What do people in CESEE think about public debt?

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This paper investigates public attitudes toward public sector debt in ten Central, Eastern and Southeastern European (CESEE) countries. Unique data from a special module of the 2018 OeNB Euro Survey wave indicate that people in CESEE have, in general, negative attitudes toward public debt. Most respondents believe that higher public debt compromises the opportunities of future generations and implies higher taxes or lower social benefits in the future. Beliefs that higher public debt allows for higher investments today are also widespread but less common. Econometric analysis reveals that wealthier individuals and more disadvantaged societal groups (particularly people who have experienced economic hardship) tend to be most concerned about public debt. The finding that the worse off are more debt averse contrasts with existing studies for advanced economies that have found that it is primarily the better off who are more skeptical. This difference may be explained by the comparatively lower level of social spending and the predominance of regressive tax systems in CESEE, which could make disadvantaged groups of society believe that the burden of higher debt must eventually be shouldered by them.

Up to the mid-2000s, the size of public debt was a cause for concern only for some Central, Eastern and Southeastern European (CESEE) countries. However, the 2008–2009 global financial crisis, the repercussions of the 2012 sovereign debt crisis in the euro area and, more recently, the COVID-19 pandemic entailed a strong increase in public debt levels across the region.[2] Based on simple averages across the ten CESEE countries under review,[3] gross general government debt amounted to slightly more than 30% of GDP in 2007 and peaked at nearly 60% in the mid-2010s. In this period, the debt ratio rose especially strongly in Romania, where it tripled, and in Bosnia and Herzegovina, Croatia and Serbia, where it more than doubled. After reaching these peaks, most countries managed to bring their public debt levels down somewhat thanks to robust economic growth. In 2017, the year before the OeNB Euro Survey asked individuals about their attitudes toward public debt, the debt ratio reached a regional average of 50% (see chart 1). More recently, large-scale fiscal support measures to mitigate the impact of the COVID-19 pandemic brought about a renewed increase in debt ratios. On average

Chart 1

General government gross debt

% of GDP
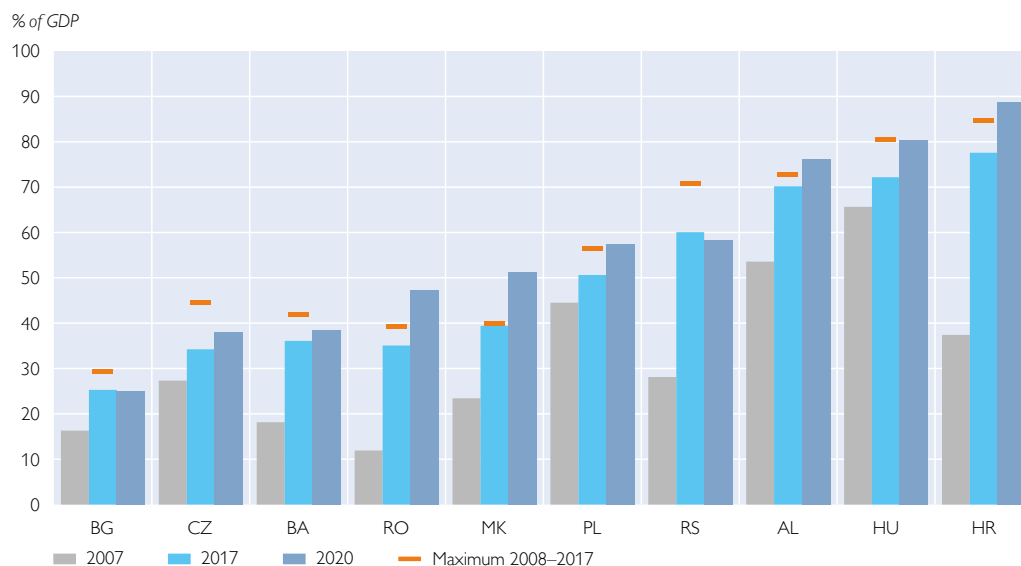
Source: European Commission (AMECO database, May 2021); data for Albania are IMF data (WEO database, April 2021) until 2009.

across the region, debt ratios widened by 10 percentage points in 2020, with the largest increase observed in Croatia, Hungary, Romania, Poland and North Macedonia. Croatia, Hungary and Albania are now confronted with debt ratios of around 80%, followed by Serbia and Poland with nearly 60%. On the other side of the spectrum, Bulgaria, Czechia and Bosnia and Herzegovina still have debt ratios below 40%.

Given the increased role of public indebtedness in the region (already before the COVID-19 pandemic), this paper studies how individuals tend to perceive public debt and whether their beliefs reflect their socioeconomic background, economic hardship experiences, financial literacy levels or political attitudes. Gaining such insights is important also from a macroeconomic perspective. After all, the profile of individuals who are more skeptical or supportive about public debt is meaningful information for policymakers, as the macroeconomic stabilization function of fiscal policy during a crisis or the political feasibility of post-crisis fiscal consolidation rely on people's trust in the government's capacity to manage taxpayer money conscientiously. This reasoning is backed by a series of papers that have studied household-level responses to fiscal policy shocks to improve our understanding of fiscal multipliers (e.g. Johnson et al., 2006; Shapiro and Slemrod, 2009; D'Acunto et al., 2018), that have identified support of individuals as an important factor for successful fiscal consolidation (e.g. Abbas et al., 2010; Ardanaz et al., 2020), or that have more generally studied the impact of public trust in government on macroeconomic outcome variables (e.g. Zak and Knack, 2001; Horvath, 2013; Sangnier, 2013).

The literature using household survey data to determine people's attitudes toward fiscal policy measures and public indebtedness has grown in recent years. The reviewed papers (see the next section) focus mainly on single countries rather than employing cross-country surveys. However, cross-country surveys are important to ensure measurement equivalence for a larger set of countries and to detect correlations with individual attitudes that go beyond country-specific institutional and

cultural factors. Therefore, the 2018 wave of the OeNB Euro Survey included a series of questions aimed at revealing people's attitudes toward public debt and public sector governance. The paper at hand builds on this survey information and investigates the views people shared about public debt[4] and its effects, addressing several individual-specific factors that are related to expressing such views. While country-specific factors are controlled for by fixed effects, we exploit information from the whole sample rather than focusing on the explanation of cross-country differences in this paper.[5]

The remainder of the paper is organized as follows: Section 1 reviews the literature on survey-based papers that examined individual perceptions of fiscal policies in general and public debt in particular. Section 2 introduces the data and provides a descriptive analysis of individuals' public debt attitudes. Section 3 guides through the econometric analysis, studying the background of people who expressed particular attitudes on debt. Finally, section 4 concludes and discusses some policy implications.

1 Related literature

One of the earliest studies on public attitudes toward public debt, and other fiscal issues, is Mueller (1963), who uses data from three nationwide US surveys, conducted in 1960 and 1961, with approximately 3,600 respondents. She finds no evidence that the existing federal debt causes great concern. However, to fund higher military spending, people prefer raising taxes and cutting other types of government spending rather than increasing debt. She also notes that deleveraging is less of a priority than expanding government spending programs, except for the highest-income families, who prefer deleveraging over expanding government spending.

Pitlik et al. (2011) investigate whether opinions on fiscal policy issues are driven more by ideology or self-interest, using a telephone survey of around 1,000 Austrian voters conducted in 2008. They find that perceived self-interest – the expectation that a proposed policy measure may have personally adverse consequences – is at least as important for the acceptance of policy measures as ideological conviction.

Stix (2013) investigates the determinants of preferences for public debt consolidation in Austria, using a survey conducted on 2,000 randomly selected voters in 2010. He investigates the relevance of several factors, including self-interest, intergenerational distributional preferences, preferences for distributional fairness among the current generation and the credibility of medium-term fiscal policy plans. He finds that all these factors matter, which has clear implications for the design of debt consolidation plans.

Heinemann and Henninghausen (2012) investigate determinants of public debt attitudes in Germany, using a representative survey of 1,000 respondents conducted in 2011. They consider several explanatory variables, such as individual credit constraints, intergenerational considerations (having children), ideology and

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[4] *Survey participants were told that "public debt" was meant to refer to the outstanding total debt of all levels of government, including public institutions ("the state").*

[5] *Cross-country differences might be investigated by running the estimations for each country individually and then comparing the results. However, then the sample size for each estimation would be considerably smaller and – given the comparatively large set of individual-level regressors we are examining – overfitting and multicollinearity issues would become more severe.*

trust. They find that Ricardian motives and ideology and trust are important for explaining the individual heterogeneity of debt consolidation preferences.

Hayo and Neumeier (2019) investigate determinants of individual attitudes toward taxes, public debt and public spending in Germany, using a representative survey conducted on 2,000 respondents in 2013. They find that economic well-being, confidence in politicians, economic knowledge, and time and party preferences are all statistically significantly related to public finance preferences. According to these results, a stronger preference for fiscal consolidation can be identified for respondents that are particularly forward-looking, well informed about debt-related economic variables or better off financially.

Roth et al. (2020) examine how beliefs about the government debt-to-GDP ratio affect people's attitudes toward government spending and taxation, using a series of experiments on more than 4,000 respondents from the USA. They find that most people underestimate the debt ratio and turn less supportive about government spending once they are made aware of the actual amount of debt, but do not substantially alter their attitudes toward taxation.

