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* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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Populist attitudes, fiscal illusion and fiscal preferences: evidence from Dutch households[1]

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Abstract

It is well documented that the public is often poorly informed about economic facts and mechanisms. In the domain of fiscal policy, this may make voters susceptible to favour spending, while underestimating its costs (*fiscal illusion*). While politicians typically have a comparative advantage in economic policymaking, voters may be less inclined to rely on proposals for prudent fiscal policy if they do not believe that these politicians act in their best interest – an idea that in recent decades has become more prevalent. Using a novel dataset from the Netherlands, this paper assesses whether people with strong populist ideas also report significantly more expansionary fiscal preferences, and whether populist attitudes reinforce the risk of fiscal illusion. We find that (i) populist attitudes indeed come with more expansionary preferences, (ii) literacy and information provision – which have the potential to alleviate the occurrence of fiscal illusion – contribute to less expansionary fiscal preferences and (iii) the effect of literacy is conditional on the level of populist sentiment. In particular, we find that poorly literate respondents report significantly higher support for tax relief only when they hold strong populist attitudes, but not when they have more favourable attitudes towards the elite.

Keywords: fiscal preferences, literacy, information, fiscal illusion, populism.
JEL codes: D72, D74, D83, E62, F52, G53, H23, H31

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1. Introduction

For some decades now, countries across the world have witnessed a surge in the vote share of parties that challenge the political elite. One of the core features that these challenger parties of both the left and the right have in common is their populist set of ideas (Mudde, 2004; Mudde and Rovira Kaltwasser, 2017).[2] This set of ideas holds that there is an antagonistic division between the ordinary people and an 'evil elite' which is not acting according to the popular will as it should, and can be present in the rhetoric of political parties, but also in the mind of individuals (Taggart, 2000; Hawkins *et al.*, 2018). While initially the literature has focused on the causes of the populist success, ranging from supply-side factors such as the party system (Hakhverdian and Koop, 2007) to demand-side factors such as voters' grievances over globalization (Pauwels, 2014), recently the literature has started to investigate the consequences of the prevalence of populism on e.g. political dynamics and policymaking (see Otjes and Louwerse, 2015).

A widely held premise of economists is that populism is a threat to sound economic policymaking and sound public finances in particular (Dornbusch and Edwards, 1991; Andersen *et al.*, 2017; Guiso *et al.*, 2017; Davidson, 2018). This fear rests on several building blocks. First, it is well documented that the public is often poorly informed about economic facts and mechanisms (Boeri *et al.*, 2001; Caplan, 2002; van der Cruijsen *et al.*, 2015; Guiso *et al.*, 2017). When public policy is complex and budgets are non-transparent, this may result in *fiscal illusion*, i.e. voters appreciating spending programs, but underestimating the (future) costs in terms of taxation or debt (Buchanan and Wagner, 1977; Alesina and Perotti, 1995). Furthermore, political elites have more information on the state of public finances and hence tend to have a comparable advantage in economic policymaking. Last, when the political elite proposes unpopular measures, public support will depend on the public's judgement of the political elite's ideology. When people believe that the political elite acts according to the people's interest, they are more likely to support unpopular measures than when they believe the elite to be financially or morally corrupt. The latter is more likely to be the case when populist ideas are widespread.

Despite the concerns of economists over the unsustainable nature of the populist economic agenda, the literature has so far not yet rigorously studied what the surge of populist sentiment – understood as the pervasiveness of ideas of an antagonistic division between the

[2] To be precise, Mudde and Rovira Kaltwasser (2017) call it a 'thin-centered ideology', which contrasts with full-blown ideologies such as socialism, fascism of liberalism.

elite and the people – implies for fiscal preferences. A more rigorous assessment is needed for at least two reasons. For one thing, the concern that populist leaders might win votes with short-term policies rests on the assumption of fiscal illusion. Yet, while in some countries politicians may indeed succeed in misleading their voters with expansionary policies that are not sustainable, the empirical support for fiscal illusion – and the deficit bias that goes with it – is not strong, especially in those countries where voters are more sophisticated (Eslava, 2011; Alesina and Passalacqua, 2016). Secondly, recent research has highlighted various examples of economic policies that have been unresponsive to the concerns of a large share of voters. This goes, most notably, for the disruptive labour market effects of trade with China, which have been found to play a causal role in the electoral success of populist parties (Autor *et al.*, 2016; Colantone and Stanig, 2018; Colantone and Stanig, 2019). In a similar vein, populist parties may also cater to voters who hold intrinsically more expansionary preferences than the political elite, e.g. due to a less benign socioeconomic position. In line with this, Piketty (2020) mocks the tendency of mainstream political actors to label parties 'populist' merely because they propose policies that they deem too radical.[3]

The aim of this paper is to evaluate the impact of increased prevalence of populist ideas for fiscal preferences of voters. To be precise, we empirically assess whether people with strong populist ideas also report more expansionary fiscal preferences, and to what extent populist attitudes reinforce the risk of fiscal illusion. Our survey is set in the Netherlands, a country with a strong tradition of prudent fiscal policy and a literate population which on average holds relatively conservative fiscal preferences. We measure fiscal preferences by asking respondents how they would use the tax windfalls that were foreseen at the time of the survey (September 2017): for debt reduction, tax relief and/or more spending. In turn, we measure the extent to which individuals adhere to populist ideas by a tested index of individuals' 'populist attitudes' (Akkerman *et al.*, 2014). We assess the role of fiscal illusion by including a measure of the literacy of respondents, and by means of an experiment in which we treat a random share of respondents with information about public debt dynamics.

[3] As an example, in the resistance of the French 'gilberts jaunes' to a gasoline tax increase to finance climate measures, protesters contend that the political elite forgets that many people have trouble making ends meet. "Some people can afford to think about the end of the 'system', but most of us just worry about how to cope until the end of the month" (The Guardian, 12 Dec 2018). According to Piketty (2020), the fact that the French government at the same time abolished the wealth tax, makes the protest of the yellow vests a strive for fiscal justice. These same yellow vests, together with the Italian League and Five Star Movement, have also proposed referenda on the cancellation of debt. While Piketty does not deem a referendum the most adequate means, he sees the idea as a necessary and unavoidable impetus to a public debate about ways to reschedule public debt in Europe (Piketty, 2020: p. 963).

This paper makes three main contributions. First, we examine to what extent fiscal preferences can be explained by populist attitudes at the individual level. To our knowledge, this has never been done before. We find that populist attitudes of respondents prove a very relevant predictor of their fiscal preferences. Our results are robust to the use of an instrumental variable (IV) estimation, in which we instrument populism with pre-crisis trust in politics and the financial sector. Second, in line with previous research, we find that literacy and information provision – which can alleviate the occurrence of fiscal illusion – contribute to more prudent fiscal preferences. Third, to assess whether populist attitudes reinforce the risk of fiscal illusion, we evaluate to what extent populist sentiment moderates the effect of literacy and information on fiscal preferences. We find that the effect of literacy is conditional on the level of populist sentiment when it comes to support for tax relief. To be precise, poor literacy only spurs support for tax relief when respondents hold relatively strong populist attitudes. Furthermore, when it comes to support for more spending, we find that the effect of our information experiment is larger for respondents with stronger populist attitudes, suggesting that information provision can also alleviate fiscal illusion with voters who are sceptical of the establishment.

This paper proceeds as follows. The next section reviews the literature on populist attitudes and fiscal preferences and presents our hypotheses. Section 3 describes our research design. Section 4 presents the main results of this paper, i.e. the relationship between populist attitudes and fiscal preferences, as well as the impact of literacy and information provision. Among other robustness tests, Section 5 assesses whether our results are robust to an IV estimation in which we instrument populism with pre-crisis trust in national politics and the financial sector. Section 6 assesses to what extent populist attitudes reinforce the effect of literacy and information provision on fiscal preferences. Section 7 concludes. Supplementary material is included in the Online Appendix (not for publication).[4]

2. Selected literature review and hypotheses

Attitudes towards the political elite and fiscal preferences

The starting point for our hypothesis that people with strong populist ideas hold more expansionary fiscal preferences is given by the model of Cukierman and Tommasi (1998). It consists of three premises that we deem rather realistic. First, public policy is complex, as outcomes do not only depend on government policies but also on external circumstances.

[4] Available from the authors' webpages.

Second, politicians have a comparative advantage in economic policymaking, as they have more information and access to expert judgement on the state of the world. Last, the model holds that voters cannot observe the ideology of politicians.[5]

In such a setting, voters will condition their evaluation of economic policy proposals on their judgement of the political elite's ideology. When people believe that the political elite acts according to the people's will, they will be more likely to support their plans. Arguably, this mechanism greatly facilitated the job of political and economic elites in the days when there were strong ideological and religious ties between the electorate and the elite (i.e., when party systems in Europe were still 'frozen', see Lipset and Rokkan, 1967). Yet, when for whatever reason people believe that the political elite is not acting in the people's interest as it should, they may be sceptical of the elite's policy proposals, especially if these policy proposals align with their views of the elite. If voters fear that elites will use public funds for their own means, they may hence favour a lean government (Hayo and Neumeier, 2017; Roth *et al.*, 2021; Otjes *et al.*, 2018). However, the opposite may also be true. When voters are especially worried that the elite is pursuing a neoliberal agenda mainly catering to the interests of big business, as in the model of Acemoglu *et al.* (2013), the elite will have to propose expansionary fiscal policies in order to be credible. It is the latter prediction that is consistent with popular discourse on the populist economic agenda, and that will guide our hypothesis.[6]

> **Hypothesis 1.** People with strong populist ideas will be more favourable to expansionary fiscal policy.

