020	27	27	27	27	23	27	29	29	29
Jun2020	27	27	27	27	24	27	29	29	29
Jul2020	27	27	27	27	25	27	29	29	29
Aug2020	27	27	27	27	27	27	29	29	29
Sep2020	27	27	27	27	27	27	29	29	29

The table reports the number of countries (out of 27 for Covid cases variables, 30 for the Oxford containment thresholds, and 29 for the Google Mobility thresholds) for which our structural break dummy variables take the value of one for each month from January to September 2020.

Table A.9 reports regression results where we regress the dispersion of households view on the interaction between an indicator on whether the dispersion is with regard to our index or households views on their past financial situation and the structural break dummy variables. All regression specifications include country and time fixed effects. The interaction between the indicator for our index and the structural break variables is a difference-in-difference estimate on whether our index is higher relative to our control measure for dispersion (views on past financial situation) after the potential structural break date. These results provide evidence indicating that the increase in belief dispersion captured by our index is not merely the result of a potential structural break in the way that the consumer surveys are conducted.

Table A.9: Belief polarization vs. structural break: Diff-in-diff regressions

Dep. var.: Belief polarization	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Index	1.807** (0.91)	2.329*** (0.75)	1.855* (1.11)	2.148** (0.87)	2.713*** (0.73)	3.217*** (0.77)	2.130** (0.94)	1.867* (1.01)	1.928* (1.01)
Index \times covid_mar20	4.137*** (0.92)								
Index \times Dummy: Post April 2020		3.713*** (0.77)							
Index \times covid_first001			4.019*** (1.12)						
Index \times covid_first100				3.792*** (0.88)					
Index \times covid_first1k					3.304*** (0.75)				
Index \times thresh_ox50						2.909*** (0.80)			
Index \times Dummy: Post increase in Oxford containment							3.986*** (0.95)		
Index \times thresh_gmr50								4.405*** (1.02)	
Index \times Dummy: Post drop in Google mobility									4.319*** (1.03)
covid_first001			-2.313** (1.05)						
covid_first100				-2.748* (1.61)					
covid_first1k					-1.215 (0.76)				
thresh_ox50						-1.221 (1.02)			
Dummy: Post increase in Oxford containment							-1.034 (1.61)		
thresh_gmr50								-4.740 (3.02)	
Dummy: Post drop in Google mobility									2.856 (2.10)
Fixed effects	C,T	C,T	C,T	C,T	C,T	C,T	C,T	C,T	C,T
Observations	1593	1593	1593	1593	1593	1695	1695	1694	1694
Adj. R-sq.	0.702	0.704	0.700	0.701	0.702	0.608	0.610	0.647	0.647

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses. The dependent variable is the dispersion of responses to either the four questions corresponding to our belief polarization index or responses to the question regarding the household's change in financial situation in the past year. The dummy variable index takes the value of 1 if the dispersion measure is our belief polarization index. Note that the coefficients on the non-interacted structural break dummy variables are difficult to interpret given that all regressions include time fixed effects. For the same reason, the non-interacted dummy variable is omitted when there is no cross-country variation. Describe explanatory variables.

Sectoral impact of the pandemic and belief polarization

We assess whether the differential effects of Covid-19 across households, approximated with differences in the effects of Covid-19 on business failure rates across sectors as estimated in [Gourinchas et al. \(2021\)](#), can account for the increase in belief dispersion. We first construct a country-specific dispersion of Covid-19 effect on business failures by calculating the cross-sectoral average and dispersion of the Covid-19 impact in terms of business failure rates from Table 3 of [Gourinchas et al. \(2021\)](#) using 2019 value-added shares to total output as sector weights. We then compare how this indicator of the disproportionate impact of Covid-19 across sectors for each country matches up with belief polarization during the Spring of 2020. Results are reported in Table A.10 where we also include average belief polarization from 2017-2019 and the weighted average (across sectors) Covid-19-induced business failure rates as controls. We do not find evidence that cross-sectoral variation in the effects of Covid-19 on business failures can explain the increase in belief polarization across countries. If anything, looking at the results in column (3) of Table A.10, it seems that a larger impact in terms of the weighted average sectoral business failure rates is associated with lower belief polarization.