If we expand our focus, we can also refer to a large related body of the recent political economy literature. One group of literature focused on the impact of fiscal austerity on public opinion and voting choices, providing evidence mostly for advanced economies (e.g. Arias and Stasavage, 2019; Hübscher et al., 2020; Kalbhenn and Stracca, 2020; Bansak et al., 2021) and only rarely for emerging market economies (e.g. Ardanaz et al., 2020, for Latin American economies). Another group of studies investigated the acceptance of fiscal rules by politicians (incumbents versus opposition) using survey methods; several of them focus on Germany (e.g. Heinemann et al., 2020; or Blesse et al., 2021). This type of literature is of interest for our research question in so far as it can be expected that people who support debt rules are also more likely to express debt-averse perceptions.

While it is obvious that there is already some literature on public attitudes toward public sector debt, most of the existing studies refer to advanced economies. However, to the best of our knowledge, no study has so far investigated this issue for CESEE countries. Our study aims to fill this gap. Moreover, the cross-country sample we study is larger than that of the reviewed papers, as it includes respondents from ten different countries and a variety of survey questions, allowing us to investigate a broad set of factors that are potentially related to individual public finance attitudes.

2 Data and variables

Our analysis is based on data from the 2018 wave of the OeNB Euro Survey, which has been conducted on a regular basis since 2007 as a repeated cross-sectional survey of individuals in the ten CESEE countries mentioned above. In each country, a multi-stage stratified random sampling procedure is applied that targets residents aged 18 years or older and generates a representative sample of 1,000 individual interviews per country. The interviews are carried out face to face at respondents' homes. Data weighting is used to ensure a nationally representative sample for each country; sampling weights use census population statistics on gender, age and region and, where available, education as well as ethnicity (separately for each country).[6]

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[6] *For more information and technical details on the OeNB Euro Survey, see https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html.*

The survey questionnaire elicits a rich set of information on socioeconomic characteristics, indicators of wealth and finances, individual beliefs, expectations and trust. The questionnaire is composed of a core set of questions regarding the extent of euroization and individuals' loan and saving decisions. In the 2018 survey wave, we added a special module of questions aimed at capturing individual attitudes toward public sector governance, respondents' knowledge and perception of public debt, and their preferences with regard to public spending priorities (building on Hayo and Neumeier, 2019; and Stix, 2013). Lastly, we extended the survey data by merging satellite nightlight data at the level of the primary sampling unit as a proxy for local economic activity (Henderson et al., 2012).

The key variable for our analysis, which captures individuals' views of public debt and its impact, is based on the following survey question:

We will now move on to another topic, namely to some questions about your attitudes toward debt and spending of the government and public institutions.
Governments and public institutions may incur debt, just like individuals. The outstanding total debt of governments and public institutions is generally referred to as "public debt."
Let me read out some statements reflecting the different views people tend to have about public debt and its effects. Please indicate your own judgment on a scale from 1 (strongly agree) to 6 (strongly disagree).

Strongly agree	*1*
Agree	*2*
Somewhat agree	*3*
Somewhat disagree	*4*
Disagree	*5*
Strongly disagree	*6*
Don't know	
No answer	

a) Higher public debt levels diminish the chances of future generations.
b) Higher public debt levels make it possible to conduct necessary investments today (e.g. into public infrastructure like schools and streets).
c) Higher public debt levels imply that I will have to pay more taxes in the future.
d) Higher public debt levels imply that I will receive lower state pensions and/or lower welfare benefits in the future.

The idea behind the question is to find out to what extent respondents agree with different statements about the implications of public debt. The first two statements expressing the belief that higher public debt compromises the chances of future generations and allows for higher investments today address the more general impact of public debt, while the views that higher debt implies higher taxes and lower pensions/benefits in the future (third and fourth statement) capture individual-level affectedness. People's perception about the benefit-related impact is also relevant for considering the role of *implicit* public debt, i.e. obligations for future government expenditures resulting from current regulations. As a caveat, the four statements are not well-balanced in the sense that positive and negative statements are represented equally strongly: With reference to debt, only one statement put to respondents in the survey carries a positive connotation ("makes it possible to conduct necessary investments today"), while the other three statements are framed negatively. This may prime respondents to adopt a more critical position on public debt. However, before confronting interviewees with these statements, the

survey introduced an analogy between public debt and individual debt (see above). Moreover, not all the negatively framed items are blocked together. Finally, the six-point Likert response scale is intended to reduce the likelihood of choosing neutral options and thus encourage respondents to make a clear choice between agreeing and disagreeing.

Chart 2 shows the (weighted) percentage of respondents who agree or strongly agree with the four statements on public debt and its effects. Based on unconditional averages across all observations in the sample (see the "CESEE" bars), nearly 70% of respondents agreed that higher public debt compromises the opportunities of future generations (north-west panel). In contrast, only about 40% of respondents agreed that higher public debt levels allow for higher investments today, ranging from a share of 30% in Croatia to 55% in North Macedonia (north-east panel). Finally, roughly 60% of respondents agree that higher public debt implies paying more taxes and receiving lower social benefits in the future (southern panels). The three panels with the skeptical views on public debt exhibit a similar ranking of countries: The countries with the lowest shares of skepticism are Czechia and Albania, while the highest shares can be found in Bulgaria, Croatia, Romania and North Macedonia.[7]

Interestingly but not surprisingly, knowledge of the size of public debt as a percentage of GDP is rather limited in the investigated CESEE countries (see chart 3). On average, 36% of respondents provide a "don't know" answer, ranging from 16% in Albania to even around 60% in Bulgaria and Romania. The share of respondents giving appropriate answers about the debt ratio varies from 17% in Hungary and Albania to about 40% in Croatia and North Macedonia (indicated by the patterned bar sections in the chart).[8]

When quality-checking the investigated survey data, we noticed some straight-lining of answers, i.e. a certain tendency among respondents to provide the same answers in blocks of questions, or a certain failure to adequately differentiate between different items in the questionnaire. In the case of the four questions on public debt attitudes shown in chart 2, straight-liners accounted for nearly 25% of respondents. The prevalence of straight-lining introduces some measurement errors. However, the background analysis provided in an online supplement shows that this is an issue predominantly in Albania and, to a lesser extent, in Hungary, where we identified some major cases of multiple straight-lining.[9] For an analysis

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[7] Note that for the broader definition of agreement, which also includes the category "somewhat agree," the extent of agreement increases even further, yet the cross-country differences become less pronounced (shown in the online supplement).

[8] Since the global financial crisis, all the EU countries in our sample have been subject either to an excessive deficit or a significant deviation procedure, which may have increased public awareness due to related media coverage. But there is no systematic difference concerning the knowledge of the debt ratio in EU countries as compared to the non-EU countries in our sample. Obviously, other factors may also be important for explaining cross-country differences in debt knowledge, e.g. existence and characteristics of fiscal councils, but such an empirical investigation is beyond the scope of the present paper.

[9] Using paradata from the OeNB Euro Survey, we find evidence that straight-lining in our sample is associated in general with rushing through the interview and with individual characteristics such as error-preventing behavior, older age, a preference to keep certain information private and particularly with low financial literacy scores. Interviewer characteristics turned out insignificant, and country fixed effects only play a minor role. Major cases of straight-lining appear to be associated with (1) individual characteristics such as risk-loving behavior (proxy for pronounced views), younger age and low financial literacy, and (2) with Albania. A closer look suggests some impact of interviewers on the respondents' response style in Albania.

Chart 2

Attitudes toward public debt

Higher debt compromises opportunities of future generations

% of individuals who agree or strongly agree
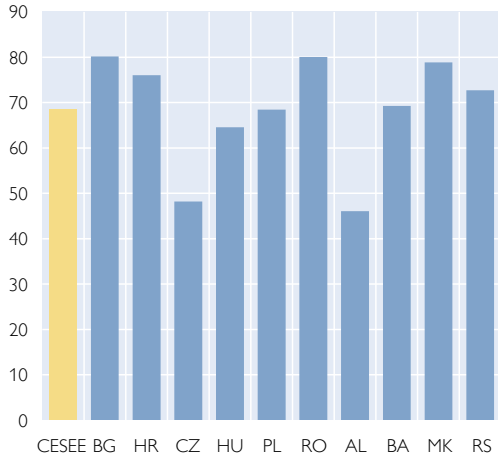
Higher debt allows for higher investments today

% of individuals who agree or strongly agree
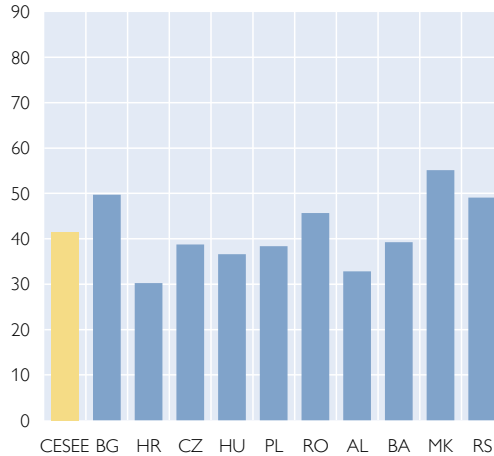
Higher debt implies higher future taxes