Importantly, there is also evidence suggesting that the relationship between populist attitudes and fiscal preferences goes in the other direction. Analysing how fiscal consolidation undertaken in the aftermath of the Great Recession affected welfare spending at the regional level, Fetzer (2019) finds that the support for Brexit was especially large in districts where the cuts to welfares spending were largest. Similarly, Guiso *et al.* (2019) hypothesize that in euro area countries the crisis has spurred frustration over the loss of economic policy space, and find support that the resort to populist parties was stronger in countries in the eurozone than outside.

[5] The model of Cukierman and Tommasi (1998) continues with the prediction that under certain circumstances, 'unlikely' parties will be more successful in implementing substantial policy reform, as their proposal of such policies can be more credible.

[6] Besides preferences for the aggregate stance on debt, taxation and spending, populist attitudes may also come with preferences on the exact composition of taxation and spending. We leave this issue for further research.

Although these studies do not examine individual-level populist attitudes, they do warrant for an empirical set-up to correct for endogeneity of populist attitudes.

Fiscal illusion and the role of literacy and information

There is a large literature in the public choice tradition on 'fiscal illusion', which holds that voters appreciate spending programs, but underestimate the (future) costs in terms of taxation or debt (Buchanan and Wagner, 1977; Alesina and Perotti, 1995). This can, for instance, arise when people observe the fruits of public spending, but do not observe the costs when spending is paid for with an increase of public debt. This would cause fiscal policies to be biased towards deficits. While the concept of fiscal illusion is intuitively very powerful and is often taken for granted, also when it comes to the populist economic agenda, scholars have put forward that fiscal illusion is at odds with the fact that voters often actually support politicians with fiscal conservative agendas (Alesina and Perotti, 1995; Eslava, 2011).

The financial sophistication of the public and collective learning by the public and the media to judge fiscal policies have been put forward as mechanisms that can mitigate fiscal illusion. Indeed, empirical studies have highlighted that a large share of the public is ill-aware of economic facts and mechanisms (Boeri *et al.*, 2001; Caplan, 2002; Blinder and Krueger, 2004; van der Cruijsen *et al.*, 2015). When public policy is complex and budgets are non-transparent, poorly literate voters are less suited to judge economic and fiscal policies. In turn, as voters are more literate and receive information on the public budget, they are less prone to deficit bias.

On the basis of a study on Germany, Hayo and Neumeier (2017) indeed find that the more knowledgeable respondents are, the more they favour prudent fiscal policies. Furthermore, a few studies have used randomized information experiments and have confirmed that exposure to factual information can spur public support for pension reforms (Boeri and Tabellini, 2012), dampen support for raising teachers' salaries (Lergetporer *et al.*, 2018) or alter overall fiscal preferences (Roth *et al.*, 2021). In particular, this latter study finds that respondents become more supportive of debt reduction, although they do not update their preferences on taxation.

> **Hypothesis 2**. People with poor literacy skills will be more favourable to expansionary fiscal policy.

> **Hypothesis 3**. When people receive information about the intertemporal budget constraint of the government, they will become less favourable to expansionary fiscal policy.

The moderating effect of populism on the effect of literacy and information

To the best of our knowledge, there is no literature explicitly linking literacy and populist attitudes in relation to fiscal policy preferences. Yet, from the model of Cukierman and Tommasi (1998) presented above we can derive predictions on this link. The model first of all holds that it is more difficult for voters to evaluate economic policy than for politicians due to less information and access to expert judgement. Yet, of course, this does not apply to all voters to the same extent, as some voters are more literate and have gathered more information on economic policymaking than others. Likewise, support for economic policies depends on people's judgement of the elite's ideology. Yet, also here, voters differ in their evaluation of the political elite's ideology. These two effects can be expected to reinforce one another. When voters are particularly suspicious of the elite's ideology, especially poorly literate individuals may demand expansionary policies to be convinced that the elite is acting in their interest. Yet, when they are reassured that the elite is acting in the people's interest, poor literacy may not lead to more demand for expansionary fiscal policies.

> **Hypothesis 4**. The positive effect of poor literacy on support for expansionary fiscal policy is larger, when people hold stronger populist views.

When it comes to information, a similar mechanism may be in place. In line with Hypothesis 3, factual information can be expected to dampen expansionary preferences. Yet, there is also a possibility that people who are sceptical of the motives of the political elite also tend to be sceptical of expert advice and third-party information in general. Indeed, recent research has found that populism is correlated with anti-intellectualism – a measure that includes attitudes towards economists (Merkley, 2020). Hence, when respondents are negative about the elite, they may be inelastic to information provision. Indeed, a study among US respondents finds that information only minimally alters fiscal preferences among respondents with low trust in government (Kuziemko *et al.*, 2015).

> **Hypothesis 5**. The negative effect of information on support for expansionary fiscal policy is more muted, when people hold stronger populist views.

Controls of fiscal preferences

A large theoretical and empirical literature has highlighted a host of determinants of fiscal preferences that we need to control for in our regression of fiscal preferences.

Gender, age and children. First of all, it is well established that since several decades women in industrialized countries have grown to be more supportive of redistribution and government spending (Alesina and La Ferrara, 2005; Alesina and Giuliano, 2011; Dassonneville, 2020).[7] Furthermore, most empirical evidence suggests that support for redistribution increases with age (Alesina and Giuliano, 2011; Gärtner *et al.*, 2017). According to Ricardian equivalence models, older people should favor higher debt levels than younger people since their remaining longevity is shorter, and hence their cumulative tax payments smaller (Heinemann and Hennighausen, 2012). However, empirical research does not find support for this prediction (Heinemann and Hennighausen, 2012; Stix, 2013). According to the same reasoning, people with children may instead be less supportive of high debt due to intergenerational concerns. Yet, the evidence is not conclusive (Heinemann and Hennighausen, 2012; Hayo and Neumeier, 2017).

Education. On the basis of the data from both the US General Social Survey and the World Values Survey, Alesina and Giuliano (2011) find that lower-educated people demand more redistribution, also controlling for income. However, when interacted with a leftwing ideology, higher-educated people are more supportive of redistribution (Alesina and Giuliano, 2011).[8] Lower-educated people have also been found to be less favourable to debt reduction, again controlling for income (Stix, 2013). What the channels are behind this education gradient has not been extensively studied. Alesina and Giuliano (2011) attribute it to the higher prospect of upwards mobility.

Economic position. According to the Meltzer-Richard hypothesis, one's position in the income distribution is the key driver of support for government spending (Meltzer and Richard, 1981).[9] Likewise, in the model of Cukierman and Meltzer (1989) people who are more financially constrained are more supportive of borrowing from future generations. Empirical studies have confirmed that higher-income individuals are less supportive of redistribution (Alesina and Giuliano, 2011), and that financially constrained people are more opposed to debt

[7] This 'gender gap' has invoked a large literature on possible explanations, ranging from more egalitarian attitudes, a stronger inclination of helping others and a higher likelihood to be employed in the public sector (Howell and Day, 2000; Cavalcanti and Tavares, 2011). On the other hand, according to experimental evidence, women are more supportive of redistribution because they are less self-confident about the position they take up in the income distribution (Buser *et al.*, 2016).

[8] Piketty (2020) documents that in fact low-educated people in advanced economies, including the Netherlands, have voted more and more for the right, while higher-educated people have voted more for left-wing parties. Yet, this does not mean that lower-educated people demand less redistribution as they may vote for right-wing parties for other reasons (e.g. immigration policies, involvement of left parties in retrenchment policies).

[9] The Meltzer-Richard hypothesis also posits that if inequality grows, in a median voter model there will be more redistribution. The evidence for this prediction, however, is weaker (for a discussion, see Borge and Rattsø, 2004).

consolidation (Stix, 2013). Furthermore, Alesina and Giuliano (2011) report that people who have experienced an unemployment spell are more supportive of redistribution.

Personality traits. The literature has also highlighted how several personality traits affect fiscal preferences. First of all, and most straightforwardly, more risk averse individuals demand more redistribution (Alesina and La Ferrara, 2005; Gärtner *et al.*, 2017). Second, studies have found that myopic individuals are more tolerant of debt (Stix, 2013; Hayo and Neumeier, 2017). Third, studies have highlighted that people who believe in control over lifetime economic outcomes, rather than luck or fate, attach less value to redistribution (Alesina and Giuliano, 2011; Kouba and Pitlik, 2014). Last, Bakker (2017) inspects the role of the 'Big Five' personality traits and found that conscientious individuals are less supportive of redistribution, while agreeable and neurotic individuals are more supportive.

