

How do social class position and party preference influence support for fossil fuel taxation in Nordic countries?

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ABSTRACT

In this paper, we study the influence of the social class and political party preference on support for fossil fuel taxation in Nordic countries. Additionally, we examine how age confounds the relationship between party preference and support for fossil fuel taxation. We utilize Round 8 data from the European Social Survey from Finland, Norway, and Sweden ($n = 5021$). According to the results, party preference was a more significant factor than social class when explaining citizens' fossil fuel taxation attitudes. We found attitudinal polarization between Left-Green and Populist Right supporters. Interestingly, we did not find differences between the parties from the traditional left–right dimension. Also, we found that differences between the Left-Green and Populist Right supporters were more remarkable among the younger cohorts in Sweden. We conclude with a discussion on interconnectivity between new political cleavages and climate policy, which direct the attitudes of a citizen by party preference in particular.

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Introduction

As the amount of greenhouse gases is accumulating in the atmosphere and causing global warming, various types of climate policies have been developed to decrease the level of emissions. One of the most cost-effective climate policy instruments is the fossil fuel tax (Parry et al., 2014; Sterner & Robinson, 2018). However, the fossil fuel tax – as taxation in general – is a comparatively hard and unpopular instrument: It can cause relatively direct effects on household economies (Heay, 2003; Rausch & Reilly, 2015). Thus, softer climate policy instruments, such as the subvention of renewable energy, tend to be more popular among the public (Dietz et al., 2007; Drews & van den Bergh, 2016). However, the cost-effectiveness of so called softer instruments is often low (Goulder & Parry, 2008).

Notably, public opinion, which is intrinsically linked to various social frameworks, potentially drives the politicians who are responsible for establishing policy instruments. That is, people face policy instruments from various starting points (Price, 1989). Taxation is a highly political issue that overlaps with other issues affecting public opinion, and attitudes toward taxation are largely determined based on the social characteristics of citizens (e.g., Edlund, 2000; Furnham, 1983). With regard to carbon taxation, this is a tricky situation because people tend to overestimate carbon taxes' possible negative impacts – such as decrease in jobs – and underestimate the benefits of decreased emission levels (Carattini et al., 2019). To find ways in which to pursue effective tax policies, an urgent need exists to understand how the carbon tax and other climate policy attitudes are socially formed. However, the role of social status and reference groups in the formation of fossil fuel taxation attitudes is somewhat unclear.

In this paper, by using European Social Survey (ESS) Round 8 data, we explore the significance of social class position and party preference on attitudes toward fossil energy taxation in Nordic countries. We examine which societal groups are exceptionally supportive and unsupportive of

higher fossil fuel taxation. Due to the lack of data from Denmark and the relatively few observations from Iceland, this study focuses on Finland, Norway, and Sweden.

First, we analyse the relationship between social class and taxation attitudes. The impact of an individual's class position is based on a traditional sociological explanation by emphasizing the significance of a citizen's position in the socioeconomic structure. Several studies have suggested that social class position affects the formation of individuals' societal values and attitudes, and that since post-industrialism has increased the share of service sector occupations, social and cultural specialists form a distinct class in which post-material values are widely supported (Güveli, 2006; Müller, 1999; Oesch & Rennwald, 2018). We ask, *how do citizens' social class positions explain their attitudes toward higher fossil fuel taxation?* (RQ1).

Traditionally, the political party map is often seen to be shaped by the social class structure (Heywood, 2002, p. 243; Rokkan, 1968). However, in recent decades, it has also been suggested that the shifting of political conflicts toward, for example, an emphasis on environmental issues and immigration has established a political cleavage among the new political parties, namely the Right-Wing populists, the Greens, and the so called New-Left or eco-socialist parties (Arter, 2012; Kriesi, 2010; Norris & Inglehart, 2019; Oesch, 2012). Particularly in the Nordic countries, macroeconomic factors, such as employment, do not entirely explain the popularity of Right-Wing populist parties (Sipma & Lubbers, 2018) or the social correlates of political party preferences (Koivula, 2019). This is also a central argument for why we should examine party preference as a separate element apart from the social position. Accordingly, we study *how individuals' political party preferences explain their attitudes toward higher fossil fuel taxation* (RQ2).

Climate change's most significant consequences will especially concern younger generations (Page, 2007). Moreover, compared with younger generations, older generations' everyday lifestyles are allegedly more dependent on fossil fuels due to, for example, a bigger share of car and house owners. To explore the generational differences between party supporters with regard to fossil fuel taxation attitudes, we study, *how age confounds the link between party preference and attitudes toward fossil fuel taxation* (RQ3).

In the following, we present an overview of fossil fuel taxation as a climate policy instrument and present the main similarities and differences among Finland, Norway, and Sweden that are relevant to this study. Then, we elaborate on the social mechanisms of social class and political party preference to establish study hypotheses. Afterward, we introduce a research design and present the results. We conclude the article with a discussion on the predictors of attitudes toward fossil fuel taxation.

Fossil fuel taxation and Nordic countries

An energy policy directs how a country uses energy and which energy sources it uses. The energy policy affects all economic sectors from households to business. An environment policy and an energy policy have a two-way connection: both influence each other (Braun & Glidden, 2014).

The taxation of energy and carbon has several rationales. Short-term assets include the reduction of carbon emissions. The medium-term benefit is that investments are more likely to be directed at less carbon-intensive industries. In the long term, the taxation of polluting energy sources can lead to structural changes in energy production and consumption patterns. One example of this kind of structural change is the transition from fossil fuels to renewable energy production (Sathre & Gustavsson, 2007). Moreover, the taxation of fossil fuels or carbon is comparatively easy to administer and is an economically cost-effective instrument that also fosters climate-friendly innovations (Hsu, 2016).

Although the popularity of carbon taxation could be increased by compensating increased costs with income redistribution (Callan et al., 2009; Hsu, 2016; Jagers et al., 2019) or by providing information about the positive effects of carbon taxation (Carattini et al., 2017), the fear of rising costs is likely to decrease the support for increasing energy taxation. This applies especially to people who do not consider climate change to be a major risk (Frondel et al., 2017). The legitimacy of

climate policy measures is a relevant factor in policy making: Policy instruments lose some of their power if the public does not support them (Matti, 2015).