% of individuals who agree or strongly agree
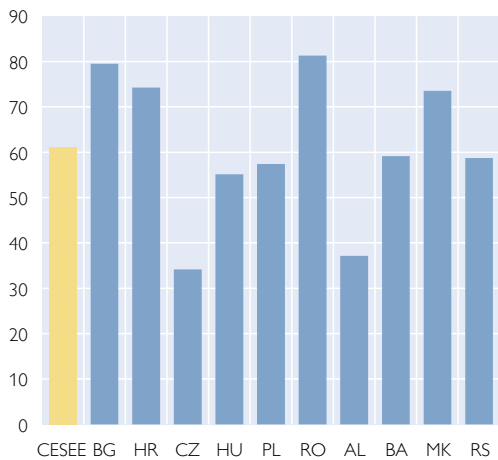
Higher debt implies lower future pensions and welfare benefits

% of individuals who agree or strongly agree
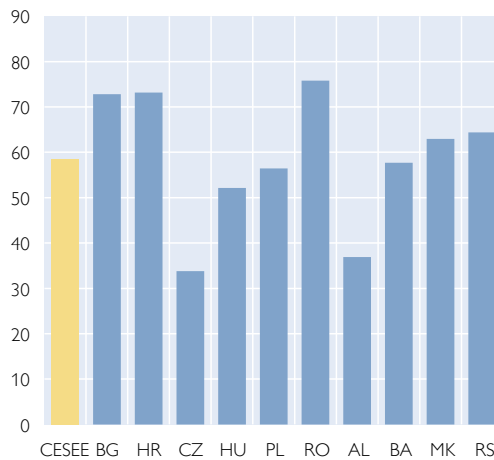
Source: OeNB Euro Survey 2018.

Note: Respondents were asked whether they agree or disagree with the respective statements on a 6-point Likert scale. The weighted values represent the share of respondents who picked "strongly agree" or "agree." Excluding respondents who answered "don't know" or did not provide an answer (averaging between 7% and 9% of all respondents across all countries). Weights are calibrated on census population statistics for age, gender, region, and, where available, on education and ethnicity (separately for each country). The CESEE averages are unconditional averages across all observations, using individual weights not adjusted for population size.

of the extent to which our results are affected by the inclusion of (major) straight-lining cases, see the robustness analysis (section 3.3).

Chart 3

Knowledge about the size of public debt

% of individuals   *% of GDP*
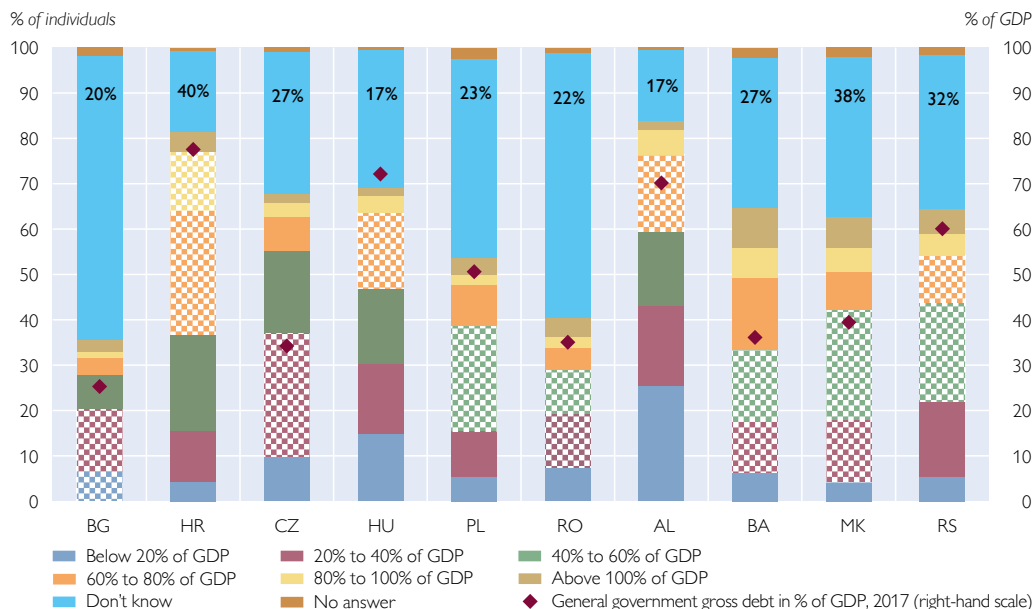
Source: OeNB Euro Survey 2018, European Commission (AMECO database, May 2021).

Note: Respondents were asked to indicate the public debt-to-GDP ratio for their country for 2017. Specifically, they were given six brackets ranging from "below 20% of GDP" to "above 100% of GDP" and asked to choose the appropriate bracket for their country. Weighted percentages; using weights that are calibrated on census population statistics for age, gender, region, and, where available, on education and ethnicity (separately for each country). Patterned areas highlight the appropriate bracket(s), and figures indicate the share of respondents who selected the appropriate bracket(s).

3 Econometric analysis of factors associated with people's attitudes toward public debt

3.1 Econometric set-up and research hypotheses

The purpose of our empirical analysis is to explore the background of individuals that expressed particular attitudes toward public debt as highlighted in the previous section. Since agreement with the statements is rather high, we focus on those respondents who have rather strong views. To this end, we map the responses to the four statements into four binary dependent variables which equal 1 if respondents agreed or strongly agreed with the respective statement (recall chart 2); and 0 if respondents somewhat agreed, somewhat disagreed, disagreed or strongly disagreed. Respondents answering "don't know" or who refused to answer are excluded. Since these dependent variables (Y_i) are defined as dummies, we apply a probit estimator with country fixed effects (A_c) using robust standard errors adjusted for clustering at the primary-sampling-unit (PSU) level. As part of the robustness checks, we will also experiment with a broader definition of agreement (i.e. including also the "somewhat agreed" answers) and apply an ordered probit estimator using all six response categories (see section 3.3).

As for the explanatory variables, we follow the literature overviewed in section 1 and include several groups of variables.[10] The first group refers to general sociodemographic and socioeconomic characteristics of individuals and households (X_{Soc}).

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[10] *In the results section below, we provide some more details on the empirical definition of the investigated regressors. Table A1 in the annex contains all the necessary details about how the variables were constructed. Moreover, the online supplement contains the corresponding summary statistics and bivariate correlations among the investigated explanatory variables.*

Some of these characteristics are standard controls used in the related literature. It is noteworthy that we also include wealth indicators here to test the hypothesis whether wealthier individuals have a more critical view of public debt as they might fear – in a Ricardian manner – that their assets will be negatively affected in the future by higher debt levels, e.g. via higher taxes, higher inflation or a sovereign debt crisis.

The second group of variables captures individuals' general attitudes (X_{Gen}) that are usually included as explanatory variables in a debt-related context. Following Heinemann and Henninghausen (2012), Stix (2013), or Hayo and Neumeier (2019) for instance, we include variables that measure time preference, discomfort about owing money, and general trust in institutions, expecting that those who have a stronger preference for the present, who are willing to incur debt themselves or are generally more trustworthy are also more inclined to see public debt in a positive light.

The third class of explanatory variables captures economic hardship experiences (X_{Per}). Here, the basic hypothesis would be that those who are/were subject to economic hardship are likely more skeptical with regard to the crisis mitigation capacities of government (see Denisova et al., 2010; Eller and Scheiber, 2020) and therefore are also more critical in their assessment of public debt. In line with existing literature (e.g. Heinemann and Henninghausen, 2012; Stix, 2013; Hayo and Neumeier, 2019; Roth et al., 2020), we include as economic hardship variables unemployment, the necessity of basic consumption cutbacks in the past, net household income, local economic activity, respondents' health status and access to emergency borrowing.

The fourth group of variables measures financial literacy and knowledge of public debt (X_{Finlit}). There is already a broad literature showing that financial literacy influences the borrowing behavior of individuals (e.g. Beckmann and Stix, 2015; or Lusardi and Tufano, 2015). Analogously, financial literacy might also be relevant for people's views about public debt. Persons who understand, or are better informed about, the cost of public indebtedness may also be more skeptical as regards the future burden of public debt (as argued for public spending preferences in Hayo and Neumeier, 2019). As empirical proxies, we include interest in politics, a financial literacy dummy, knowledge of the size of public debt, and backward-oriented debt concerns.

The fifth and final group of variables captures individuals' general political attitudes (X_{Pol}), as included in several of the surveyed studies. In essence, a more positive view of current policies can be expected to be correlated positively with tolerance for public debt. This view would be backed by political economy approaches that point to rent-seeking, self-interested behavior of politicians eventually undermining trust and questioning a government's capacity of managing taxpayer money diligently (for respective overviews, see Alesina et al., 1997; or Persson and Tabellini, 2000). As empirical proxies, we include variables capturing individuals' satisfaction with public services, trust in government, the belief that the state is wasting taxpayer money, and preference for redistribution.

