FIELD OF EDUCATION AND THE TRANSNATIONAL CLEAVAGE

Liesbet Hooghe
University of North Carolina at Chapel Hill
European University Institute, Florence
hooghe@unc.edu

Gary Marks
University of North Carolina at Chapel Hill
European University Institute, Florence
marks@unc.edu

Jonne Kamphorst
European University Institute, Florence
Jonne.Kamphorst@eui.eu

ABSTRACT

Education is perhaps the most generally used independent variable in the fields of public opinion and vote choice. Yet the extent to which a person is educated, which is the predominant way in which education is conceived in surveys, is just one way in which education may affect political beliefs and behavior. In this paper, we suggest that the substantive field of education has an independent, and important, role to play over and above level. Using cross-national data for thirteen European countries we find that a person's field of education is robustly significant and substantively strong in predicting voting for green and hard-right populist parties that have transformed European party systems. Analysis of panel data suggests that the effect of educational field results from both self-selection and socialization in schooling and work.

Acknowledgements: The authors appreciate financial support from the Advanced European Research Council grant TRANSNATIONAL (#885026).

Prepared for the European Union Studies Association conference, Pittsburgh, May 4-6, 2023.

DRAFT – please do not quote

Introduction

Education is perhaps the most generally used independent variable in the fields of public opinion and vote choice. Yet the extent to which a person is educated, which is the predominant way in which education is conceptualized in public opinion surveys, is just one way in which education may affect political beliefs and behavior. In this paper, we suggest that the *substantive field* of education has an independent, and important, role to play over and above level of education.

We suspect that this holds for many topics in the fields of public opinion and vote choice. However, space constraints lead us to select one in particular: voting for green and hard-right parties in Europe. This topic has generated a large and growing literature that seeks to understand the social bases of the socio-cultural divide. Education has emerged as the great divider (Bornschier 2010; De Vries 2018; Kuhn et al. 2021; Stubager 2008, 2010). Most green voters have college degrees; most TAN voters have only secondary education.[1] For good reason, education has become a topic of intense concern in the study of contemporary political conflict.

The question we pose and seek to answer in this article is whether it makes sense to extend our understanding of education to include its substance in addition to its level. To make the case

[1] TAN stands for traditionalist, authoritarian, nationalist. Abou-Chadi and Hix (2021) show that the level of education is even more strongly associated with voting for green and TAN parties than for mainstream Left and Right parties. Mainstream parties tend to blur on the socio-cultural divide (Bakker et al. 2012; Jackson and Jolly 2021) and redistributive preferences and socio-cultural preferences are largely orthogonal (Attewell 2021).

we chart new theoretical and conceptual ground. In the next section we explain why we think this is worth doing.

Education and the socio-cultural divide

A growing body of evidence reveals that a person's education is profoundly related to their attitudes and behavior. The political implications of this are particularly stark in Europe where multiparty competition has lowered the barriers for green and TAN parties. Just how education plays into the divide is the subject of an informative and consequential debate (Abou-Chadi and Hix 2021; Hall et al. forthcoming; Häusermann and Kriesi 2015; Hobolt 2016; Ivarsflaten and Stubager 2013; Stubager 2008). What features of education matter for vote choice (Kitschelt and Rehm 2022; Maxwell 2020; van de Werfhorst and de Graaf 2004)? Is the level of a person's education a cause, or is it a consequence of processes earlier in a person's life (Cavaillé and Marshall 2019; Kitschelt and Rehm 2014; Kuhn et al. 2021; Lancee and Sarrasin 2015)?

We contribute to this research in three respects. First, we extend the analysis of education to the field in which a person is educated. This opens up a dimension of variation that is independent of the number of years a person is educated. Although research on the effect of level of education for partisanship has been very fruitful, the premise of this paper is that this is only one aspect of how education impinges on partisanship. In doing so, we propose a parsimonious new measure to tap variation in field specialization. Second, we develop a theory of field beyond the educational experience itself to account for the association between occupation and partisanship. Third, we seek to shed light on *how* educational field affects voting by examining the timing of that connection in a person's life.

There are plausible grounds to believe that the substance of a person's education is no less indicative of their partisanship than whether they went to college or not. Fields of education vary widely in their content, their methods of analysis, their modes of explanation, and their intellectual discourse (Maxwell 2020; van de Werfhorst and de Graaf 2004). They foster distinct cultural, economic, communicative, and technical skills (CECT); they engage students in different social networks; and they qualify individuals for particular occupations (Bourdieu 1984; Kalmijn and Kraaykamp 2007; van de Werfhorst and Kraaykamp 2001).

The political implications of these contrasts were first analyzed in studies of American university professors (Ladd and Lipset 1975; Lazarsfeld and Thielens 1958). In their classic analysis, Ladd and Lipset found that professors in the arts, humanities, and social sciences were significantly further to the left than professors in economics, business, and engineering. Interestingly, the contrasts that Ladd and Lipset (1975: ch. 3) detected appeared to be particularly sharp on non-economic issues, including support for racial integration and the Vietnam war.

The topic remained of interest to social scientists in the subfield "politics of the academy" (Hastie 2007; Hooghe, Dassonneville, Marien 2015), but the implications for the general population are rarely pursued. One reason for this lies in the information that is available in mass surveys. Whereas the level at which a person finishes school or college is tapped in most social surveys and features heavily in voting models, few surveys ask what a respondent studied. With one exception, noted below, field of education has not featured in voting choice models.

Beyond lack of data, it has proven difficult to conceptualize and operationalize fields of education in ways amenable to vote choice models. In most research, educational field has been conceived as a series of nominal categories for individual fields or it has been aggregated using

the STEM (science, technology, engineering, math) categorization. The former approach requires at least a dozen dummy variables. The latter approach is more parsimonious, but it is not well fit for the purpose of modeling voting. STEM fields vary widely in their association with voting on the socio-cultural divide, as do non-STEM fields.[2]

Building on the work of sociologists (van de Werfhorst 2001; van de Werfhorst and Kraaykamp 2001; van de Werfhorst and de Graaf 2004), we propose a continuous variable designed to capture the cultural, economic, communicative, and technical skill content of educational fields. This allows us to directly compare the relative effect of the field and level of education for individual voting. Pooling data from the European Social Survey for thirteen countries, we find that field of education is strongly and significantly associated with voting for green and TAN political parties and, surprisingly, it is even stronger than level of education. Second, we advance and confirm the claim that the field basis of a person's occupation predicts their vote choice on the socio-cultural divide.[3] Independent of the educational field in which a person was educated, the average field background of workers in a person's occupation provides leverage in explaining vote choice. Voters in occupations with different field concentrations express starkly different political preferences over the political parties that take polar positions on the contemporary divide. We confirm that this holds even after we control for the conventional

[2] Appendix H shows that our CECT approach is considerably more powerful than one based on STEM.

[3] We use the term *predict* in its technical sense as a forecast of what would be observed under specific conditions.

occupational categories that stand in for the work experience. By proposing a variable that directly taps the knowledge content of the workforce in an occupation, we seek to complement the categorical variables—e.g., socio-cultural professional or production worker—that currently predominate in voting models.

Our third contribution is to explain the timing of the connection between educational field and voting on the socio-cultural divide. The literature on the effect of education implies distinct phases in a person's life in which the link between education and socio-cultural attitudes is formed (Lancee and Sarrasin 2015; Stubager 2008). Is this link due to self-selection into education resulting from *prior* social influence, is it formed *during* education, or *after* education in working life?

The predominant line of argument, consistent with a social structural interpretation, suggests that attitudinal differences are already there prior to higher education. Inherited characteristics (Breen and Müller 2020), parental influence (Kunst et al. 2022; Lancee and Sarrasin 2015), and peer learning during early adulthood (Kunst 2022; Maxwell 2020) socialize a person into a given set of beliefs and a particular level of education (Kuhn et al. 2021; Margaryan et al. 2021). Alongside this there is also mounting evidence of educational sorting: individuals seek partners or friends with similar education (Attewell and Zollinger 2023); prefer to live in educationally similar neighborhoods (Maxwell 2019; Mijs and Roe 2021); or interact in their working life with people of similar education (De Jong and Kamphorst 2023). However, there is also support for the view that the educational experience itself shapes attitudes (Apfeld et al. 2023; Cavaillé and Marshall 2019; Stubager 2008). Education's role in conveying knowledge and honing critical thinking may promote social liberalism—a cognitive effect. To the extent that university professors lean liberal (Gross and Fosse 2012; van de Werfhorst 2020), they may

transmit these values in their courses—a formal socialization, or instruction, effect. And universities as sites where young people experiment with diverse ideas and practices may nurture liberalism—an informal socialization, or peer, effect (Campbell and Horowitz 2016). Finally, education may shape values after individuals leave school. Higher education increases the odds of higher social status or income which appears conducive to cultural liberalism (but not economic liberalism) (Attewell 2021; Gidron and Hall 2017; Magni 2022).

The range of possibilities applies equally to fields of education, with important implications for how we interpret the correlation between a person's field and their partisanship. Whereas the weight of evidence for level of education leans on the side of self-selection, we need to examine field of education with a fresh mind. The effect of studying one field or another may reflect the academic environment, peer pressures in university, or the nature of the discipline itself (Kalmijn and Kraaykamp 2007; Stubager 2008; van de Werfhorst and Kraaykamp 2001). Alternatively, a person may select into a field depending on their prior values, their gender, the position and values of their parents, their social circle during childhood and early adulthood, or their anticipation of employment opportunities after graduating (Bos et al. 2022; Corno and Carlana 2021; Kunst 2022).

We seek to shed light on these possibilities using Dutch LISS panel data and the German Socio-Economic Panel (SOEP). We find that *both* prior social influences and socialization during and after education matter. The stronger links in the causal chain are forged early in life – even before a student enters a field specialization – but we find that subsequent life experience is important also, both during education and in an occupation.

While interesting in their own right, answers to these questions have fundamental implications for understanding political conflict and competition in western democracies (Dalton

2018; De Vries and Hobolt 2020; Guth and Nelsen 2021; Jackson and Jolly 2021; Kriesi et al. 2006). Our larger purpose is to build a bridge between the sociology of education and research on voting, party competition, and what Lipset and Rokkan (1967: 2) described as "the constellations of alternatives" presented to the electorate. For example, our claim that a person's field of education shapes partisanship and is tied to a person's social background feeds directly into the consequential debate about whether there has, in fact, been a decline in the social basis of voting in democratic societies (Bornschier et al. 2022; Dassonneville 2023; Rovny 2015; Zollinger 2022).

However, we are aware that any account of the effect of field of education for voting faces several inferential challenges. Perhaps most obviously, we need to deal with the imbalance of field specializations across different educational levels. In most European countries, students pursue field specializations from their final year or two in high school. Yet the incidence of those specializations is unevenly distributed across fields. Some fields, like agriculture or technical training, are biased to secondary education while others, including law, social sciences, or natural sciences, are more predominant in post-secondary education. This raises the possibility that the variance associated with field of education is, at least in part, a function of level of education.

In response to this, we uncover a statistically significant and substantial field effect among both lower educated and higher educated, consistent with the claim that the association between a person's field of education and their partisanship is independent of whether they did, or did not, attend college.

Further, we need to examine the possibility that occupational location accounts for the effect of educational field. This is an acute question because, after the level of education, the second most powerful influence on green and TAN voting is a person's occupation (Häusermann

and Kriesi 2015; Kitschelt and Rehm 2014; Oesch and Rennwald 2018). Beyond using controls for occupational categories, we introduce models that consider the knowledge content of the occupation, which we measure as its average educational field score. Both a person's field score and the knowledge content of their occupation are robustly significant in models that include an array of dichotomous variables for occupations.

A prominent concern for any analysis of education and voting is the marked gender imbalance across fields (Charles and Bradley 2009; Schmader 2023; see also Bos 2022). Engineering, for example, is disproportionately male, while the arts and humanities are disproportionately female. At the same time, we also know that women are more likely than men to vote green, and men are more likely than women to vote TAN (Abou-Chadi et al. 2020; Dancygier 2020; Harteveld and Ivarsflaten 2018). To what extent, then, is the association between educational field and partisanship on the socio-cultural divide a product of the gendering of fields?

We confirm that the effect of gender extends into sorting by field and that this does indeed help to explain voting on the socio-cultural divide, but we also find that field has a strong and significant effect independent of gender. Moreover, when we subset the sample by gender we find that the association of field of study with green and TAN voting is homogenous for women and men.

Finally, we need to assess the robustness of our claims in different national contexts. Prior research on the political attitudes of those in different educational fields has used datasets confined to a single country, yet our theory applies more broadly. The force of this concern is heightened by research stressing that the socio-cultural divide differs across space and time (Boräng et al. 2023; Hutter and Kriesi 2019; Jackson and Jolly 2021), and that competition between

green and TAN parties is mediated by electoral rules (Dalton 2021; Koedam et al. 2023), historical legacies (Rovny and Polk 2019), and party strategy (Meguid 2008; Rovny 2013; Weeks et al. 2022).

In the next section, we set out expectations relating field of education to voting on the socio-cultural divide. Our analysis proceeds along two paths. We begin by exploiting the power that comes with large-N cross-sectional data from the European Social Survey to probe the association between educational field and partisanship. This allows us to impose a range of statistical controls, to subset the sample into theoretically meaningful groups, and to show robustness of our core claims across a range of countries. We then use Dutch panel data (LISS) and the German Socio-Economic Panel (SOEP) to identify the causal influence of education over a person's life course. While the weightiest effects arise from self-selection into a field of education, we detect the influence of subsequent socialization in education and within an occupation. We conclude by summarizing our findings and noting some implications for future research.

Field of education and voting

Following van de Werfhorst and co-authors (2001; 2001b; 2004; Kraaykamp et al. 2013), we consider four resources that differentiate fields of education:

- Cultural: the extent to which a field rewards expertise in artistic, literary, and cultural expression. Those who select into a cultural field are trained in historical analysis, artistic judgement, writing, and reading.
- Communicative: the extent to which a field rewards expertise in social interaction, group instruction, and public speaking. Those who select into a communicative field are trained in presentation skills, social scientific analysis, psychology, communication, and teaching.

- Economic: the extent to which a field rewards expertise in business and market behavior. Those who select into an economic field are trained in management, accounting, commerce, and law.
- Technical: the extent to which a field rewards expertise in production processes and concrete tasks. Those who select into a technical field are trained in machinery use, automation, mathematical calculation, and test procedures.

Although field of education has not been used in voting models, several studies provide a basis for believing that there is an affinity between a person's educational field and their social worldview. Most studies focus on professors or students. Although these studies cannot assess the generalizability of their results or control for particular sample biases, their findings are suggestive. Those with a liberal arts education tend to be more progressive on social issues, more culturally liberal, and less authoritarian than those in economic or technical fields (Carnevale et al. 2020: 18 and Table C1). Fischer et al. (2017: 185) find that humanities and social science students are significantly less favorable to market ideology than engineering students and, surprisingly for the authors, natural science students are more akin to students in the humanities and social sciences than those in other STEM fields. Elchardus and Spruyt (2009: 449) find that social science students score significantly lower than students in law or economics on ethnocentrism, authoritarianism, anti-politics, and utilitarian individualism. On the premise that social science leads students to appreciate the situational conditions that produce differential social outcomes, Guimond et al. (1989: 128) observe that whereas business administration students attribute unemployment and poverty to personal failings, social science students consider the social circumstances that shape life chances. Professors in the liberal arts and social sciences (with the

exception of economics) are more willing to be critical of the status quo on progressive grounds (Lipset 1982: 47). In all, this research suggests that the relative preponderance of cultural-communicative or economic-technical skills in a person's education provides a window into that person's worldview.

Two studies provide evidence beyond the university. Using data representative for the Dutch population, van de Werfhorst and de Graaf (2004: 216) find that fields oriented to social and communication skills lead individuals to "better understand and appreciate other people's standpoints" and consequently lean towards culturally tolerant orientations. Testing this against controls that include social class, they conclude that those educated in fields with high communicative content have more liberal gender role attitudes and are more likely to support left-wing political parties. Stubager (2008: 327) finds that those educated in teacher training, arts and humanities, social/behavioral studies, health and welfare are significantly more libertarian on a scale that picks up "law and order, immigration/multiculturalism, and the role of authority in society."

Subsequent papers confirm the association between cultural-communicative fields, social liberalism, and cosmopolitan tolerance while seeking to identify whether self-selection or socialization is responsible. Maxwell (2020) and Kunst (2020) find that self-selection and not socialization is at play, while Surridge (2016) presents evidence for in-education socialization.

We build on this literature to propose a theory that extends the argument in two important respects. First, we propose that the effect of a person's field of education reaches beyond political attitudes to voting and that the effect of field is independent from level of education. Second, we hypothesize that field of education is associated with voting on *both* sides of the socio-cultural

divide. To the extent that field has been related to voting, it has been to left voting (van de Werfhorst 2020). Our view is that the political affinities of those educated in cultural-communicative and technocratic-economic fields are more closely related to the socio-cultural divide which has gained prominence in western societies (Grande and Kriesi 2012; Hetherington and Weiler 2018; Kitschelt 1988; Kriesi 1998). If this is valid, one would expect field to be particularly strong for political parties that take polar positions on the divide, and which have been instrumental in transforming European party systems (Dalton 2018; Dassonneville et al. forthcoming; Ford and Jennings 2020). This leads us to claim that voting for TAN parties, as well as green parties, is associated with field:

(H_{1a}): Cultural-communicative education is associated with green voting.

(H_{1b}) Economic-technical education is associated with TAN voting.

We theorize that the logic of educational field is not bounded by the educational process itself but extends to a person's occupation. The field content of occupations varies widely, and this raises the possibility that differential recruitment, self-selection, socialization, and social closure may forge a link between the prevailing educational background of those in occupation and their political attitudes and behavior (Lindh et al. 2021; Zacher and Rudolf 2022).

Of these, differential recruitment is the most visible. While the Bachelor's degree is a general gateway qualification, this only touches the surface of the possible ways in which education serves as gatekeeper. Many occupations require particular qualifications for entry. This is typically the case for professional occupations such as medicine or forestry. In continental European societies, entry into many semi-skilled manual occupations, e.g., plumbing, general electrics, or car mechanics, requires formal apprenticeship. Beyond this, occupations that do not

require formal field-specific qualifications may have an elective affinity with a particular field of education. A person may seek a job based on what they believe would be a good fit given their educational background or the values commensurate with their educational field. Reflecting on the liberal bias among academics, Gross and Fosse (2012: 155-6) write that "the professoriate, along with a number of other knowledge work fields, has been 'politically typed' as appropriate for and welcoming of people with broadly liberal political sensibilities, and as inappropriate for conservatives." More generally, those educated in cultural-communicative fields may gravitate to jobs that involve person-to-person interaction or that have some cultural content, such as librarianship or teaching, whereas those trained in an economic-technical field may be drawn to a job with an industrial orientation, such as the financial sector or construction.

Differential recruitment and self-selection relating to field of education can provide a setting for socialization as a person becomes habituated to colleagues who share particular skills and values (van de Werfhorst 2020: 60). The classic literature on socialization and normative control finds that field-specific education, training, and apprenticeship for an occupation "solidifies preexisting attitudes, instills explicit codes of behavior, or otherwise generates homogeneity among recruits" (Weeden and Grusky 2005: 151; Kitschelt and Rehm 2014).

While occupation features in models of voting on the socio-cultural divide as broad categories—e.g., socio-cultural professionals and production workers—a more refined occupational approach at the ISCO-2 or ISCO-3 digit level appears better attuned to capture variation among occupations due to socialization and interactional closure. This is where we believe it pays off to disaggregate the occupational categorical schema developed by Daniel Oesch (2006) which posits eight (or sixteen) categorical variables that indirectly tap a matrix of

hypothesized effects. Our field approach relaxes the assumption that the site of production is organized into a small number of large groups (socio-cultural professionals, production workers, clerks, etc.). Here we take the micro-occupation—116 occupations at ISCO-3 level—as the unit of analysis. Each occupation is distinguished by its average field content and, correspondingly, we propose a parsimonious continuous variable designed to capture variation along the economic-technocratic versus cultural-communicative dimension. Our core claim is that each occupation is composed of individuals who have chosen to specialize in a particular educational field and this, we hypothesize, is associated with their vote choice.

(H_{2a}): A person in an occupation with cultural-communicative educated workers will tend to vote green.

(H_{2b}): A person in an occupation with economic-technical educated workers will tend to vote TAN.

Data and Measures

We adopt the European Social Survey (ESS) to assess the relationship between educational field, social bases, and vote choice for green and TAN parties. To evaluate whether self-selection into education or experiences during education undergird the effect of educational field, we turn to panel data from the Dutch Longitudinal Internet studies for the Social Sciences (LISS) and the German Socio-Economic Panel (SOEP). These are longitudinal panels that contain not just respondents' highest completed degree, but their field of study.