Nordic countries form a regime that includes important similarities – ones that separate the Nordic region from other regions – as well as differences between the countries. The Nordic welfare state regime contains a high-quality educational system and a relatively low share of poverty (Kangas & Palme, 2009). Due to the high share of service sector occupations, Nordic countries can be described as post-industrial economies (Kivivuori, 2007). Generally speaking, Nordic countries have a comparatively uniform political party system (Bengtsson et al., 2014) and have been pioneers in implementing a different type of CO₂ or energy taxes (Andersen, 2004). However, Norway's rich oil resources make it an exceptional state in the Nordic context. The countries also differ in their stances toward Populist Right parties: Although Right-Wing populist parties have been part of the government in Finland and Norway, the Right-Wing populist party has been politically isolated in Sweden (Widfeldt, 2018).

Compared with the rest of Europe, people in Nordic countries are on average particularly in favour of fossil fuel taxation – especially when it comes to Sweden and Finland (Pohjolainen et al., 2018, p. 12). The reason for the relatively high support of fossil fuel taxation in the Nordic region includes numerous factors. First, the Nordic welfare state model provides a relatively high level of socioeconomic security (Esping-Andersen, 2000); several studies indicate that a good economic situation is related to the willingness to contribute to environmental protection (e.g., Jones et al., 2009; Klineberg et al., 1998). Second, post-material values – such as freedom of speech and environmental protection – are comparatively common in Nordic countries (Inglehart, 1995; Inglehart & Welzel, 2005). Third, generalized trust is especially high in Nordic countries (e.g., Kouvo, 2011), which has been linked to a greater willingness to pay for climate protection (Smith & Mayer, 2018). Finally, political trust is typically at a high level in Nordic countries (Bengtsson et al., 2014; Listhaug & Ringdal, 2008; Söderlund, 2019; Zmerli, 2012), and it is also associated with the support of environmental policies (Fairbrother, 2016; Fairbrother et al., 2019; Harring & Jagers, 2013; Sivonen, 2020).

Social class

Numerous studies have connected social class position with, for example, inequality (Erola et al., 2008; Goldthorpe & McKnight, 2006) as well as political party preference and voting choices (Goldthorpe, 1999; Jansen et al., 2011; Oesch & Rennwald, 2018). Classes reflect socioeconomic stratification, which is based on the unequal distribution of economic and social statuses in society (Heywood, 2002).

Perhaps the most used class model today is the Erikson–Goldthorpe–Portocarero (EGP) scheme. In a simple form, it differentiates among five classes: high-grade professionals, low-grade professionals, routine non-manual employees, workers, and the self-employed (Erikson & Goldthorpe, 1992). However, many studies suggest that old classes have been differentiated in past decades and that scholars should pay attention to new social class fragments (Güveli, 2006; Jansen et al., 2011; Kitschelt & Rehm, 2014; Oesch, 2008).

The essential reason behind the changing class structure argument is that society has shifted from being industrial to post-industrial. Post-industrialization refers to the decreasing share of industrial jobs, increasing the portion of the service sector, emphasizing the importance of information, and increasing the population's level of education (Bell, 1974; Cohen, 2008). Meanwhile, an industrial society requires more technical know-how. Typical job sectors within a post-industrial society include the education, social, and health fields (Brante, 2010).

Güveli (2006) argues that post-industrialization has caused the differentiation of the professional class: Technocrats and socio-cultural specialists differ in their typical work logic and values. The roots of technocrats, such as administrators and engineers, originate more from industrial society, whereas the share of socio-cultural specialists (e.g., teachers and social scientists) has been increasing with the growth of the post-industrial welfare state (Güveli, 2006). Accordingly, socio-cultural

specialists are also called a ‘new middle class’ (Güveli et al., 2012). Technocrats work more often at companies, and socio-cultural specialists work more often in the public sector or in organizations. The socio-economic position of technocrats overall is typically better, but these specialist groups also differ in terms of their values. Technocrats are more materialistic, rational, and profit oriented, whereas socio-cultural specialists place more weight on post-material, autonomic, and non-economic values and objectives. Apart from separating professional class to technocrats and socio-cultural specialists, Güveli’s EGP class scheme follows the traditional EGP model (Güveli, 2006; Güveli et al., 2007).

The described differences between the classes are also related to their views on the state’s role: Compared with technocrats, socio-cultural specialists prefer a larger public sector and higher taxation (Güveli, 2006). Evidence from Sweden and Belgium indicates that socio-cultural specialists are especially active participants in the climate change mitigation movement (Eggert & Giugni, 2012).

Based on the described discussion about socio-cultural specialists having more post-material values than other classes do (Güveli, 2006; Güveli et al., 2007), as well as socio-cultural specialists’ active involvement in the climate movement (Eggert & Giugni, 2012), we hypothesize the following (H1): *Socio-cultural specialists are more in favour of higher fossil fuel taxation than other classes are.*

Political party preference

As a second explanatory factor in fossil fuel taxation attitudes, we measure the effect of citizens’ political party preferences. Taxation is generally one of the most essential administrative tools for organizing the public economy, which also makes it a crucial part of political conflicts in Nordic countries.

Previous studies have shown that party preference is an influential factor that explains individuals’ attitudes toward environmental issues in particular (Carter, 2013; Clements, 2014; Dunlap & McCright, 2008; Koivula et al., 2020; Linde, 2018). In this study, we are interested in the relationship between the party preference and the taxation of fossil fuels.

Our assumption is that the party plays a potential role in the formation of citizens’ values and attitudes with regard to other citizens. Individuals generally categorize themselves with others to make the social or political context understandable (Festinger, 1957; Merton, 1967), and political preferences potentially guide individuals in forming their issue orientations (Goren et al., 2009; Jacoby, 1988; Slothuus, 2010). In this respect, political party preference may also be understood as a significant category that individuals use as a reference group by self-categorizing themselves with others (Greene, 2004; Koivula, 2019).

To map party differences, we need to define the Nordic political spectrum in the light of political cleavages. In this study, we grouped parties by following the previous studies of Knutsen (1998) as well as Koivula et al. (2017). We present the country-specific party groups with their original names in Table A1. In Figure 1, we illustrate their political views on environmental and economic issues according to the most recent Chapel Hill Expert Survey conducted in 2014 (Polk et al., 2017).

The Chapel Hill Expert Survey places parties on the political spectrum based on various questions from the specialists’ evaluations. The parties located on the economic left want the government to play an active role in the economy; on the other hand, the parties on the economic right emphasize a reduced economic role for the government, a more privatized government, and lower taxes with a leaner welfare state. In terms of environmental orientation, the parties located on the downside of the spectrum actively support environmental protection at the cost of economic growth; meanwhile, the parties located on the opposite pole strongly support economic growth at the cost of environmental protection (Polk et al., 2017).