For choosing the concrete combination of regressors in the individual specifications, we face the following tradeoff: Basically, we attempt to include as many explanatory variables as possible in order to exploit the rich survey information at hand and to identify interesting profiles of individuals expressing skeptical versus

trustful views about public debt. At the same time, by including a large set of regressors, we face econometric challenges such as multicollinearity and overfitting. To address these issues at least to some extent, we opted for a *specific-to-general approach*, starting from the following parsimonious specification of the baseline model:

$$\Pr(Y_i = 1) = F(A_c, X_{Soc}, X_{Gen}, X_{Per}) \tag{1}$$

Our baseline model incorporates (1) the basic sociodemographic and socioeconomic characteristics X_{soc}, which we expand by adding block-wise (2) individuals' debt-relevant general attitudes X_{Gen} and (3) economic hardship experiences X_{Per}. We then estimate two extended models. The first extension adds the variables on financial literacy or debt knowledge X_{Finlit}. The second extension enhances the baseline model by adding, one by one, the variables capturing political attitudes X_{Pol}.

$$\Pr(Y_i = 1) = F(A_c, X_{Soc}, X_{Gen}, X_{Per}, X_{Finlit}) \tag{2.1}$$

$$\Pr(Y_i = 1) = F(A_c, X_{Soc}, X_{Gen}, X_{Per}, X_{Pol}) \tag{2.2}$$

Potential multicollinearity issues were addressed by theoretical considerations as well as consulting bivariate correlations (see online supplement). Model selection is based on statistics of model fit and explanatory power. The selection of the presented models is supported unanimously by three different measures: the Schwarz criterion, or Bayesian information criterion (BIC); McFadden's adjusted pseudo R^2; and Tjur's D (coefficient of discrimination).

3.2 Basic results

In this section, we discuss the estimation results along the four different dependent variables and the block-wise expansion of explanatory variables introduced in the previous section. As a caveat right at the beginning, we do not claim in this section that the estimated effects represent causal effects, given the likely endogeneity of several regressors. Therefore, the results shown below should be interpreted as conditional correlations.

The estimated average marginal effects for the baseline specification are shown in table 1. Among the variables capturing *sociodemographic and socioeconomic characteristics*, wealth indicators indeed turn out to be important. We include two related indicators: one that captures real wealth in the form of the condition of respondents' homes and another that captures financial wealth in the form of savings. Compared to individuals who live in a dwelling that was assessed by the interviewer to be of medium condition, individuals living in dwellings *both* of poor and excellent condition[11] are more likely to associate higher debt levels with higher investments today as well as with negative effects for the future. The positive connotation of public debt for poorer individuals regarding investment benefits may stem from the belief that public investment can improve public infrastructure and thus their living standards, too. Turning to financial wealth, respondents who

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[11] *The share of individuals living in dwellings of excellent condition amounts to 30% versus 12% for dwellings of poor condition.*

possess savings are more concerned about the future impact of public debt than those without savings. This finding, together with the previous one on individuals living in dwellings of excellent condition, would be in accordance with the existing literature for advanced economies and corroborate Ricardian arguments.[12] Finally, to control to some extent for per capita wealth, we also include household size. Larger households apparently are less likely to believe that higher public debt allows for higher investments today, probably because they are confronted with cramped living conditions and would therefore support more (residential) investment.[13]

Besides the explanatory variables discussed so far, we add in a second step individuals' *debt-relevant general attitudes* (see medium panel in table 1). Our results indicate that people who have a present bias (i.e. are either impatient or impulsive or both; constituting 45% of the sample) express a positive connotation of public debt across all the specifications. This is as expected, given that these respondents are less likely to identify themselves with future repayment obligations. In contrast, respondents who are more debt averse themselves, i.e. those that feel uncomfortable if they owe money to others, have very strong concerns about the possible future negative effects of higher public debt. Finally, general trust in institutions (an index excluding government) matters as well: Those who are in general more trustful also see public debt in a more positive light.[14]

In a third step, we include additional explanatory variables that capture *economic hardship* respondents may have experienced (see lower panel in table 1).[15] First, respondents that were unemployed at the time of the survey tend to agree that public debt compromises the opportunities of future generations and implies lower social benefits in the future. This can probably be explained by the fact that the unemployed are more vulnerable and, due to this, do not believe that the system offers sufficient solidarity. Second, people who had to cut back on basic consumption during 2008–2018 hold skeptical views about public debt across all the four specifications. Having to cut down basic consumption is well remembered even after several years and thus an indicator for severe economic hardship (see EBRD, 2006; Denisova et al., 2010). These people's negative views of public debt might be due to a loss of trust in the crisis mitigation capacities of public institutions (see Eller and Scheiber, 2020) and/or the fear that higher public debt levels could make them go through a similar hardship experience again. Unemployment and past basic consumption cuts, alongside the explanatory variables mentioned above, constitute the "baseline controls" referred to in the remainder of this section.[16] Third, we add other variables step by step that might be related to the attitudes of people

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[12] For some CESEE countries where holding savings is not that widespread (below 25% of individuals in Bosnia and Herzegovina, Romania and Serbia; roughly one-third in Bulgaria, Hungary and North Macedonia; around one-half in Croatia and Poland; compared with nearly 80% in Czechia), savings can be interpreted as a proxy for economic well-being.

[13] We experimented with using finer categories of household size and including a dummy for having children. However, the results for different definitions of household size remain very similar and the children dummy remains statistically insignificant.

[14] The index on general trust in institutions is constructed as the average trust score across five institutions: police, domestically owned banks, foreign owned banks, the European Union, the national central bank. For details, see annex table A1.

[15] The inclusion of X_{Per} leaves the results for X_{Soc} and X_{Gen} qualitatively unchanged (for comparison, see the online supplement for a specification with X_{Soc} and X_{Gen} only).

[16] The results for unemployment and consumption cuts remain unchanged if we include them separately in the regressions.

who suffer(ed) economic hardship (only specifications where these variables are statistically significant are reported). Similarly to the results for housing conditions, individuals who belong to *both* low- or high-income households are more likely to agree that higher public debt compromises the opportunities of future generations.[17] At the same time, respondents are more likely to support the view that higher debt allows for higher investments today if they live outside the capital city (probably due to the thinner infrastructure there) but also in a neighborhood characterized by comparatively stronger economic activity (proxied by nightlight intensity), or assess their personal health status as favorable (to control also for a less economically oriented hardship variable). Finally, access to liquidity in an emergency situation dampens people's skeptical debt views: these individuals are less likely to think that they have to pay higher taxes and will receive lower social benefits in the future as a result of higher public debt today.

To provide a first summary picture, chart 4 depicts the relative importance of the most important baseline regressors by comparing for each dependent variable the estimated average marginal effects of these regressors. Interestingly, individuals' public debt attitudes are strongly associated with other personal attitudes; especially aversion to incurring personal debt appears crucial with the by far largest average marginal effects in the three specifications indicating "debt skepticism" (i.e., to reiterate, the understanding that public debt compromises the opportunities of future generations, implies higher taxes, and implies lower pensions and benefits). Finally, belonging to more disadvantaged groups of society (poor dwelling conditions, unemployed, experience of basic consumption cutbacks) also yields very significant effects in most specifications.

In a fourth step, we expand the baseline specification by variables capturing *financial literacy levels or debt knowledge* (in line with equation 2.1). Table 2 shows that the financial literacy dummy[18] is related positively to the first three dependent variables, suggesting that people who understand the basic concepts related to finance tend to be more skeptical about the future impact of higher public debt, while agreeing that higher debt levels allow for higher investments today (conditional on that these respondents are not concerned about debt dynamics). Respondents who are concerned about public debt dynamics during the past ten years have similar views (with a substantially larger average marginal effect) as financially literate persons. They weigh potential future drawbacks of public debt more heavily but also agree – despite their backward-oriented concerns – that higher public debt levels allow for higher investments today. Including an interaction term between the two variables reveals that individuals who are both financially literate *and* concerned about past debt dynamics are less likely to see public debt positively as a catalyst for investment, compared with respondents who are not financially literate and unconcerned about the debt history, turning the positive view into a skeptical one. This brings us to studying the role of debt knowledge more closely. Financial literacy and debt knowledge correlate only slightly, and their correlation with debt attitudes differs as well. Knowing (or guessing) the size of public debt is related

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[17] *For the other dependent variables, net household income did not matter in a statistically significant manner. For the given context, the other chosen economic hardship variables are apparently more specific and informative.*

[18] *Dummy equals 1 if respondents score 3 or 4 on the financial literacy index; 0 otherwise. The financial literacy index is based on answers to four questions, regarding real interest rates, exchange rates, inflation and risk diversification. For details, see annex table A1.*