Table A.10: Belief polarization and pandemic impact sectoral dispersion

	(1)	(2)	(3)
Dep. var.: Polarization Spring 2020	Economy	Unemployment	HH Financial
Business failure: sectoral dis	-0.121 (0.16)	0.011 (0.31)	0.181 (0.21)
Business failure: sectoral ave	-0.236 (1.46)	-5.572** (2.65)	-2.087 (1.26)
Ave. Polarization 2017-19: Econ	0.401* (0.19)		
Ave. Polarization 2017-19: Unemp		0.895*** (0.24)	
Ave. Polarization 2017-19: HH Fin.			0.649*** (0.16)
Observations	28	28	28
Adj. R-sq.	0.030	0.253	0.275

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses.

Consequences of absolute economic expectations on pandemic measures

Table A.11: Consequences of belief polarization from individual responses

	(1) Covid measures focus (abs)	(2) Limit liberties just. (abs)	(3) Conseq.: Personal (abs)	(4) Conseq.: Economy (abs)	(5) Conseq.: Teleworking (abs)	(6) When country recover
Absol. Expectations: Economic situation	-0.012 (0.01)	0.022*** (0.01)	0.010 (0.01)	0.002 (0.01)	0.010* (0.01)	-0.174*** (0.04)
MEDIA USE: INTERNET USE	0.002 (0.00)	0.001 (0.00)	0.002 (0.00)	0.006*** (0.00)	0.002 (0.00)	-0.005 (0.01)
Left-Right Political scale (abs)	0.004 (0.01)	0.004** (0.00)	0.005*** (0.00)	0.003 (0.00)	0.006*** (0.00)	-0.010 (0.01)
EDUC: Up to 15	0.021 (0.04)	0.013 (0.02)	-0.002 (0.03)	0.005 (0.01)	0.029 (0.02)	-0.107 (0.08)
EDUC: 16-19	-0.007 (0.03)	0.005 (0.02)	-0.006 (0.02)	0.001 (0.01)	0.011 (0.02)	-0.163*** (0.06)
EDUC: 20+	-0.025 (0.03)	0.017 (0.02)	-0.003 (0.02)	0.001 (0.01)	0.026 (0.02)	-0.124** (0.05)
EDUC: Still studying	0.009 (0.04)	0.018 (0.02)	0.000 (0.02)	0.009 (0.01)	0.025 (0.02)	-0.077 (0.06)
EDUC: No education	0.072 (0.04)	-0.006 (0.03)	-0.000 (0.03)	-0.031 (0.03)	0.011 (0.03)	-0.188 (0.13)
DIFF BILLS: Most of the time	0.071*** (0.02)	-0.032** (0.01)	0.070*** (0.01)	0.039*** (0.01)	-0.005 (0.01)	0.172*** (0.06)
DIFF BILLS: From time to time	0.052*** (0.01)	-0.020*** (0.01)	0.002 (0.01)	0.004 (0.01)	-0.018*** (0.01)	0.032 (0.03)
DIFF BILLS: Almost never/never	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
DIFF BILLS: Refusal (SPONT.)	-0.009 (0.05)	0.041* (0.02)	0.033 (0.02)	0.060* (0.03)	0.004 (0.02)	0.345 (0.23)
Fixed effects	C	C	C	C	C	C
Additional controls	Y	Y	Y	Y	Y	Y
Observations	22762	22951	22399	22823	22062	22632
Adj. R-sq.	0.117	0.090	0.076	0.082	0.044	0.082

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The key explanatory variable is the absolute deviation of responses to expectations regarding the economic situation (3 category scale coded as -1=Worse, 0=Same, 1=Better) relative to the (weighted) country average response. The sample of responses is from the Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type (3 categories), reported difficulties in paying bills in the previous year (4 categories), the main source of information regarding Covid, political interest, and trust in the police, health and medical staff, and the judicial system. All specifications include country fixed effects.