Attitudinal predispositions. Finally, fiscal preferences have been linked to a variety of predispositions held by individuals. Almost by definition, people who place themselves to the left of the political spectrum are more keen on redistribution (Alesina and Giuliano, 2011).[10] Furthermore, in the European context, fiscal policy is highly influenced by European rules. Attitudes towards the European Union may therefore drive fiscal preferences, as people who are supportive of the EU may be more supportive of fiscal consolidation efforts to comply with European rules. At the same time, there is also evidence that Euroscepticism has grown as a result of fiscal consolidations implemented during the crisis, which lends support to the view that one's attitude towards the EU could be an endogenous regressor (Armingeon *et al.*, 2016; Guiso *et al.*, 2019; Fetzer, 2019).

3. Research design and data description

Context of our study

Our study is set in the Netherlands a decade after the start of the Great Recession. With government debt at 43.0 percent of GDP in 2007, its public finance position was relatively strong (CPB, 2019). Yet, government debt rose to 67.8 percent of GDP in 2014, despite expenditure cuts and tax rises that were taken from 2011 onwards. In Spring 2012, the government was at the brink of non-compliance with the Stability and Growth Pact (SGP) rules,

[10] While scholars heavily rely on left-right self-placement as a summary indicator of political ideology, it has been found that this measure in fact captures attitudes towards various issues such as cultural freedom, income equality, the role of markets and immigration (Bauer *et al.*, 2017; Laméris *et al.*, 2018). Given that we have variables for both support for redistributive policies and left-right orientation, we prefer to include these as separate regressors.

and implemented a large package to meet the 3 percent deficit threshold (the so-called Spring agreement). Since 2014, growth turned positive again and government debt started to fall.

Since the early 1990s, Dutch fiscal policy follows the principle of trend-based budgeting. This consists of expenditure ceilings, prudent budgeting and a strict separation between the expenditure and revenue side of the budget, which restricts the use of revenue windfalls for additional expenditure (Beetsma *et al.*, 2013). Trend-based budgeting can be at odds with the rules of the Stability and Growth Pact (SGP), as in a downturn the deficit can quickly deteriorate. This is why authorities aim to have some margin with respect to the SGP thresholds (MinFin, 2016). In Summer 2017, the economic forecasts for the years to come were better than assumed in the initial budgetary projections. In the run-up of the budget for 2018 – that was presented to the public in September 2017 – there was discussion on how to allocate the tax windfalls that would result from this, for debt reduction (consistent with budgetary rules) or for tax relief or more spending. This is precisely the question that we ask respondents in our September 2017 survey.

It is furthermore worth mentioning that, compared to other European countries, Dutch households appear to be relatively financially literate as well as fiscally conservative. As to literacy, according to the analysis of Fornero and Prete (2019), the Dutch public has one of the highest rates of financial literacy, which they find facilitates pension reforms. Furthermore, when it comes to fiscal policy, the Netherlands was the first country to have a fiscal council, the Netherlands Bureau for Economic Policy Analysis (CPB) (Debrun and Kinda, 2017; Geest and Vuuren, 2018). Research has demonstrated that CPB's forecasts are relatively unbiased (Beetsma, Giuliodori *et al.*, 2013; Beetsma, Bluhm *et al.*, 2013). Arguably, this tradition has made Dutch voters one of the most sophisticated audiences for judging fiscal policy. When it comes to their fiscal preferences, together with more Northern European countries, Dutch households are on average relatively debt averse. In a 2010 Eurobarometer poll, 77 percent of Dutch households agreed that measures to reduce public deficit and debt could not be delayed (European Commission, 2010). This percentage was only 3 percentage points higher than the EU average; yet, the Netherlands had also a relatively low debt level (59 percent of GDP, against an EU average of 80 percent in 2010).

Furthermore, the Netherlands is also a suitable case for studying the influence of populism. First, next to right-wing populists (LPF, PVV, FVD), also left-wing populists (SP) have been successful in this country. Second, it has been demonstrated that populist attitudes can be measured validly in this country (Akkerman *et al.*, 2014). Third, the populist message is relatively widespread in the Netherlands (Rooduijn, 2014). The main surveys used for this

study, on populism and on fiscal preferences, were held just several months after the Parliamentary elections in which populist parties fared relatively well (together, PVV, SP and FVD obtained 24 percent of the seats).

Surveys used

We employ various modules of the DNB Household Survey (DHS), conducted by CentERdata at Tilburg University. DHS is a panel dataset that includes approximately 2000 households from which one or more household members may take part. The panel is designed to be representative of the Dutch population and includes questions on demographics, occupational status, education, earnings, wealth, health and psychological concepts, in various modules spread out over the year. In addition to recurrent questions, additional questions can be added to the questionnaire on an *ad hoc* basis.[11] In a special module of the September 2017 DHS survey, we presented respondents with several questions on fiscal policy. The survey was presented to 2773 members of the panel, and completed by 2299 of them (i.e., the response rate was 82.9%). Furthermore, in June 2017, we conducted a special module in the DHS on political attitudes of households (this survey was also used in Rooduijn *et al.*, 2017). This survey was presented to 3035 members of the panel, and completed by 2358 of them (i.e., the response rate was 77.7%). Furthermore, to instrument populism with two indicators of trust, we draw from the trust survey that is administered by De Nederlandsche Bank and embedded in the DHS modules of 2006 and further, which are presented to the panel in the first quarter of the year (for more information, see van der Cruijsen *et al.*, 2016). See Tables A.1a and A.1b in the Online Appendix for an overview of all variables used and the respective module.

Dependent variables

Our dependent variables capture the support of respondents for three margins of fiscal policy. To be precise, we asked respondents to what extent they would prefer to use the tax windfalls that were foreseen at the time for i) debt reduction, ii) tax relief and iii) increased spending (see Table A.1a in the Online Appendix for the exact wording of our survey questions). Respondents could answer all three questions on a 1 (do not agree at all) to 4 scale (strongly agree).[12] Furthermore, as some respondents report more extreme answers than others, we divide the

[11] The panel has been used extensively to study financial market and savings behaviour (see e.g. Guiso *et al.*, 2008; van Rooij *et al.*, 2012).

[12] Clearly, a score of 1 or 4 on all three dimensions would be inconsistent. This is the reason why we delete those cases. Together, this concerns 31 cases.

scores per item by the the total scores awarded. This adjustment results in three continuous variables, that we transform to a scale from 0 to 10. We will use these three variables – '*support_debt_reduction'*, '*support_tax_relief*' and '*support_more_spending*' – as our dependent variables throughout the paper. Correcting for the total scores awarded is not trivial, however, as the total scores awarded is significantly correlated with populism (r = 0.17). Yet, in the robustness section we show that our results are similar without this correction. Table 1 below presents summary statistics for all variables used, restricting the sample to respondents for whom we observe their fiscal preferences. From an inspection of the means of our three dependent variables, we can see that respondents were on average most likely to support more spending and, to a lesser extent, debt reduction, while support for tax relief was substantially lower. To test our hypotheses, we interpret support for debt reduction as less expansionary, and support for tax relief and more spending as more expansionary.

Regressors of main interest

The regressor of our main interest is '*populism'*. While political scientists initially studied the populist ideas of political parties, recently they have started to measure to what extent individuals are prone to populist ideas. To be precise, this set of ideas comprises i) a distinction between the ordinary people and an evil elite, ii) an antagonistic relationship, and iii) the premise that politics should follow the general will and respect popular sovereignty (Mudde, 2004; Akkerman *et al.*, 2014).[13] Following the work of Akkerman *et al.* (2014), in the June 2017 survey we asked respondents to rank their agreement with six statements on political elites (see Table A.1a of the Online Appendix for the exact wording). As in other studies, the scores on these statements are strongly related, allowing us to integrate the scores into a composite index which is internally consistent.[14] This composite indicator, '*populism*', is a continuous variable ranging from 1 to 5.

Furthermore, to measure the numerical sophistication of respondents we use an index for probability literacy ('*prob_literacy'*).[15] This index traces to what extent respondents can

[13] It has been demonstrated that the index of populism, also used in this research, measures different underlying attitudes than older concepts such as political trust and external political efficacy, i.e. the extent to which respondents feel they can influence the political process (Geurkink *et al.*, 2020).

[14] Cronbach's alpha = 0.85.

[15] We also considered using two measures for financial literacy available in the DHS, a parsimonious one based on three questions as designed by Lusardi and Mitchell (2014) and an extensive one based on sixteen questions as designed by Van Rooij *et al.* (2012). However, the questions to construct these indices were not asked in 2017. Using the index of another year would result in a loss in the number of observations (with 75% in the case of the extensive measure). The correlation of our probability numeracy index with the parsimonious and the extensive

account for uncertainty, such as an event like job loss (Hudomiet *et al.*, 2018). The index is based on four numerical questions, where respondents have to select the right answer on an answering scale from 0 to 100. We reward each correct answer with 1 point, leaving us with an index running from 0 (all questions answered incorrectly) to 4 (all questions answered correctly).

Last, in order to assess the effect of information provision on fiscal preferences we conduct a survey experiment, which was presented to DHS respondents just before the question on fiscal preferences in the September 2017 survey. In the experiment, half of the respondents was given some information about the intertemporal budget constraint of the government, whereas the other half received no message.[16] To be precise, our message is as follows: *'In case in one year a government spends more money than she receives by taxation, the government runs a budget deficit. To finance this, the government must borrow money. Due to this, the total debt of the government ('government debt') will increase. The government cannot let government debt rise endlessly. If the government keeps on borrowing, eventually she will have to raise taxes or cut expenditures so as to stop government debt from increasing.'* The variable '*debt_experiment*' takes the value of 1 if respondents received the information text, and a value of 0 if they received no text.