As in most Western democracies, the 20th century was mainly characterized as a time of class-based politics in Nordic countries (Nieuwbeerta & Ultee, 1999), and the various population groups constituted their political movements and party groups based on their societal positions. Valen and

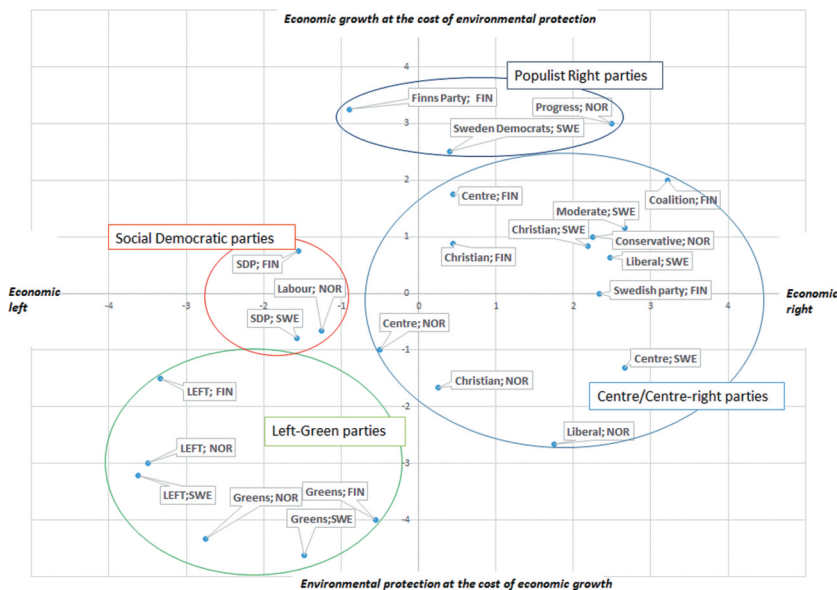


Figure 1. The locations of Finnish, Norwegian, and Swedish parties on a political spectrum. Source: Polk et al. (2017)

Rokkan (1974) especially emphasize the industrial structure when conceptualizing the Nordic political spectrum around the three-pole model in which Finnish, Norwegian, and Swedish parties are organized by contrasting the interests of the working class (Social Democrats), businesses (Conservatives), and agrarians (Centre parties).

Even though the characteristics of the three-pole model may still be recognizable, post-industrialization, globalization, and environmental issues have modified the traditional three-pole party system. The emergence of newer parties, namely the Green, the New-Left, and the Right-Wing populist parties, is ultimately based on the new cleavage, which is increasingly based on non-economic purposes (Bornschieer, 2010; Eskelinen, 2015; Hooghe & Marks, 2018).

Inglehart (1971) had already predicted the transformation toward the new political divisions in the 1970s, as he proposed that Western democracies that have achieved material and physical security are witnessing 'the silent revolution,' in which values are becoming increasingly related to post-material issues related to quality of life and environmental issues (Carter, 2007, p. 93). In the 1990s, Inglehart (1995, 1997) pointed out empirically that Nordic citizens are at the forefront regarding the fostering of post-material values.

In this sense, it is also not surprising that the majority of Nordic countries have been pioneers in the implementation of CO₂ or energy taxes (Andersen, 2004). Therefore, one may assume that the issue related to environmental issues does not separate the supporters of traditional parties very strongly. Instead, we expect that the attitudes toward fossil fuel taxation are likely to be linked to the new political dividing lines.

Along with Pippa Norris, Inglehart recently analysed that Western democracies have faced a rise in neo-conservative forces and that this is not the only consequence of increasing social inequality; it is also a 'cultural backlash' toward the long-standing progress of post-material values (Inglehart & Norris, 2016; Norris & Inglehart, 2019). On the Nordic level, the new neo-conservative Right-Wing parties are at the heart of the backlash, namely The Finns Party (Finland), Progress Party (Norway), and Sweden Democrats (Sweden).

Previous studies have pointed out that the supporters of Right-Wing parties generally have less ecological attitudes, whereas supporters of the Left (including UK Labour and US democrats) and Green parties consistently have the most environmentally friendly attitudes and reported behaviour (Carter, 2013; Clements, 2014; Dunlap & McCright, 2008; Koivula et al., 2020; Linde, 2018, 2020; McCright et al., 2016). These results are in line with the theories and findings of new political cleavages and divisions (Kriesi, 2010; Oesch & Rennwald, 2018), where it has emerged that supporters of Right-Wing populist parties are generally opposite of the supporters of the Green and New-Left parties.

Nordic countries are sometimes thought to be forerunners of environmental policies (Hoff, 2018). Sweden was the first country to found an administration for environment, which took place in 1969 (Berg & Saikkonen, 2019). The first Green Party in the Nordic countries was also established in Sweden at 1981 (Hoff, 2018). Later on, Green parties made a breakthrough to the national parliaments in all three of the studied countries. At the same time, Nordic socialist left or New-Left parties have adapted environmental issues prominently to their programmes (Eskelinen, 2015; Hoff, 2018). Due to the prominent positions of environmental topics, feminism, and other new-politics issues among the parties, the Nordic Green and New-Left parties can be grouped in the same party group (Koivula et al., 2017; Knutsen, 1998). Due to the emphasis of environmental protection among Nordic Left-Green parties, the following hypothesis was formed: *H2. Supporters of Left-Green parties are more in favour of higher fossil fuel taxation than supporters of other parties.*

A counterforce to the Left-Green faction is formed by Right-Wing populist parties. They have questioned the need for national climate policies in all three of the studied countries (Aasen, 2017; Arter, 2012; Båtstrand, 2014; Hatakka & Välimäki, 2019; Hultman et al., 2019). Although the Populist Right party made its breakthrough earlier in Norway, it happened during the 2010s in Sweden and Finland, and around the mid-2010s Finland, Norway, and Sweden all had significant Populist Right parties (Widfeldt, 2018). The situation of Right-Wing populist parties differs between the countries: In Finland the Finns Party and in Norway the Progress party have been part of the government, whereas Swedish populist party, Sweden Democrats, have been politically isolated (Widfeldt, 2018).

Differences also exist between the approaches from the Nordic Populist Right parties toward climate change. Although Sweden Democrats and the Progress Party have been sceptical of climate science and global warming itself (Hultman et al., 2019; Midttun et al., 2015), the Finns Party has been less inclined to question climate change as a natural phenomenon in its official communication (Hatakka & Välimäki, 2019). However, in more informal communication, the Finns Party representatives also flirt with climate scepticism (Vihma et al., 2020).