Effects of personal expectations on Covid-19 measures and consequences

Table A.12: Consequences of personal expectations from individual responses

Panel A. Expectations about own financial situation						
	(1) Covid measures focus	(2) Limit liberties justified	(3) Conseq: Personal finances	(4) Conseq: Country economy	(5) Conseq: Incr. teleworking	(6) When country recover
Expectations: Own financial	0.018 (0.02)	0.062*** (0.01)	-0.113*** (0.02)	-0.022 (0.01)	0.027*** (0.01)	-0.177*** (0.03)
Fixed effects	C	C	C	C	C	C
Additional controls	Y	Y	Y	Y	Y	Y
Observations	22826	23023	22477	22882	22099	22682
Adj. R-sq.	0.074	0.178	0.263	0.072	0.062	0.088
Panel B. Expectations about personal job situation						
	(1) Covid measures focus	(2) Limit liberties justified	(3) Conseq: Personal finances	(4) Conseq: Country economy	(5) Conseq: Incr. teleworking	(6) When country recover
Expectations: Own job	0.030 (0.02)	0.058*** (0.01)	-0.091*** (0.02)	-0.014 (0.01)	0.033*** (0.01)	-0.159*** (0.03)
Fixed effects	C	C	C	C	C	C
Additional Controls	Y	Y	Y	Y	Y	Y
OBservations	20878	21052	20589	20931	20309	20749
Adj. R-sq.	0.073	0.180	0.250	0.073	0.062	0.084

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The key explanatory variables are expectations regarding own financial and job situation (3 category scale coded as -1=Worse, 0=Same, 1=Better). The sample of responses is from the Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type (3 categories), reported difficulties in paying bills in the previous year (4 categories), the main source of information regarding Covid, internet use, self-reported position on the Left-Right political scale, political interest, and trust in the police, health and medical staff, and the judicial system. All specifications include country fixed effects.

Cross-country determinants of polarization in personal situations

Table A.13: Cross-country determinants of polarization in unemployment and household finances

	(1)	(2)	(3)	(4)
Dep. var.: Polarization	Unemployment situation		Household finances	
Income share top 10%	-0.618 (0.60)	2.207** (0.96)	-0.554 (0.68)	0.792 (0.59)
Dispersion of self position political scale	-3.992 (2.84)	0.997 (7.17)	-7.135 (4.17)	-4.019 (6.46)
Confidence: The Government	-6.130 (4.62)	-3.684 (9.74)	-2.236 (8.13)	1.140 (9.20)
Confidence: The Press	-7.634** (3.32)	-19.961** (8.80)	-12.143** (5.25)	-2.307 (8.50)
Most people can be trusted	-26.798* (12.81)	-42.972 (28.53)	-21.148 (18.11)	11.499 (18.82)
2017-19 Polarization: Unemp		0.715** (0.33)		
2017-19 Polarization: HH Fin.				0.423 (0.37)
Human capital index	-74.347*** (24.78)	-9.905 (39.80)	-56.226** (19.09)	-18.672 (32.22)
Sample	Pre-pandemic	Pandemic	Pre-pandemic	Pandemic
Additional controls	Y	Y	Y	Y
Observations	25	25	25	25
Adj. R-sq.	0.621	0.477	0.453	0.198

*, **, and *** denote significance at 10, 5, and 1%. Robust standard errors in parentheses. The dependent variable is the average (pre-pandemic) and maximum (pandemic) polarization of expectations on the unemployment situation and household financial situations. The pre-pandemic sample refers to 2017 to 2019 while the pandemic sample refers to April to June of 2020. Note that confidence variables have been recoded to an increasing scale such that a higher value indicates more confidence. Additional control variables are real GDP per capita, share of rural to total population, share of services value added to GDP, and the World Bank Ease of Doing Business index.