Likewise, the 2004, 2006, and 2008 waves of the European Social Survey are the only waves that contain information on respondents' substantive fields of education.[4] Recruitment of representative samples is a major challenge for cross-national research projects that seek to generalize their findings to defined populations. The exceptionally rigorous and transparent sampling design of the ESS, along with its *face-to-face* interview methodology, makes it uniquely valuable for our purpose (Jowell et al. 2007). In the Appendix we use LISS data from 2021 and 2022 to show that the results from the ESS are not particular to the 2000s (Table A.25).

Our ESS sample consists of thirteen European countries in years where a green party, a TAN party, or both parties were on the ballot. The unit of analysis is the respondent who is at least 21 years old and who reports which party they voted for in the last national election. We extract our dichotomous dependent variables—*voting Green or voting TAN*—from this vote choice item, and we follow the Chapel Hill Expert Survey to categorize parties into party families (Jolly et al. 2022).

To estimate the effect of our chief independent variable, *field of education*, we adapt information in the 1998 Family Survey of the Dutch Population asking respondents to assess how much each of sixteen skills were emphasized in their education (van de Werfhorst and Kraaykamp 2001). These are grouped in four categories: cultural, economic, communicative, technical. The rating for each category ranges from 1 (very limited extent) to 5 (very large extent). The variable,

[4] European Social Survey Rounds 2, 3, and 4: Data file edition 3.6. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS2-2004; -2006; -2008.

CECT is estimated as follows: for a given field, it is the ratio of communicative plus cultural skills to the sum of the four skill categories:

$$CECT_i = \frac{communicative_i + cultural_i}{cultural_i + economic_i + communicative_i + technical_i}$$

This variable is introduced into the ESS survey in two ways. First, we project the field-specific CECT ratio to each respondent's chief substantive field of specialization from a list of fourteen fields. Each respondent who reported the field of their highest qualification receives an *individual CECT* score. Second, we calculate the average CECT of respondents in each ISCO-3 level occupation and we apply an *occupational CECT* score to each individual in that occupation. Here we take advantage of the micro-level information in ESS that identifies each respondent's ISCO-3 digit occupation (116 categories) using the ILO's Standard Classification of Occupations (ISCO-88). Both individual CECT and occupational CECT are rescaled 0-1 for ease of interpretation.

We use conventional operationalizations for gender, education, age, location, secularism, and occupation. *Gender* is self-reported, whereby female takes the value of 1 and male zero. *Higher education* takes on a value of 1 if the respondent has completed post-secondary or tertiary education, and zero otherwise. *Age* is the year of the survey minus a respondent's reported year of birth. *Rural* is a five-category variable whereby higher values stand for a less urbanized living environment. *Secular* is a seven-category variable tapping attendance in religious services, with higher values indicating that a person rarely or never attends. *Occupational Status* classifies a person's job or past job in eight categories using information on employment relationship, work logic, and job content derived from ISCO-88 following Oesch (2006). *Income* is a four-category variable that taps a respondent's feeling about their household's income, from "very difficult on

present income" to "living comfortably on present income."[5] The Appendix provides further details (Tables A.1-A.6).

The LISS is a true probability panel of about 5,000 Dutch households that started in 2006 (www.lissdata.nl). The LISS field categories are virtually identical to the fields in the Family Survey of the Dutch Population, and green and TAN parties were represented in parliament for all survey years. The dependent variable is a thermometer scale reporting whether a respondent finds a given party sympathetic on a 0 to 10 scale. For each respondent, *GAL minus TAN sympathy* takes the difference between their score on Groenlinks (GL) and Partij voor Vrijheid (PVV) thermostat, so that higher values indicate more GAL.

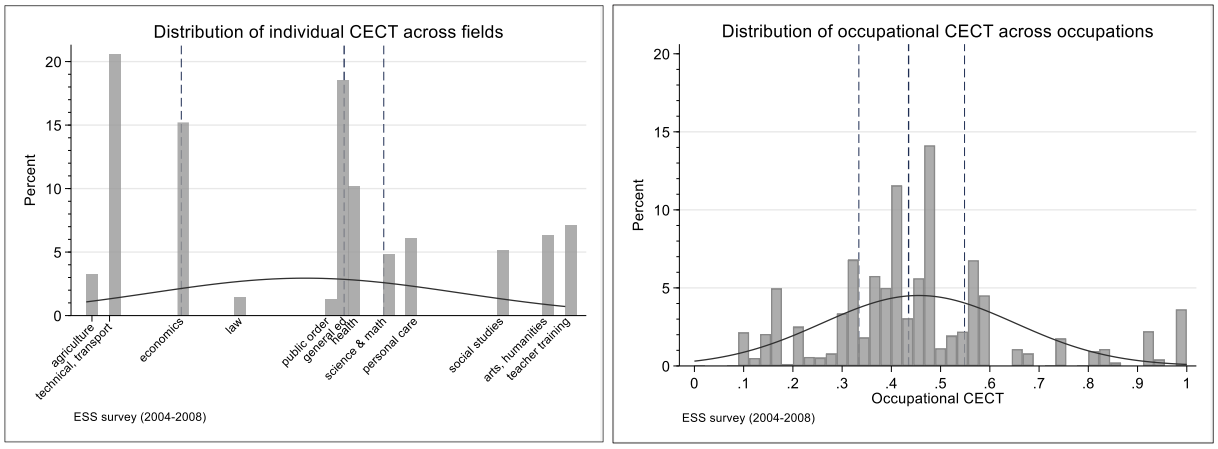
The SOEP is a true probability panel of about 15,000 German households from 1984 to 2020 (https://www.diw.de/). Aside from the benefit of a larger sample size and a nearly two-decade longer time horizon, the dependent variable—vote intention—is closer to the dependent variable in the ESS survey. *Green vote intention* takes on a value of 1 or 0. We do not probe vote intention for a TAN party because popular support was extremely low until 2013; the first representatives to the German Bundestag were elected in 2017. We compress the SOEP's more fine-grained information on substantive education and vocational training into the field categories used for ESS and LISS.

[5] The objective income variable is not commensurable across the three waves.

Individual and occupational CECT

We begin by visualizing the distribution of *individual CECT* and *occupational CECT* in the ESS sample in **Figure 1** from lowest to highest CECT. The standard deviation for *individual CECT* is 0.33 and that for *occupational CECT* is 0.20. Observations are dispersed on *individual CECT* with an interquartile range of 0.43. The distribution picks up divergent scores for individuals in fields with low CECT scores (agriculture; technical, engineering, and transport; economics and commerce), close to average CECT scores (health care, general education, and public order and safety), and high CECT scores (science and math; personal care; social studies; humanities and the arts; and teacher training).

Figure 1: Distribution of CECT in the European Social Survey



Note: N=35644; broken lines indicate the 25th, 50th, and 75th percent.

The average CECT of occupations is more single peaked. Around half of all 116 ISCO-3 occupations lie within a 0.20 band around the median (0.44), but the distribution has long tails. High CECT occupations include teachers, librarians, authors and journalists; low CECT occupations include civil, electrical, mechanical, and chemical engineers, and crop and animal producers.

Results

We begin by assessing the association between field of education and voting on the socio-cultural divide using ESS data. While this cannot rule out the possibility that an omitted variable causes both field and voting, using a larger N than available in panel data offers greater scope for stratification to control for confounding variables and greater confidence in the cross-national generalizability of our results.

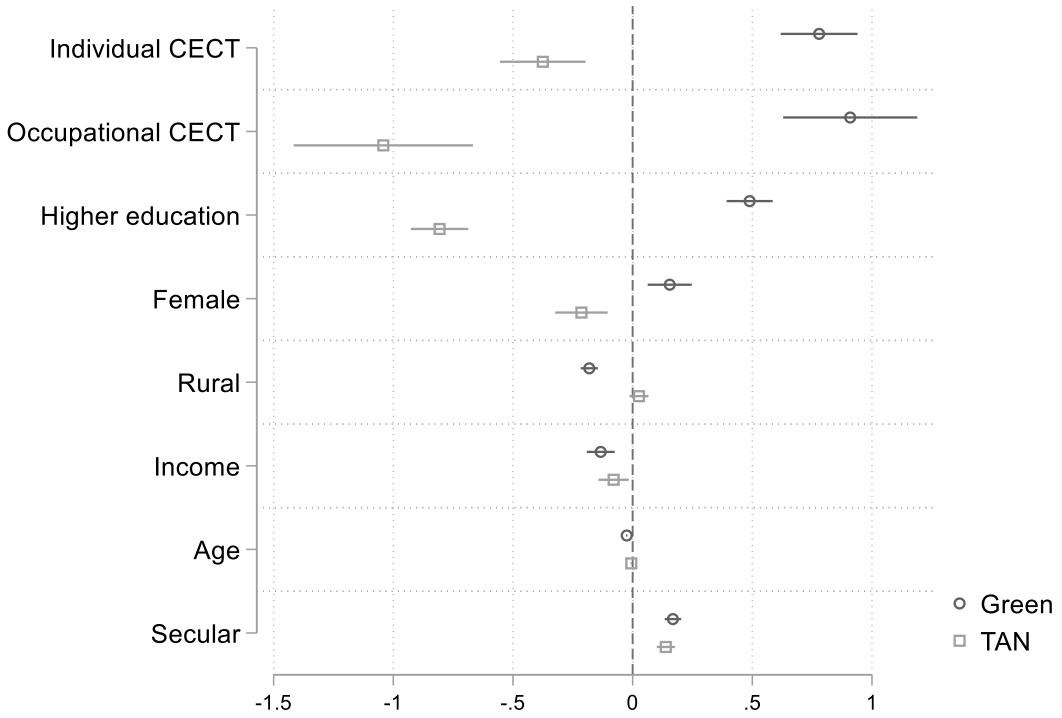
We wish to estimate the extent to which individual-level characteristics related to a person's education predict voting while controlling for the effects of other variables at different levels. We do this with multilevel mixed-effects logistic models in which individuals are hierarchically nested in occupations and in countries. We begin by analyzing the data as a whole without any consideration of potential differences among subgroups, while controlling for gender, urban/rural location, income, age, secularism, and temporal confounders.

The results presented in **Figure 2** suggest that our priors concerning field of education are plausible for the dataset considered as a whole. The coefficients for individual CECT (H_1a; H_1b) and occupational CECT (H_2a; H_2b) in models for green and TAN voting are significant at p-levels below .0001 and are substantively strong. A one-unit increase in individual CECT—from agriculture to teaching—is associated with an increase in the probability of voting green from 5.4% to 10.6% (+/-0.8) and a decrease in voting TAN from 8.5% to 6.3% (+/-0.6). A one-unit increase in occupational CECT is associated with an increase in the probability of voting green from 5.4% to 10.8% (+/-1.2) and a decrease in voting TAN from 10.7% to 4.4% (+/-0.9).[6] These differences are large in

[6] Appendix G shows that the results reported here are robust for individual countries.

proportional terms as well as in absolute terms. Variables tapping field of education are associated with an increase (or decrease) in voting for parties on the socio-cultural divide ranging from around 33% to 100%.

Figure 2 - Education and voting



Note: Multilevel mixed-effects logistic with oim clustering by country and ISCO-3 occupational categories based on Table A.7. ESS data for 2004-2008 for 11 countries with a green party or 10 countries with a TAN party.

This analysis also confirms the statistical significance of a person's level of education for green and TAN voting at similar degrees of significance. Interestingly, and perhaps unexpectedly, the substantive effect of level is in most cases less than that of field. The probability that a person with post-secondary education votes green is 9.7% compared to 6.3% for someone without a post-secondary diploma, and the probability that a person without post-secondary education votes TAN is 9.4% compared to 4.4% for someone with a post-secondary diploma. These differences, 3.4%

and 5.0% respectively, while large, are in all but one instance smaller than those for the field variables.

The relative magnitude of the coefficients for the three education variables is instructive. To predict the incidence of voting for a green party, it is equally important to know which subject someone studied and the field content of their occupation; the *level* of education is much less informative than the *field* of education. To gauge the likelihood of a person voting for a TAN party, it is most important to know the field content of someone's occupation, over and above both level of education or personal subject of study.

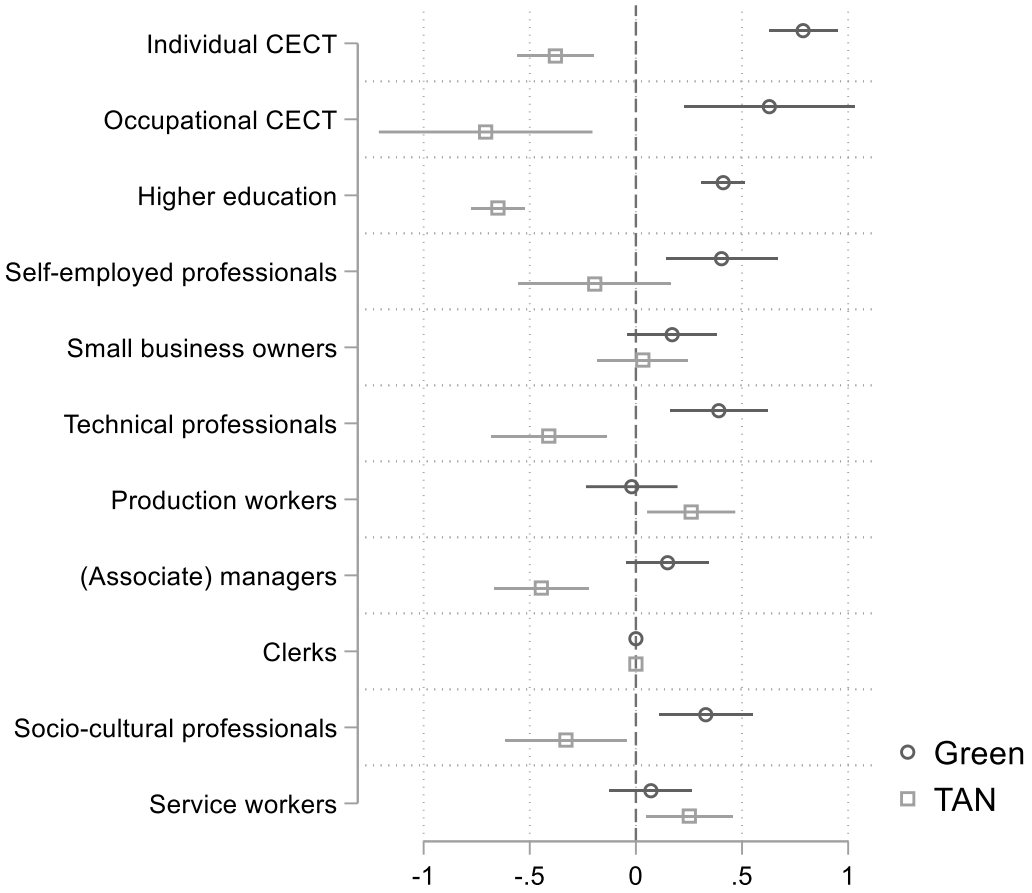
Among the controls, the coefficient for gender is smaller than either of the educational coefficients. Income is *negatively* associated with both green and TAN voting, which is a useful reminder that the divide cannot be reduced to a conflict between economic winners and losers of transnationalism. Finally, as others have found, religion has little bite on the socio-cultural cleavage in Europe: both green and TAN voters tend to be secular (Guth and Nelsen 2021).

We next extend the model to encompass categorical controls for occupations using the conventional eight-category Oesch schema (2006). This is a harsh test for our theory because the Oesch categorization seeks to capture interpersonal work logics and hierarchical relationships that might overlap with the skill characteristics of those employed in a particular occupation – i.e., the properties that CECT is designed to tap.

However, the results conveyed in Figure 3 reveal that both field and occupation provide useful information for predicting voting probabilities on the socio-cultural divide. Coefficients for individual CECT remain highly significant at $p<.0001$, while those for occupational CECT now have wider confidence bands and are reduced to a still acceptable $p=.0022$ (green) or $p=.0058$ (TAN).

The substantive effects remain large. The probability of voting green increases from 5.5% to 10.7% with a one-unit increase in individual CECT, and the probability of voting TAN decreases from 8.5% to 6.3%. The corresponding shifts for a one-unit increase in occupational CECT are from 6.0% to 9.9% for voting green and from 10.2% to 4.8% for voting TAN. It is also worth noting that this analysis confirms expectations concerning occupation and voting, with those in the professions tending to vote green, and production and service workers voting TAN. Interestingly, the largest difference among occupations—that between self-employed professionals and production workers—is smaller at 3.5% than those reported above for individual and occupational CECT. In conclusion, this analysis suggests that the underlying theories at stake are complementary rather than mutually exclusive.

Figure 3: Field, occupation and voting



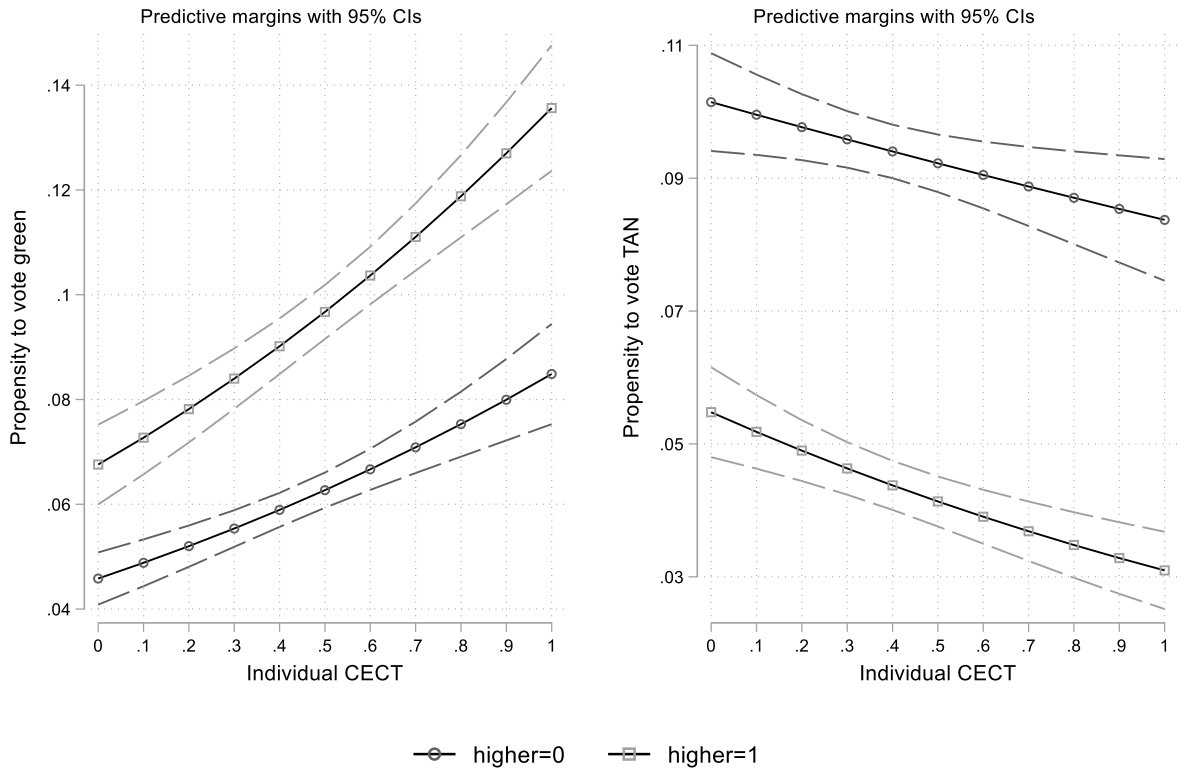
Note: Multilevel mixed-effects logistic with oim clustering by country and ISCO-3 occupational categories, and controls for gender, age, income, rural/urban, secularism, and time fixed effects. The reference category for occupation is clerical workers. ESS data for 2004-2008. See Table A.8 for full models.

We now stratify the sample to gain insight into differences among subgroups that are not apparent in aggregation. This enables us to respond to several potential inferential challenges. One arises from the fact that the incidence of post-secondary education is unevenly distributed across fields. For example, nearly 70 percent of individuals reporting humanities as their specialization have a postsecondary degree, but only 26.5 percent of those specializing in

agriculture do. If field merely stands in for level of education, the effect of individual CECT would disappear if we subset the sample into those with post-secondary education and those without.

Figure 4 presents results when we do this. It reveals that the association is more marked for green than for TAN voting, and stronger for those with post-secondary education. Individual CECT is associated at p<.0001 with voting green for both higher and lower educated individuals. For TAN voters, the association is p=.0012 for higher educated and p=.0136 for lower educated individuals. In substantive terms, the probability that a person with a post-secondary degree in social studies (CECT=0.86) votes green is 12.4 percent (+/- 0.9%) against 6.9 percent (+/- 0.7%) for a person with a post-secondary degree in engineering (CECT=0.03). A social studies graduate has a 3.4 percent (+/- 0.3%) probability of voting TAN against 5.4 percent (+/- 0.6%) for an engineer. The significant association for both subsets reinforces confidence in our prior that field of education and level of education are not substitutes for each other, but have independent predictive power.