Controls

Due to the embedding of our questions in the DHS survey, we can merge our own survey questions with a rich set of controls: age, income, educational level, personality traits and the financial situation of the household (e.g. whether they have a hard time making ends meet).[17,18] For the precise description of all variables, see Table A.1a in the Online Appendix or the DHS codebook.[19] It furthermore should be noted that we have imputed some values in order to

financial literacy indicator is 0.33 and 0.43 respectively. When running our baseline regressions with the literacy measures in a smaller sample, our conclusions are the same.

[16] With information experiments there is a risk that respondents try to conform with the researcher's hypothesis, although such 'experimenter demand effects' have been shown to be of only limited quantitative importance in online surveys (de Quidt *et al.*, 2018). Yet, we have tried to formulate our experiment as neutral as possible.

[17] The DHS survey presents respondents with a series of statements to measure risk aversion, patience, locus of control and all so-called 'Big Five' personality traits (i.e., openness, conscientiousness, extraversion, agreeableness and neuroticism, using Goldberg's 50-item personality scale). See Table A.2 in the Online Appendix for the exact statements used.

[18] Table A.3 in the Online Appendix displays pairwise correlations of all our regressors. It can be derived that the highest correlation between covariates in our baseline regression is -0.42, i.e. the correlation between left-right self-placement (rightwing) and support for income levelling (equality). Furthermore, there is a similarly high correlation between populist attitudes and attitudes towards EU cooperation (0.42), which is not included in our baseline regression but in one of our robustness checks.

[19] For the DHS codebook see https://www.dhsdata.nl/site/users/login.

minimize the loss of observations due to merging various modules. For the personality traits, that are found to be relatively stable (Cobb-Clark and Schurer, 2012; Cobb-Clark and Schurer, 2013; Salamanca, 2018), we have imputed the average value of the available observations in the entire period. For the variable '*hard_to_getby*' we used a stricter imputation method and imputed the value of the observation in the previous or next year only, or the average thereof, if both were available.

Table 1 Summary statistics

	Count	mean	s.d.	min	max
Dependent variables					
support_debt_reduction	2268	4.37	1.66	0	10
support_tax_relief	2268	2.93	1.41	0	10
support_more_spending	2268	4.70	1.34	0.3	10
Regressors of main interest					
populism	1926	3.20	0.74	1	5
prob_literacy	1995	2.51	1.10	0	4
debt_experiment	2268	0.50	0.50	0	1
Controls					
age	2268	54.40	16.84	16	92
female	2268	0.48	0.50	0	1
child	2268	0.32	0.47	0	1
low	2267	0.26	0.44	0	1
preuniversity	2267	0.11	0.31	0	1
vocational_med	2267	0.25	0.44	0	1
vocational_high	2267	0.25	0.43	0	1
university	2267	0.13	0.34	0	1
grossincome (in 1000 EUR)	2268	2.75	21.03	0	1000
hard_to_getby	2172	2.54	0.84	1	5
riskaversion	2160	5.18	0.98	1.5	7
patience	2239	4.11	0.65	1.5	6.3
locus_of_control	2218	4.53	0.68	1.9	7
openness	2234	3.42	0.55	1.2	5
conscientiousness	2241	3.63	0.53	1.7	5
extraversion	2234	3.06	0.66	1	5
agreeableness	2234	3.89	0.57	1.7	5
neuroticism	2234	2.48	0.69	1	4.9
rightwing	1927	5.14	2.08	0	10
equality	1932	3.51	0.98	1	5
Auxiliary variables					
trust_politics_pc	824	2.22	0.60	1	4
integrity_finance_pc	821	3.43	0.62	1	5
eu_cooperation	1932	3.24	1.04	1	5
N	2268				

Notes: See Tables A.1 and A.2 of the Online Appendix for descriptions of all variables and their source.

Moving further in Table 1, '*rightwing*' is the self-placement of respondents on a left-to-right scale, ranging from 0 (extreme left) to 10 (extreme right). Furthermore, the table shows respondents' agreement (on a 1 to 5 score) with the statement that the government should take measures to minimize income differentials ('*equality'*). Both variables come from the June 2017 survey.

Turning to the end of the table, under the 'auxiliary variables' we report the summary statistics for variables that are used for robustness purposes. First of all, pre-crisis trust in national politics and the management of financial institutions refer to the trust that respondents reported in the years 2006, 2007 and 2008 (as respondents stay in the panel for a limited number of years, this leads to a strongly reduced sample size). We will use these as instruments for populism in Section 5. Furthermore, in our robustness section we test whether the results hold when we include a regressor that we suspect to be endogenous to fiscal preferences, i.e. respondents' attitudes towards a strengthening of EU cooperation ('*eu_cooperation*').

Finally, Table 1 highlights that, due to nonresponse and the merging process, for some variables there are quite a few missing values. As we shall see, in our baseline regressions we end up with a sample of 1636 observations, which is 71 percent of the full sample. In the robustness section, we test whether the smaller sample selection that we end up with results in different estimates.

4. Main results

We now turn to our baseline results, which allow us to test Hypotheses 1, 2 and 3. Our dependent variables are the scores of respondents on the three options to use tax windfalls that were at the time discussed in the policy debate, namely for debt reduction, tax relief or more spending. For each of the three margins, we show three specifications. First, we include only populist attitudes and our controls. Second, we add our literacy measure. Third, we also add the dummy variable taking the value of 1 in case respondents received our information treatment. As our dependent variables are continuous, we use OLS. In all regressions, we cluster standard errors at the household level to control for the possibility that errors correlate among members of the households, capturing e.g. exposure to the same media and acquaintances that shape populist attitudes and/or policy preferences. We standardize the personality traits and use categorical dummy variables for income and education.

Table 2 reports the results of our main regressions. The first row shows our main result: populist attitudes yield a strongly significant coefficient on all three fiscal preferences. The

directions are as expected: respondents with strong populist attitudes are less debt averse, more inclined to favor tax relief and more supportive of spending, in line with Hypothesis 1. Importantly, this effect holds when adding our literacy and information measures. In line with Hypothesis 2, we find that our literacy measure exerts a highly significant effect on debt reduction and tax preferences. Yet, there is no effect on support for more spending. Last, treatment with our educational message causes respondents to report more support for debt reduction and less support for more spending. In line with the findings of Roth *et al.* (2021), the effect on tax relief is not statistically significant.

We will not discuss all other results in detail, but mention some that stand out. First of all, support for more spending does not differ among educational groups, yet more education goes hand in hand with more support for debt reduction and less support for offering tax relief. Second, in contrast to the prediction of the Meltzer-Richard hypothesis, one's income position does not matter for fiscal preferences. Yet, in line with the model of Cukierman and Meltzer (1989), we do find that respondents who have a hard time getting by are less supportive of reducing public debt (although this result is significant at 10 percent only once we add our literacy measure).[20] Third, several of the personality traits appear highly significant regressors of fiscal preferences, although their impact differs across our three fiscal policy margins. The results for risk aversion, patience and locus of control are broadly in line with previous research. As to the Big Five personality traits, broadly in line with findings of Bakker (2017), we find that conscientious respondents are significantly more supportive of tax relief, while individuals who score high on agreeableness are less supportive of tax relief and more supportive of increasing spending. Fourth, there appear to be some interesting nuances when it comes to the differences between rightwing self-placement and support for income levelling. When it comes to debt reduction, it is rightwing respondents that stand out with a significantly higher support for debt reduction. When it comes to support for tax relief, it is supporters of income levelling that stand out, reporting significantly lower levels of support for tax relief. When it comes to support for more spending, both dimensions prove significant regressors.

[20] We also included an actual unemployment spell as a regressor; yet the results were not statistically significant.