In Sweden, the climate change denial of Sweden Democrats is based on an anti-elite discourse, a doubtful attitude toward science, and the favouring of industrial and masculine identities (Hultman et al., 2019). Swedish Democrats have received funding from wealthy businessmen whose profits are dependent on the usage of fossil fuels (Hultman et al., 2019). The Finns Party has instead formed an opposing force for the implantation of Finnish environmental policies that they have framed as restricting rural people's lifestyles and hampering normal taxpayers' economic situations (Hatakka & Välimäki, 2019). In Norway, the Progress Party doubts the need for climate policies, especially costly ones (Båtstrand, 2014). Accordingly, we hypothesized the following: *H3. Supporters of Populist Right parties are less in favour of higher fossil fuel taxation compared with supporters of other parties.*

The new political issues and new political cleavage unite with the differentiation of generations. For example, Inglehart and Norris (2016) suggest that the long-standing fostering of postmaterialism – such as minority rights, feminism, and environmental protection – has triggered older people with traditional values in particular to vote for Right-Wing populists. Postmaterial values have become more common among generations that were born after World War II, as they have been able to grow with better economic prosperity and physical security (Inglehart, 2018).

In general, these arguments are based on the idea that the voting decision is determined based on the core values adopted in childhood. According to Inglehart (1971), people tend to retain the core values adopted in their formative years throughout adult life. In particular, climate change appears to be more important to younger generations (Carle, 2015; Poortinga et al., 2011). Climate issues also potentially have a real impact on the lives of young people; their futures and life opportunities on Earth are more dependent on contemporary policies when compared with older people (Page, 2007). Consequently, it is possible that age has a modifying effect on the party differences.

As party supporters tend to maintain distance in their attitudes toward their political counterparts (Koivula, 2019), younger Populist Right supporters in particular may want to distinguish themselves from the attitudes of younger, climate-friendly and climate-oriented Left-Green supporters (and vice versa). On the other hand, middle-aged and older party supporters are presumably more likely to own cars and houses – in other words, more fossil fuel-dependent lifestyles – which may confound the relationships among party preference, age, and fossil fuel taxation attitudes.

Research design

Data

We used the ESS data collected in 2016–2017 (ESS, 2018). Our dependent variable measured the attitude toward higher fossil fuel taxation. The respondents were asked, ‘To what extent are you in favour or against the following policies in [your country] to reduce climate change?’: ‘Increasing taxes on fossil fuels, such as oil, gas, and coal.’ To enable easier interpretation, we reversed the original response options, where a higher value indicated that a respondent was more against a policy. Thus, the scale was the following: 1 = Strongly against, 2 = Somewhat against, 3 = Neither in favour nor against, 4 = Somewhat in favour, and 5 = Strongly in favour. The five-point hedonic scale in question has been used in several earlier studies (e.g., Fairbrother et al., 2019; Stadelmann-Steffen & Eder, 2020; Welsch, 2020). Table 1 shows the descriptive statistics of the dependent variable.

Information on the data collection process and quality control of the survey questions can be found from the publication of ESS (2017).

Even though Finland, Norway, and Sweden have relatively high carbon prices (Klenert et al., 2018), the carbon emissions per capita are at unsustainable level (Larsen & Alslund-Lanthén, 2017). Hence, an increase in fossil fuel taxation can be considered to be a relevant question for climate change mitigation in the Nordic context.

Güveli’s (2006) EGPG class scheme is based on ISCO-88 occupation codes. As ESS Round 8 includes ISCO-08 codes, we first converted them to ISCO-88 (Ganzeboom & Treiman, 2009), classified them according to the EGP model (Leiulfstrud et al., 2005), and finally coded them according to the Güveli’s EGPG scheme (Güveli, 2006). Accordingly, the classes in our analysis include the following: technocrats, socio-cultural specialists, clerks, workers, and entrepreneurs.

Political party preference was requested: ‘Is there a particular political party that you feel closer to than all of the other parties? (Yes/No).’ If an answer was ‘Yes,’ the follow-up question was, ‘Which one?’ Table A2 shows the frequencies of the party groups. In our analysis, we classified respondents

Table 1. Descriptive statistics of attitudes on higher fossil tax (dependent variable).

Country	n	Mean of attitudes on higher fossil fuel taxation	SD	Missing answers (%)
Finland	1925	3.35	1.08	0.88
Norway	1545	3.20	1.24	0.32
Sweden	1551	3.48	1.21	1.93
Total	5021	3.35	1.18	1.10

who did not have party preference as ‘No Party Preference.’ For those who answered with parties other than those listed in [Table A1](#), we included them in the analysis but did not report on them in the results.

We categorized the education variable into three classes: 1 = Primary, 2 = Secondary, and 3 = Tertiary. We inquired about the subjective income with the question ‘Which of the descriptions [on this card] comes closest to how you feel about your household’s income nowadays?’: 1 = Living comfortably on present income, 2 = Coping on present income, 3 = Finding it difficult on present income, and 4 = Finding it very difficult on present income. Due to the low response with answer option 4, we grouped the original options 3 and 4 into a new category 3: ‘Difficult or very difficult on present income.’ Age was centred on the country means when we studied countries separately, and age was centred on the total mean when we studied all three countries together. [Table A2](#) presents the details of all independent variables.

Methods

Our research methods include ordinary least squares (OLS) regression and interaction effects. The interaction effect means that the independent variable’s effect on the dependent variable varies according to the value of a third, moderating, or modifying variable (Jaccard & Turrisi, 2003). In our analysis, we hypothesized that the age variable modifies the relationship between political party preference and the fossil fuel taxation attitude. [Figures 2-4](#) include 95% confidence intervals. All of the following analyses were weighted with post-stratification weight (pspwght) and population size weight (pweight) as instructed by ESS (ESS, 2014). Due to heteroscedasticity in the data, we used robust standard errors in the following analysis. An analysis was carried out by using Stata version 15.1.

Results

[Table A3](#) includes data from Finland, Norway, and Sweden. According to the results, both political party preference and social class were associated with the fossil fuel taxation attitude. It is worth noting that the political party preference’s coefficient of determination was remarkably higher. Model 1 reveals support for our first hypothesis. When socio-cultural specialists were the reference groups, all other classes (technocrats, clerks, workers, and entrepreneurs) were less in favour of the higher fossil fuel tax, and this supports the first hypothesis. The difference was most prominent between socio-cultural specialists and workers.

Model 2 supports the second and third hypotheses: When the Left-Green party supporters were the reference, all other parties’ supporters were statistically significantly less in favour of higher fossil fuel taxes, and the difference toward supporters of the Populist Right was clearly the largest.