Figure 4: The effect of field of education among higher and lower educated



Note: Multilevel mixed-effects logistic with oim clustering by country and ISCO-3 category, and controls for occupational CECT, gender, age, rural, income, secularism, and time fixed effects. ESS data for 2004-2008. See Table A.10, for full models.

Gendered fields

A second inferential challenge arises from gender sorting. To what extent can the associations we discover be attributed to the fact that women select into cultural-communicative fields and men into economic-technocratic fields? We regard this possibility as all the more serious because it is consistent with the well-founded literature on gendered socialization (Bos et al. 2023; Schmader 2023).

We begin by laying out for the reader how extensive gender sorting actually is in both educational fields and in occupations. **Figure 5** reveals just how wide the gap is by plotting the distribution of individual CECT for males on the left and females on the right. On our zero to one scale, the median score for women is 0.53 compared to 0.31 for men. The contrast is stark (difference of means p<.001) and raises the possibility that the association between individual CECT and voting is a function of gendered field choices.

Figure 5: Distribution of individual CECT by gender

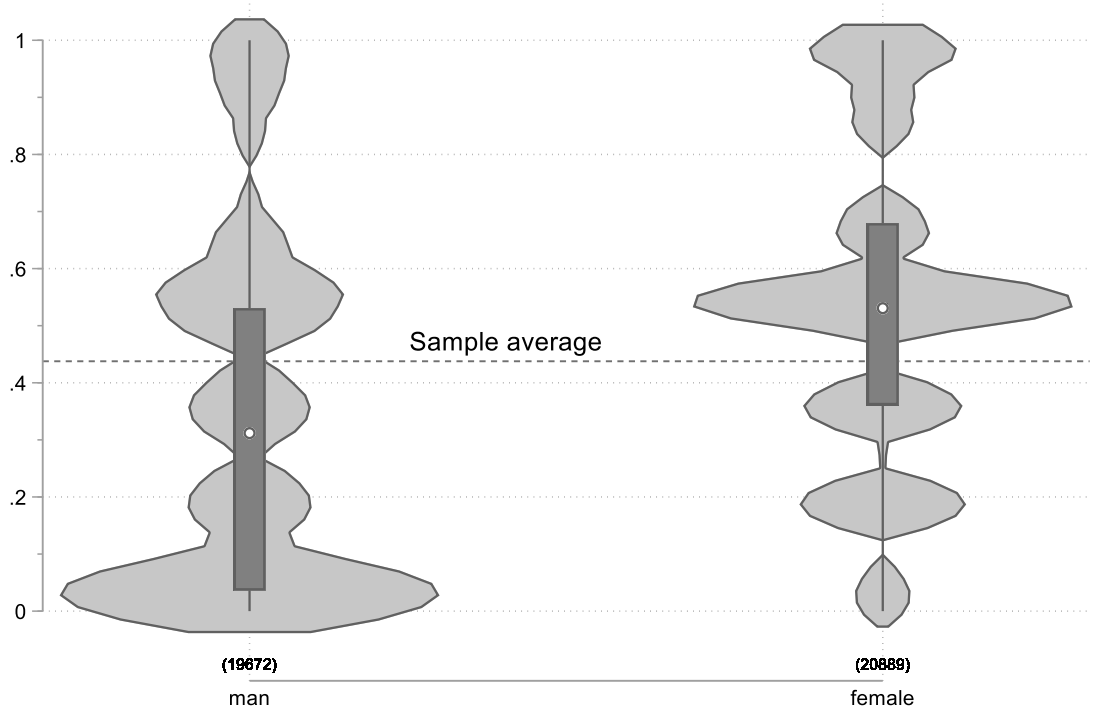
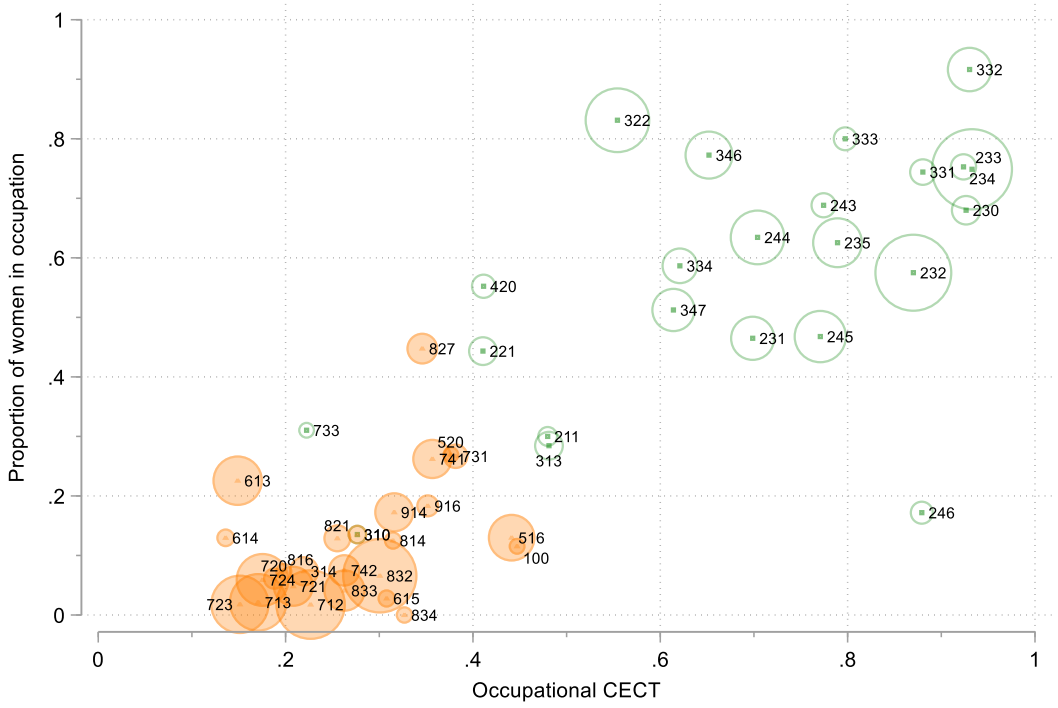


Figure 6 extends this inferential challenge by plotting occupations with twice the sample proportion of green voters (olive circles) or twice the sample proportion of TAN voters (orange circles). In line with theory, the former occupations are predominantly high CECT (median=0.70) and the latter occupations are predominantly low CECT (median=0.27). It is noteworthy that the

gender composition of these occupations varies almost as sharply. The Green-leaning occupations are on average 64.1% female; the TAN-leaning occupations are 90.7 percent male on average.

Figure 6: Distribution of occupational CECT by gender



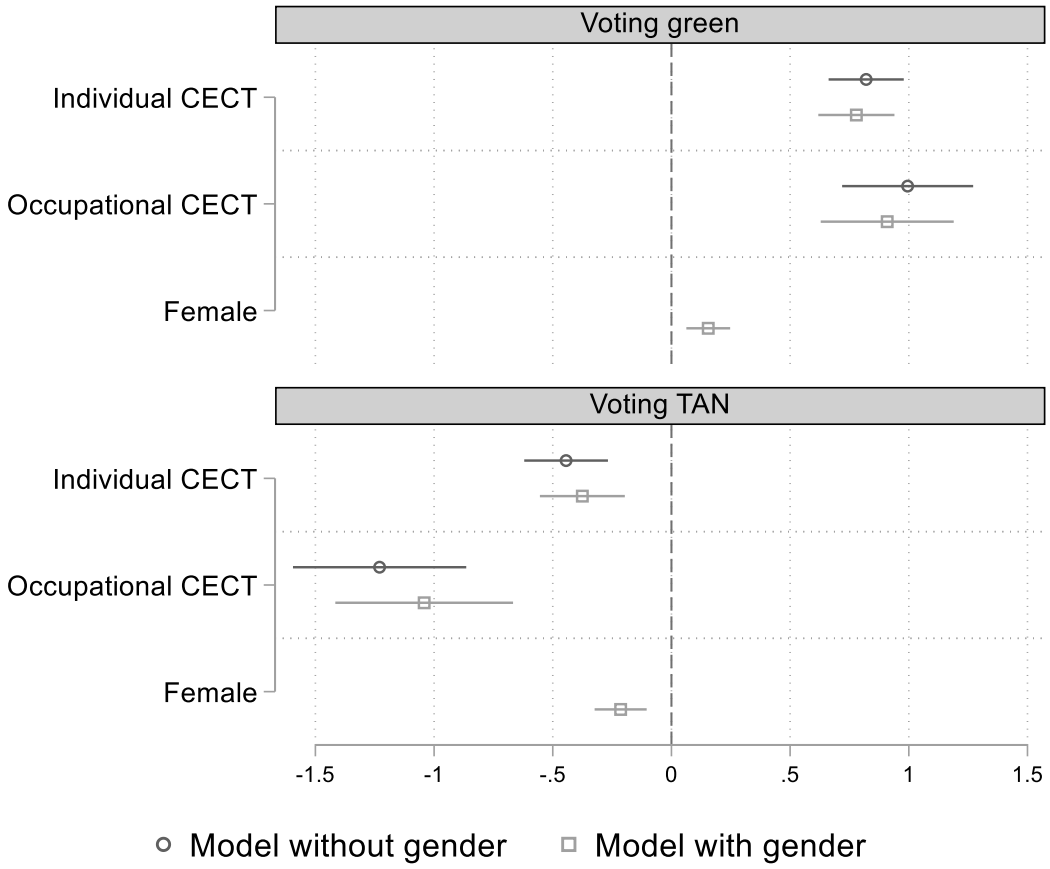
Note: Distribution of occupational CECT for green and TAN occupations (ISCO-3 level) against the proportion of women in an occupational category. An occupation is classified as green (TAN) if the proportion of green (TAN) voters is at least twice as large as the average green (TAN) vote in the sample. Numbered occupations are listed in Table A.9.

We proceed in two steps. First, we evaluate to what extent the effect of field can be attributed to differential selection by boys and girls into fields of specialization. To do so, we contrast a model with field, but without gender, to our baseline model that includes both gender and CECT (**Figure 7**).

This shows that the effect of field is extremely robust under controls for gender. Further analysis reveals that a model with field alongside gender is superior to one with gender alone or with field alone, as shown by its lower Bayesian Information Criterion (Table A.11). Hence knowing a person's field of education reveals *new* information about someone's propensity to vote on the

socio-cultural divide—not information that can be derived from a person's gender identity. Gender continues to contribute to green or TAN voting, but its effect is smaller than either CECT variable.

Figure 7: The effect of field on green and TAN voting while controlling for gender (or not)



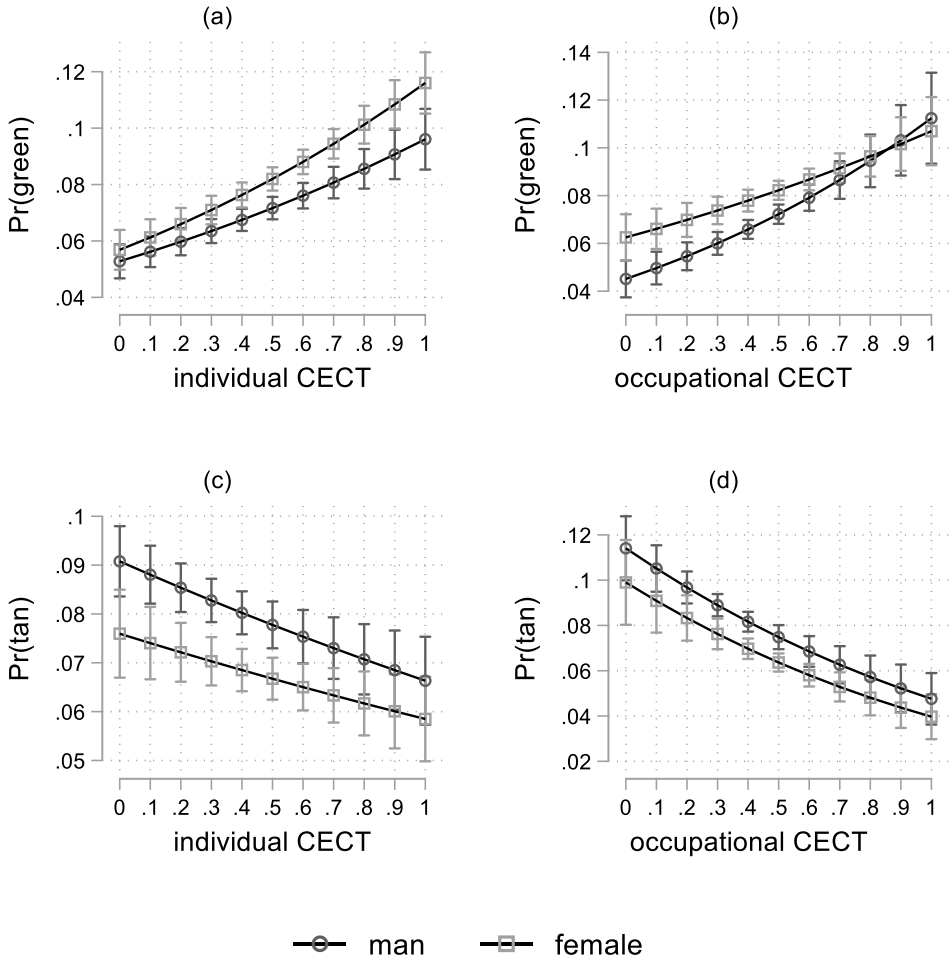
Note: Multilevel mixed-effects logistic with oim clustering by country and ISCO-3, with controls for higher education, age, income, rural/urban, secularism, and time fixed effects. See Table A.11 for full models.

It is still possible that the effect of field is stronger for one gender than the other, i.e., that gender moderates the effect of field on voting. What happens when we subset the sample?

Figure 8 presents results when we do this. It shows that the effect of field is present for both men and women, and for both green and TAN voting. Panel (b) which plots the effect of

occupational CECT on green voting, shows a steeper slope among men than women, but a contrast slopes test reveals that the difference is not significant (p=.086). We conclude therefore that there is little statistical support for the idea that educational field shapes voting among women and men differently.

Figure 8: Homogenous effects of field by gender



Note: Multilevel mixed-effects logistic with oim clustering by country and ISCO-3, with controls for higher education, age, income, rural/urban, secularism, and time fixed effects. See Table A.12 for full models.

Before we move on to investigate the timing of the link between field of education and voting, we wish to address two further questions. The first concerns whether we are right to think

that the field of education has an especially strong association with voting on the socio-cultural divide relative to mainstream Left/Right voting. Appendix F shows that field of education is less predictive of voting for mainstream Left or Right parties than for green and TAN parties though, as expected, CECT variables are negatively associated with Right voting and positively associated with Left voting.

A second question concerns cross-national robustness. Although the multi-level mixed-effects logistic models contain fixed effects for country, there is still the possibility that our findings are not robust across the countries in our analyses. This is a valid concern, particularly in light of variation in educational systems between early-track specialization in continental Europe and systems oriented to general education in Anglo-Saxon countries (Triventi 2013). In Appendix G we report both bivariate and multivariate analyses that break down the sample by country for those for which we have sufficient N. Our findings hold for Austria, Belgium, Denmark, Germany, the Netherlands, Norway, Sweden, and Switzerland, with the partial exception of France.

Where do differences between fields come from?

Can one disentangle whether the effect of educational field on party choice is due to the experience of education itself, or whether it expresses life chances shaped prior to education by choices that are rooted earlier in a person's life? We use Dutch LISS panel data and panel data from the German SOEP to shed light on the mechanisms connecting CECT to voting. We first

examine individual CECT, and next occupational CECT. We conclude by assessing whether CECT remains predictive of vote intention over a person's life.

Individual CECT in time

We begin by probing whether the connection between a person's field of education and their party sympathies is established during and/or after study. To do so, we restrict the sample to respondents who a) were in the panel while in high school and b) stay in the panel for at least one wave after they complete all education. In LISS, this produces a sample of 412 respondents with 2,271 observations, and in SOEP a sample of 3,828 respondents with 44,353 observations. We determine an individual's educational field in the year they complete education and use this information to back-predict someone's party sympathy when that person is still in high school. If the link between field and voting is established during post-secondary education or subsequently in the labor market, we would not detect it in high school. If, by contrast, a person's later field already predicts party sympathies in high school, this indicates that prior life-shaping characteristics—parental, peer group socialization, social background—influence *both* field choice and party sympathies.[7]

[7] Note that by focusing on high school students, we can rule out that experience *while in* education after high school is the sole driver of differences between fields. This is important because one may argue that differences between fields are forged while someone is studying in a particular field.

We run standard multivariate regression models with standard errors clustered at the respondent level. In LISS, the dependent variable is the difference between a person's sympathy score for GreenLeft (GL) and their sympathy score for the Party for Freedom (PVV). In SOEP, the dependent variable is whether respondents would consider voting for the Greens (1 or 0). The main explanatory variable of interest is later individual CECT, a respondent's CECT score after having completed education and coded in the same way as in the ESS analysis. We control for level of education (post-secondary degree). Coefficients for later CECT are allowed to vary by life-stage: in high school, or during/after post-secondary education (LISS); in high school, in post-secondary education, or after education (SOEP). The LISS allows us to include TAN voting as an outcome variable, while the SOEP has more respondents and therefore allows more fine-grained analysis of different life phases. Our model for the LISS is then:

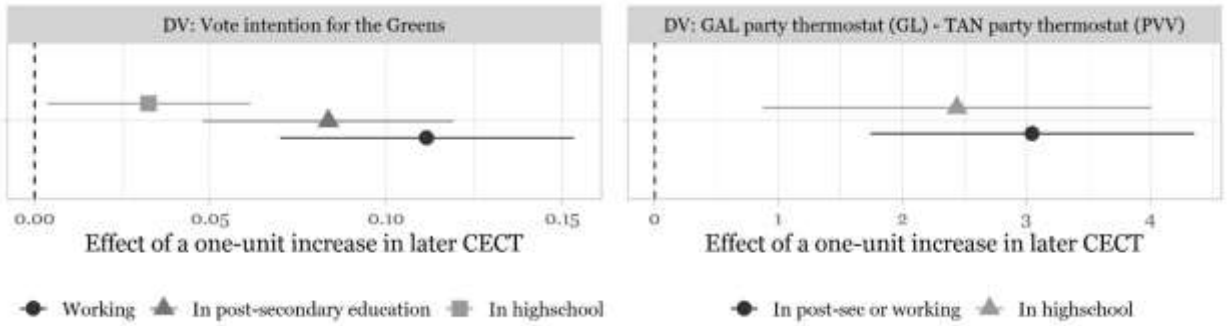
$$y_{it} = \alpha + laterCECT_i + Postsecondarydegree_i + highschool_{it} + postEdu_{it} + laterCECT_i \times highschool_{it} + laterCECT_i \times postEdu_{it}$$

The coefficient of interest is the interaction term between being in high school and later CECT. Note that in the SOEP we can identify additional life phases due to the higher number of respondents.

The results in **Figure 9** indicate that later CECT is indeed predictive of a person's party sympathy already in high school (light gray). In the SOEP, the effect is larger for those who are already in the workforce (black), consistent with the notion that experiences during higher education or in the labor market may reinforce the effect of field choice. In the LISS, we do not have the statistical power to detect whether these differences are significant, even though the sign is in the right direction.

Taken together, party sympathies on the socio-cultural divide start to diverge even before someone completes high school, and an individual's *later* educational field provides a reliable predictor of this divergence. That is to say, the factors that influence someone's political sympathies also influence someone's choice of educational field. However, the divergence arising from self-selection into a field appears to widen as a person progresses through life.

Figure 9: The effect of individual CECT on party sympathy among high school students and post-education



Note: The left panel (SOEP) plots the coefficients of a model that predicts vote intention for the Greens by life phase; the right panel (LISS) plots the coefficients of a model that predicts differences in sympathy between GAL and TAN. These models control for higher education, and standard errors are clustered at the respondent level. Table A.17, and A18 contain the full models.

Our second analysis filters out the effects of self-selection and focuses on the experience of education in a specific field. Here we wish to extend the literature that studies the effects of post-secondary education on political attitudes and behavior (De Jong and Kamphorst 2023; Kuhn et al. 2021; Lancee and Sarrasin 2015; Scott 2022). The goal is to hold constant the social background of an individual and compare the same people before and after they graduate. Our prior is that the effect of attending and graduating post-secondary education differs depending on someone's field of education. Finding a within-individual effect of attending university in a particular field would be evidence that part of the influence of field is caused by experiences *during* education.