Table 2 Regressions of fiscal preferences

Extent to which respondents would be in favor of using foreseen tax windfalls for the following purposes exclusively:

	Debt reduction						Tax relief						More spending					
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)	
populism	-0.50***	(0.07)	-0.47***	(0.07)	-0.46***	(0.07)	0.33***	(0.06)	0.30***	(0.06)	0.30***	(0.06)	0.17**	(0.06)	0.17**	(0.06)	0.16**	(0.06)
prob_literacy			0.20***	(0.04)	0.20***	(0.04)			-0.17***	(0.04)	-0.17***	(0.04)			-0.04	(0.03)	-0.04	(0.03)
pf_experiment					0.28***	(0.08)					-0.11	(0.07)					-0.17**	(0.06)
age35to45	0.00	(0.15)	0.04	(0.14)	0.04	(0.14)	-0.17	(0.13)	-0.20	(0.13)	-0.20	(0.13)	0.17	(0.13)	0.16	(0.13)	0.16	(0.13)
age45to55	0.04	(0.15)	0.07	(0.15)	0.08	(0.15)	-0.16	(0.13)	-0.19	(0.12)	-0.19	(0.12)	0.12	(0.12)	0.12	(0.12)	0.11	(0.12)
age55to65	-0.06	(0.15)	0.00	(0.15)	0.00	(0.15)	-0.09	(0.13)	-0.14	(0.13)	-0.14	(0.13)	0.15	(0.12)	0.14	(0.12)	0.14	(0.12)
age65plus	-0.15	(0.15)	-0.03	(0.16)	-0.04	(0.16)	-0.14	(0.13)	-0.23	(0.13)	-0.23	(0.13)	0.28*	(0.13)	0.26*	(0.13)	0.27*	(0.13)
female	-0.33***	(0.09)	-0.27**	(0.09)	-0.27**	(0.09)	0.12	(0.08)	0.07	(0.08)	0.07	(0.08)	0.21**	(0.08)	0.20*	(0.08)	0.20*	(0.08)
child	-0.24*	(0.10)	-0.23*	(0.10)	-0.24*	(0.10)	0.16	(0.09)	0.16	(0.09)	0.16	(0.09)	0.08	(0.08)	0.08	(0.08)	0.08	(0.08)
vocational_med	-0.10	(0.11)	-0.11	(0.11)	-0.10	(0.11)	0.00	(0.10)	0.02	(0.09)	0.01	(0.09)	0.09	(0.09)	0.09	(0.09)	0.09	(0.09)
preuniversity	0.26	(0.17)	0.20	(0.17)	0.22	(0.16)	-0.30*	(0.13)	-0.25	(0.13)	-0.26*	(0.13)	0.04	(0.13)	0.05	(0.13)	0.04	(0.13)
vocational_high	0.13	(0.12)	0.05	(0.12)	0.07	(0.12)	-0.26*	(0.11)	-0.20	(0.11)	-0.20	(0.11)	0.13	(0.10)	0.15	(0.10)	0.14	(0.10)
university	0.49**	(0.17)	0.33*	(0.17)	0.35*	(0.16)	-0.50***	(0.14)	-0.37**	(0.14)	-0.38**	(0.14)	0.02	(0.15)	0.04	(0.15)	0.03	(0.15)
incomeQ2	-0.05	(0.12)	-0.04	(0.12)	-0.01	(0.12)	0.14	(0.10)	0.13	(0.10)	0.12	(0.10)	-0.09	(0.09)	-0.09	(0.09)	-0.11	(0.10)
incomeQ3	-0.14	(0.12)	-0.12	(0.12)	-0.10	(0.12)	0.14	(0.10)	0.12	(0.10)	0.12	(0.10)	0.00	(0.10)	-0.00	(0.10)	-0.02	(0.10)
incomeQ4	-0.07	(0.15)	-0.07	(0.14)	-0.04	(0.14)	0.12	(0.12)	0.12	(0.12)	0.11	(0.12)	-0.05	(0.12)	-0.05	(0.12)	-0.07	(0.12)
hard_to_getby	-0.11*	(0.05)	-0.09	(0.05)	-0.09	(0.05)	0.06	(0.04)	0.05	(0.04)	0.04	(0.04)	0.05	(0.05)	0.05	(0.05)	0.04	(0.05)
riskaversion	0.04	(0.04)	0.03	(0.04)	0.03	(0.04)	-0.10**	(0.04)	-0.09*	(0.04)	-0.09*	(0.04)	0.06	(0.04)	0.06	(0.04)	0.06	(0.04)
patience	0.11*	(0.04)	0.10*	(0.04)	0.10*	(0.04)	-0.07*	(0.03)	-0.06	(0.03)	-0.06	(0.03)	-0.04	(0.04)	-0.04	(0.04)	-0.04	(0.04)
locus_of_control	0.11*	(0.05)	0.10*	(0.05)	0.09	(0.05)	-0.04	(0.04)	-0.03	(0.04)	-0.03	(0.04)	-0.06	(0.04)	-0.06	(0.04)	-0.06	(0.04)
openness	0.04	(0.05)	0.03	(0.05)	0.03	(0.05)	0.04	(0.04)	0.04	(0.04)	0.04	(0.04)	-0.07	(0.04)	-0.07	(0.04)	-0.07	(0.04)
conscientiousness	-0.07	(0.05)	-0.06	(0.05)	-0.06	(0.05)	0.12**	(0.04)	0.11**	(0.04)	0.11**	(0.04)	-0.05	(0.04)	-0.05	(0.04)	-0.05	(0.04)
extraversion	-0.04	(0.05)	-0.02	(0.04)	-0.02	(0.04)	0.06	(0.04)	0.05	(0.04)	0.05	(0.04)	-0.03	(0.04)	-0.03	(0.04)	-0.03	(0.04)
agreeableness	-0.01	(0.05)	-0.03	(0.05)	-0.03	(0.05)	-0.14**	(0.04)	-0.13**	(0.04)	-0.13**	(0.04)	0.15***	(0.04)	0.16***	(0.04)	0.16***	(0.04)
neuroticism	-0.03	(0.05)	-0.03	(0.05)	-0.04	(0.05)	0.05	(0.04)	0.05	(0.04)	0.05	(0.04)	-0.02	(0.04)	-0.02	(0.04)	-0.02	(0.04)
rightwing	0.07**	(0.02)	0.07**	(0.02)	0.07**	(0.02)	0.01	(0.02)	0.01	(0.02)	0.00	(0.02)	-0.08***	(0.02)	-0.08***	(0.02)	-0.08***	(0.02)
equality	-0.05	(0.05)	-0.04	(0.05)	-0.04	(0.05)	-0.09*	(0.04)	-0.10*	(0.04)	-0.10*	(0.04)	0.14***	(0.04)	0.14***	(0.04)	0.14***	(0.04)
_cons	6.36***	(0.38)	5.58***	(0.40)	5.36***	(0.41)	2.03***	(0.33)	2.68***	(0.35)	2.77***	(0.35)	3.60***	(0.32)	3.74***	(0.35)	3.87***	(0.36)
N	1636		1636		1636		1636		1636		1636		1636		1636		1636	
R^2	0.145		0.158		0.165		0.098		0.111		0.112		0.112		0.112		0.116	

Notes: Fiscal preferences are measured on a 0 to 10 scale, and are estimated by OLS. Reference groups: aged below 35, male, low educational level and first income quartile. Between brackets are standard errors, which are clustered at the household level. The symbols *, ** and *** denote significance at the 10, 5 and 1 percent confidence level, respectively.

Table 3 reports the results of a decomposition of the explained variance. First and foremost, it shows that populist attitudes are not only a significant regressor for fiscal preferences, they also prove very important in material terms. When it comes to support for debt reduction and tax relief, a quarter of the explained variation can be attributed to populist attitudes. Its contribution is bigger than many variables that play a central role in the literature on fiscal preferences, such as income and right-wing ideology. The relevance of populist attitudes for support for more spending is more limited, whereas the role of ideology is much bigger here. Second, a similar pattern can be observed when it comes to our literacy measure. Whereas literacy accounts for about a fifth of the fit of our models of debt reduction and tax relief, this is only 3 percent when it comes to attitudes towards spending. Third, while our information treatment has a significant effect on two out of three fiscal preferences, it can only account for a very small portion of the model fit. When it comes to our controls, it stands out from Table 3 that personality traits play a very important role in explaining attitudes towards fiscal policy. Taken together, they are even the most important predictor of support for more spending.

Table 3 Decomposition goodness of fit

	Debt reduction		Tax relief		Spending	
	Pseudo R^2	%	Pseudo R^2	%	Pseudo R^2	%
Populism	0.047	28%	0.027	25%	0.009	8%
Literacy	0.030	18%	0.024	21%	0.003	3%
Information	0.007	4%	0.002	2%	0.004	3%
Demographics	0.014	8%	0.005	5%	0.016	14%
Education	0.020	12%	0.019	17%	0.003	2%
Income	0.013	8%	0.005	5%	0.007	6%
Personality	0.023	14%	0.023	20%	0.032	27%
Rightwing	0.005	3%	0.004	3%	0.020	17%
Equality	0.006	4%	0.003	3%	0.022	19%
Total R^2	0.165	100%	0.112	100%	0.116	100%

Notes: Shorrocks-Shapley decomposition calculated with Stata's shapley2 command (Chávez Juárez, 2012).

5. Robustness analysis

Endogeneity

As mentioned before, our main methodological concern about the regression presented in Table 2 is that various sources of endogeneity would cause the outcomes in Table 2 to be biased. Our main regressor of interest, populist attitudes, could be endogenous for three main reasons. First, there could be an omitted variable bias, i.e. fiscal preferences and populism are both influenced by another factor, such as feelings of vulnerability. A second concern is that the relation is simultaneous, i.e. there is

reverse causation from fiscal preferences to populism. In our case, we cannot exclude the possibility that respondents with more expansionary fiscal preferences have grown populist sentiments when the government consolidated in the midst of a large recession. Finally, it would be problematic if errors in the measurement of our variables – which by themselves are inevitable in observational research – would not be random. For instance, a respondent's mood can influence the answers given in the same survey in similar ways. This is particularly a concern when variables are taken from a common source.