When social class, party preference, and control variables were included in Model 3, the effect of social class was mitigated but remained statistically significant. The relationship of party preference did not change very significantly in the model (compared with Model 2). Additionally, Model 3 indicates that people with higher education are more supportive compared with those with primary education. Respondents with coping, difficult, or very difficult subjective incomes were less supportive than were those with comfortable incomes. Older age predicted less support for higher fossil fuel taxation.

Model 4 explores the interaction between party preference and age. When Left-Green supporters were the reference group, supporters of Populist Right parties differed significantly from them: Older Populist Right supporters were less in favour of fossil fuel taxation than younger ones were. Thus, when we explored the respondents of Finland, Norway, and Sweden together, the analysis supported our fourth hypothesis.

[Tables A4-A6](#) explore the situation in Finland, Norway, and Sweden separately. The tables show that, generally speaking, the same type of situation can be found in the countries separately as in all of these countries together. Party preference had a higher coefficient of determination than social class did in all

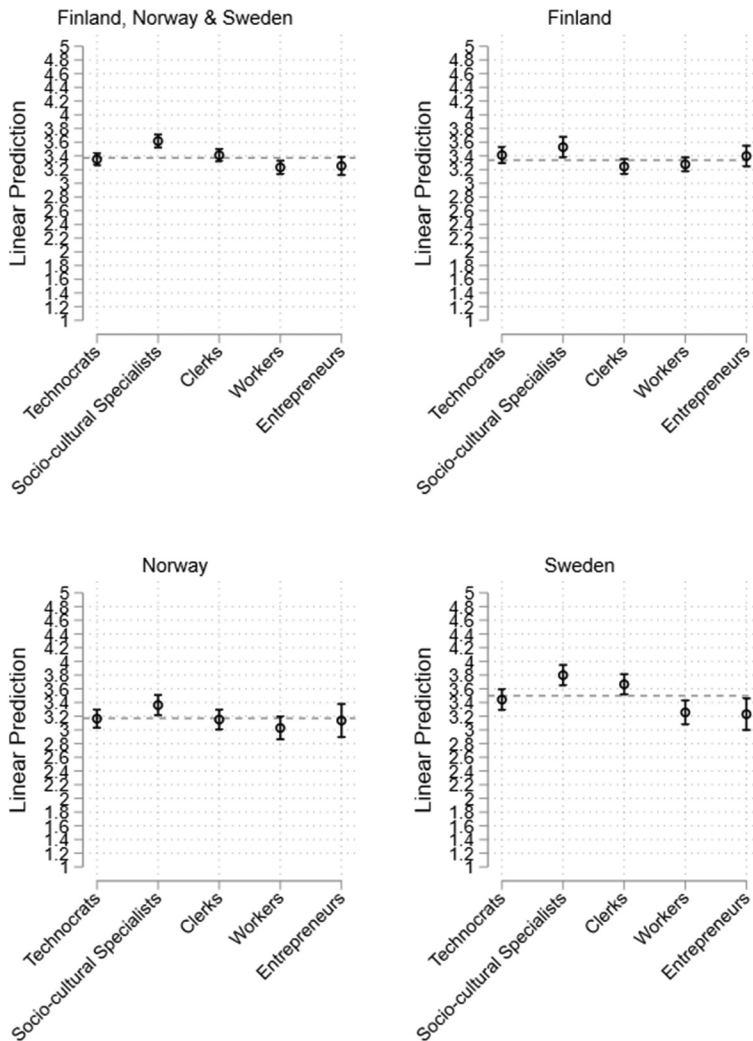


Figure 2. Support of higher fossil fuel taxation by social class. Controls: education, gender, country, and subjective income level. Horizontal line indicates the average.

countries. Overall, the significance of both social class and party preference was greater in Sweden and Norway than in Finland. The interaction effect between party preference and age was significant only in Sweden. [Figure 2](#) points out the relationship of class position, and [Figure 3](#) indicates the relationship of party preference with the fossil taxation attitudes.

[Figures 2](#) and [3](#) clearly indicate what [Tables A3-A6](#) show: Although some statistically significant differences existed between the classes, the differences between party supporters – particularly between Left-Green- and Populist Right supporters – were more extensive.

[Figure 4](#) shows the interaction effect of age with the party preference variable. The figure points out that when Finland, Norway, and Sweden were grouped into one regime, age modified the effect of party preference so that the difference between younger supporters of the Left-Green and Populist Right parties was more significant, whereas the difference with older supporters was smaller. However, when countries were examined separately, the effect of age was clear only in Sweden; the effect of age was not statistically significant in Finland and Norway. Thus, [Tables A4-A6](#) and [Figure 4](#) reveal that when countries were studied separately, the difference between younger Left-

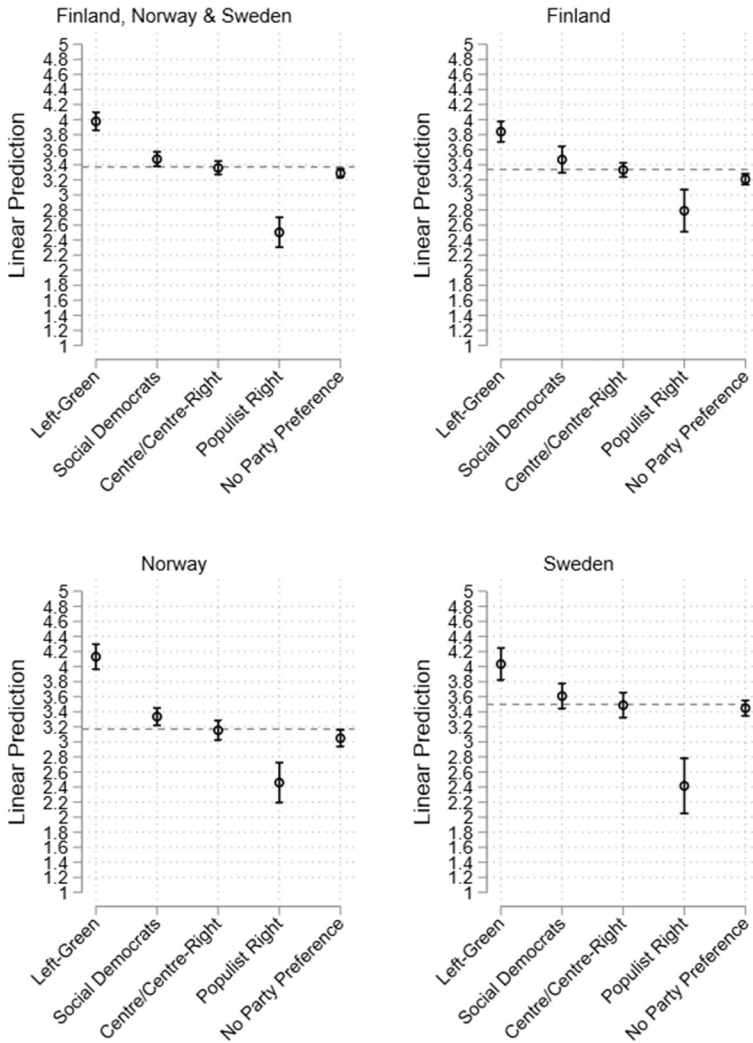


Figure 3. Support of higher fossil fuel taxation by political party preference. Controls: education, gender, country, and subjective income level. The horizontal line indicates the average.