## Baseline estimation: main factors associated with attitudes toward public debt

Outcome variable: agreement with statement (0/1)	Binary dependent variables								
	Higher public debt compromises opportunities of future generations		Higher public debt allows for higher investments today			Higher public debt implies higher future taxes		Higher public debt implies lower future pensions and benefits	
	1	2	3	4	5	6	7	8	9
	Average marginal effects								
Respondents' sociodemographic and socioeconomic characteristics									
Aged 19 to 34 years	−0.004	−0.007	−0.007	−0.005	−0.012	0.003	−0.000	−0.004	−0.005
	(0.013)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)
Aged 55+ years	−0.004	−0.002	−0.002	0.001	0.011	−0.011	−0.012	−0.021	−0.024*
	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)
Female	−0.017*	−0.008	−0.004	−0.001	0.001	0.003	0.004	−0.007	−0.002
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)
Dwelling is well maintained	0.030**	0.024*	0.035***	0.032**	0.029**	0.028**		0.023*	
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)		(0.013)	
Dwelling is poor, needs major repair	0.041**	0.053***	0.050**	0.048**	0.054***	0.006		0.043**	
	(0.018)	(0.017)	(0.020)	(0.019)	(0.019)	(0.018)		(0.019)	
Respondent has accumulated savings	0.033***	0.026**	0.024*	0.025*	0.024*	0.028**		0,020	
	(0.012)	(0.012)	(0.014)	(0.014)	(0.014)	(0.013)		(0.013)	
Refused to reveal extent of savings	−0.025	−0.016	−0.026	−0.024	−0.016	0.008		−0.012	
	(0.032)	(0.031)	(0.039)	(0.037)	(0.038)	(0.032)		(0.034)	
2-person household	−0.020	−0.006	−0.042**	−0.039**	−0.042**	−0.036**	−0.032*	−0.012	−0.017
	(0.016)	(0.017)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)
3-plus-person household	−0.033*	−0.016	−0.051***	−0.043**	−0.050***	−0.043**	−0.034**	−0.022	−0.019
	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)
Respondents' general attitudes									
Present bias (index)	−0.025***	−0.026***	0.032***	0.031***	0.031***	−0.024***	−0.023***	−0.014***	−0.013**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Discomfort of owing money	0.105***	0.106***	0.041**	0.033*	0.034*	0.144***	0.153***	0.131***	0.137***
	(0.016)	(0.016)	(0.018)	(0.018)	(0.018)	(0.017)	(0.016)	(0.017)	(0.016)
General trust in institutions (index)	−0.011	−0.012*	0.024***	0.028***	0.024***	−0.019***	−0.016**	−0.023***	−0.021***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Respondents' economic hardship experiences									
Currently unemployed	0.047***		0.022			0.023		0.041**	
	(0.015)		(0.016)			(0.016)		(0.016)	
Had to cut back consumption (2008–2018)	0.057***		−0.039***			0.066***		0.049***	
	(0.013)		(0.014)			(0.013)		(0.013)	
Household net income: 1st quartile		0.037**							
		(0.015)							
Household net income: 4th quartile		0.033**							
		(0.015)							
Capital city resident				−0.066**					
				(0.033)					
Local economic activity (nightlight brightness)				0.016*					
				(0.009)					
Self-reported health status (index)					0.024***				
					(0.008)				
Access to emergency borrowing (index)							−0.111***		−0.091**
							(0.040)		(0.041)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	−5,200.3	−5,458.0	−5,732.2	−6,000.4	−5,976.6	−5,278.8	−5,537.5	−5,446.8	−5,705.2
Pseudo R-squared (McFadden)	0.07	0.06	0.03	0.03	0.03	0.10	0.10	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.13	0.12	0.06	0.06	0.06	0.19	0.18	0.14	0.14
Probability > Chi squared (df_m)	345.42 (23)	314.09 (24)	182.54 (23)	182.56 (23)	187.20 (22)	507.24 (23)	471.12 (18)	406.43 (23)	362.63 (18)
Number of observations	8,907	9,315	8,687	9,086	9,046	8,765	9,155	8,652	9,038
BIC	10,618.9	11,144.6	11,682.00	12,219.5	12,162.8	10,775.6	11,248.3	11,111.3	11,583.5
Adjusted pseudo R-squared (McFadden)	0.06	0.06	0.02	0.02	0.02	0.09	0.09	0.07	0.07
Tjur's D	0.09	0.08	0.04	0.04	0.04	0.12	0.12	0.09	0.09
P(DepVar=1)	0.68	0.68	0.41	0.42	0.42	0.61	0.61	0.59	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. Base categories are: 35 to 54 years old; main residence is good, only needs minor repair; reports to have no savings; 1-person household; Czech resident. For specification 2, the base category consists of the 2nd and 3rd household net income quartile. The additional dummy for refusing to report household net income is not shown. The sample comprises all ten OeNB Euro Survey countries.

Chart 4

Baseline estimation: main factors associated with attitudes toward public debt

Higher public debt compromises opportunities of future generations
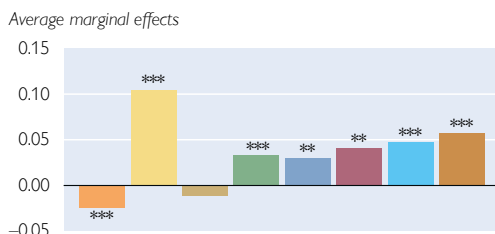
Average marginal effects

Higher public debt allows for higher investments today

Average marginal effects

Higher public debt implies higher future taxes

Average marginal effects

Higher public debt implies lower future pensions and benefits

Average marginal effects

- Present bias (index)
- Respondent has accumulated savings
- Currently unemployed
- Discomfort of owing money
- Dwelling is well maintained
- Had to cut back consumption (2008–2018)
- General trust in institutions (index)
- Dwelling is poor, needs major repair

Source: Authors' calculations based on OeNB Euro Survey 2018.

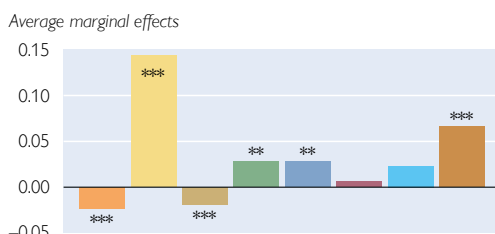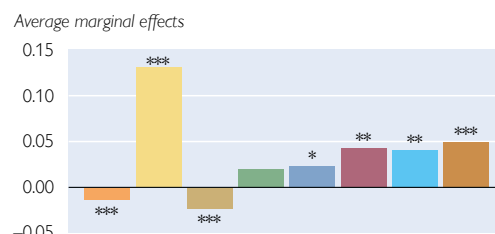Note: Columns represent average marginal effects estimated with probit regressions with country fixed effects; standard errors are adjusted for clustering at the PSU level. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. By construction, a positive (negative) average marginal effects implies that a respondent is more (less) likely to agree with the statement. Additional dummy variables control for age, gender and household size (not shown). The results refer to the baseline specifications for the ten surveyed CESEE countries, i.e. columns (1), (3), (6) and (8) in table 1.

negatively to the dependent variables, albeit not in a highly statistically significant manner. The most convincing case can be made for debt knowledge being associated with a less pronounced belief that there is a nexus between today's public debt level and the future tax burden. However, knowing the current debt level *and* being at the same time concerned about past debt developments (see the results for the respective interaction terms) amplifies both skeptical views about the future impact of public debt and the belief that higher debt allows for higher investments today. Finally, we include in table 2 also self-assessed interest in politics to capture individuals that are likely better-informed about public finance issues: they also share the positive view that higher public debt levels allow for higher investments today.[19]

In a fifth and final step, we expand the baseline specification by *several attitudes about politics* (in line with equation 2.2). However, the issue of endogenous regressors applies particularly to these political preference variables, and the interpretation in the sense of conditional correlations should therefore be reiterated. We cover four different attitudes about politics and include each of them in a separate regression.

[19] *Different levels of educational attainment were added as an alternative to financial literacy and debt knowledge but did not turn out to be statistically significant (results available upon request). Apparently, for the given context, financial literacy and debt knowledge are more specific and informative than general degrees of educational attainment.*

Accordingly, table 3 shows how each dependent variable is associated with political preferences. The following observations can be made. First, people who are more satisfied with the delivery of public services are more confident about higher public debt – very consistently across the four specifications. The same holds true for individuals who think that the state manages tax revenues conscientiously (except for the specification depicting public debt as a catalyst for investment, where the relation is insignificant). Second, people who believe that the state should reduce income differences between the rich and the poor are less likely to agree that higher public debt compromises the opportunities of future generations or implies higher future taxes. Thus, people who support income redistribution by the state tend to be less skeptical about the future impact of public debt, possibly because

Table 2

Extension 1: association of attitudes toward public debt with financial knowledge

Outcome variable: agreement with statement (0/1)	Binary dependent variables							
	Higher public debt compromises opportunities of future generations		Higher public debt allows for higher investments today		Higher public debt implies higher future taxes		Higher public debt implies lower future pensions and benefits	
	1	2	3	4	5	6	7	8
	Average marginal effects							
Respondents' financial literacy level and debt knowledge								
Interested in politics	0.005	0.007	0.051***	0.047***	0.009	0.013	−0.001	0.006
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)	(0.013)
Financially literate	0.090***		0.099***		0.086***		0.042	
	(0.031)		(0.035)		(0.032)		(0.033)	
Concerned about development of public debt	0.189***	0.146***	0.177***	0.084***	0.237***	0.176***	0.230***	0.201***
	(0.020)	(0.016)	(0.024)	(0.019)	(0.020)	(0.017)	(0.021)	(0.017)
Interaction: financially literate AND concerned about development of public debt	0.007		−0.123***		−0.038		0.008	
	(0.032)		(0.037)		(0.034)		(0.035)	
Correctly identified size of public debt		−0.031		−0.055*		−0.072**		−0.061*
		(0.029)		(0.032)		(0.032)		(0.033)
Failed to identify size of public debt		0.037***		−0.030*		0.026*		0.011
		(0.014)		(0.016)		(0.015)		(0.015)
Interaction: correctly identified size of public debt AND concerned about its development		0.083***		0.068**		0.084**		0.052
		(0.031)		(0.034)		(0.033)		(0.034)
Other baseline controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	−4,716.0	−5,014.3	−5,351.7	−5,612.3	−4,796.9	−5,071.7	−4,956.7	−5,226.5
Pseudo R-squared (McFadden)	0.10	0.09	0.04	0.04	0.13	0.12	0.10	0.10
Pseudo R-squared (McKelvey & Zavoina)	0.18	0.17	0.03	0.03	0.12	0.12	0.10	0.09
Probability > Chi squared (df_m)	531.27(27)	494.14(28)	249.82(27)	241.93(28)	689.10(27)	674.40(28)	601.19(27)	608.72(28)
Number of observations	8,381	8,788	8,206	8,579	8,276	8,661	8,166	8,543
BIC	9,685.0	10,292.0	10,955.8	11,487.3	9,846.4	10,406.3	10,165.6	10,715.5
Adjusted pseudo R-squared (McFadden)	0.09	0.08	0.08	0.07	0.24	0.23	0.19	0.19
Tjur's D	0.13	0.11	0.05	0.05	0.16	0.15	0.13	0.13
P(DepVar=1)	0.68	0.68	0.41	0.41	0.62	0.62	0.60	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. Base categories are: 35 to 54 years old; main residence is good, only needs minor repair; reports to have no savings; 1-person household; Czech resident. The sample comprises all ten OeNB Euro Survey countries.