Effects of control variables on belief polarization

Table A.14: Belief polarization determinants from individual responses: control variables

Dep var.:	(1) Expectations: Econ. sit.	(2) Econ. sit.	(3) Absol. Expectations	(4) Absol. Expectations
AGE EXACT	-0.010***	-0.006***	-0.000	-0.000
AGE EXACT Squared	0.000***	0.000*	-0.000	-0.000
EDUC: Up to 15	-0.005	-0.054	0.008	-0.047
EDUC: 16-19	-0.004	-0.034	-0.010	-0.048
EDUC: 20+	-0.010	-0.036	-0.005	-0.048
EDUC: Still studying	0.084*	-0.051	0.026	-0.052
EDUC: No full-time education	-0.060	-0.077	-0.041	-0.078
Woman	-0.049***	0.016	-0.018**	-0.016**
OCCUP: Self-employed	-0.045	0.019	-0.000	0.012
OCCUP: Managers	-0.067**	-0.050	-0.011	-0.027
OCCUP: Other white collar	-0.033	-0.015	0.002	-0.003
OCCUP: Manual worker	-0.031	0.018	-0.000	-0.003
OCCUP: Unemployed	0.041	0.063*	0.030	-0.001
OCCUP: Retired	-0.014	0.011	0.005	-0.018
OCCUP: Student	-0.083**	0.000	0.002	0.000
CLASS: Working class	0.098	0.111	0.023	-0.015
CLASS: Lower middle	0.048	0.082	0.029	0.009
CLASS: Middle class	0.110	0.108	0.037	0.010
CLASS: Upper middle	0.084	0.120	0.046	0.002
CLASS: Higher class	0.185*	0.054	0.098**	0.049
MARITAL: Single	0.005	-0.019	0.004	0.013
MARITAL: Partner	0.003	-0.045*	0.013	0.012
MARITAL: Married	-0.005	-0.047**	0.010	0.001
CHILD: No children	0.000	0.000	0.000	0.000
MARITAL: With children	0.001	0.007	-0.001	0.012
MARITAL: Other	-0.018	0.047	-0.051	0.084
TOWN: Small/middle town	-0.020	0.016	-0.002	-0.005
TOWN: Large town	-0.017	0.018	-0.004	0.002
TOWN: DK	0.589**		-0.116	
DIFF BILLS: Most of the time	-0.080*	-0.126***	-0.008	0.055***
DIFF BILLS: From time to time	-0.032	-0.075**	-0.008	0.032*
DIFF BILLS: Almost never/never	0.000	0.000	0.000	0.000
DIFF BILLS: Refusal (SPONT.)	0.041	0.183**	-0.030	0.091*
TRUST IN INST: POLICE	0.066***	0.066***	0.011*	-0.016
TRUST IN INST: LEGAL	0.105***	0.067***	0.009	-0.008
Sample	Pandemic	Pre-pandemic	Pandemic	Pre-pandemic
Fixed effects	C	C	C	C
Additional controls	Y	Y	Y	Y
Observations	22438	18723	22438	18723
Adj. R-sq.	0.071	0.081	0.036	0.055

*, **, and *** denote significance at 10, 5, and 1%. Country-clustered standard errors are omitted due to space constraints. The dependent variables are the expectations and absolute deviation of expectations regarding the economic situation (3 category scale coded as -1=Worse, 0=Same, 1=Better) relative to the (weighted) country average response. The pre-pandemic sample refers to Standard Eurobarometer 92 (November-December 2020). The Covid-19 sample refers to Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories: up to 15 for primary, 16-19 for post-secondary, and 20+ for tertiary, still studying, and no full-time education), gender, occupational category (7 categories including, unemployed, self-employed, manager, manual workers, retired, student, etc.), self-reported social class (5 categories), marital status and children dummy, community type category (3 categories), reported difficulties in paying bills in the previous year (4 categories: most of the time, from time to time, almost never, and refusal) and trust in the police and judicial system.