Green and Populist-Right supporters (when compared with older ones) was statistically significant only in Sweden.

The attitudes of Centre/Centre-Right supporters, Social Democratic supporters, and those without party preferences were relatively close to the citizens’ average attitudes, and the interaction of age did not particularly change this finding.

Discussion

In this study, we explored the significance of social class position and political party preference on attitudes toward higher fossil fuel taxation in the context of post-industrial Nordic countries: Finland, Norway, and Sweden. In the first hypothesis, we predicted that socio-cultural specialists are more in favour of higher fossil fuel taxation than other classes are. The hypothesis was based on the discussion of socio-cultural specialists being more post-materialistic than other classes are (Güveli, 2006), as well as more involved in the climate movement (Eggert & Giugni, 2012). The hypothesis was supported. We found the most significant difference

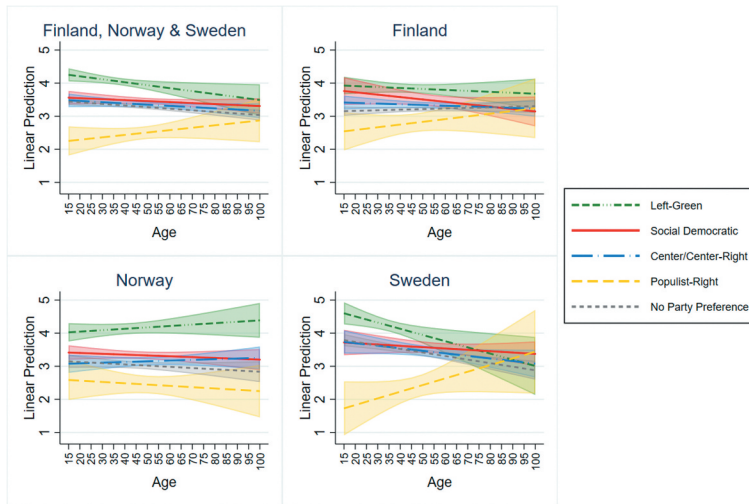


Figure 4. The influence of age on the party supporters' fossil fuel taxation attitudes in Finland, Norway, and Sweden. Controls: education, gender, country, and subjective income level.

between socio-cultural specialists and workers. The difference remained significant in all countries, even after adding control variables to the analysis. In Sweden, the differences in attitudes between classes were most pronounced, yet the class differences between the countries were not very large.

The second and third hypotheses were based on the literature, which argues that supporters of New-Left and Green parties are more environmentally oriented than others are and that supporters of Populist Right parties have less environmentally friendly attitudes than other parties' supporters do (Hooghe et al., 2002; Koivula et al., 2020; Linde, 2018, 2020). In the second hypothesis, we assumed that supporters of Left-Green parties are more in favour of taxation than supporters of other parties are, which the results supported. The difference remained significant in all countries when we accounted for all other variables. Moreover, the Populist Right supporters were less in favour of higher fossil fuel taxation in all of the studied countries, and this supported the third hypothesis.

The results from Sweden showed that compared with older supporters, the difference between the attitudes of Left-Green and Populist Right young supporters is more prominent among younger than older party supporters. However, this phenomenon was not found to be statistically significant in Finland and Norway.

Both studied factors that we hypothesized to be connected with fossil fuel taxation attitudes - class and party preference - seem to be somewhat significant factors in terms of fossil energy taxation attitudes. Party preference, however, appears to be more independent and relevant: The link between party preference and fossil taxation remained significant in all of the studied countries despite our adding control variables to the analysis. The relationship between class position and fossil taxation attitudes was weaker, albeit statistically significant, across all of the studied countries. From the two post-industrial social explanations - new middle class and new politics party preference - the latter seems to be more relevant in terms of attitudes toward fossil energy taxation. Because the most prominent cleavage was found between Left-Green and Populist Right supporters, attitudes toward fossil fuel taxation seem to be strongly linked to the post-industrial era's new political confrontations.

The discovered relationship between class and fossil taxation attitudes seems to be a partly disconnected factor from the economic or financial position: We found the most significant difference between socio-cultural specialists and workers. If economic status would have been the

most relevant factor behind the attitudes, the biggest difference would have been between workers and technocrats: Technocrats typically have the best economic situations of all classes. This result could be related to the argument that socio-cultural specialists have more post-material values than other classes do (Güveli et al., 2007). On the other hand, the increase in fossil fuel taxation could more directly affect the employment situations of workers and technocrats who work in the industrial sector compared with those of socio-cultural specialists. This is one possible explanation for the fact that, when compared with socio-cultural specialists, technocrats are also less in favour of the climate policy instrument in question.

The Nordic countries are sometimes mentioned as examples of the generalization of post-materialistic values (Inglehart & Welzel, 2005) and a relatively advanced climate policy (Hoff, 2018). However, the results of this study indicate that the so called cultural backlash against the diffusion of post-material values (Norris & Inglehart, 2019) can be recognized in Finland, Norway, and Sweden. The supporters of the Populist Right parties are significantly less in favour of an increase in fossil taxation than other parties are, especially the Left-Green parties. In Sweden, the attitudes of the Populist Right supporters are especially far from the country average, which could be due to the fact that the Swedish Democrats have questioned climate science and global warming relatively strongly (Hultman et al., 2019). The results of this study suggest that of the countries studied, in Finland the attitudes towards fossil fuel taxation are the least polarized: The difference between Left-Green and Populist Right supporters was least remarkable in there. This may be partially due to the fact that the Finns Party has not specifically questioned climate change as a natural phenomenon in its official communication (Hatakka & Välimäki, 2019). On the other hand, in Finland and Norway, the Populist Right parties have been represented in the government (Widfeldt, 2018), which could bring these parties' supporters closer to the centrist parties.