Table 3

Extension 2: association of attitudes toward public debt with political attitudes

	Specifications for attitudes toward politics			
	Satisfaction with public services (index)	State is wasting taxpayer money	Preference for income redistribution	Trust in central government
	1	2	3	4
	Average marginal effects			
Dependent variable: higher public debt compromises opportunities of future generations				
General trust in institutions (index)	0.001	–0.001	–0.013*	–0.000
	(0.007)	(0.007)	(0.007)	(0.007)
Respective political attitudes	–0.045***	0.114***	–0.029**	–0.045***
	(0.010)	(0.013)	(0.013)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,082.5	–5,046.7	–5,128.2	–5,149.8
Pseudo R-squared (McFadden)	0.07	0.08	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.14	0.15	0.13	0.13
Probability > Chi squared (df_m)	353.87(24)	425.62(24)	352.94(24)	345.93(24)
Number of observations	8,710	8,716	8,795	8,822
BIC	10,391.7	10,320.1	10,483.4	10,526.8
Adjusted pseudo R-squared (McFadden)	0.07	0.08	0.07	0.06
Tjur's D	0.09	0.10	0.09	0.09
P(DepVar=1)	0.68	0.68	0.68	0.68
Dependent variable: higher public debt allows for higher investments today				
General trust in institutions (index)	0.013	0.024***	0.024***	0.018**
	(0.008)	(0.008)	(0.008)	(0.008)
Respective political attitudes	0.048***	0.011	0.022	0.030*
	(0.011)	(0.014)	(0.015)	(0.016)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,590.4	–5,604.9	–5,659.2	–5,677.7
Pseudo R-squared (McFadden)	0.03	0.03	0.03	0.03
Pseudo R-squared (McKelvey & Zavoina)	0.06	0.06	0.06	0.06
Probability > Chi squared (df_m)	196.41(24)	186.10(24)	184.74(24)	183.58(24)
Number of observations	8,491	8,501	8,580	8,608
BIC	11,407.0	11,435.9	11,544.8	11,581.9
Adjusted pseudo R-squared (McFadden)	0.03	0.02	0.02	0.02
Tjur's D	0.04	0.04	0.04	0.04
P(DepVar=1)	0.42	0.41	0.41	0.41

Source: Authors' calculations based on OeNB Euro Survey 2018.

Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. The sample comprises all ten OeNB Euro Survey countries.

they have in mind that public spending enabled by higher debt would benefit the poor relatively more. Finally, people who have greater trust in government tend to be more confident about higher public debt levels, too.[20]

[20] The baseline regressors remain robust when we add either financial literacy or debt knowledge or political attitudes. Therefore, we do not show the average marginal effects for the baseline controls in tables 2 and 3 – except for general trust in institutions in table 3. The estimated average marginal effect for general trust in institutions (recall table 1) decreases and loosens statistical significance in most specifications of extension 2, reflecting also the partly high bivariate correlation with some of the political attitude variables. At the same time, dropping general trust completely leaves the results for the political attitude regressors qualitatively unchanged.

Extension 2: association of attitudes toward public debt with political attitudes

	Specifications for attitudes toward politics			
	Satisfaction with public services (index)	State is wasting taxpayer money	Preference for income redistribution	Trust in central government
	1	2	3	4
	Average marginal effects			
Dependent variable: higher public debt implies higher future taxes				
General trust in institutions (index)	−0.010	−0.010	−0.021***	−0.001
	(0.007)	(0.007)	(0.007)	(0.008)
Respective political attitudes	−0.043***	0.121***	−0.028**	−0.081***
	(0.011)	(0.013)	(0.013)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	−5,164.5	−5,104.1	−5,206.2	−5,206.6
Pseudo R-squared (McFadden)	0.10	0.11	0.10	0.10
Pseudo R-squared (McKelvey & Zavoina)	0.19	0.21	0.19	0.19
Probability > Chi squared (df_m)	503.17(24)	609.56(24)	513.88(24)	532.70(24)
Number of observations	8,578	8,573	8,655	8,681
BIC	10,555.5	10,434.5	10,639.1	10,640.0
Adjusted pseudo R-squared (McFadden)	0.09	0.10	0.09	0.10
Tjur's D	0.13	0.14	0.13	0.13
P(DepVar=1)	0.61	0.61	0.61	0.62
Dependent variable: higher public debt implies lower future pensions and benefits				
General trust in institutions (index)	−0.013*	−0.014*	−0.024***	−0.003
	(0.007)	(0.007)	(0.007)	(0.008)
Respective political attitudes	−0.042***	0.107***	−0.013	−0.083***
	(0.011)	(0.014)	(0.014)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	−5,333.8	−5,289.2	−5,380.9	−5,369.4
Pseudo R-squared (McFadden)	0.07	0.08	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.14	0.16	0.14	0.15
Probability > Chi squared (df_m)	399.03(24)	478.73(24)	405.63(24)	434.69(24)
Number of observations	8,464	8,464	8,545	8,569
BIC	10,893.7	10,804.5	10,988.1	10,965.2
Adjusted pseudo R-squared (McFadden)	0.07	0.07	0.07	0.07
Tjur's D	0.09	0.10	0.09	0.10
P(DepVar=1)	0.59	0.59	0.59	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. The sample comprises all ten OeNB Euro Survey countries.*

3.3 Robustness analysis

To emphasize the robustness of the basic results presented in the previous section, we run several checks. Most of them are documented in the online supplement; if not, they are available from the authors upon request. The main robustness checks can be summarized as follows.

First, the prevalence of highly-significant country fixed effects in all specifications indicates that cross-country differences in the various institutional and economic backgrounds are important for determining individual public debt perceptions.

Therefore, we execute a type of jackknife test, re-estimating the baseline specifications and the extensions by excluding one country at a time. The main effects of the regressors on general attitudes, economic hardship, financial literacy and political attitudes are robust with respect to the exclusion of individual countries. Yet, we identify some robustness issues regarding the marginal effects of the regressors capturing real wealth, savings and knowledge about the size of public debt. For the baseline model and extension 2, the reported highly significant average marginal effects of wealth and savings turn out to be robust, while the less significant average marginal effects of the wealth and savings regressors vary with the inclusion of some countries, and they lose significance if Albania is excluded. For extension 1, the category dwelling well-maintained turns out robust, while the poor-wealth and savings dummies vary with the inclusion of some countries. Moreover, the average marginal effects on savings, general trust in institutions or unemployment occasionally even increase and become more significant if particular countries are excluded. Finally, the household-size regressors turn out to be sensitive with respect to the inclusion of Czechia, Poland and sometimes of Albania.

Second, the analysis of the correlates of straight-lining (see online supplement) concludes that nondifferentiation is mainly influenced by individual characteristics and rushing through the interview, while the rather few cases of multiple straight-lining pile up mainly in Albania and appear to be influenced by interviewer effects on response styles, too. To assess the impact of straight-lining on the robustness of the presented results, we re-estimate the baseline specification and the extensions by dropping (a) all respondents who straight-lined at least once, (b) all respondents who straight-lined their responses on the dependent variables and (c) by dropping only the major cases of multiple straight-lining (see the results for the latter in the online supplement). Excluding all cases with straight-lining (or only with respect to the dependent variables) shrinks the sample size by 58% (or 24%) and would presumably exclude many (some) respondents who simply have pronounced views on the specific topic of public debt. Regression results show for all specifications that the exclusion of all straight-lining respondents leads to insignificant average marginal effects of the regressors for wealth, savings and household size; but confirm the robustness of the effects of all other explanatory variables.[21] This implies that the majority of straight-lining cases are *not* measurement errors but rather assemble respondents with pronounced views associated with relatively richer and poorer respondents. Excluding the *major* cases of multiple straight-lining (i.e. 4% of the sample size, mostly concentrated on Albania and Hungary) yields smaller and less significant average marginal effects only for the poor-wealth dummy, confirming the robustness of all other regressors.[22]

Third, given that the binary dependent variables used thus far are derived from naturally ordered raw data, we alternatively apply an *ordered* probit and a *generalized ordered* probit estimator. The results confirm the main findings concerning excellent housing conditions, general attitudes and economic hardship (see online

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[21] *By contrast, rerunning the regressions relying only on the 58% straight-lining respondents yields the opposite picture: larger average marginal effects for wealth and household-size regressors, and robust results for the remaining factors.*

[22] *Conversely, rerunning the regressions including only the 4% major straight-lining cases yields significant effects only for wealth, general trust, consumption cuts and most importantly for the dummy for not revealing whether the respondent has any savings. This reinforces the impression that personality characteristics and interviewer effects may have introduced some measurement errors, yet the attenuated average marginal effects are mostly limited to this subsample.*

supplement for the baseline and further econometric details). But the regressors for poor housing condition and savings turn out insignificant for all the four dependent variables. The average marginal effects as well as the threshold parameters change sign between the categories "strongly agree" and "agree" for the statement that higher debt compromises the opportunities of future generations, and between "somewhat agree" and "agree" in the other cases – substantiating the coding rule for the binary dependent variables. As another robustness check with respect to defining the dependent variable, we rerun the probit regressions with the broader definition of agreement (i.e. including also "somewhat agree"). The main results survive, but the detected effects are partly smaller and statistically less significant.