In our baseline regression, several elements of our estimation strategy already mitigated some of these sources of endogeneity. For instance, we employ a very rich set of regressors, diminishing the bias resulting from omitted variables. Likewise, our questions come from surveys held at various moments in time, which alleviates concern over common source bias. Most importantly, this holds for our main regressor of interest, populist attitudes, which were measured in June 2017, and our dependent variables (fiscal preferences), which were recorded three months later. Nonetheless, there remains a risk of endogeneity due to other omitted variables, the possibility of reverse causation and measurement error that affect the answering in all surveys (e.g. a tendency to social desirability).

A more general solution to control for endogeneity is to employ an instrumental variable approach. Given the possibility of reverse causation, we prefer to use instrumental variables that are gathered with a considerable lag from the moment that we asked respondents about their fiscal preferences, ideally before the economic crisis. As the measurement of populist attitudes was first done in June 2017, a lagged variable of populism is not an option. Yet, as our survey was embedded in the rich DHS survey environment there are other lagged variables that we can consider. In particular, since 2006 each year DHS respondents are asked about their trust in various entities, including national politics. In addition, respondents were asked whether they had faith in the expertise and integrity of the management of financial firms (see Table A.1a in the Online Appendix for the exact wording).[21]

Trust in politics is typically understood by political scientists as an evaluation of how well politicians fulfill people's expectations (van der Meer, 2018) and is a different concept than populism (Geurkink *et al.,* 2020). For instance, according to populist discourse, politics should follow the 'will of the people', which is not a necessary condition for people to trust their government. Yet, low trust and populism have in common that they are, at least to a large extent, an expression of discontent with the performance of the political elite. Likewise, respondents' attitudes to the management of financial institutions are likely to pick up adverse sentiment towards elites. To rule out the possibility that our instruments capture feelings of anger over fiscal consolidation measures taken in the

[21] This variable has also been used in a recent paper on financial literacy and trust in financial institutions (van der Cruijsen *et al.,* 2019).

aftermath of the crisis, we take the average of the available observations that were available in 2006 to 2008, before the crisis hit. This limits our sample to 610 observations. Yet, even with this time lag, our instruments could still be endogenous to our dependent variables (fiscal preferences) as there could be unobserved fixed individual characteristics that influence both attitudes towards fiscal policy and political views. When it comes to trust in politics, there is a literature that links fiscal preferences to trust in politics (Stix, 2013; Hayo and Neumeier, 2017). Yet, we are not aware of theoretical and empirical linkages of pre-crisis attitudes towards the financial sector and fiscal preferences. Table A.4 in the Online Appendix shows the correlation between fiscal preferences of respondents in 2017 and their trust in national politics and the management of financial firms in the years before the crisis. It reports a significant correlation of pre-crisis trust in national politics and fiscal preferences in 2017, also when controlling for other relevant regressors. Yet, there is no significant correlation of fiscal preferences with pre-crisis trust in financial sector management. When including controls, the remaining partial correlation is very low (from a maximum of -0.09 for support for tax relief to 0.02 for support for spending). This gives us reassurance that according to this statistical test, at least one of our two instrumental variables is exogenous to our dependent variables, which is a necessary condition for the Sargan over-identification test that we perform later.

Table 4 presents the results of our two-stage-least square (2SLS) regression. While the table focuses on the regression of fiscal preferences (our second stage), it also includes the highlights of the first-stage regression where we instrument populist attitudes with the two instruments, pre-crisis trust in politics and the financial sector management, while including all controls from explanatory regression. The results indicate that our two instrumental variables turn out to be highly significant regressors. The partial R^2 of the first stage is 0.159 and the F-statistic 55.1, which largely exceeds the threshold of 10 which is widely used to test the relevance of an instrument. In the regression of fiscal preference, our second stage, we include the full set of regressors of Table 2 (i.e. columns 3, 6 and 9). We first run the same regressions but then with our limited sample size (N=610) so that we can attribute any differences in the estimated coefficient to the estimator and not to differences in the sample. While the point estimates of the OLS and 2SLS differ, the 2SLS results confirm our main finding from our baseline regression, i.e. a significantly positive coefficient for populist attitudes.[22]

[22] In all three cases, confidence intervals of the OLS en 2SLS estimates overlap.

Table 4 Regressions of fiscal preferences with lagged trust as instrument

Extent to which respondents would be in favor of using foreseen tax windfalls for the following purposes exclusively:

	Debt reduction				Tax relief				More spending			
	OLS		2SLS		OLS		2SLS		OLS		2SLS	
	(1)		(2)		(3)		(4)		(5)		(6)	
populism	-0.49***	(0.11)	-0.81***	(0.25)	0.27***	(0.10)	0.37*	(0.22)	0.22**	(0.10)	0.44**	(0.20)
prob_literacy	0.10*	(0.06)	0.09	(0.06)	-0.13**	(0.06)	-0.12**	(0.06)	0.03	(0.05)	0.04	(0.05)
pf_experiment	0.14	(0.13)	0.12	(0.13)	0.05	(0.12)	0.05	(0.11)	-0.18*	(0.11)	-0.17	(0.10)
age35to45	0.48	(0.70)	0.59	(0.74)	-0.25	(0.35)	-0.28	(0.66)	-0.23	(0.62)	-0.31	(0.61)
age45to55	0.27	(0.69)	0.39	(0.73)	-0.20	(0.34)	-0.24	(0.65)	-0.07	(0.61)	-0.15	(0.60)
age55to65	0.20	(0.69)	0.38	(0.74)	-0.13	(0.35)	-0.19	(0.65)	-0.06	(0.62)	-0.19	(0.61)
age65plus	0.10	(0.69)	0.29	(0.74)	-0.15	(0.35)	-0.20	(0.65)	0.05	(0.61)	-0.08	(0.60)
female	-0.40***	(0.15)	-0.43***	(0.16)	0.14	(0.14)	0.15	(0.14)	0.26**	(0.12)	0.28**	(0.13)
child	-0.36**	(0.17)	-0.35**	(0.17)	0.42**	(0.16)	0.42***	(0.15)	-0.06	(0.14)	-0.07	(0.14)
vocational_med	0.01	(0.18)	-0.04	(0.20)	-0.10	(0.16)	-0.09	(0.18)	0.10	(0.17)	0.13	(0.17)
preuniversity	0.40	(0.25)	0.31	(0.23)	-0.34	(0.21)	-0.31	(0.21)	-0.06	(0.18)	0.01	(0.19)
vocational_high	0.31	(0.19)	0.20	(0.21)	-0.48***	(0.16)	-0.44**	(0.18)	0.16	(0.17)	0.24	(0.17)
university	0.40	(0.27)	0.22	(0.29)	-0.56**	(0.24)	-0.50**	(0.25)	0.16	(0.25)	0.28	(0.24)
incomeQ2	0.20	(0.20)	0.21	(0.20)	0.00	(0.18)	-0.00	(0.17)	-0.20	(0.15)	-0.21	(0.16)
incomeQ3	-0.06	(0.19)	-0.09	(0.20)	0.08	(0.17)	0.09	(0.18)	-0.02	(0.16)	0.00	(0.16)
incomeQ4	0.12	(0.23)	0.06	(0.23)	0.11	(0.20)	0.13	(0.20)	-0.23	(0.19)	-0.19	(0.19)
hard_to_getby	-0.14	(0.09)	-0.12	(0.09)	0.06	(0.08)	0.06	(0.08)	0.07	(0.08)	0.06	(0.07)
riskaversion	0.07	(0.07)	0.08	(0.07)	-0.10	(0.06)	-0.10	(0.06)	0.03	(0.06)	0.02	(0.06)
patience	0.02	(0.07)	0.02	(0.06)	-0.06	(0.06)	-0.06	(0.06)	0.03	(0.06)	0.04	(0.05)
locus_of_control	0.17**	(0.08)	0.18**	(0.07)	-0.05	(0.07)	-0.05	(0.06)	-0.12*	(0.07)	-0.12**	(0.06)
openness	0.03	(0.07)	0.02	(0.07)	0.09	(0.07)	0.10	(0.07)	-0.12*	(0.06)	-0.12*	(0.06)
conscientiousness	-0.22***	(0.08)	-0.20**	(0.08)	0.23***	(0.07)	0.22***	(0.07)	-0.00	(0.06)	-0.02	(0.06)
extraversion	0.03	(0.08)	0.03	(0.07)	-0.07	(0.07)	-0.07	(0.06)	0.04	(0.06)	0.04	(0.06)
agreeableness	0.11	(0.09)	0.12	(0.08)	-0.21***	(0.07)	-0.21***	(0.07)	0.10	(0.07)	0.09	(0.07)
neuroticism	-0.08	(0.07)	-0.08	(0.08)	0.10	(0.06)	0.10	(0.07)	-0.02	(0.06)	-0.02	(0.06)
rightwing	0.07*	(0.04)	0.10**	(0.04)	0.00	(0.04)	-0.01	(0.04)	-0.07**	(0.03)	-0.09***	(0.04)
equality	-0.13	(0.08)	-0.11	(0.08)	-0.05	(0.07)	-0.06	(0.07)	0.18***	(0.07)	0.17**	(0.07)
_cons	5.94***	(0.91)	6.70***	(1.08)	2.52***	(0.64)	2.28**	(0.96)	3.54***	(0.84)	3.02***	(0.89)
First stage (populism)												
trust_politics_pc			-0.39***				-0.39***				-0.39***	
integrity_finance_pc			-0.11**				-0.11**				-0.11**	
(other controls suppressed)												
Partial R^2 / F(2,581)			0.159/55.1				0.159/55.1				0.159/55.1	
Sargan (score) $chi^2(1)$			1.95 (p=0.16)				0.00 (p=0.96)				3.08 (p=0.08)	
Wu-Hausman F(1,581)			1.91 (p=0.17)				0.23 (p=0.63)				1.34 (p=0.25)	
N	610		610		610		610		610		610	
R^2	0.200		0.187		0.132		0.130		0.145		0.134	

Notes: For each fiscal preference, the table first reports ordinary least squares (OLS) regression (same as in Table 2, but with a smaller sample) and two-stage least squares (2SLS) regression whereby populism is instrumented by pre-crisis trust in national politics and pre-crisis trust in financial sector management plus all the controls used in the second stage. Between brackets are standard errors, which are clustered at the household level. The symbols *, ** and *** denote significance at the 10, 5 and 1 percent confidence level, respectively.