Determinants of unemployment expectations

Table A.15: Belief polarization determinants from individual responses

Dep. var.:	(1) Expectations:	(2) Employment	(3) Absol.	(4) Expectations
TRUST IN INST: MEDIA	0.067*** (0.02)		0.003 (0.01)	
TRUST IN INST: MEDIA TRUST INDEX		0.051*** (0.02)		0.001 (0.01)
TRUST IN INST: NATIONAL GOVERNMENT	0.221*** (0.02)	0.185*** (0.03)	0.037*** (0.01)	0.020 (0.01)
COVID INFO: Television	-0.078 (0.21)		0.173 (0.12)	
COVID INFO: The written press	-0.125 (0.21)		0.185 (0.12)	
COVID INFO: Radio	-0.102 (0.21)		0.164 (0.12)	
COVID INFO: Websites	-0.111 (0.21)		0.164 (0.12)	
COVID INFO: Online social networks	-0.088 (0.21)		0.167 (0.11)	
COVID INFO: Other (SPONTANEOUS)	0.017 (0.22)		0.066 (0.23)	
COVID INFO: Did not look	-0.073 (0.20)		0.203 (0.13)	
FAKE NEWS: SEE OFTEN		-0.028** (0.01)		0.014 (0.01)
FAKE NEWS: EASY TO IDENTIFY		0.012 (0.01)		-0.000 (0.01)
FAKE NEWS: ARE A PROBLEM IN CNTR		0.022** (0.01)		0.015* (0.01)
FAKE NEWS: ARE A PROBLEM FOR DEMOCRACY		-0.001 (0.01)		-0.023*** (0.01)
MEDIA USE: INDEX		0.005 (0.01)		-0.000 (0.01)
MEDIA USE: INTERNET	0.001 (0.00)	-0.008* (0.00)	0.005* (0.00)	0.007** (0.00)
MEDIA USE: ONLINE SOCIAL NETWORKS		0.010** (0.00)		-0.002 (0.00)
Left-Right Political scale	0.003 (0.00)	0.003 (0.01)	0.001 (0.00)	0.005** (0.00)
Left-Right Political scale (abs)	0.014** (0.01)	0.004 (0.01)	0.007** (0.00)	0.009** (0.00)
POL INTEREST: Low	-0.128*** (0.03)	-0.045 (0.03)	0.011 (0.01)	0.029* (0.02)
POL INTEREST: Medium	-0.065** (0.03)	-0.027 (0.03)	0.017 (0.01)	0.021* (0.01)
POL INTEREST: Strong	-0.107*** (0.03)	-0.038 (0.03)	0.041*** (0.01)	0.058*** (0.01)
Sample	Pandemic	Pre-pandemic	Pandemic	Pre-pandemic
Fixed effects	C	C	C	C
Additional controls	Y	Y	Y	Y
OBservations	22234	18559	22234	18559
Adj. R-sq.	0.056	0.063	0.046	0.045

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The dependent variables are the deviation and absolute deviation of responses to expectations regarding the employment situation (3 category scale coded as -1=Worse, 0=Same, 1=Better) relative to the (weighted) country average response. The pre-pandemic sample refers to Standard Eurobarometer 92 (November-December 2020). The Covid-19 sample refers to Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type category (3 categories), reported difficulties in paying bills in the previous year (4 categories), and trust in the police and the judicial system. Note that False/misleading news variables are agree/disagree questions with higher values indicating agreement and the political scale is a 10 point scale indexed from 1=Left to 10=Right and absolute deviations are relative to the central value of 5. All specifications include country fixed effects.