Fourth, as a robustness check with respect to model selection, we apply the least absolute shrinkage and selection operator (LASSO) method, i.e. a machine-driven selection of explanatory variables from a larger set of candidate variables. The LASSO results largely confirm the preferred probit baseline specification, whereby a few variables that lacked robustness or were not highly significant in the probit estimations were selected by LASSO (results are shown in the online supplement).

Finally, concerning the estimation technique, the significance of results turns out robust if standard errors are clustered at the regional level or if we use Huber-White robust standard errors.

4 Conclusion

In the aftermath of the global financial crisis most countries in CESEE experienced a considerable increase in their public debt levels. Despite some consolidation until 2019, this development has most recently been reinforced by the fallout from the COVID-19 pandemic, as countries have launched sizable government stimulus packages. Even if refinancing costs were to remain low for a prolonged period of time, elevated public debt ratios could potentially pose risks to debt sustainability for a few countries. For these reasons, policymakers from CESEE countries could benefit from insights into people's attitudes toward public debt for designing and implementing successful stabilization strategies during the ongoing crisis and successful consolidation strategies thereafter. This seems even more important as the COVID-19 pandemic has shifted public support in favor of higher social spending (see Ferragina and Zola, 2020), which is why post-pandemic consolidation might meet greater resistance.

This paper has sought to contribute accordingly, by analyzing people's attitudes toward public debt incurrence in ten CESEE countries, using unique survey data collected in the fall of 2018 through the OeNB Euro Survey. A stylized fact from our analysis is that CESEE residents have, in general, negative views about public debt, with a big majority believing that higher public debt levels compromise the opportunities of future generations and that there is a link between higher debt incurrence and the perspective of higher taxes and lower social benefits. The belief that higher public debt levels allow for higher investments today is also widespread but less common. There are cross-country differences, with individuals in some CESEE countries being more skeptical than in others, but the overall conclusion refers to all countries.

Turning to the profile of individuals that expressed certain attitudes toward public debt, our econometric analysis stresses the importance of several groups of factors. First, a more skeptical view of public debt is strongly affected by personal debt-related attitudes, in particular aversion to incurring personal debt. Second,

economic well-being matters. Individuals who belong to more disadvantaged societal groups (particularly individuals who have experienced economic hardship) tend to be most concerned about public debt. Conversely, this does not uniformly imply that better-off individuals are more debt tolerant. For instance, we provided some evidence that wealthier individuals also express comparatively more skepticism about higher public debt levels, pointing to the existence of Ricardian considerations in our sample. Third, people who are more financially literate tend to be more skeptical about the future impact of higher public debt, but also agree that higher public debt levels allow for higher investments today. Fourth, we have also learned that individuals' general attitudes about politics underpin their public debt attitudes: A more confident view of public debt is associated with satisfaction with public services, preference for income distribution by the state, the perception that the state is managing taxpayer money diligently, and trust in government.

The finding that worse-off societal groups are more skeptical toward higher levels of public debt contrasts with several existing studies for advanced economies that found that it is *primarily* the better off who tend to be more skeptical and prefer deleveraging. The skepticism of disadvantaged (or disappointed) societal groups in CESEE may be explained by the comparatively lower level of social spending and the predominance of regressive tax systems in the region, which could make worse-off individuals believe that the burden of higher debt must eventually be shouldered by them. Thus, to gain people's support for temporarily higher public debt levels – as e.g. needed during the current crisis situation – our results would call for channeling increased government spending to the more disadvantaged groups of society (Eller and Scheiber, 2020) and strengthening the progressivity of tax systems (as recently emphasized by Gaspar et al., 2021).

Our descriptive analysis pointed to notable cross-country differences in individuals' perception of public debt. As parts of future research efforts, the reasons for these differences across countries could be explored – e.g. by adding country-specific regressors to the model (instead of country fixed effects) and moving toward multilevel modeling to account for the hierarchical structure of the data. In line with our reasoning above, it would be interesting to examine whether a different perception of public debt across countries is indeed related to differences in public spending intensity and composition (e.g. the share of social expenditure) or the degree of progressivity of the taxation system. In addition, besides obvious macroeconomic factors, it would be interesting to investigate several institutional factors that could explain local variation in individuals' debt attitudes and fiscal knowledge, such as the way fiscal topics (e.g. fiscal council recommendations) are covered by public media, a country's past track record in complying with fiscal rules or meeting fiscal targets, or more generally the quality of public sector governance – to mention only a few.

Once the dust of the COVID-19 pandemic settles, it will be of interest to examine whether people's attitudes toward public debt have changed significantly compared to the pre-crisis survey data presented in this paper. Therefore, in future waves of the OeNB Euro Survey, we will attempt to repeat parts of the survey presented here and realign the answers in order to uncover post-crisis debt consolidation preferences of individuals in CESEE (e.g. analogously to Stix, 2013; or Hayo and Neumeier, 2017) and to investigate how these preferences change once consolidation measures are in fact taken (e.g. building on Kalbhenn and Stracca, 2020).

References

Abbas, A., O. Basdevant, S. Eble, G. Everaert, J. Gottschalk, F. Hasanov, J. Park, C. Sancak, R. Velloso and M. Villafuerte. 2010. Strategies for Fiscal Consolidation in the Post-Crisis World. IMF Fiscal Affairs Department.

Alesina, A., N. Roubini and G. D. Cohen. 1997. Political Cycles and the Macroeconomy, MIT Press.

Ardanaz, M., M. Hallerberg and C. Scartascini. 2020. Fiscal consolidations and electoral outcomes in emerging economies: Does the policy mix matter? Macro and micro level evidence from Latin America. In: European Journal of Political Economy 64. 101918.

Arias, E. and D. Stasavage. 2019. How large are the political costs of fiscal austerity? In: The Journal of Politics 81(4). 1517–1522.

Bansak, K., M. M. Bechtel and Y. Margalit. 2021. Why austerity? The mass politics of a contested policy. In: American Political Science Review 115(2). 486–505.

Beckmann, E. and H. Stix. 2015. Foreign Currency Borrowing and Knowledge About Exchange Rate Risk. In: Journal of Economic Behavior & Organization 112. 1–16.

Beyer, R. C. M., E. Chabhra, V. Galdo and M. Rama. 2018. Measuring districts' monthly economic activity from outer space. World Bank Policy Research Working Paper 8523.

Blesse, S., F. Heinemann, E. Janeba and J. Nover. 2021. Die Zukunft der Schuldenbremse nach der Pandemie: Einsichten aus einer Befragung aller 16 Landesparlamente. In: Zeitschrift für Wirtschaftspolitik 70(1). 1–16.

D'Acunto, F., D. Hoang and M. Weber. 2018. Unconventional fiscal policy. In: American Economic Review – Papers & Proceedings 108(5). 1–5.

Denisova, I., M. Eller and E. Zhuravskaya. 2010. What do Russians think about transition? In: Economics of Transition 18(2). 249–280.

EBRD. 2006. Life in Transition I – A survey of people's experiences and attitudes.

Eller, M. and T. Scheiber. 2020. A CESEE conundrum: low trust in government but high hopes for government-led job creation. In: Focus on European Economic Integration Q3/20. OeNB. 81–97.

Ferragina, E. and A. Zola. 2020. An Obituary for Austerity Narratives? An Experimental Analysis of Public Opinion Shifts and Class Dynamics during the Covid-19 Crisis. MaxPo Discussion Paper 20/5.

Gaspar, V., M. Keen, A. Klemm and P. Mauro. 2021. A COVID-19 Recovery Contribution. In: IMF Blog. April 16. https://blogs.imf.org/2021/04/16/a-covid-19-recovery-contribution/?utm_medium=email&utm_source=govdelivery

Hayo, B. and F. Neumeier. 2017. Public Attitudes toward Fiscal Consolidation: Evidence from a Representative German Population Survey. In: Kyklos 70. 42–69.

Hayo, B. and F. Neumeier. 2019. Public Preferences for Government Spending Priorities: Survey Evidence from Germany. In: German Economic Review 20(4). 20 (4), e1–e37.

Heinemann, F. and T. Henninghausen. 2012. Understanding Public Debt Preferences. In: FinanzArchiv/Public Finance Analysis 68(4). 406–430.

Heinemann, F., E. Janeba and M. Todtenhaupt. 2020. Incumbency and expectations of fiscal rule compliance: Evidence from surveys of German policy makers. ZEW Discussion Papers 20-057.