Finally, as we have more than one instrument, we can run a Sargan test of overidentifying restrictions to test the exogeneity condition of our instrument set. At the significance level of 5 percent, we cannot reject the null of validity of our instrument set for all our three fiscal preferences. Yet, as OLS is a much more efficient estimator we also assess to what extent an IV estimation is really needed.[23] Comparing OLS and 2SLS results, the Wu-Hausman test scores formally rejects endogeneity of populist attitudes. Hence, while our IV estimation is valid and the results support that populism is a significant predictor of fiscal preferences, we may just as well rely on our OLS regression.

Inclusion of attitudes towards the European Union

As noted in the literature review, attitudes towards the European Union (EU) might be another factor driving fiscal preferences. Yet, attitudes towards the EU might also be influenced by fiscal preferences, e.g. due to frustration over consolidations during the crisis. This would make it an endogenous regressor, that in turn is also highly correlated with populist attitudes (0.42, see Table A.3 in the Online Appendix). Including multiple endogenous covariates can severely confound our regressions, which is why we chose not to include attitudes towards the EU in our baseline regression, while correcting for endogeneity via an IV regression instrumenting populist attitudes with pre-crisis trust levels. Yet, it is possible that also these pre-crisis populist attitudes partly pick up the effect of (pre-crisis) attitudes towards the EU. In Table A.5 in the Online Appendix we run the same regressions as in Table 2, but now also including attitudes towards EU cooperation. While the coefficient of populist attitudes is somewhat smaller, it remains highly significant and all other results also hold.

Loss of observations

As noted in Section 3, using variables from different DHS modules comes at the cost of a loss of observations. In our baseline regressions we end up with a sample of 1636 observations, which is 71 percent of the full sample of fiscal preferences. To test whether restricting the sample influences our results, we repeat the regressions with a smaller set of controls and hence with larger samples. In Table A.6 in the Online Appendix we repeat the regression of Table 2 for debt reduction (the first of the three fiscal preferences) with a smaller set of regressors for which we have substantially more

[23] Another drawback is that our IV estimate is strictly speaking only applicable to those respondents for which our instruments properly predict the level of populism. In more technical terms, the IV models estimate the 'local average treatment effect' (LATE) for those people that positively respond to the IV ('the compliers'), while the models without IV estimate the 'average treatment effect' (Cameron and Trivedi, 2005: 884-5).

observations. Comfortably, we find that all coefficients are remarkably similar. The only difference is that in one case (i.e., a dummy for respondents aged 65 and over) the coefficient is only statistically significant in the larger sample, and not in our baseline sample.

Correction of scaling

As mentioned in Section 3, we have corrected the scales of our dependent variables for the total number of scores awarded so as to filter out the effect of more extreme answering. Yet, this correction is not trivial as the answering is correlated with populist attitudes. We therefore test whether our main results are robust to using the uncorrected scale. Table A.7 in the Online Appendix compares the results of Table 2 (full model) with fiscal preferences, when no correction is made (to compare the coefficients, we adjust the original scale to the 0 tot 10 scale that we employ in the baseline regression). When we do not correct the scaling, the results for populist attitudes are even stronger.

6. Interaction effects

Moderating effect of populism on effect of literacy

To test Hypotheses 4 and 5, this section extends the regression of Table 2 with interaction effects of populism with literacy and information provision, respectively. Figure 1 graphically reports the results of the interaction analysis of populist attitudes and literacy. The y-axis depicts the marginal effect of literacy on fiscal preferences (y-axis) at different levels of populism (x-axis). As such, the chart reports the combined effect of the coefficients of literacy and the interaction term of literacy and populist attitudes.[24] The brown bars display the distribution of populist attitudes.

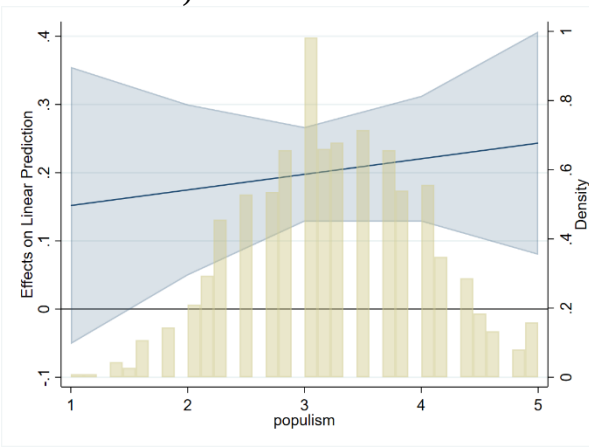
The chart in panel (a) of Figure 1 shows that the effect of literacy on debt reduction – which on average yielded a highly significant coefficient of 0.20 (see Table 2) – does not vary much with populism, although at very low levels of populism the effect of literacy on support for debt reduction is no longer significant. The effect is stronger when it comes to tax relief (see panel (b) of Figure 1). On average, we found a highly significant coefficient of -0.17 of literacy on support for tax relief. Yet, panel (b) shows that the effect of literacy on support for tax relief is not significant at low levels of populism, but is highly significant at high levels of populist attitudes, lending support to our Hypothesis 4. The effect of literacy on support for spending does not vary significantly with the level of populism (see panel (c) of Figure 1), which is not surprising as there was also no significant overall

[24] Regression results can be found in Table A.8 of the Online Appendix. The results show that the coefficients of the interaction term are not statistically significant.

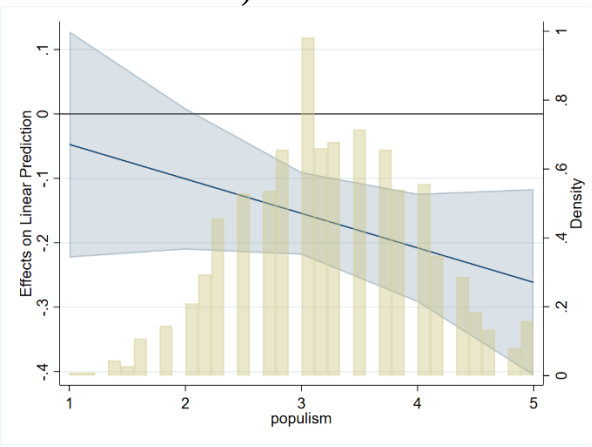
effect of literacy on support for more spending in the first place. These results are robust to using the uncorrected scale (results available upon request).

Figure 1 Moderating effect of populism on the effect of literacy on fiscal preferences