The effect of interest is the Average Treatment effect on the Treated (ATT) of attending post-secondary education. The ATT captures the within-individual effect of receiving a treatment compared to what would have happened if an individual had not received that treatment. We code a respondent as treated from the year they enroll in university. The ATT thus captures the within-individual effect of attending *and* graduating with a post-secondary degree. We restrict the sample to individuals aged up to 30—the years in which a person is considered to be most impressionable.

We use the 'IFEct' counterfactual estimator developed by Liu, Wang, and Xu (2022) to estimate the ATT. This estimator incorporates an interactive fixed effects (IFEct) specification that models time-varying confounds as latent factors and builds on synthetic-control methods to form a unique counterfactual for each treated unit. The estimation procedure has four steps: (1) time-trends are modeled using control-group observations; (2) the counterfactual outcome for each treated observation is predicted based on the model from the first step; (3) for each treated individual, the treatment effect is estimated by taking the difference between the observed outcome and the counterfactual outcome; (4) the estimator takes the average of all the individual treatment effects. Because treated observations of early treatment adopters never serve as controls for late treatment adopters—since we compare each individual to their own counterfactual—the estimator accounts for the problems associated with negative weighting in TWFE regressions (de Chaisemartin and D'Haultfoeuille 2020).[8]

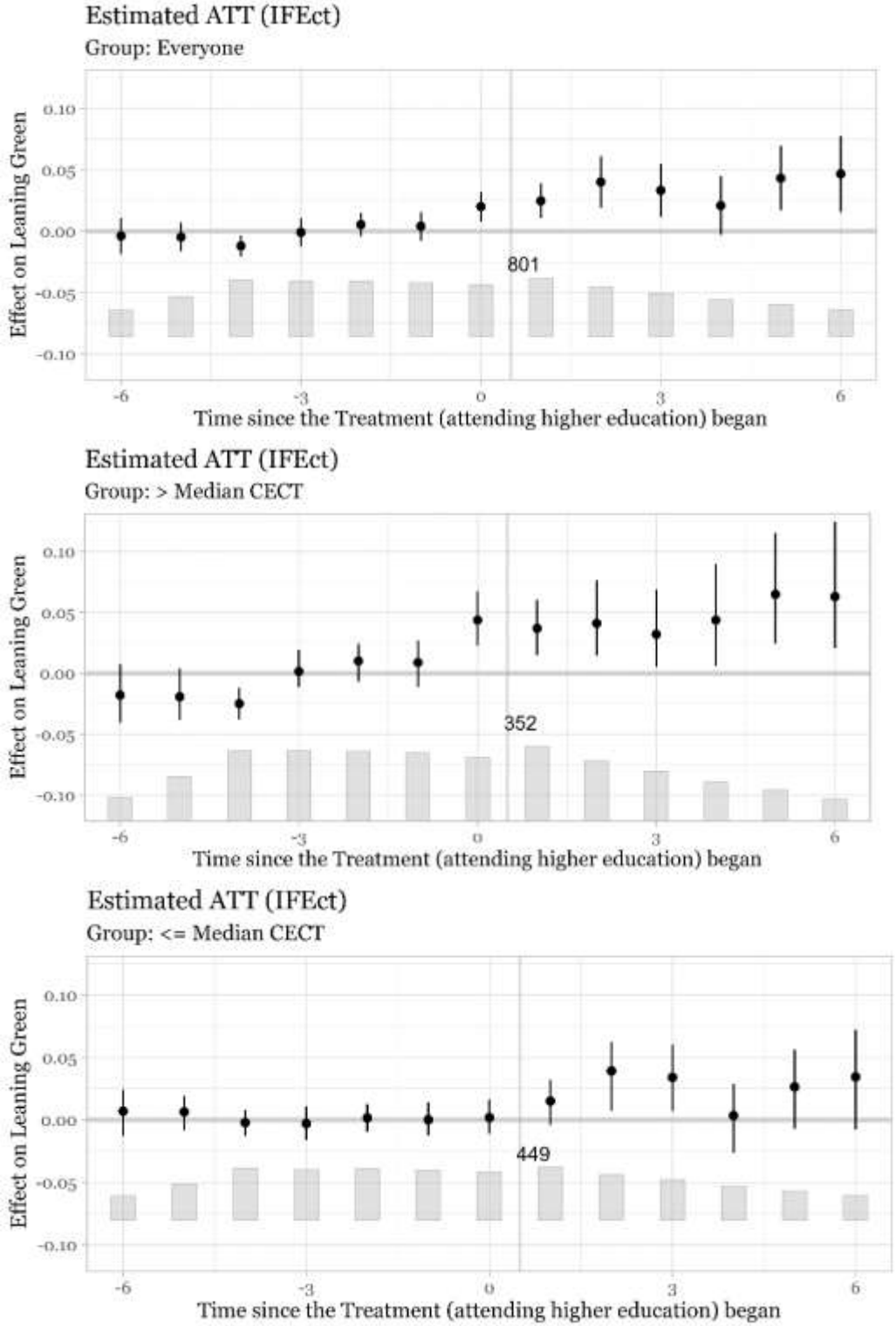
[8] In the Appendix we report conventional Two-Way Fixed Effects (TWFE) and Random Effects Within Between (REWB) models yielding similar results (Tables A.22, and A.23).

An additional benefit of this approach is that it generates a dynamic treatment effects plot which formalizes the visual tests researchers generally use to assess the validity of the parallel trends assumption. Using the IFEct estimator, we run three models: one with the full sample, one with low-CECT individuals (CECT below the median), and one with high-CECT individuals (CECT above the median). We employ the larger N in the SOEP data.

The results are in Figure 10. All three panels show that the parallel trends assumption holds because there are no strong pre-trends or substantial violations of parallel trends. In line with expectations, we find that the within-individual effect of attending higher education is larger for people who graduated in a high-CECT field (aggregated beta=.049, SE=.014), such as education, social studies, humanities, or science, than for those with a degree in a low-CECT field (aggregated beta=.027, SE=.011), such as engineering, business, or mining. This suggests that CECT has an ongoing effect on vote intention both during and after postsecondary education. Nevertheless, the REWB model in Table A.23 shows that the between-individual effect is about three times as large as the within-individual effect (beta=.073 against beta=.021 for the full sample).

In all, we find that both self-selection – understood as the combined influence of social background, gender, and socialization prior to adulthood—and experiences during and after education shape party preferences on the socio-cultural divide. The effects of self-selection, however, appear stronger.

Figure 10: The within-individual effect of attending post-secondary education with a particular CECT score on vote intention for the Greens.



Note: SOEP panel using IFEct models (Liu, Wang, and Xu 2022). We subset the sample into groups with lower than median and higher than median CECT. Table A.21 reports the full regression models.

Occupational CECT in time

We now explore the effect of occupational CECT, which in the ESS analysis has a significant association with vote choice alongside individual CECT.

Our approach is similar to that for individual CECT. The first model estimates whether a person's later occupational CECT explains their attitudes while they are studying. A person's later occupational CECT is estimated as the average of an individual's occupational CECT for each year they are in the labor market after completing education. As before, we control for post-secondary degree. We use both the LISS and the SOEP. If an individual's occupational CECT does not influence attitudes when a person is still studying, then it is reasonable to believe that the effect of occupational CECT that we find in the ESS is primarily due to on-the-job experiences. By contrast, if a person's later occupational CECT predicts attitudes when someone is still in school, this suggests that people self-select into an occupation at least in part because of prior attitudes (Gross and Fosse 2012).

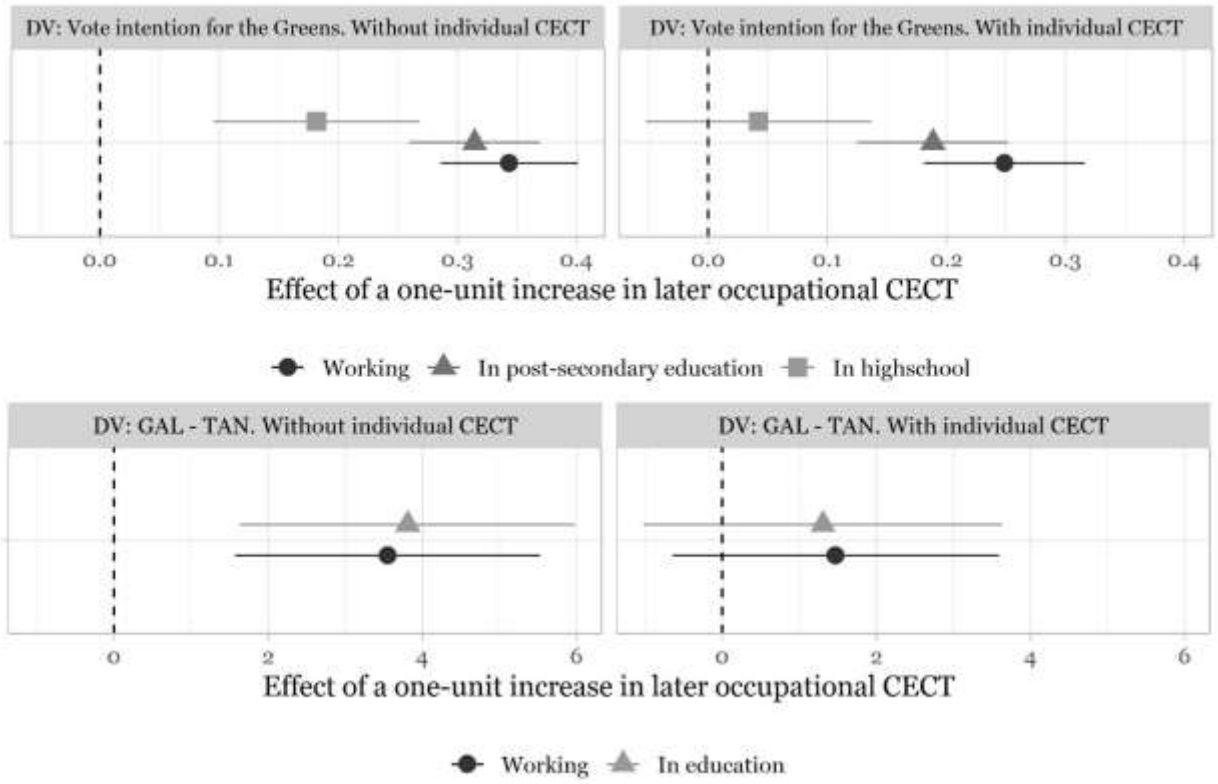
To further flesh out this self-selection mechanism, a second model adds a person's individual CECT. If a person selects into an occupation based on their individual CECT, the effect of occupational CECT should weaken. We run the following models (for the SOEP, we once again distinguish between three life phases):

$$y_{it} = \alpha + laterOccuCECT_i + Postsecondarydegree_i + postEdu_{it} + laterOccuCECT_i \times postEdu_{it}$$

$$y_{it} = \alpha + laterOccuCECT_i + Postsecondarydegree_i + postEdu_{it} + laterOccuCECT_i \times postEdu_{it} + laterIndiviCECT_i$$

Figure 11 shows that later occupational CECT is associated with vote sympathies (left panel). In a model with later occupational CECT alongside individual CECT, the former weakens while the latter is robustly significant (right panel).

Figure 11: The effect of occupational field among students and post-education



Note: SOEP panel (top) and LISS panel (bottom). Both models use respondents for whom we have observations while they are still in education as well as while they are on the job market. Occupational CECT is assessed for each year that someone is in the labor market. Standard errors are clustered at the respondent level. Tables A.19 and A.20 contain the full regression models.

Taken together, an individual's CECT seems indicative of life-long experiences that influence *both* political attitudes and choice of educational field. People appear to congregate in occupations with affinity to their individual CECT, and by implication, occupational CECT is a predictor of political behavior on the socio-cultural divide.

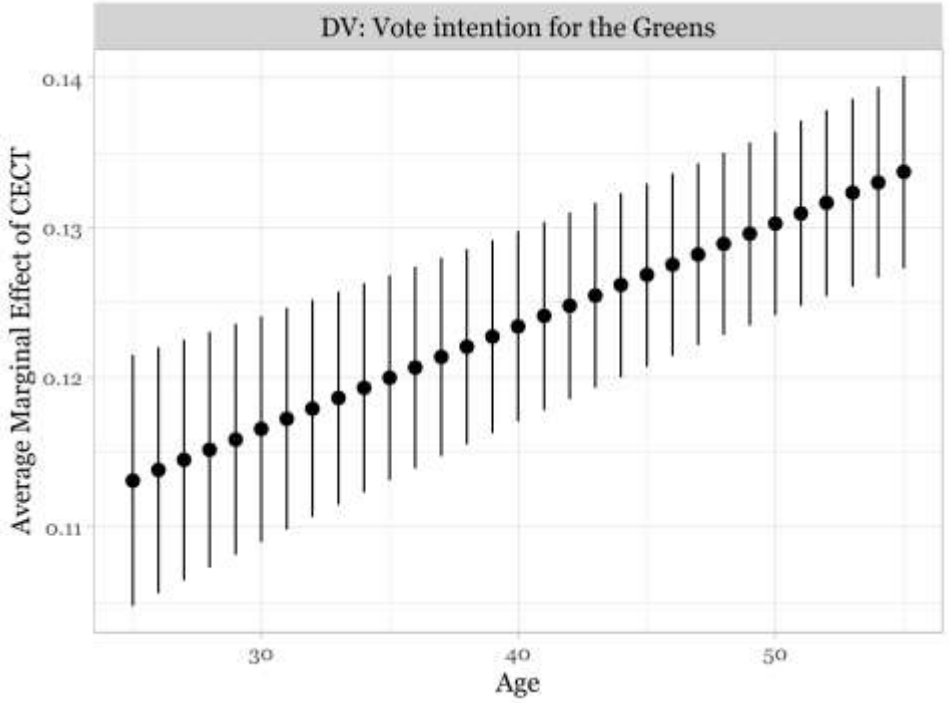
Does educational field have staying power?

To what extent does field remain an important influence on vote choice as one's formal education recedes into the past? We once again turn to the SOEP which tracks individuals over an extended time.

When estimating if the effect of field lasts as people grow older, we need to be wary of period and cohort effects. For instance, the effect may be weaker for older generations not because field becomes less important with age, but because people from older generations grew up when education was a weaker marker of socio-cultural differences. To ensure that we filter out most period and cohort effects as well as individual-level confounders, we employ a multi-level model with intercepts (random effects) for survey year, generation, and individuals. Our main independent variable is individual CECT, which we interact with the number of years since someone turned 25. Vote intention for the Greens is once again our dependent variable.

Figure 12 plots the effect of field on green vote intention for different ages, and shows two things. First, field remains significant. Second, the effect becomes stronger as people age, even though the differences are substantively small. The effect likely grows in strength because people congregate in occupations consistent with their educational specialization. In all, our analysis reveals the stickiness of field of education over the four decades for which we are able to observe individuals.

Figure 12: The effect of educational field over time



Note: Multilevel mixed-effects model with intercepts (random effects) by individual, generation, and survey year. SOEP data for 1984-2018. We identify six different generations: silent (born < 1945), Boomers I (1946-1955), Boomers II (1956-1965), Gen X (1966-1975), Gen X II (1976-1985), Millennials (1986-1995). The full model can be found in table A.24.

Conclusion

An extensive and growing literature finds that a person's level of education is a potent predictor of their political attitudes and behavior. When it is not a key explanatory variable, level of education routinely features as a control.[9] In this paper, we make a case for considering a person's field of education alongside their level of education. Here we focus on voting for green and TAN

[9] For example, forty-five articles published in the APSR in 2022 and 2023 use level of education as an independent variable (list available from authors).

parties in Europe, a substantively important topic for which the level of education is widely considered to be a powerful predictor. We confirm this, but find that a person's field of education is independently associated with both green and TAN voting, and in some models is even more powerful than level of education.

Fields of education vary widely in their substantive content, their social networks, their psychological associations, and they arguably stand as a proxy for social characteristics that reach back into childhood and early adulthood. We find evidence for self-selection prior to the post-secondary educational experience, but we also find that the effect of a person's field of education continues over their life course, both during education and in their occupation. Our account suggests that this staying power comes from socialization during education and through life-long experiences in an occupation that reflects and reinforces those field-specific values.

These results have implications for research on both the sources and consequences of voting on the contemporary divide. Our findings are in line with a political sociology that seeks to understand how socially rooted choices early in a person's life shape a person's subsequent life chances and political affinities. If, indeed, field of education is confirmed as a source of voting, research into the relative causal influence of self-selection and socialization may take up the puzzle of how and why these differ across two facets of education: its substance and its extent.

While the sociology of educational fields has flourished for some years, the political science of the subject is still in its infancy. Given that this paper is a first attempt to use field of education to explain voting on the socio-cultural divide that has transformed political competition in Europe, our results need to be carefully checked. Perhaps one reason why the topic has not been subject to more research by political scientists is that cross-national surveys do not routinely include a

question tapping the substance of the respondent's education. Hence, one practical implication of this research is that when designing a survey on voting, researchers may find it worthwhile to consider including a pull-down menu tapping respondents' fields of education.

Should such information become more readily available, several topics may deserve more detailed consideration. The individual-level analysis here might well be accommodated within an analysis of its institutional settings. In this paper, we have treated the structure of education as exogenous. However, the findings of this paper have macro-political implications. In particular, they suggest that preferences concerning funding priorities across disciplines have an ideological as well as a technocratic dimension. If so, this may help to make sense of the efforts of TAN adherents to cut funding for the arts, humanities, and the social sciences, while concentrating funding on economic-technical fields.

While the data used here ranges over the past two decades, it is worth stressing that the causality of voting reflects the structure of conflict in a particular society at a particular time. There is no reason to believe that the ideological affinities of fields of study are time invariant. In former communist societies, for example, social scientists were often regarded as the ideological mouthpieces of the ruling elite. The premise of this paper is that our findings regarding the association of field and voting are specific to the contemporary socio-cultural divide. Only future research can assess how era-specific our argument truly is.

References

Abou-Chadi, Tarik, and Simon Hix. 2021. Brahmin Left versus Merchant Right?ntinuity Evidence from Romania. *Journal of Politics* 85(1): 34-48.

Abou-Chadi, Tarik, Magdalena Breyer, Theresa Gessler. 2020. The (re)politicization of gender in Western Europe. *European Journal of Politics and Gender* 4(2): 311-314.

Apfeld, Brendan, Emanuel Coman, John Gerring, Stephen Jessee. 2023. Higher education and cultural liberalism: Regression Discontinuity Evidence from Romania. *Journal of Politics* 85(1): 34-48.

Attewell, David and Delia Zollinger. 2023. Educational Networks, Social Closure, and Political Divides. Unpublished paper.

Attewell, David. 2021. Redistribution attitudes and vote choice across the educational divide. *European Journal of Political Research* 61(4): 1080-1101.

Bakker, Ryan, Seth Jolly, and Jonathan Polk. 2012. Complexity in the European party space: Exploring dimensionality with experts. *European Union Politics* 13(2): 219-245.

Beramendi, Pablo, Silja Häusermann, Herbert Kitschelt, and Hanspeter Kriesi eds. 2015. *The Politics of Advanced Capitalism*. Cambridge: Cambridge University Press.

Boräng, Frida, Daniel Naurin, Jonathan Polk. 2023. Making space: Citizens, parties and interest groups in two ideological dimensions. *Journal of European Public Policy* (first view Feb 2023) https://doi.org/10.1080/13501763.2023.2182819.

Bornschier, Simon, Silja Häusermann, Delia Zollinger, Céline Colombo. 2022. How "Us" and "Them" Relates to Voting Behavior – Social Structure, Social Identities, and Electoral Choice. *Comparative Political Studies* 54(12): 2087-2122.

Bornschier, Simon. 2010. *Cleavage Politics and the Populist Right: The New Cultural Conflict in Western Europe.* Philadelphia, Penn: Temple University.

Bos, Angela L., Jill S. Greenlee, Miry R. Holman, Zoe M. Oxley, J. Celeste Lay. 2022. This one's for the boys: How gendered political socialization limits girls' political ambition and interest. *American Political Science Review* 116(2): 484-501.

Bourdieu, Pierre. 1984. *Distinction. A Social Critique of the Judgment of Taste.* London: Routledge.

Breen, Richard and Walter Müller eds. 2020. *Education and Intergenerational Social Mobility in Europe and the United States*. Palo Alto, CA: Stanford University Press.

Campbell, Colin and Jonathan Horowitz. 2016. Does college influence sociopolitical attitudes? *Sociology of Education* 89(1): 40-58.

Carnevale, Anthony, Nicole Smith, Lenka Dražanová, Artem Gulish and Kathryn Campbell. 2020. "The Role of Education in Taming Authoritarian Attitudes." Georgetown Center on Education and the Workforce Report.