Henderson, J. V., A. Storeygard and D. N. Weil. 2012. Measuring economic growth from outer space. In: The American Economic Review 102(2). 994–1028.

Horvath, R. 2013. Does trust promote growth? In: Journal of Comparative Economics 41(3). 777–788.

Hübscher, E., T. Sattler and M. Wagner. 2020. Voter responses to fiscal austerity. In: British Journal of Political Science. 1–10. doi:10.1017/S0007123420000320.

Johnson, D. S., J. A. Parker and N. S. Souleles. 2006. Household Expenditure and the Income Tax Rebates of 2001. In: American Economic Review 96(5). 1589–1610.

Lusardi, A. and P. Tufano. 2015. Debt literacy, financial experiences, and overindebtedness. In: Journal of Pension Economics & Finance 14(4). 332–368.

Kalbhenn, A. and L. Stracca. 2020. Mad about Austerity? The Effect of Fiscal Consolidation on Public Opinion. In: Journal of Money, Credit and Banking 52(2-3). 531–548.

Mueller, E. 1963. Public Attitudes Toward Fiscal Programs. In: The Quarterly Journal of Economics 77(2). 210–235.

Persson, T. and G. Tabellini. 2000. Political Economics. MIT Press.

Pitlik, H., G. Schwarz, B. Bechter and B. Brandl. 2011. Near Is My Shirt but Nearer Is My Skin: Ideology or Self-Interest as Determinants of Public Opinion on Fiscal Policy Issues. In: Kyklos 64(2). 271–290.

Roth, C., S. Settele and J. Wohlfart. 2020. Beliefs about Public Debt and the Demand for Government Spending. CESifo Working Paper Series 8087.

Sangnier, M. 2013. Does trust favor macroeconomic stability? In: Journal of Comparative Economics 41(3). 653–668.

Shapiro, M. D. and J. B. Slemrod. 2009. Did the 2008 tax rebates stimulate spending? NBER Working Paper 14753. February.

Stix, H. 2013. Does the Broad Public Want to Consolidate Public Debt? – The Role of Fairness and of Policy Credibility. In: Kyklos 66(1). 102–129.

Sturzenegger, F. and J. Zettelmeyer. 2006. Debt Defaults and Lessons from a Decade of Crises. MIT Press.

Zak, P. J. and S. Knack. 2001. Trust and growth. In: The Economic Journal 111(470). 295–321.

Annex

Definitions of variables

Label	Description
Respondents' attitudes toward public debt (dependent variables in the regressions)	
Higher public debt compromises opportunities of future generations	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels diminish the chances of future generations"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt allows for higher investments today	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels make it possible to conduct necessary investments today (e.g. into public infrastructure like schools and streets)"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt implies higher future taxes	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels imply that I will have to pay more taxes in the future"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed with the statement (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt implies lower future pensions and benefits	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels imply that I will receive lower state pensions and/or lower welfare benefits in the future"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Respondents' sociodemographic and socioeconomic (household) characteristics	
Age	Dummy variables for three age groups: 19 to 34 years, 45 to 54 years (base category) and 55 and more years.
Female	Dummy variable that takes the value 1 if respondents were female, 0 otherwise (base category).
Condition of respondents' home	Dummy variables: interviewer assessment whether respondents' home is "excellent and well-maintained"; "good, needs some minor repairs" (base category); or "poor, needs major work/very poor, some walls or ceilings need replacement."
Savings	Dummy variables: respondents have savings (themselves or together with their partners), refused to answer or were not able to provide an answer. Base category: have no savings.
Household size	Dummy variables for the number of persons living permanently in a given household (two individuals; three and more individuals). Base category: 1-person household.
Respondents' general attitudes	
Present bias (index)	Index is constructed as the average score of agreement on a 6-point Likert scale using the following two statements: "I tend to live for today and let tomorrow take care of itself" and "I am impulsive and tend to buy things even when I cannot really afford them." Excluding respondents who answered "don't know" or did not provide an answer.
Discomfort of owing money	Dummy equals 1 if respondents rather/strongly agreed with the statement "Owing money to somebody, even if it is just a small amount, makes me feel uncomfortable"; 0 otherwise (6-point-Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
General trust in institutions (index)	Index constructed as the average trust score across five institutions: police, domestically owned banks, foreign-owned banks, the EU, the national central bank. Respondents were asked about how much they trust these five institutions on a 5-point Likert scale. Respondents answering "don't know" were re-assigned to category 3 "I neither trust nor distrust." Excluding respondents who did not provide an answer.

Source: Authors' compilation.

Definitions of variables

Label	Description
Respondents' economic hardship experiences	
Currently unemployed	Dummy equals 1 if respondents are currently unemployed; 0 otherwise (base category). Excluding respondents who did not provide an answer.
Cut back consumption	Dummy equals 1 if respondents had to cut back on basic consumption in the period from 2008 to 2018; 0 otherwise. Excluding respondents who answered "don't know" or did not provide an answer.
Household net income	Dummy variables for the level of total household income after taxes (1st quartile, 2nd and 3rd quartile, 4th quartile, don't know/no answer). Base category: 2nd and 3rd quartile.
Capital city resident	Dummy equals 1 if respondents' main residence happened to be in the capital city; 0 otherwise (base category).
Local economic activity	Natural logarithm of visible infrared imaging radiometer suite (VIIRS) nightlight data for a radius of 10km around the primary sampling unit (PSU) serving as a proxy for local economic activity. The nightlight data refer to 2018 (annual averages) and were cleaned by a contractor according to Beyer et al. (2018).
Access to emergency borrowing (index)	Index constructed as the average of reported probabilities. The index is based on respondents' self-assessment of being able to borrow a given amount (representing four times the average monthly wage in their country) in an emergency from five different sources: banks; their employer; payday lenders, pawnshops or internet loan providers; family, relatives or friends; or other private lenders. The responses were coded as ordinal categories, and the following numerical probabilities were assigned to the set of verbal categories, as identified: very likely = 0.9, likely = 0.65, don't know = 0.5, unlikely = 0.35 and very unlikely = 0.1.
Self-reported health status (index)	Based on the answer to the question "All in all, how would you describe your current state of health? Would you say it is very good/good/fair/poor." Index ranges from 1 (poor) to 4 (very good). Excluding respondents who answered "don't know" or did not provide an answer.
Respondents' financial literacy level and debt knowledge	
Very interested in politics	Dummy equals 1 if respondents rather/strongly agreed with the statement "I am very interested in politics"; 0 otherwise (6-point Likert scale). Excluding respondents who did not provide an answer.
Concerned about the development of public debt	Dummy equals 1 if respondents rather/strongly agreed with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise (6-point Likert scale). Excluding respondents who did not provide an answer.
Financial literacy	Dummy equals 1 if respondents scored 3 or 4 on the financial literacy index; 0 otherwise (base category). The financial literacy index is based on answers to four questions, relating to real interest rates, exchange rates, inflation, and risk diversification. The index varies between 0 (= item non-response) and 4 (= all questions regarding financial literacy were answered correctly).
Interaction: financially literate AND concerned about development of public debt	Interaction term: dummy equals 1 if the financial literacy dummy equals 1 AND respondents indicated to rather/strongly agree with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise. Excluding respondents who did not provide an answer.
Correctly identified size of public debt	Dummy variables: correctly identified size of public debt or answered "don't know." Base category: failed to identify size of public debt, including item non-response. The original variable captures respondents' actual answers: they were given six brackets (ranging from "below 20% of GDP" up to "above 100% of GDP") and asked to indicate the appropriate bracket for their country. The debt ratios for Albania, Czechia, Hungary and Poland broadly corresponded to bracket midpoints, so that the respective brackets constituted the only appropriate answer. The ratios for all other countries broadly corresponded to two out of the six brackets, so that both brackets were counted as appropriate. The respective tolerance margin turns out to be +/–3 percentage points.
Interaction: correctly identified size of public debt AND concerned about its development	Interaction term: dummy equals 1 if respondents correctly identifed the size of public debt AND rather/strongly agreed with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise. Excluding respondents who did not provide an answer.
Respondents' political attitudes	
Satisfaction with public services (index)	Index constructed as the average degree of satisfaction with the delivery of public services as reported for six areas: social security; public infrastructure; education; health; defense and public safety; and economic development. Answers range from "very satisfied (4)" to "very dissatisfied (1)." Excluding respondents who answered "don't know" or did not provide an answer.
State is wasting taxpayer money	Dummy equals 1 if respondents rather/strongly agreed with the statement "the state is wasting taxpayer money"; 0 if they rather/strongly agreed with the statement "the state manages tax revenues conscientiously," or if they indicated no preference, or considered both statements to be somewhat true, or answered "don't know." Excluding respondents who did not provide an answer.
Preference for income redistribution	Dummy equals 1 if respondents rather/strongly agreed with the statement "the state should reduce income differences between those with higher incomes and those with lower incomes, e.g. via taxation or public benefits"; 0 if they rather/strongly agreed with the statement "the state should not reduce income differences," or if they indicated no preference, or considered both statements to be somewhat true, or answered "don't know." Excluding respondents who did not provide an answer.
Trust in central government	Dummy equals 1 if respondents reported to somewhat or completely trust the central government/cabinet of ministers; 0 if they indicated complete/some distrust or picked neither trust nor distrust (5-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.

Source: Authors' compilation.