The results indicate that political party preference has a relatively robust link with fossil fuel taxation attitudes, as we considered the confounding effects of other crucial variables. Based on earlier research, we found at least two interpretations for the result. First, parties may have a noteworthy role in public opinion formation. If a party clearly takes a position on some issue - and even tries to politicize it - this may be reflected in the supporters' opinions through the party cues, even if supporters have not chosen the party for that issue (Druckman et al., 2013; Slothuus, 2010).

On the other hand, the results indicate how citizens differentiate themselves from other groups through party preference (Goren et al., 2009; Greene, 2004). For instance, Populist-Right parties (the Swedish Democrats in Sweden and the Finns Party in Finland) have been profiled as highly critical toward immigration, as opposed to the Green and Leftist parties in both countries (Harteveldt et al., 2017; Lönnqvist et al., 2018). In this respect, it is possible that the supporters of the Right-Wing populist parties want to distinguish themselves from the supporters of the Left-Green parties when taking a stand on a political question related to the core values of the Left-Green parties, such as environmental policies.

In Sweden, the difference was largest between younger supporters of these two new-politics party groups - the Green and Populist Right - whereas the interaction effect of age was not a significant factor in other countries. The older party supporters generally spoke closer to each other regarding this question. As Inglehart (1997) points out, values adopted at a younger age tend to remain in later years. This could mean that, especially in Sweden, the debate on climate change and the right methods for addressing it could culminate more in the upcoming years. Political parties would have the potential - if they so wish - to curb the confrontation over climate change by influencing their supporters. At the same time, researchers have an opportunity to point out ways in which climate policy can be promoted without deepening societal divisions.

Our data have restrictions that must be accounted for in the generalizations, and thus, more research is needed to understand the dynamics of climate policy attitudes. This study provided observations from only three Nordic countries that have relatively distinct spectrums of political parties when compared with other European countries. Our data are from a cross-sectional sample, so the conditions of the collection time may have affected them. To ensure more in-depth interpretations of the relationship between political party preference and support for fossil fuel taxation, the study should be repeated using longitudinal data. Energy taxation is typically a flat tax, which could modify attitudes toward it, especially in Nordic countries, where relatively high progressive taxation prevails. In the future, the significance of values and lifestyle choices in the formation of climate policy attitudes

should be further studied to enrich the understanding of the increasingly hot dispute regarding climate crisis and the methods used to tackle it.

Conclusion

In Finland, Norway, and Sweden, both social class position and political party preference are associated with citizens' support for fossil fuel taxation. When it comes to social class, socio-cultural specialists were most in favour of fossil fuel taxation, and workers were least in favour of it. Party preference, however, had a stronger link with the attitudes in question compared with social class. The clearest dividing line was found between supporters of the Left-Green and Populist Right parties: The former were most in favour and the latter least in favour of higher fossil fuel taxation. When compared with other countries, the attitudes between different Finnish parties' supporters were least polarized. When party supporters were examined by age, the most significant observation was found from Sweden: the attitudinal cleavage between younger supporters of Left-Green and Populist Right supporters was remarkably broad.

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Appendix A

Table A1. Party Groups in Finland, Norway and Sweden.

Party Group	Finland	Norway	Sweden
Left-Green	Left Alliance, Green League	Socialist Left Party, Green Party	Green Party, Left Party
Social Democratic	Social Democratic Party of Finland	Labour Party	Swedish Social Democratic Party
Centre and Centre-Right	National Coalition Party, Centre Party, Swedish People's Party of Finland, Christian Democrats	Centre Party, Liberal Party, Christian Democratic Party, Conservative Party	Centre Party, Liberals, Christian Democrats, Moderate Party
Populist Right	Finns Party	Progress Party	Sweden Democrats

Table A2. Descriptive statistics of independent variables in Finland, Norway and Sweden.

Variable	n	Mean	SD	Min	Max	Share (%)
Social Class	4762	2.81	1.33	1	5	
1 Technocrats	1127					23.67
2 Social-cultural specialists	825					17.32
3 Clerks	1130					23.73
4 Workers	1164					24.44
5 Entrepreneurs	516					10.84
Political party preference	4841	3.83	1.86	1	6	
1 Left-Green	508					10.49
2 Social Democratic	841					17.37
3 Centre/Centre-Right	1,311					27.08
4 Populist Right	269					5.56
5 No Party Preference	1,839					37.99
6 Other Party	73					1.51
Age	5017	49.60	19.05	15	98	
Subjective income	4992	1.59	0.68	1	4	
1 Living comfortably	2543					50.94
2 Coping	2049					41.05
3 Difficult or very difficult	400					8.01
Gender	5020	1.49	0.50	1	2	
1 Male	2564					51.08
2 Female	2456					48.92
Education	5001	2.30	0.77	1	3	
1 Primary	940					18.80
2 Secondary	1593					31.85
3 Tertiary	2468					49.35

Table A3. OLS regression model on support for higher fossil fuel taxation in Finland, Norway and Sweden (Country controlled).

	Model 1	Model 2	Model 3	Model 4
Social class				
Technocrats (ref. Socio-cultural specialists)	-0.386*** (0.0619)		-0.225*** (0.0616)	
Clerks	-0.385*** (0.0619)		-0.179** (0.0668)	
Workers	-0.687*** (0.0663)		-0.312*** (0.0753)	
Entrepreneurs	-0.589*** (0.0799)		-0.256** (0.0805)	
Party preference				
Center and Center-Right (ref. Left-Green)		-0.660*** (0.0817)	-0.504*** (0.0826)	-0.483*** (0.0891)
Social Democratic		-0.716*** (0.0775)	-0.635*** (0.0771)	-0.615*** (0.0840)
Populist Right		-1.678*** (0.122)	-1.425*** (0.122)	-1.422*** (0.124)
No Party Preference		-0.803*** (0.0711)	-0.681*** (0.0695)	-0.662*** (0.0769)
Education				
Secondary education (ref. Primary)			0.0170 (0.0639)	0.0417 (0.0641)
Higher education			0.227*** (0.0676)	0.319*** (0.0625)
Subjective income				
Coping (ref. Living comfortably)			-0.161*** (0.0486)	-0.172*** (0.0478)
Difficult or very difficult			-0.197* (0.0837)	-0.213* (0.0840)
Gender				
(ref. Male)			0.121** (0.0439)	0.160*** (0.0422)
Age				
			-0.00338** (0.00118)	-0.00903* (0.00396)
Party preference#age				
Center and Center-Right#age (ref. Left-Green)				0.00607 (0.00479)
Social Democratic#age				0.00664 (0.00459)
Populist Right#age				0.0167* (0.00744)
No Party Preference#age				0.00438 (0.00426)
_cons	3.684*** (0.0713)	3.889*** (0.0748)	4.022*** (0.114)	3.717*** (0.106)
N	4540	4540	4540	4540
R ²	0.036	0.085	0.119	0.116

Heteroscedasticity robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A4. OLS regression model on support for higher fossil fuel taxation in Finland.