Cavaillé, Charlotte and John Marshall 2019. Education and anti-immigration attitudes: Evidence from compulsory schooling reforms across western Europe. *American Political Science Review* 113(1): 254-63.

Charles, Maria and Karen Bradley. 2009. Indulging our gendered selves? Sex segregation by field of study in 44 countries. *American Journal of Sociology* 114(4): 924-76.

Corno, Lucia and Michela Carlana. 2021. *Parents and Peers: Gender Stereotypes in the Field of Study.* London: Centre for Economic Policy research, DP16582.

Dalton, Russell J. 2018. *Political Realignment: Economics, Culture, and Electoral Change*. Oxford: OUP.

Dalton, Russell J. 2021. Modeling ideological polarization in democratic party systems. *Electoral Studies,* 72: 102346.

Dancygier, Rafaela M. 2020. Another progressive's dilemma: immigration, the radical right and threats to gender equality. *Daedalus* 149(1): 56-71.

Dassonneville, Ruth, Liesbet Hooghe, and Gary Marks. Forthcoming. Transformation of the political space: A citizens' perspective. *European Journal of Political Research*.

Dassonneville, Ruth. 2023. *Voters Under Pressure: Group-Based Cross-Pressure and Electoral Volatility*. Oxford: OUP.

De Vries, Catherine E. and Sara B. Hobolt. 2020. *Political Entrepreneurs: The Rise of Challenger Parties in Europe.* Princeton: Princeton University Press.

De Vries, Catherine E. 2018. The cosmopolitan-parochial divide: changing patterns of party and electoral competition in the Netherlands and beyond. *Journal of European Public Policy* 25(11): 1541-1565.

De Jong, Jona and Jonne Kamphorst. 2023. Increased education-based network homogeneity reinforces contemporary political divides. Unpublished paper.

Elchardus, Mark and Bram Spruyt. 2009. The culture of academic disciplines and the sociopolitical attitudes of students: A test of selection and socialization effects. *Social Science Quarterly* 90(2): 446-460.

Fischer, Mira, Bjorn Kauder, Niklas Potrafke, Heinrich W. Ursprung. 2017. Support for free-market policies and reforms: Does the field of study influence students' political attitudes? *European Journal of Political Economy* 48: 180-197.

Ford, Robert and Will Jennings. 2020. The changing cleavage politics of western Europe. *Annual Review of Political Science* 23:295-314.

Gidron, Noam and Peter A. Hall. 2017. The politics of social status: Economic and cultural roots of the populist right. *British Journal of Sociology* 68(S1): 57-84.

Grande, Edgar and Hanspeter Kriesi. 2012. The transformative power of globalization and the structure of political conflict in Western Europe. In: Hanspeter Kriesi, Edgar Grande, Martin Dolezal, Marc Helbling, Dominic Höglinger, Swen Hutter, Bruno Wüest eds. *Political Conflict in Western Europe,* 3-31. Cambridge: CUP.

Gross, Neil and Ethan Fosse. 2012. Why are professors liberal? *Theory and Society* 41: 127-168.

Guimond, Serge, Guy Begin, and Douglas L. Palmer. 1989. Education and causal attributions: The development of "Person-Blame" and "System-Blame" ideology. *Social Psychology Quarterly* 52(2): 126-140.

Guth, James L. and Brent F. Nelsen. 2021. Party choice in Europe: Social cleavages and the rise of populist parties. *Party Politics* 27(3): 453–464.

Hall, Peter A., Georgina Evans, and Sung In Kim. Forthcoming. *Political Change and Electoral Coalitions in Western Democracies*. Cambridge: CUP.

Harteveld, Eelco and Elisabeth Ivarsflaten. 2018. Why women avoid the radical right: Internalized norms and policy reputations. *British Journal of Political Science* 48(2): 369-84.

Hastie, Brianne. 2007. Higher education and sociopolitical orientation: The role of social influence in the liberalization of students. *European Journal of Psychology of Education* 22(3): 259-74.

Häusermann, Silja and Hanspeter Kriesi. 2015. What do voters want? Dimensions and configurations in individual-level preferences and party choice. In Pablo Beramendi, Silja

Häusermann, Herbert Kitschelt, and Hanspeter Kriesi eds., *The politics of advanced capitalism*, 202-230. Cambridge: Cambridge University Press.

Hetherington, Marc and Jonathan Weiler. 2018. *Prius or Pickup? How the Answers to Four Simple Questions Explain America's Great Divide*. New York: Houghton Mifflin Harcourt.

Hobolt, Sara Binzer. 2016. The Brexit vote: A divided nation, a divided continent. *Journal of European Public Policy* 23(9): 1259–1277.

Hooghe, Marc, Ruth Dassonneville, and Sofie Marien. 2015. The impact of education on the development of political trust: Results from a five-year panel study among late adolescents and young adults in Belgium. *Political Studies* 63: 123-141.

Hutter, Swen and Hanspeter Kriesi. 2019. Politicizing Europe in times of crisis. *Journal of European Public Policy* 26(7): 996-1017.

Ivarsflaten, Elizabeth and Rune Stubager. 2013. Voting for the populist radical right in Western Europe: The role of education. In Jens Rydgren (Ed.), *Class politics and the radical right,* 122–137. London: Routledge.

Jackson, Daniel and Seth Jolly. 2021. A new divide? Assessing the transnational-nationalist dimension among political parties and the public across the EU. *European Union Politics* 22(2): 316-329.

Jolly, Seth, Ryan Bakker, Liesbet Hooghe, Gary Marks, Jonathan Polk, Jan Rovny, Marco Steenbergen, Milada Vachudova. 2022. Chapel Hill Expert Survey Trend File, 1999-2019. *Electoral Studies* 75 (first view, Nov 2021) https://doi.org/10.1016/j.electstud.2021.102420

Jowell, Roger and the Central Coordinating Team. 2007. *European Social Survey 2006/2007: Technical Report*. London : Centre for Comparative Social Surveys, City University.

Kalmijn, Matthijs and Gerbert Kraaykamp. 2007. Social stratification and attitudes: A comparative analysis of the effects of class and education in Europe. *British Journal of Sociology* 58(14): 547-576.

Kitschelt, Herbert and Philipp Rehm. 2014. Occupations as a site of political preference formation. *Comparative Political Studies* 47(12): 1670-1706.

Kitschelt, Herbert and Philipp Rehm. 2022. Polarity Reversal: The Socioeconomic Reconfiguration of Partisan Support in Knowledge Societies. *Politics & Society* (first view, July 2022) https://doi.org/10.1177/00323292221100220

Kitschelt, Herbert. 1988. Left-Libertarian parties: Explaining innovation in competitive party systems. *World Politics* 40(2): 194-234.

Koedam, Jelle, Garret Binding, Marco R. Steenbergen. 2023. Multidimensional party polarization in Europe: Cross-cutting divides and effective dimensionality. Unpublished paper.

Kraaykamp, Gerbert, Jochem Tolsma, and Maarten H.J. Wolters. 2013. Educational expansion and field of study: Trends in the intergenerational transmission of educational inequality in the Netherlands. *British Journal of Sociology of Education* 34(5-6): 888-906.

Kriesi, Hanspeter, Edgar Grande, Romain Lachat, Martin Dolezal, Timotheos Frey. 2006. *West European Politics in the Age of Globalization*. Cambridge, UK: Cambridge University Press.

Kriesi, Hanspeter. 1998. The transformation of cleavage politics: The 1997 Stein Rokkan Lecture. *European Journal of Political Research* 33: 165-185.

Kuhn, Theresa, Bram Lancee, and Oriana Sarrasin. 2021. Growing up as a European? Parental socialization and the educational divide in Euroskepticism. *Political Psychology* 42(6): 957-75.

Kunst, Sander, Theresa Kuhn, and Herman van de Werfhorst. 2022. As the twig is bent, the tree is inclined? The role of parental versus own education for openness towards globalization. *European Union Politics* (first view, Nov 2022) https://doi.org/10.1177/146511652211402.

Kunst, Sander. 2020. Learning to love cosmopolitanism? Testing the socialization effect of educational field of study on cosmopolitan orientations in the Netherlands. *SocArXiv*, 2020/7.

Kunst, Sander. 2022. *The Educational Divide in Openness Towards Globalisation in Western Europe*. PhD. Dissertation, University of Amsterdam.

Ladd, Everett C., and Seymour Martin Lipset. 1975. *The Divided Academy: Professors and Politics*. Berkeley, CA: Carnegie Commission on Higher Education.

Lancee, Bram, and Oriane Sarrasin. 2015. Educated preferences or selection effects? A longitudinal analysis of the impact of educational attainment on attitudes towards immigrants. *European Sociological Review* 31(4): 490-501.

Lazarsfeld, Paul and Wagner Thielens Jr. 1958. *The Academic Mind*. Free Press, Glencoe.

Lindh, Arvin, Anton B. Andersson, and Beate Volker. 2021. The Missing Link: Network Influences on Class Divides in Political Attitudes. *European Sociological Review* 37(5): 695–712.

Lipset, Seymour M. 1982. The academic mind at the top: The political behavior and values of faculty elites. *Public Opinion Quarterly* 46:143–68.

Lipset, Seymour M. and Stein Rokkan. 1967. Cleavage structures, party systems, and voter alignments: An introduction. in S. M. Lipset and S. Rokkan eds., *Party Systems and Voter Alignments: Cross-national Perspectives*, 1-64. Toronto: Free Press.

Liu, Licheng, Ye Wang, and Yiqing Xu. 2022. A practical guide to counterfactual estimators for causal inference with time-series cross-sectional data. *American Journal of Political Science* (first view, August 2022) https://doi.org/10.1111/ajps.12723.

Magni, Gabriele. 2022. Boundaries of solidarity: Immigrants, economic contributions, and welfare attitudes. *American Journal of Political Science* (first view April 2022) https://doi.org/10.1111/ajps.12707

Margaryan, Shushanik, Annemarie Paul, and Thomas Siedler. 2021. Does education affect attitudes towards immigration? Evidence from Germany. *Journal of Human Resources* 56(2): 446-79.

Maxwell, Rahsaan. 2019. Cosmopolitan Immigration Attitudes in Large European Cities: Contextual or Compositional Effects? *American Political Science Review* 13(2): 456–474.

Maxwell, Rahsaan. 2020. Can the relationship between higher education and cosmopolitanism be explained by field of study? Unpublished paper.

Meguid, Bonnie. 2008. *Party Competition between Unequals*. New York: Cambridge University Press.

Mijs, Jonathan B., and Elizabeth L. Roe. 2021. Is America coming apart? Socioeconomic segregation in neighborhoods, schools, workplaces, and social networks, 1970–2020. *Sociology Compass* 15(6): 1-16.

Oesch, Daniel and Line Rennwald. 2018. Electoral competition in Europe's new tripolar political space: Class voting for the left, centre-right and radical right. *European Journal of Political Research* 57(4): 783-807.

Oesch, Daniel. 2006. Coming to grips with a changing class structure. *International Sociology* 21(2): 263-288.

Rovny, Jan and Jonathan Polk. 2019. New wine in old bottles: Explaining the dimensional structure of European party systems. *Party Politics* 25(1): 12-24.

Rovny, Jan. 2013. Where do radical right parties stand? Position blurring in multidimensional competition. *European Political Science Review* 5(1): 1–26.

Rovny, Jan. 2015. Riker and Rokkan: Remarks on the strategy and structure of party competition. *Party Politics* 21(6): 912–918.

Scott, Ralph. 2022. Does university make you more liberal? Estimating the within-individual effects of higher education on political values. *Electoral Studies* 77:102471.

Schmader, Toni. 2023. Gender inclusion and fit in STEM. *Annual Review of Psychology* 74: 9.1-9.25.

Stubager, Rune. 2008. Education effects on authoritarian-libertarian values: A question of socialization. *British Journal of Sociology* 59(2): 327-50.

Stubager, Rune. 2010. The development of the education cleavage: Denmark as a critical case. *West European Politics* 33(3): 505-533.

Surridge, Paula. 2016. Education and Liberalism: Pursuing the Link. *Oxford Review of Education* 42(2): 146–164.

Triventi, Moris. 2013. Stratification in higher education and its relationship with social inequality: A comparative study of 11 European countries. *European Sociological Review* 29(3): 489-502.

Van de Werfhorst, Herman G. 2020. Are universities left-wing bastions? The political orientation of professors, professionals, and managers in Europe. *British Journal of Sociology* 71: 47-73.

Van de Werfhorst, Herman G. and Gerbert Kraaykamp. 2001. Four field-related educational resources and their impact on labor, consumption, and sociopolitical orientation. *Sociology of Education* 74(4): 296-317.

Van de Werfhorst, Herman G. and Nan-Dirk de Graaf. 2004. The sources of political orientations in post-industrial society: Social class and education revisited. *British Journal of Sociology* 55(2): 211-235.

Van de Werfhorst, Herman G., Nan Dirk de Graaf, and Gerbert Kraaykamp. 2001. Intergenerational resemblance in field of study in the Netherlands. *European Sociological Review* 17(3): 275-93.

Weeden, Kim A. and David B. Grusky. 2005. The Case for a New Class Map. *American Journal of Sociology,* 111(1): 141-212

Weeks, Ana Catalano, Bonnie Meguid, Miki Caul Kittilson, Hilde Coffé. 2022. Who do Mannerparteien elect women? Radical right partie and strategic descriptive representation. *American Political Science Review* (first view, March 2022) https://doi.org/10.1017/S0003055422000107.

Zacher, Hannes and Cort W. Rudolf. 2022. Effects of person–occupation political orientation misfit on occupational identification: An experimental study. *Applied Psychology* (first view, Sept 2022) https://doi.org/10.1111/apps.12433.

Zollinger, Delia. 2022. Cleavage identities in voters' own words: Harnessing open-ended survey responses. *American Journal of Political Science* 1-21 (first view, Oct 2022) https://doi.org/10.1111/ajps.12743.

SUPPLEMENTARY ONLINE APPENDIX

Contents

A. Descriptive support for the ESS analysis

Table A.1. Country coverage and sample size

Country	Wave 2 (2004)	Wave 3 (2006)	Wave 4 (2008)
Austria	1,044	1,249	
Belgium	1,177	1,200	1,182
Denmark	1,115	1,196	1,265
Finland	1,268	1,215	1,368
Germany	1,649	1,714	1,734
Greece	1,292		1,232
France	935	979	1,099
Ireland	1,480	992	1,156
Netherlands	1,380	1,393	1,384
Norway	1,281	1,257	1,111
Sweden	1,401	1,414	1,339
Switzerland	926	745	752
United Kingdom	1,073	1,461	1,372
Total	16,021	14,815	14,994

Note: The sample encompasses country-waves in which vote choice includes a green or TAN political party. Light-gray shaded cells are country-waves where both a green and TAN party competed--or more accurately, where both parties were presented as options in a particular ESS wave; medium-gray with a green party only; dark-gray with a TAN party only. White cells indicate no ESS survey was fielded. N=45,830.

Table A.2. Party family size (waves 2-4)

Party family	All 13 countries and waves	Countries-waves with green party	Countries-waves with TAN party
TAN	6.83	5.20	7.55
Conservatives	16.42	17.23	12.71
Liberals	13.90	14.34	15.37
Christian democrats	16.16	15.82	14.78
Socialists/social-democrats	31.18	31.87	33.41
Radical Left	5.99	5.35	6.02
Green	7.19	7.72	7.59
Other	2.33	2.46	2.57
All families	100.00	100.00	100.00

Note: Unweighted percentages based on vote choice. An individual's party choice in the most recent national election is classified as TAN (or nationalist right), Conservative, Liberal, Christian Democratic, Social Democratic, Radical Left, Green, or Other (Döring and Manow 2016; Hix and Lord 1997; Jolly et al. 2022; Knutsen 2018; Marks et al. 2022).

Table A.3. Control variables

Female	Self-reported. Male=0, and female=1.
Rural	Five-category variable that reports respondent's self-description of area where they live, ranging from 1 (big city) to 5 (farm or home in countryside).
Secularism	Seven-category variable tapping attendance of religious services, ranging from 1 (every day) to 7 (never).
Age	Calculation bases on year of birth
Income	Four-category variable from "very difficult on present income" to "living comfortably on present income"
Generation	1: Millennials (born from 1980); 2: Generation X (1965–1979); 3: Boomers II generation (1955–1964); 4: Boomers I generation (1945-- 1954); 5: Silent or pre-war generation (born before 1945).
Country	AT, BE, CH, DE, DK, FI, FR, GR, IRL, NL, NO, SV, UK
Time	ESS waves 2002, 2004, 2006

Table A.4. Descriptives

	Mean	Min	Max	SD	N
Individual CECT	0.438	0	1	0.306	40596
Occupational CECT (green)	0.449	0	1	0.189	38330
Occupational CECT (TAN)	0.448	0	1	0.193	34197
Higher education (dichotomous)	0.358	0	1	0.479	41825
Female	0.517	0	1	0.500	41934
Rural	2.991	1	5	1.210	41913
Secular	5.483	1	7	1.517	41928
Income	3.283	1	4	0.770	40880
Age	51.381	21	101	16.494	41851

Table A.5. Correlation matrix

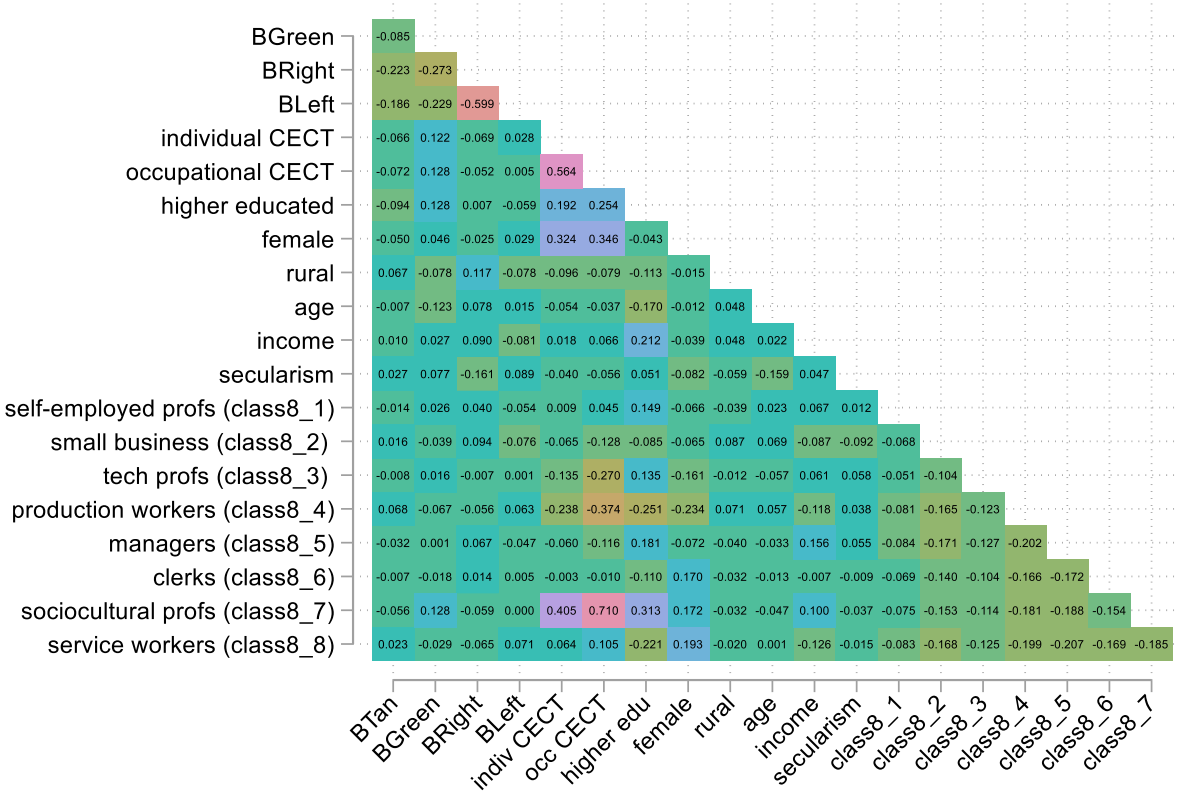


Table A.6. Individual CECT by field

Educational field	Individual CECT	Size of the field
Teacher training	1.000	6.7
Arts	0.952	2.4
Humanities	0.952	3.6
Social studies	0.861	8.7
Personal care	0.680	5.9
Science/mathematics	0.614	4.5
Medical & health	0.554	9.6
General education	0.531	22.6
Public order and safety	0.494	1.2
Law	0.312	1.4
Economics and commerce	0.188	14.4
Technical and engineering	0.036	18.2
Transport	0.036	1.4
Agriculture/forestry	0.000	3.3
Mean / Total	**0.438**	**100**

Note: Sample=38,116 respondents who indicated a field of study (not including respondents with primary education only).