Determinants of expectations regarding personal situations

Table A.16: Determinants of personal expectations from individual responses

Dep. var.:	(1)	(2)	(3)	(4)
	Expectations:	Own job	Expectations:	Own financial
TRUST IN INST: MEDIA	0.025 (0.02)		0.045*** (0.02)	
TRUST IN INST: MEDIA TRUST INDEX		0.036** (0.01)		0.046*** (0.01)
TRUST IN INST: NATIONAL GOVERNMENT	0.070*** (0.01)	0.072*** (0.02)	0.093*** (0.01)	0.087*** (0.02)
COVID INFO: Television	-0.276* (0.15)		-0.112 (0.27)	
COVID INFO: The written press	-0.321* (0.16)		-0.136 (0.28)	
COVID INFO: Radio	-0.318* (0.16)		-0.168 (0.27)	
COVID INFO: Websites	-0.253 (0.15)		-0.104 (0.27)	
COVID INFO: Online social networks	-0.266 (0.16)		-0.094 (0.28)	
COVID INFO: Other (SPONTANEOUS)	-0.310 (0.19)		-0.124 (0.28)	
COVID INFO: Did not look	-0.321* (0.17)		-0.294 (0.31)	
FAKE NEWS: SEE OFTEN		-0.004 (0.01)		-0.010 (0.01)
FAKE NEWS: EASY TO IDENTIFY		0.003 (0.01)		0.022*** (0.01)
FAKE NEWS: ARE A PROBLEM IN CNTR		0.015 (0.01)		0.018** (0.01)
FAKE NEWS: ARE A PROBLEM FOR DEMOCRACY		0.027** (0.01)		0.008 (0.01)
MEDIA USE: INDEX		0.015 (0.01)		0.026 (0.02)
MEDIA USE: INTERNET	-0.001 (0.00)	-0.007* (0.00)	0.001 (0.00)	-0.007* (0.00)
MEDIA USE: ONLINE SOCIAL NETWORKS		0.011** (0.00)		0.005 (0.00)
Left-Right Political scale	0.002 (0.00)	0.004 (0.00)	0.005 (0.00)	0.003 (0.00)
Left-Right Political scale (abs)	0.006 (0.00)	0.006 (0.00)	0.016*** (0.00)	0.008* (0.00)
POL INTEREST: Low	-0.052** (0.02)	-0.008 (0.03)	-0.069*** (0.02)	-0.027 (0.02)
POL INTEREST: Medium	-0.036 (0.02)	-0.018 (0.02)	-0.036 (0.02)	-0.027 (0.02)
POL INTEREST: Strong	-0.032 (0.02)	0.003 (0.02)	-0.042* (0.02)	-0.026 (0.02)
Sample	Pandemic	Pre-pandemic	Pandemic	Pre-pandemic
Fixed effects	C	C	C	C
Additional controls	Y	Y	Y	Y
Observations	20589	17032	22496	18864
Adj. R-sq.	0.065	0.089	0.078	0.089

*, **, and *** denote significance at 10, 5, and 1%. standard errors clustered by country in parentheses. The dependent variables are expectations regarding own financial and job situation (3 category scale coded as -1=Worse, 0=Same, 1=Better). The pre-pandemic sample refers to Standard Eurobarometer 92 (November-December 2020). The Covid-19 sample refers to Standard Eurobarometer 93 (July-August 2020). Additional control variables are age and age-squared, respondent age at highest education (five categories), gender, occupation (7 categories), self-reported social class (5 categories), marital and children status, community type category (3 categories), reported difficulties in paying bills in the previous year (4 categories), and trust in the police and the judicial system. Note that False/misleading news variables are agree/disagree questions with higher values indicating agreement and the political scale is a 10 point scale indexed from 1=Left to 10=Right and absolute deviations are relative to the central value of 5. All specifications include country fixed effects.

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