	Model 1	Model 2	Model 3	Model 4
Social class				
Technocrats (ref. Socio-cultural specialists)	-0.206* (0.0881)		-0.0984 (0.0861)	
Clerks	-0.439*** (0.0870)		-0.250** (0.0922)	
Workers	-0.522*** (0.0837)		-0.215* (0.0969)	
Entrepreneurs	-0.317** (0.105)		-0.108 (0.104)	
Party preference				
Center and Center-Right (ref. Left-Green)		-0.445*** (0.116)	-0.319** (0.119)	-0.276* (0.125)
Social Democratic		-0.529*** (0.0868)	-0.510*** (0.0855)	-0.496*** (0.0880)
Populist Right		-1.088*** (0.162)	-0.945*** (0.164)	-0.924*** (0.167)
No Party Preference		-0.692*** (0.0816)	-0.598*** (0.0815)	-0.601*** (0.0839)
Education				
Secondary education (ref. Primary)			0.0408 (0.0814)	0.0446 (0.0816)
Higher education			0.204* (0.0856)	0.275*** (0.0777)
Subjective income				
Coping (ref. Living comfortably)			-0.209*** (0.0606)	-0.234*** (0.0596)
Difficult or very difficult			-0.240* (0.0993)	-0.267** (0.0989)
Gender				
(ref. Male)			0.0420 (0.0560)	0.0170 (0.0530)
Age				
			-0.000850 (0.00150)	-0.000936 (0.00417)
Party preference#age				
Center and Center-Right#age (ref. Left-Green)				-0.00745 (0.00679)
Social Democratic#age				-0.00129 (0.00488)
Populist Right#age				0.00913 (0.00937)
No Party Preference#age				0.00247 (0.00463)
_cons	3.696*** (0.0677)	3.880*** (0.0718)	4.017*** (0.131)	3.855*** (0.111)
N	1711	1711	1711	1711
R ²	0.025	0.057	0.088	0.087

Heteroscedasticity robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A5. OLS regression model on support for higher fossil fuel taxation in Norway.

	Model 1	Model 2	Model 3	Model 4
Social class				
Technocrats (ref. Socio-cultural specialists)	-0.387*** (0.0936)		-0.123 (0.0925)	
Clerks	-0.495*** (0.0974)		-0.167 (0.104)	
Workers	-0.783*** (0.105)		-0.256* (0.119)	
Entrepreneurs	-0.539*** (0.143)		-0.139 (0.142)	
Party preference				
Center and Center-Right (ref. Left-Green)		-0.913*** (0.107)	-0.791*** (0.107)	-0.813*** (0.107)
Social Democratic		-1.103*** (0.110)	-1.006*** (0.111)	-1.039*** (0.112)
Populist Right		-1.879*** (0.161)	-1.627*** (0.164)	-1.659*** (0.166)
No Party Preference		-1.239*** (0.105)	-1.090*** (0.106)	-1.123*** (0.106)
Education				
Secondary education (ref. Primary)			-0.109 (0.102)	-0.119 (0.103)
Higher education			0.297** (0.105)	0.369*** (0.0966)
Subjective income				
Coping (ref. Living comfortably)			-0.101 (0.0724)	-0.110 (0.0720)
Difficult or very difficult			-0.108 (0.144)	-0.120 (0.144)
Gender				
(ref. Male)			0.224** (0.0724)	0.251*** (0.0676)
Age				
			-0.000313 (0.00174)	0.00449 (0.00462)
Party preference#age				
Center and Center-Right#age (ref. Left-Green)				-0.00743 (0.00568)
Social Democratic#age				-0.00107 (0.00594)
Populist Right#age				-0.00872 (0.00907)
No Party Preference#age				-0.00531 (0.00548)
_cons	3.611*** (0.0671)	4.255*** (0.0869)	4.111*** (0.145)	3.959*** (0.123)
N	1424	1424	1424	1424
R ²	0.039	0.092	0.140	0.139

Heteroscedasticity robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A6. OLS regression model on support for higher fossil fuel taxation in Sweden.

	Model 1	Model 2	Model 3	Model 4
Social class				
Technocrats (ref. Socio-cultural specialists)	-0.466*** (0.104)		-0.332** (0.104)	
Clerks	-0.288** (0.101)		-0.125 (0.109)	
Workers	-0.788*** (0.114)		-0.435*** (0.125)	
Entrepreneurs	-0.799*** (0.133)		-0.382** (0.138)	
Party preference				
Center and Center-Right (ref. Left-Green)		-0.649*** (0.142)	-0.422** (0.145)	-0.350* (0.165)
Social Democratic		-0.667*** (0.141)	-0.566*** (0.138)	-0.482** (0.159)
Populist Right		-1.880*** (0.216)	-1.538*** (0.219)	-1.444*** (0.223)
No Party Preference		-0.700*** (0.128)	-0.574*** (0.122)	-0.513*** (0.147)
Education				
Secondary education (ref. Primary)			0.0413 (0.113)	0.122 (0.114)
Higher education			0.161 (0.117)	0.301** (0.111)
Subjective income				
Coping (ref. Living comfortably)			-0.206* (0.0895)	-0.205* (0.0880)
Difficult or very difficult			-0.274 (0.153)	-0.273 (0.155)
Gender				
(ref. male)			0.107 (0.0765)	0.182* (0.0739)
Age				
			-0.00705*** (0.00208)	-0.0197** (0.00709)
Party preference#age				
Center and Center-Right#age (ref. Left-Green)				0.0159 (0.00855)
Social Democratic#age				0.0144 (0.00821)
Populist Right#age				0.0400** (0.0137)
No Party Preference#age				0.00855 (0.00760)
_cons	3.963*** (0.0659)	4.156*** (0.115)	4.191*** (0.164)	3.723*** (0.175)
N	1405	1405	1405	1405
R ²	0.055	0.099	0.150	0.148

Heteroscedasticity robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$