B. The base line model of field of education

Table A.7 reproduces the baseline model which reveals that both field variables are highly significant under controls, including level of education (models for Figure 2 in the main text).

Table A.7: Baseline model

VARIABLES	Baseline model	
	Green	TAN
Individual CECT	0.779***	-0.375***
	(0.082)	(0.091)
Occupational CECT	0.909***	-1.042***
	(0.143)	(0.191)
Higher education	0.489***	-0.806***
	(0.049)	(0.061)
CONTROLS		
Female	0.155***	-0.214***
	(0.047)	(0.056)
Rural	-0.181***	0.027
	(0.018)	(0.020)
Income	-0.133***	-0.079**
	(0.030)	(0.032)
Age	-0.025***	-0.005***
	(0.001)	(0.001)
Secular	0.168***	0.139***
	(0.017)	(0.019)
Country intercept variance	0.676**	1.883**
	(0.295)	(0.869)
ISCO intercept variance	0.082***	0.142***
	(0.022)	(0.031)
Intercept	-2.729***	-2.480***
	(0.309)	(0.482)
Observations	34,604	31,008
Groups	11	10
Log Likelihood	-8251.2	-6943.3
BIC	16638.4	14021.0

Note: Multilevel mixed-effects logistic models with oim clustering by country and by ISCO-3 occupational categories. Groups=11 countries with a green party and 10 countries with a TAN party. Results are similar for the 13 countries with a green or TAN party. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

C. Testing a field logic of occupation

This section provides background models and additional illustrations for assessing the relative strength of an occupational logic and the proposed field logic of occupation. Occupations are operationalized by means of the eight Oesch (2006) categorization, which is based on the interpersonal work logic and hierarchical relationships in the workplace. The field logic is operationalized by imputing for each respondent the average CECT of all respondents in their occupation; occupations are aggregated at the ISCO-3 level. The models in Table A.8 produce Figure 3 in the main text.

Table A.8. Field of education and occupation

	Green	TAN
EDUCATIONAL FIELD LOGIC		
Individual CECT	0.788***	-0.379***
	(0.082)	(0.091)
Occupational CECT	0.629***	-0.708***
	(0.205)	(0.257)
OCCUPATIONAL LOGIC		
Self-employed profs & large employers	0.403***	-0.194
	(0.135)	(0.184)
Small business owners	0.171	0.033
	(0.107)	(0.109)
Technical (semi-)professionals	0.391**	-0.410***
	(0.117)	(0.139)
Production workers	-0.019	0.260**
	(0.110)	(0.106)
(Associate) managers	0.149	-0.445***
	(0.099)	(0.113)
Clerks	*Ref. category*	*Ref. category*
Socio-cultural (semi-)professionals	0.329***	-0.330**
	(0.099)	(0.146)
Service workers	0.071	0.252**
	(0.099)	(0.104)
CONTROLS		
Higher education	0.411***	-0.650***
	(0.053)	(0.064)
Female	0.178***	-0.228***

	(0.048)	(0.057)
Rural	-0.180***	0.020
	(0.018)	(0.020)
Income	-0.146***	-0.044
	(0.030)	(0.033)
Age	-0.025***	-0.006***
	(0.001)	(0.001)
Secular	0.167***	0.142***
	(0.017)	(0.019)
Country intercept variance	0.663**	1.919**
	(0.290)	(0.884)
ISCO intercept variance	0.065***	0.082***
	(0.021)	(0.024)
Intercept	-2.363***	-2.480***
	(0.342)	(0.487)
Observations	34,495	30,913
Groups	11	10
Log Likelihood	-8215.7	-6883.6
BIC	16640.4	13974.0

Note: Multilevel mixed-effects logistic models with oim clustering by country and by ISCO-3 occupational categories. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Multilevel mixed-effects logistic regression.

Figure A.1 below visualizes the incidence of high vs. low CECT individuals in occupations and its close connection to green and TAN voting. The X-axis arrays all 115 ISCO-3 occupations by the *average CECT* of individuals employed in the occupation and the Y-axis shows the proportion of workers in an occupation who vote green (top panel) or TAN (bottom panel). The diameter of each circle represents the size of the occupational category. Dashed lines indicate the average vote share for green parties (7.7%) and for TAN parties (7.6%) in the ESS sample.

Table A.9 contains two numbered lists of occupations, one for occupations that vote disproportionately green and one for occupations that vote disproportionately TAN. We define "disproportionate" as a vote share that is at least twice the average vote share in the sample.

A look at the tables reveals that green-leaning occupations are overwhelmingly composed of people who were educated in cultural-communicative fields: e.g., teachers, social workers, artists, writers, handicraft workers, sports professionals, librarians, social scientists, and life scientists.

TAN-leaning occupations are disproportionately composed of individuals educated in economic-technical fields. Many are semi-skilled machine workers who cast, mold, stamp, forge, cut, grind, weld, paint, seal, bend or move ore, stone, wood, metal, or plastic. Here we find miners, construction workers, machine operators, vehicle drivers, engineers, and crop or animal producers.

Figure A.1. Green- or TAN-leaning occupations by occupational CECT

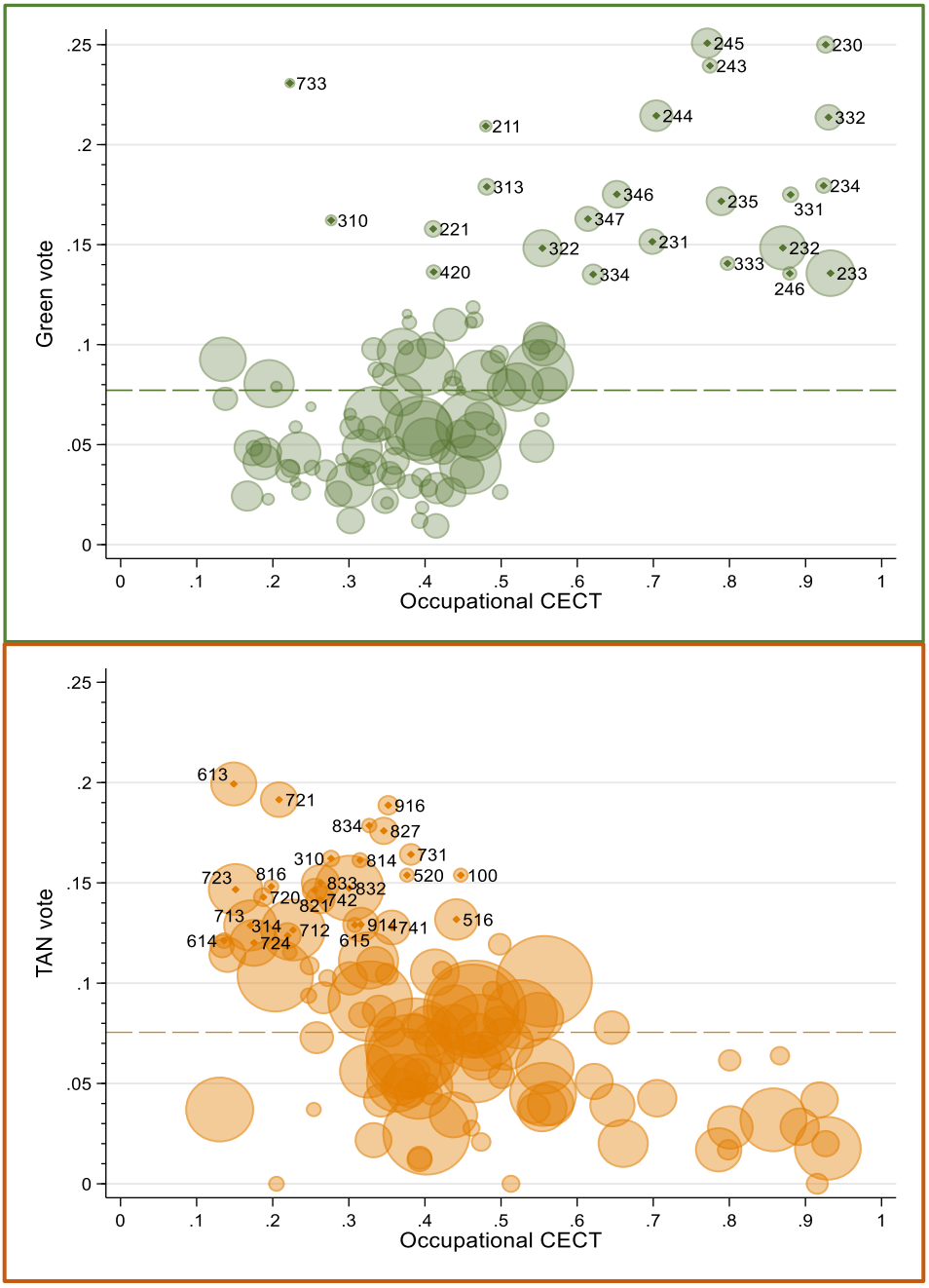


Table A.9. List of green- and TAN-leaning occupations

211	Physicists and astronomers	100	Armed forces
221	Life science professionals	310	Physical, engineering science associate professionals
230	Teaching professionals	516	Protective service workers
231	Higher education teaching professionals	520	Models, salespersons, and demonstrators
232	Secondary education teaching professionals	613	Crop and animal producers
233	(Pre-)primary education teaching professionals	614	Forestry and related workers
234	Special education teaching professionals	615	Fishery workers, hunters, and trappers
235	Other teaching professionals	712	Building frame and related trades workers
243	Archivists, librarians, related information professionals	713	Build finishers, related trades workers
244	Social science and related professionals	720	Metal, machinery, or related trades workers
245	Writers and creative or performing artists	721	Metal molders, welders, sheet-metal workers, structural-metal preparation etc.
246	Religious professionals	723	Machinery mechanics and fitters
310	Physical, engineering science associate professionals	724	Electric mechanics, electronic equipment mechanics and fitters
313	Optical and electronic equipment, broadcasting, image & sound operators	731	Precision workers in metal and related materials
322	Health associate professionals	741	Food processing and related trades workers
331	Primary education teaching associate professionals	742	Wood treaters, cabinet makers, related trade work
332	Pre-primary education teaching associate professionals	814	Wood-processing, papermaking-plant operator
333	Special education teaching associate professionals	816	Power-production and related plant operators
334	Other teaching associate professionals	821	Metal, mineral-products machine operators
346	Social work associate professionals	827	Food, related products machine operators
347	Artistic, entertainment, sports associate professionals	832	Motor vehicle drivers
420	Customer services	833	Agricultural, other mobile plant operators
733	Handicraft work wood, textile, leather, related material workers	834	Ships' deck crews and related workers
		914	Building caretakers, vehicle, window, or related cleaner
		916	Garbage collectors and related laborers

D. Testing the effect of field among higher and lower educated

Table A.10 interacts field of education with level of education (Figure 4 in the text). For both higher and lower educated individuals, educational field is a significant predictor of vote choice. The effect is significant at p<.001 for three of the four interactions; for lower educated TAN voters, p=0.014.

Table A.10. Field of education for higher and lower educated

VARIABLES	Green	TAN
Individual CECT	0.700***	-0.253**
	(0.113)	(0.104)
Occupational CECT	0.890***	-0.965***
	(0.144)	(0.194)
Higher education	0.417***	-0.652***
	(0.087)	(0.088)
Higher education x individual CECT	0.142	-0.415**
	(0.141)	(0.172)
CONTROLS		
Female	0.158***	-0.224***
	(0.047)	(0.056)
Rural	-0.181***	0.027
	(0.018)	(0.020)
Income	-0.133***	-0.080**
	(0.030)	(0.032)
Age	-0.025***	-0.006***
	(0.001)	(0.001)
Secular	0.168***	0.138***
	(0.017)	(0.019)
Country intercept variance	0.676**	1.884**
	(0.295)	(0.869)
ISCO intercept variance	0.082***	0.142***
	(0.023)	(0.031)
Intercept	-2.683***	-2.545***
	(0.312)	(0.483)
Observations	34,604	31,008
Log Likelihood	-8250.7	-6940.4
BIC	16647.8	14025.5

Note: Multilevel mixed-effects logistic models with oim clustering by country and ISCO-3 occupational categories. Groups=11 countries with a green party and 10 countries with a TAN party. Results are similar for the 13 countries with a green or TAN party.

E. Testing how gender and field of education relate

How much of the effect of field on the socio-cultural divide is absorbed by gender? This has two parts: to what extent can the effect of field be attributed to differential selection by men and women into fields of specialization; is the effect of field homogenous or heterogenous for men and women? Table A.11 addresses the first question (full models for Figure 7 in the text).

Table A.11. The effect of field -- with or without controls for gender

	GREEN			TAN		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Individual CECT	0.820***	0.779***		-0.444***	-0.375***	
	(0.081)	(0.082)		(0.090)	(0.091)	
Occupational CECT	0.995***	0.909***		-1.230***	-1.042***	
	(0.141)	(0.143)		(0.186)	(0.191)	
Female		0.155***	0.364***		-0.214***	-0.393***
		(0.047)	(0.046)		(0.056)	(0.052)
CONTROLS						
Higher education	0.475***	0.489***	0.649***	-0.788***	-0.806***	-0.892***
	(0.049)	(0.049)	(0.048)	(0.061)	(0.061)	(0.061)
Rural	-0.180***	-0.181***	-0.200***	0.026	0.027	0.044**
	(0.018)	(0.018)	(0.018)	(0.020)	(0.020)	(0.020)
Income	-0.136***	-0.133***	-0.129***	-0.077**	-0.079**	-0.079**
	(0.030)	(0.030)	(0.030)	(0.032)	(0.032)	(0.032)
Age	-0.025***	-0.025***	-0.025***	-0.005***	-0.005***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Secular	0.166***	0.168***	0.162***	0.143***	0.139***	0.139***
	(0.017)	(0.017)	(0.017)	(0.019)	(0.019)	(0.019)
	(0.054)	(0.054)	(0.054)	(0.059)	(0.059)	(0.059)
Country intercept variance	0.673**	0.676**	0.682**	1.891**	1.883**	1.874**
	(0.294)	(0.295)	(0.299)	(0.872)	(0.869)	(0.865)
ISCO intercept variance	0.084***	0.082***	0.169***	0.142***	0.142***	0.178***
	(0.022)	(0.022)	(0.030)	(0.031)	(0.031)	(0.034)
Intercept	-2.680***	-2.729***	-2.050***	-2.504***	-2.480***	-3.029***
	(0.308)	(0.309)	(0.305)	(0.483)	(0.482)	(0.475)
Observations	34,616	34,604	35,070	31,008	31,008	31,377
Number of groups	11	11	11	10	10	10
Log-likelihood	-8259.3	-8251.2	-8472.6	-6950.6	-6943.3	-7030.6
BIC	16644.0	16638.4	17060.3	14025.3	14021.0	14175.2

Note: Multilevel mixed-effects logistic models with oim clustering by country and ISCO-3 occupation, controls for time not shown. ESS data for 2004-2008.

We begin by comparing a model that includes field but excludes gender (models 1 and 4) against our baseline model that has both (models 2 and 5). This shows that the effect of field is strongly resilient to including gender, and we conclude that field cannot be explained away by gender.

Next, we compare a model that includes gender but excludes field (models 3 and 6) against our baseline model. This reveals that the gender gap is overestimated if we omit information on field of education. A model that includes both field of education and gender (models 2 and 5) is preferable to one that includes gender only (models 3 and 6), as indicated by the substantially higher BIC for the combined model.

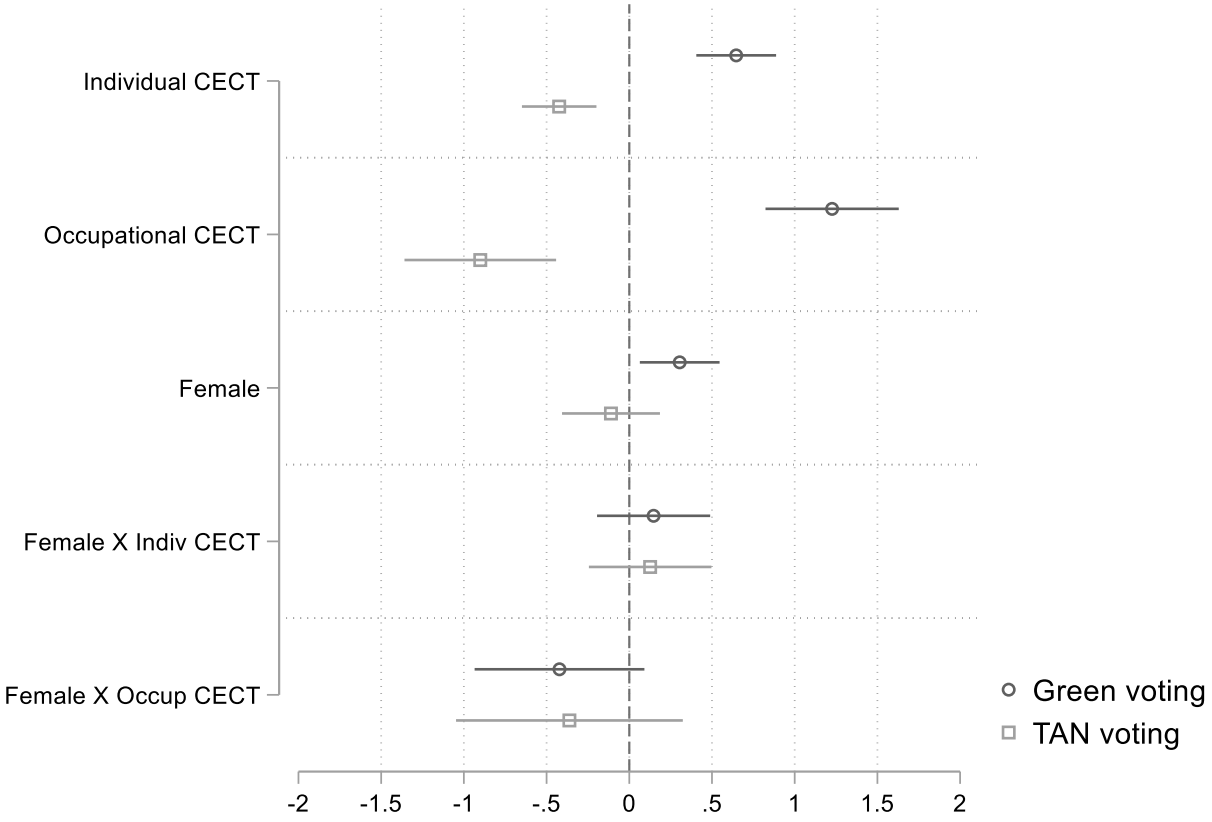
We then ask whether the effect of field could be heterogeneous for men and women. Table A.12 below reports the interaction between gender and individual CECT or gender and occupational CECT. None of the four interactions reaches conventional levels of statistical significance, and this is corroborated in the coefficient plot following the table (Figure A.2). Another way of showing this is by plotting the slopes for men and women separately, as in Figure 8 in the main text.