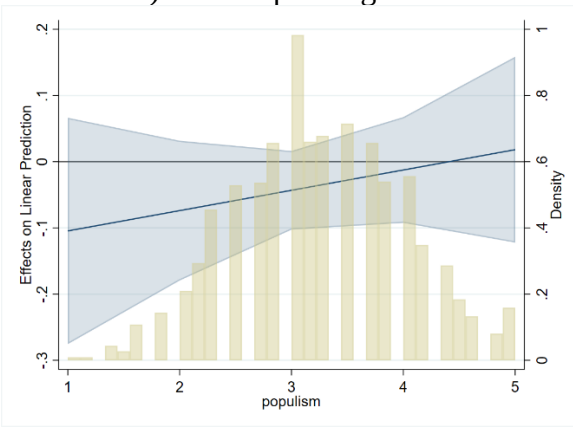
a) Debt reduction



b) Tax relief



c) More spending



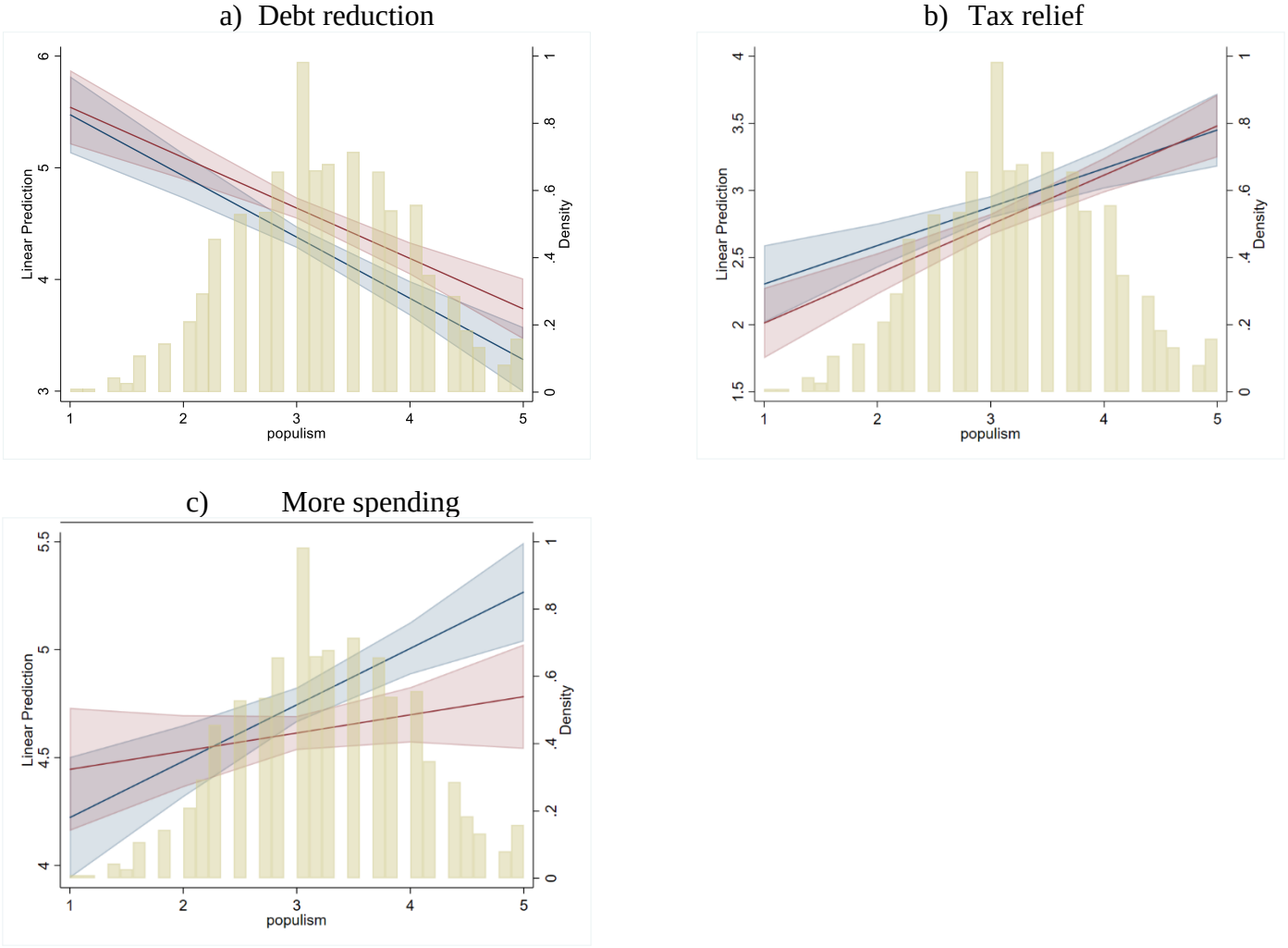
Notes: Panels show at the y-axis the marginal effect of literacy on fiscal preferences (i.e., debt reduction, tax relief and more spending) at various levels of populism (x-axis). Shaded area covers the 90% confidence interval. Brown bars display the distribution of populist attitudes.

Moderating effect of populist attitudes on effect of information

Figure 2 reports the results of the models in which we include an interaction term of the information experiment with populist attitudes. The figure shows the predicted level of fiscal preferences (i.e., support for the fiscal policy margin on a scale of 1 to 10), both for people who have been treated with the information experiment (red line) as well as for those in our control group (blue line). In Table 2 we estimated the average effect of the information experiment over the entire sample, yielding a significant coefficient for debt reduction (0.28, i.e., more support debt reduction) and spending (-0.17, i.e., less support for more spending). Panels (a) and (b) of Figure 2 show that the effect of the information experiment on support for debt reduction does not vary along respondents' level of

populist attitudes. Panel (c), however, shows that the information experiment reduces support for more spending especially when populist attitudes of respondents are stronger.[25] Hence, information provision can alleviate fiscal illusion also especially with voters who are sceptical of the establishment.[26] This is in contrast to our Hypothesis 5, and may be explained by the fact that respondents with low populist sentiment report much lower support for increase spending in the first place, leaving less scope for adjusting their fiscal preferences in response to information provision.

Figure 2 Moderating effect of populism on effect information on fiscal preferences



Notes: At the y-axis is the level of support for our three fiscal policy margins (i.e., debt reduction, tax relief and more spending) at various levels of populism (x-axis) for respondents in the treatment group of our information experiment (red line) and those in our control group (blue line). Shaded area covers the 90% confidence interval. Brown bars display the distribution of populist attitudes.

[25] Regression results can be found in the Table A.9 of the Online Appendix. The results show that in the regression of support for more spending, the coefficient of the interaction term is statistically significant at the 10 percent level.
[26] Again, results are robust to using the uncorrected scale. Results available upon request.

7. Conclusions

This paper assesses whether populist attitudes lead to more expansionary fiscal preferences, and whether populist attitudes reinforce the risk of fiscal illusion. Our results show that populist attitudes are indeed a highly significant and materially important predictor of fiscal preferences, while our IV regressions confirmed that our estimates are robust to potential endogeneity. People who hold strong populist sentiments are less supportive of debt reduction, and more supportive of tax relief and more spending. For debt reduction and tax relief, the explanatory power of populist attitudes by far exceeds that of covariates that feature prominently in the political economy literature, such as income and left-right ideology. This is a very important finding because it shows that key socioeconomic preferences that have traditionally been associated with classical left-right positions currently appear more closely linked to a new diving line like populism. This suggests that the way in which political and economic attitudes are rooted in ideologies has changed over time. And this, in turn, means that economists and political scientists should carefully rethink and restudy the ideological structure of public opinion.

To assess whether populist sentiment reinforces the risk of fiscal illusion, we have also inspected the role of literacy and information and their interaction with populist attitudes. We find that literacy is a statistically significant and materially relevant predictor of support for debt reduction and tax relief. We take this as support of the occurrence of fiscal illusion. In addition, we find that populist attitudes moderate the effect of literacy on support for tax relief (but not on attitudes towards debt and spending). At high levels of populist attitudes, literacy is a significant predictor of support for tax relief, but not at low levels of populist attitudes. Our results hence suggest that populist sentiment reinforces the risk of fiscal illusion that comes with poor literacy. Turning to information, our information experiment confirms that providing information about the intertemporal budget constraint of the government causes respondents to have less expansionary fiscal preferences. We find that respondents with strong populist attitudes, who report significantly higher support for more government spending, also reduce their support for more spending more strongly after being exposed to our information treatment.

Our findings offer various lessons to economic policymakers who may view populism as a threat to sound economic policymaking. First of all, our results corroborate the finding that poor literacy spurs the risk of fiscal illusion which calls for investing in the numerical and fiscal policy sophistication of voters (Fornero, 2014). Furthermore, this risk is even larger when people, for whatever reason, have come to believe that the political elite is not acting in their interest as it should. This means that in the current era, in which the religious and/or ideological ties between voters and the elite have become increasingly loose, investing in knowledge and skills is even more important.

Second, our results suggest that information provision can alleviate fiscal illusion especially with people with strong populist sentiment, as they are most prone to a deficit bias in the first place. Of course, a precondition is that information can reach such voters, which may complicated by the lower tendency of voters with strong populist attitudes to make use of established news sources (Schulz, 2019).

Yet, the results of our analysis also imply that fiscal illusion is not the full story behind the expansionist 'populist economic agenda', as dubbed by economists. For one thing, after controlling for literacy and information, there remains a very large independent effect of populism on fiscal preferences. Our literature review has highlighted some mechanisms that may be at play here. Most prominently, according to the model of Acemoglu *et al.* (2013), individuals who think the elite is not acting in the people's interest as it should, may deem the political elite's agenda too neoliberal to their taste, catering more to the needs of big business more than to the ordinary people. It is not in the scope of this paper to judge whether such a view is correct or not. In either case, as put forward by Piketty (2020), it is dangerous to equate the populist economic agenda as merely short-termist and unsustainable, as it can reinforce the idea that the elite is not responsive to the needs of ordinary voters and can also inhibit debates about fundamental economic policy questions, complex as they may be. And in either case, the elite may need to signal better that it is really acting in the interest of ordinary people, e.g., by investing in universal welfare schemes and shifting taxation more to big firms and wealthy households.

We conclude this paper with some suggestions for further research. First of all, with our dataset we have only been able to analyse fiscal preferences and populist attitudes in a cross-section setting. By instrumenting populist attitudes with pre-crisis trust levels, we ruled out the possibility of reverse causation. Yet, while we showed that one of our instrumental variables was exogenous to fiscal preferences from a statistical point of view, it could be argued that unobserved individual traits may link it endogenously to the dependent variable. This can only be addressed by using longitudinal data, once these become available. Second, the strong empirical relationship between populist attitudes and fiscal preferences warrants more theoretical literature on the mechanisms underlying this relationship.

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