Table A.12. The effect of field among men and women

	GREEN	TAN
Female	0.310***	-0.111
	(0.116)	(0.151)
Individual CECT	0.725***	-0.424***
	(0.115)	(0.115)
Female X Individual CECT	0.094	0.126
	(0.163)	(0.189)
Occupational CECT	1.126***	-0.901***
	(0.194)	(0.234)
Female X Occupational CECT	-0.405*	-0.362
	(0.245)	(0.350)
CONTROLS		
Higher education	0.489***	-0.806***
	(0.049)	(0.061)
Rural	-0.180***	0.027
	(0.018)	(0.020)
Income	-0.134***	-0.079**
	(0.030)	(0.032)
Age	-0.025***	-0.005***
	(0.001)	(0.001)
Secular	0.168***	0.139***
	(0.017)	(0.019)
Country intercept variance	0.676**	1.882**
	(0.296)	(0.868)
ISCO intercept variance	0.082***	0.144***
	(0.023)	(0.031)
Intercept	-2.802***	-2.519***
	(0.313)	(0.484)
Observations	34,604	31,008
Number of groups	11	10
Log-likelihood	-6991.1	-6942.7
BIC	14135.6	14040.5

Note: Multilevel mixed-effects logistic models with oim clustering by country and ISCO-3 occupation, controls for time not shown. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Figure A.2. The interaction between field of education and gender

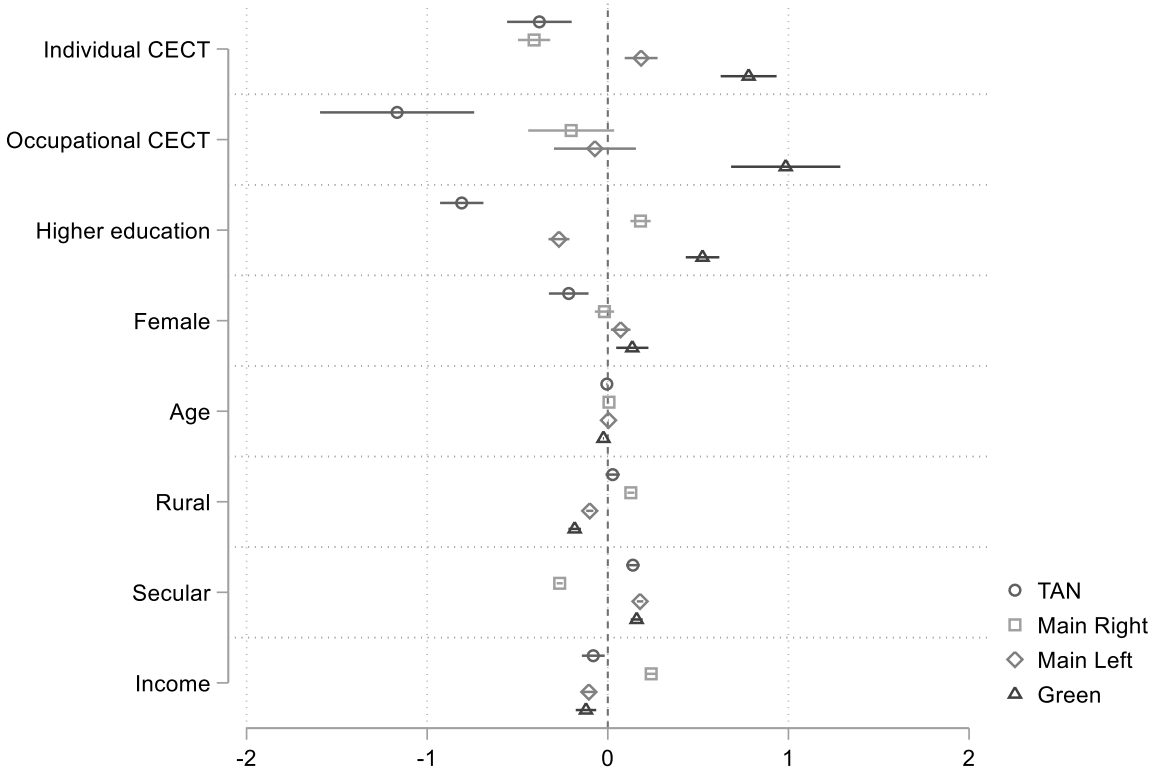


Note: multilevel mixed-effects logistic models with oim clustering by country and ISCO-3, with controls for higher education, age, rural, income, secularism and time fixed effects.

F. Field and level of education in multiparty systems

We compare the predictive power of field and level of education for green and TAN parties against their role in explaining voting for the traditional mainstream Left and mainstream Right. This builds on Abou-Chadi and Hix (2021) which shows that the effect of education is largely driven by green/left-libertarian and radical right parties and not left vs. right – in contrast to the claim by Piketty (2020). We corroborate this finding in Figure A.3 and Table A.13 and show furthermore that the same is true for field of education.[1]

Figure A.3. The differential effect of field of education across party blocs



Note: multilevel mixed-effects logistic models with oim clustering by country and ISCO-3, with controls for higher education, age, rural, income, secularism and time fixed effects.

[1] We adopt Abou-Chadi and Hix's classification of particular national parties into the four party blocs (see Supplementary appendix to their article).

Table A.13. Party bloc analysis with field of education under controls

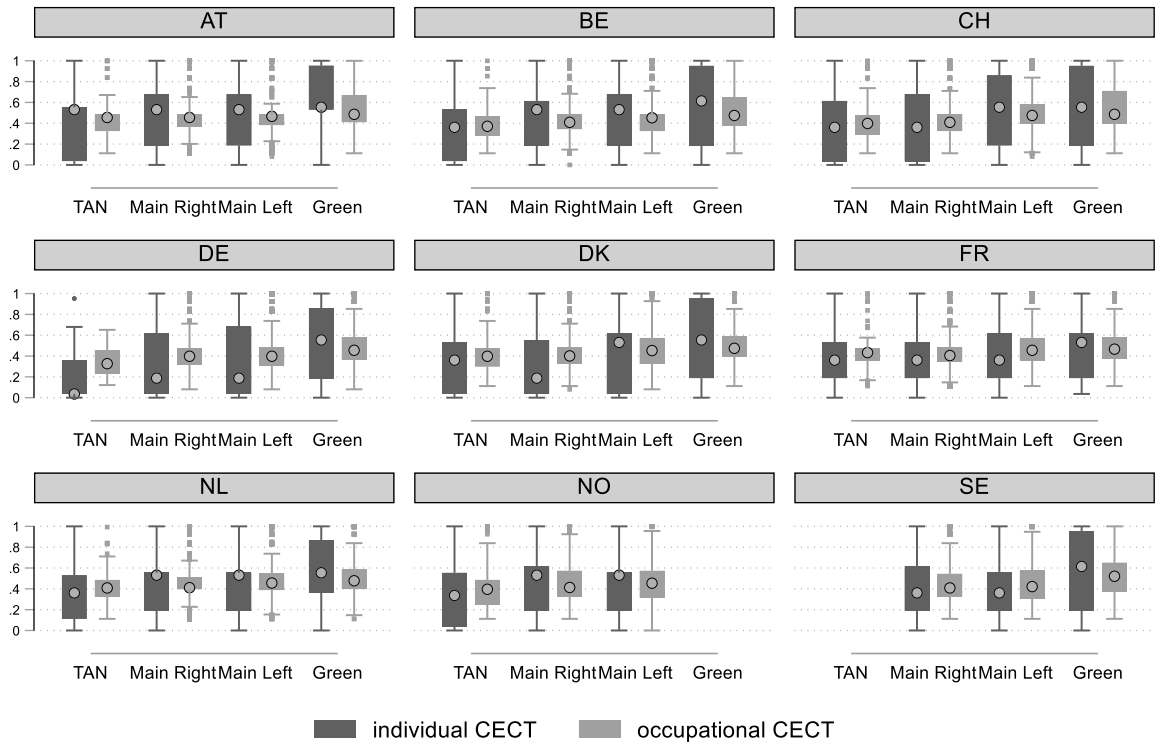
	TAN	Mainstream Right	Mainstream Left	Green
Individual CECT	-0.379***	-0.408***	0.184***	0.780***
	(0.091)	(0.045)	(0.047)	(0.079)
Occupational CECT	-1.167***	-0.203*	-0.071	0.985***
	(0.218)	(0.122)	(0.116)	(0.154)
Post-secondary educated	-0.809***	0.181***	-0.270***	0.524***
	(0.061)	(0.029)	(0.030)	(0.047)
CONTROLS				
Female	-0.216***	-0.019	0.071**	0.136***
	(0.056)	(0.027)	(0.028)	(0.045)
Rural	0.027	0.128***	-0.100***	-0.183***
	(0.020)	(0.010)	(0.010)	(0.018)
Income	-0.081**	0.240***	-0.105***	-0.121***
	(0.032)	(0.017)	(0.016)	(0.029)
Age	-0.005***	0.007***	0.004***	-0.024***
	(0.001)	(0.001)	(0.001)	(0.001)
Secular	0.139***	-0.266***	0.179***	0.160***
	(0.019)	(0.009)	(0.009)	(0.017)
var(_cons[cntry])	7.258**	0.237**	0.147**	3.096**
	(3.595)	(0.099)	(0.062)	(1.492)
var(_cons[cntry>isco3tr])	0.143***	0.196***	0.143***	0.077***
	(0.031)	(0.018)	(0.015)	(0.021)
Constant	-3.490***	-0.110	-1.302***	-3.186***
	(0.770)	(0.176)	(0.153)	(0.540)
Observations	38,198	38,198	38,198	38,198
Number of groups	12	12	12	12
Log Likelihood	-6953.3	-23620.9	-22619.3	-8711.6
BIC	14043.7	47379.0	45375.7	17560.3

Note: Multilevel mixed-effects logistic models with oim clustering by country and ISCO-3 occupational categories, fixed time effects (not shown). ESS data for 2004-2008. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

G. Replication of the educational field model by country

Figure A.4 below plots the distribution of individual and occupational CECT for each of the four main party blocs across nine countries for which we have a combined total of 200 votes for green and TAN parties. In every country, the median TAN voter has the lowest individual CECT and the lowest occupational CECT and the median green voter has the highest individual CECT and the highest occupational CECT.

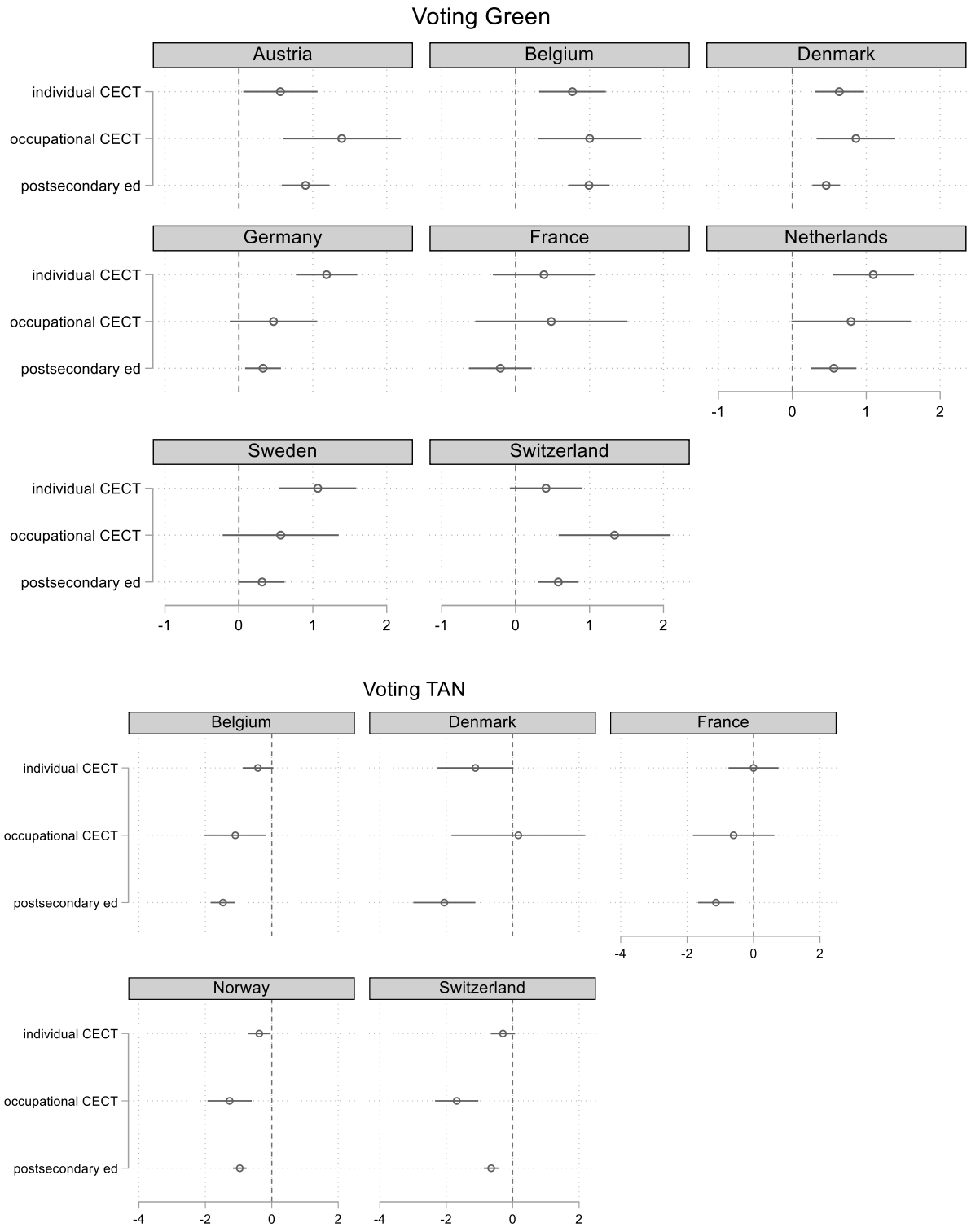
Figure A.4. Distribution of individual and occupational CECT by country and party bloc



In Figure A.5 and Tables A.14 and A.15 we report country-level multivariate analyses. These reveal that field of education is in almost all cases significant predictor of voting on the socio-cultural divide under controls. The results are highly significant if we drop any one or two countries from the analysis.

Figure A.5. Voting on the socio-cultural divide by country

-



Note: logistic models with robust standard errors under controls (female, age, secular, rural, income, and essround). Countries for which at least 200 respondents say they voted for a green or TAN party (pooled across ESS rounds).

Table A.14. Green voting and field of education by country (2004-2008)

	Austria	Belgium	Switzerland	Germany	Denmark	France	Netherlands	Sweden
Individual CECT	0.561**	0.769***	0.427*	0.621***	1.197***	0.340	1.094***	1.054***
	(0.256)	(0.230)	(0.251)	(0.171)	(0.212)	(0.355)	(0.282)	(0.266)
Occupational CECT	1.392***	1.014***	1.331***	0.893***	0.536*	0.489	0.804*	0.600
	(0.408)	(0.358)	(0.389)	(0.272)	(0.304)	(0.528)	(0.412)	(0.403)
Higher educated	0.902***	0.984***	0.579***	0.438***	0.328***	-0.190	0.560***	0.298*
	(0.165)	(0.144)	(0.140)	(0.096)	(0.125)	(0.216)	(0.156)	(0.156)
Female	0.096	-0.115	0.263*	0.252***	0.069	0.203	0.346**	-0.031
	(0.135)	(0.134)	(0.141)	(0.097)	(0.122)	(0.194)	(0.154)	(0.148)
Rural	-0.296***	-0.121**	-0.300***	-0.178***	-0.007	-0.090	-0.202***	-0.149**
	(0.054)	(0.055)	(0.058)	(0.040)	(0.046)	(0.078)	(0.055)	(0.060)
Income	-0.243***	-0.137*	-0.088	0.015	-0.293***	-0.279**	-0.112	-0.272***
	(0.086)	(0.079)	(0.093)	(0.065)	(0.085)	(0.134)	(0.093)	(0.093)
Age	-0.043***	-0.015***	-0.026***	-0.033***	-0.010***	-0.031***	-0.016***	-0.028***
	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)	(0.006)	(0.005)	(0.005)
Secular	0.279***	0.277***	0.286***	0.047	0.208***	0.075	0.200***	-0.007
	(0.050)	(0.058)	(0.054)	(0.035)	(0.056)	(0.078)	(0.053)	(0.062)
Constant	-0.783	-3.897***	-2.470***	-1.052***	-3.090***	-0.700	-3.556***	-1.399**
	(0.541)	(0.569)	(0.577)	(0.382)	(0.533)	(0.791)	(0.567)	(0.601)
Party vote size	15.5%	8.5%	13.1%	13.2%	10.8%	6.9%	5.9%	5.7%
Observations	2,181	3,530	2,392	4,827	3,522	2,069	4,083	4,127
Log likelihood	-777.7	-927.9	-796.4	3492.5	-1116.5	-478.5	-834.9	-828.8
BIC	1632.2	1945.7	1678.3	3492.5	2322.9	1033.4	1761.3	1749.2

Note: Logistic models with robust standard errors in parentheses, and fixed effects for essround (not shown). Minimum N=200 respondents saying they voted green in a country (pooled across ESS rounds). Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A.15. TAN voting and field of education by country (2004-2008)

	Belgium	Switzerland	Denmark	France	Norway
Individual CECT	-0.417*	-0.292	-0.060	-0.168	-0.376**
	(0.236)	(0.186)	(0.248)	(0.394)	(0.174)
Occupational CECT	-1.097**	-1.685***	-0.930**	-0.581	-1.269***
	(0.473)	(0.332)	(0.433)	(0.634)	(0.339)
Higher education	-1.469***	-0.646***	-0.973***	-1.092***	-0.963***
	(0.188)	(0.113)	(0.153)	(0.277)	(0.105)
Female	-0.214	-0.122	-0.038	-0.128	-0.142
	(0.142)	(0.110)	(0.145)	(0.207)	(0.110)
Rural	0.086	0.228***	0.082	-0.060	-0.030
	(0.059)	(0.050)	(0.051)	(0.081)	(0.037)
Income	0.215***	0.097	-0.345***	-0.513***	-0.113*
	(0.077)	(0.071)	(0.090)	(0.137)	(0.067)
Age	-0.010***	0.001	0.010***	-0.013**	-0.010***
	(0.004)	(0.003)	(0.004)	(0.006)	(0.003)
Secular	0.212***	0.077**	0.127**	-0.159**	0.134***
	(0.053)	(0.036)	(0.061)	(0.070)	(0.043)
Constant	-2.943***	-1.384***	-1.949***	1.783**	-0.380
	(0.553)	(0.444)	(0.588)	(0.780)	(0.441)
Party vote size	9.1%	26.9%	8.7%	7.7%	16.1%
Observations	3,530	2,392	3,522	2,069	3,632
Log Likelihood	-993.1	-1305.0	-978.0	-448.9	3096.3
BIC	2076.0	2695.7	-448.9	974.2	3096.4

Note: Logistic models with robust standard errors in parentheses, and fixed effects for essround (not shown). Minimum N=200 respondents saying they voted for a TAN party in a country (pooled across ess rounds) *** p<0.01, ** p<0.05, * p<0.1

H. Testing an alternative operationalization of field of education: STEM

The STEM categorization refers to science, technology, engineering, and mathematics (Dugger 2010; Schmader 2023). We apply the categorization of the American Congress and the National Science Foundation (CRS report 2018). Similar to our CECT measure, we assess whether an individual has a degree in STEM and the density of STEM-educated individuals in that individual's occupation (i.e., percentage of respondents in an occupation at the ISCO-3 level who have a degree in STEM). To align the interpretation of the coefficients with those for CECT —higher scores implying a greater propensity to vote green—we reverse the values on STEM so that a value of 1 stands for *not* having a STEM degree and higher values on occupational STEM mean *fewer* individuals with STEM degrees in that occupation. We use a multilevel mixed-effects regression with the usual controls for higher education, gender, age, rural, income, secularism, time and with country and ISCO-3 fixed effects. Figure A.6 and Table A.16 show that estimates based on CECT are stronger predictors of green and TAN voting than estimates based on STEM.

Figure A.6. The effect of field of education: STEM vs. CECT as measure

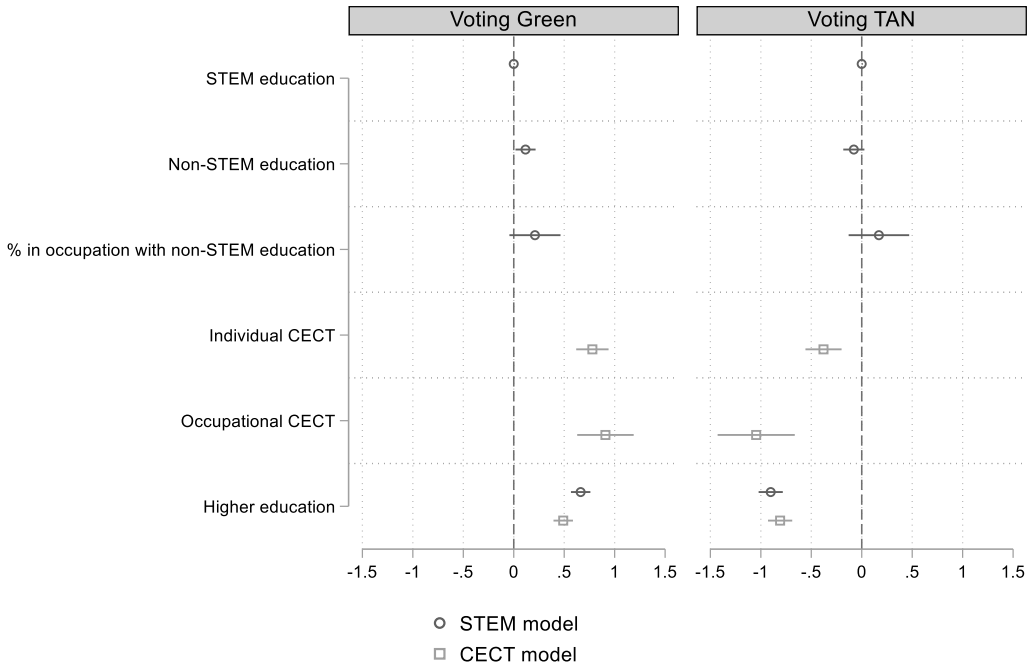


Table A.16. The effect of STEM or CECT on voting green and TAN

	Green		TAN	
	(1)	(2)	(3)	(4)
STEM OPERATIONALIZATION				
Non-STEM degree	0.117**		-0.078	
	(0.051)		(0.053)	
% with non-STEM degree in occupation	0.210		0.170	
	(0.129)		(0.153)	
CECT OPERATIONALIZATION				
Individual CECT		0.779***		-0.379***
		(0.082)		(0.091)
Occupational CECT		0.909***		-1.046***
		(0.143)		(0.195)
CONTROLS				
Higher education	0.663***	0.490***	-0.902***	-0.809***
	(0.049)	(0.049)	(0.061)	(0.061)
Female	0.348***	0.155***	-0.397***	-0.216***
	(0.047)	(0.047)	(0.054)	(0.056)
Rural	-0.197***	-0.182***	0.046**	0.027
	(0.018)	(0.018)	(0.020)	(0.020)
Age	-0.024***	-0.025***	-0.005***	-0.005***
	(0.001)	(0.001)	(0.002)	(0.001)
Secular	0.163***	0.168***	0.143***	0.139***
	(0.018)	(0.017)	(0.019)	(0.019)
Income	-0.122***	-0.135***	-0.081**	-0.081**
	(0.030)	(0.030)	(0.033)	(0.032)
Country intercept variance	2.918**	2.950**	7.043**	7.258**
	(1.418)	(1.430)	(3.501)	(3.595)
ISCO intercept variance	0.161***	0.082***	0.169***	0.143***
	(0.030)	(0.023)	(0.033)	(0.031)
Intercept	-2.687***	-3.180***	-4.132***	-3.532***
	(0.529)	(0.531)	(0.760)	(0.769)
Observations	36,198	38,198	36,198	38,198
Number of groups	12	12	12	12
Log-Likelihood	-8277.9	-8261.6	-7854.4	-6953.3
BIC	16692.3	16660.4	13845.3	14043.7

Note: multilevel mixed-effects logistic models with oim clustering by country and ISCO-3 occupational categories, fixed time effects (not shown). ESS data for 2004-2008. Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

I. Regression using Dutch LISS panel data & German SOEP panel data

Table A.17 shows the full regression model for the forest plot in Figure 9 (right panel), which explains the difference in GAL (or Greenleft) and TAN (or PVV) party sympathies. Table A.18 shows the full regression model using the SOEP for the forest plot in Figure 9 (left panel), which explains whether respondents lean towards voting for the Green party.

Table A.17. Effect of individual CECT on party sympathy using the LISS

	DV: Greenleft – PVV sympathies
Later individual CECT	2.441 **
	(0.800)
In Postsecondary or working	0.274
	(0.409)
Post-secondary degree completed	1.480 **
	(0.412)
CECT * In Postsecondary or working	0.608
	(0.681)
Intercept	-0.383
	(0.482)
R^2	0.085
Adj. R^2	0.083
Observations	2271
RMSE	4.036
N Clusters	412

Table A.18. Effect of individual CECT on party sympathy using the SOEP

	DV: vote intention for the Greens
CECT	0.032 *
	(0.015)
In Post-secondary education	0.002
	(0.007)
Working	-0.009
	(0.008)
Later higher education	0.063 ***
	(0.006)
Female	0.008
	(0.007)
CECT * In Post-secondary education	0.051 **
	(0.017)
CECT * Working	0.079 ***
	(0.022)
Intercept	-0.003
	(0.006)
R^2	0.034
Adj. R^2	0.034
Observations	44353
RMSE	0.246
N Clusters	3828

Table A.19 and A.20 show the full regression models for the results in Figure 11 in the paper. These models aim to capture the effect of occupational CECT while someone is still in education, showing that self-selection into a given occupation explains (part of) the effect of occupational CECT.

Table A.19. The effect of occupational CECT - LISS

	Without control for individual CECT	With control for individual CECT
Later occupational CECT	3.806 ***	1.306
	(1.109)	(1.189)
In education	-0.194	-0.404
	(0.554)	(0.541)
Later occupational CECT * In education	-0.256	0.172
	(1.201)	(1.167)
Later individual CECT		2.131 ***
		(0.459)
Intercept	0.770	0.897
	(0.524)	(0.524)
R^2	0.022	0.044
Adj. R^2	0.022	0.043
Observations	5558	5552
RMSE	5.627	5.562
N Clusters	1006	1003

Table A.20. The effect of occupational CECT - SOEP

	Without control for individual CECT	With control for individual CECT
Later Occupational CECT	0.182 ***	0.042
	(0.044)	(0.048)
In Post-secondary education	-0.034 *	-0.034 *
	(0.016)	(0.016)
Working	-0.054 **	-0.058 **
	(0.018)	(0.018)
In Post-secondary education X Occu CECT	0.133 **	0.146 **
	(0.046)	(0.046)
Working X Occu CECT	0.162 **	0.206 ***
	(0.052)	(0.052)
R^2	0.021	0.030
Adj. R^2	0.021	0.030
Observations	141157	120159
RMSE	0.247	0.243
N Clusters	14100	11292

J. Within-individual effects of attending higher education in a CECT field

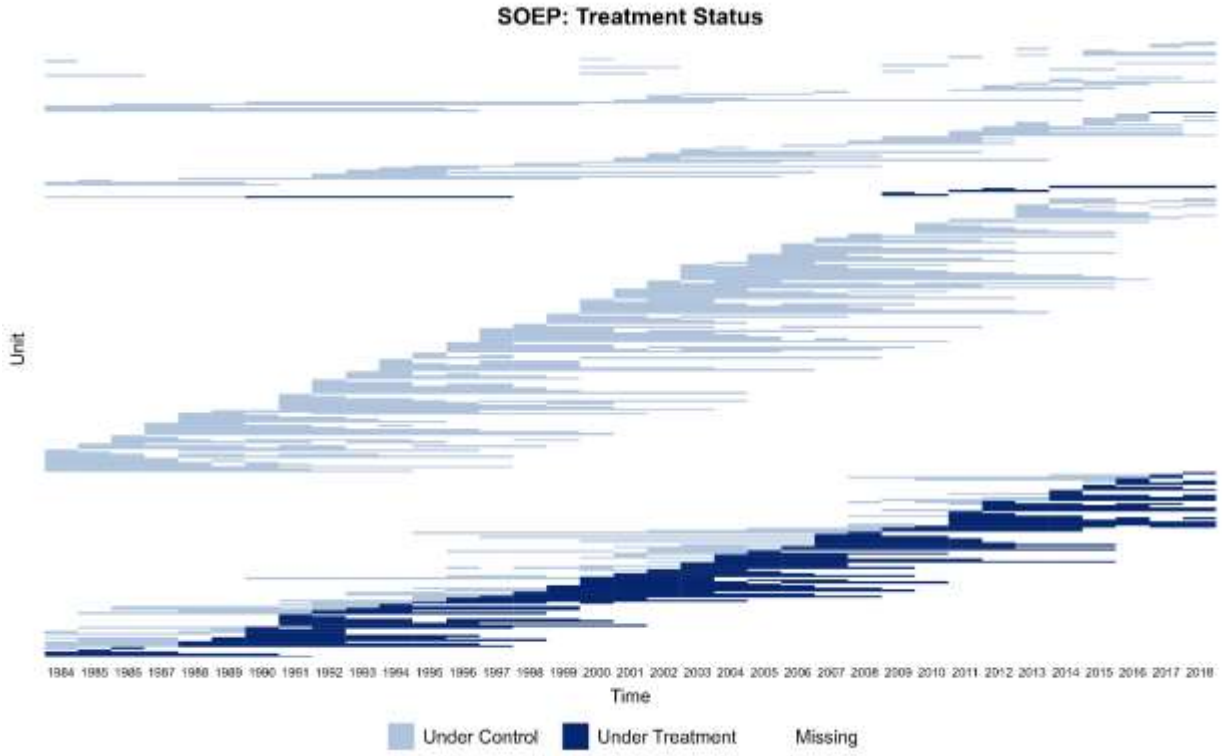
This section presents modeling results for three alternative approaches for estimating within-individual effects. The first is the 'IFEct' counterfactual estimator developed by Liu, Wang, and Xu (2022), presented in the body of the paper. The full results are reported in Table A.21 and diagnostics in Figure A.7. The second model uses a Two-Way-Fixed-Effects estimator (Table A.22). The third model uses a Random-Effects-Within-Between Estimator (Table A.23). Figure A.8 visualizes the second and third approach. We use SOEP data for each approach. Our results are almost identical using these three different approaches, as indicated in Tables A.21, A.22, and A.23.

Table A.21 reports the IFEct within-individual effect of attending higher education in low-CECT or high-CECT fields, and it confirms that this effect is significant and substantively important. The effect of attending higher education is nearly twice as high for those in educational fields with higher CECT, such as teaching, social studies, or science. Figure A.7 shows the treatment history for a random subset of 500 units (Liu, Wang, and Xu 2022). As expected with individual-level panel data, there is a lot of missingness over the course of the whole panel because few individuals stay in the survey from 1984 up to 2018.

Table A.21. IFEct Within-individual effect of attending higher education in a particular field

	Effect of attending post-secondary education	Attending post sec with > median CECT	Attending post sec with <= median CECT
Attending post-secondary (within effect)	0.037 ***	0.049 ***	0.027 **
	(0.009)	(0.014)	(0.011)

Figure A.7. Treatment history plot



Note: SOEP treatment history for a random subset of 500 units using the panelView package in R.

As we explain in the paper, we prefer the IFEct approach because it does not rely on the assumption of a homogenous treatment effect, which may cause biased estimates, particularly if treatment effects vary depending on when a respondent gets treated (see e.g., de Chaisemartin and D'Haultfoeuille 2020). IFEct does not employ treated observations of early treatment adopters as controls for late treatment adopters, but instead compares each individual to their own counterfactual, and in this way, the estimator accounts for the problems associated with negative weighting in TWFE regressions (Liu, Wang, and Xu 2022). Furthermore, this approach produces more formal plots that allow researchers to assess the parallel trends assumptions (see main paper).

We now show two commonly used alternative approaches to the IFEct approach, one using a Two-Way-Fixed-Effects estimator (Table A.22) and one using a Random-Effects-Within-Between

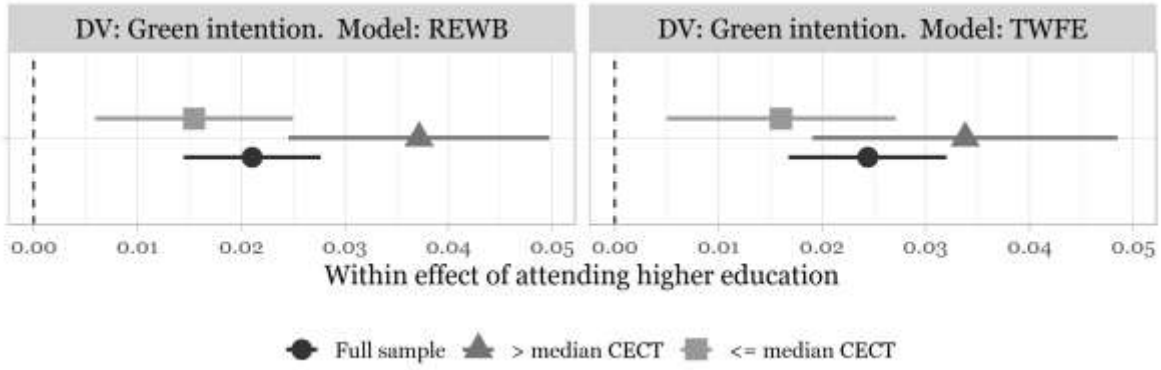
estimator (Table A.23). For each estimator, we apply a generalized Difference in Differences (DiD) approach. A DiD framework estimates the Average Treatment effect on the Treated (ATT).

The TWFE model, until recently the conventional workhorse model for a generalized DiD, uses fixed effects for respondents and survey year. Due to the fixed effects, the time-varying treatment variable (attending higher education) is not subject to bias caused by time-constant confounders.

We also present a hybrid approach reliant on a Random Effects Within-Between (REWB) model (Bell et al. 2019), as applied by e.g., Lancee and Sarrasin (2015) and Scott (2022). An REWB model parses out within-individual and between-individual variation, and the latter can be interpreted as the effect of self-selection. Hence by comparing within- and between-effects in the REWB model we obtain an estimate of the relative importance of self-selection versus socialization during or after education. The REWB model also estimates a separate intercept for each individual, which accounts for time-constant confounders, and it estimates a separate beta coefficient on the treatment variable for each respondent, which relaxes the assumption of homogenous treatment effects.

Figure A.8 visualizes REWB (left panel) and TWFE (right panel), and in line with expectations, both approaches find that the within-individual effect of attending higher education is larger for people who graduated in high-CECT fields. Note that the REWB model in Table A.23 estimates the between-individual effect to be about three times as large as the within-individual effect (.073 against .021 in column 1).

Figure A.8. Results from the REWB and TWFE models



Note: SOEP panel using REWB and TWFE models. The effects of higher education are estimated for the full sample, for those with lower than median CECT, and for those with higher than median CECT. Regression models in Tables A.21 and A.22.

Table A.22. TWFE Within-individual effect of attending higher education in a particular field

	Effect of attending post-secondary education	Attending post sec with > median CECT	Attending post sec with <= median CECT
Attending post-secondary	0.024 ***	0.034 ***	0.016 **
	(0.004)	(0.008)	(0.006)
Reference group used to calculate the common trends	People in education or working without a post-secondary degree	People in education or working without a post-secondary degree and > median CECT	People in education or working without a post-secondary degree and <= median CECT
Individual and time FE	Yes	Yes	Yes
# observations	133762	31362	62743
# respondents	30505	5019	13352

Table A.23. REWB Within-individual effect of attending higher education in a particular field

	Effect of attending post-secondary education	Attending post sec with > median CECT	Attending post sec with <= median CECT
Attending post-secondary (within effect)	0.021 ***	0.037 ***	0.015 **
	(0.003)	(0.006)	(0.005)
Attending post-secondary (between effect)	0.073 ***	0.120 ***	0.054 ***
	(0.002)	(0.006)	(0.003)
Intercept	-0.015 ***	-0.044 ***	-0.009 *
	(0.003)	(0.011)	(0.004)
Var respondent intercept	0.024	0.034	0.016
Var within effect	0.03	0.03	0.01
Reference group used to calculate the common trends	People in education or working without a post-secondary degree	People in education or working without a post-secondary degree and > median CECT	People in education or working without a post-secondary degree and <= median CECT
# observations	133762	31362	62743
# respondents	30505	5019	13352

K. The effect of educational field over time

Table A.24 reports a multilevel mixed-effects model with intercepts (random effects) by individual, generation, and survey year. This indicates that the effect of CECT remains important as people age. Figure 12 in the paper visualizes this. The data are derived from SOEP (1984-2020). The dependent variable is vote intention for the Greens.

Table A.24. The effect of individual CECT over time

	DV: Lean Green
Individual CECT	0.113 ***
	(0.004)
Number of years since 25	-0.000
	(0.000)
Individual CECT X Number of years since 25	0.001 ***
	(0.000)
Intercept	0.002
	(0.008)
# observations	348003
# respondents	44098
BIC	-281415.6
Log Likelihood	140758.8
Num. obs.	348003
Num. groups: syear	35
Num. groups: generation	6
Var: pid (Intercept)	0.023
Var: syear (Intercept)	0.000
Var: generation (Intercept)	0.000
Var: Residual	0.020

L. A robustness test with contemporary educational field data

The paper relies on information from the 2000s, because the European Social Survey uniquely collected information on educational field in 2004, 2006, and 2008. Table A.25 reports multivariate regression results for the latest LISS wave (collected in 2021 and 2022) using a model that is nearly identical to our main ESS model. This shows that individual CECT continues to be a highly significant predictor of party sympathy on the socio-cultural divide in the Netherlands. This is the case for each of three plausible operationalizations of the dependent variable: the difference between Groenlinks and TAN sympathies, TAN sympathies, and Groenlinks sympathies.

Table A.25. The effect of field of education in The Netherlands in 2020-21

	DV: Difference between GL and PVV thermostat	DV: PVV Thermostat	DV: GL Thermostat
Individual CECT	1.150 ***	-0.642 ***	0.531 ***
	(0.256)	(0.160)	(0.154)
Higher Education	1.590 ***	-0.827 ***	0.766 ***
	(0.170)	(0.109)	(0.103)
Female	0.707 ***	-0.230 *	0.463 ***
	(0.160)	(0.102)	(0.097)
Income in 1000	-0.001	-0.098 *	-0.105 *
	(0.067)	(0.043)	(0.044)
Age	0.021 ***	-0.024 ***	-0.002
	(0.004)	(0.003)	(0.003)
Migrant Background	0.341	-0.104	0.213
	(0.198)	(0.130)	(0.118)
Urban	0.127 *	-0.071 *	0.068 *
	(0.052)	(0.033)	(0.031)
Intercept	-2.160 ***	5.566 ***	3.381 ***
	(0.581)	(0.372)	(0.351)
FE for occupation	Yes	Yes	Yes
FE for sector	Yes	Yes	Yes
FE for supervising	Yes	Yes	Yes
R^2	0.111	0.097	0.073
Adj. R^2	0.108	0.094	0.070
# observations	3308	3397	3346

Note: OLS model using the latest LISS wave (wave 14, data collection in 2021 and 2022). Urban is a 5-step variable indicating how urban the place is where someone lives. Higher education, female, and migrant background are dummy variables. Age is measured in years and income in 1000 euros monthly net income. As a substitute for someone's ISCO score, we control for occupation, sector, and whether someone is supervising in their job.

References

Abou-Chadi, Tarik and Simon Hix. 2021. Brahmin Left versus Merchant Right? Education, class, multiparty competition, and redistribution in Western Europe. *British Journal of Sociology* 72: 79-92.

Bell, Andrew, Malcolm Fairbrother, and Kelvyn Jones. 2019. Fixed and random effects models: making an informed choice. *Quality & Quantity* 53(2): 1051-1074.

Congressional Research Service. 2018. *Science, Technology, Engineering, and Mathematics (STEM) Education: An Overview.* CRS Report R45223-version 4 – updated (authored by Boris Granovskiy).

De Chaisemartin, Clément, and Xavier d'Haultfoeuille. 2020. Two-way fixed effects estimators with heterogeneous treatment effects. *American Economic Review* 110(9): 2964-96.

Döring, Holger and Philip Manow. 2019. *Parliaments and Governments database (ParlGov): Information on Parties, Elections and Cabinets in Modern Democracies*. Development version (available https://parlgov.org).

Dugger, William E. 2010. Evolution of STEM in the United States. Unpublished (available on ResearchGate -- https://www.researchgate.net/publication/229041732_Evolution_of_STEM_in_the_United_States).

ESS Round 4: European Social Survey Round 4 Data (2008). Data file edition 4.5. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS4-2008.

ESS Round 3: European Social Survey Round 3 Data (2006). Data file edition 3.7. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS3-2006.

ESS Round 2: European Social Survey Round 2 Data (2004). Data file edition 3.6. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS2-2004.

Eurostat. 2008. *NACE Rev. 2 Statistical Classification of Economic Activities in the European Community.* Luxembourg: European Commission, Eurostat Methodologies and Working papers, 369pp.

Goebel, Jan, Markus M. Grabka, Stefan Liebig, Martin Kroh, David Richter, Carsten Schröder, Jürgen Schupp (2018) The German Socio-Economic Panel Study (SOEP). *Jahrbücher für Nationalökonomie und Statistik / Journal of Economics and Statistics* (online first), doi: 10.1515/jbnst-2018-0022.

Hix, Simon and Christopher Lord. 1997. *Political Parties in the European Union*. Oxford: Oxford University Press.

International Labor Organization (ILO). 2012. *International Standard Classification of Occupations: Structure, Group Definitions, and Correspondence Tables*. Geneva: ILO.

Jolly, Seth, Ryan Bakker, Liesbet Hooghe, Gary Marks, Jonathan Polk, Jan Rovny, Marco Steenbergen, Milada Vachudova. 2022. Chapel Hill Expert Survey Trend File, 1999-2019. *Electoral Studies* 75 https://doi.org/10.1016/j.electstud.2021.102420 (first online November 2021).

Knutsen, Oddbjørn. 2018. *Social Structure, Value Orientations and Party Choice in Western Europe*. Palgrave.

Kuhn, Theresa, Bram Lancee, and Oriane Sarrasin. 2021. Growing Up as a European? Parental Socialization and the Educational Divide in Euroskepticism. *Political Psychology* 42(6): 957-975.

Lancee, Bram, and Oriane Sarrasin. 2015. Educated preferences or selection effects? A longitudinal analysis of the impact of educational attainment on attitudes towards immigrants. *European Sociological Review* 31(4): 490-501.

LISS (Longitudinal Internet studies for the Social Sciences) panel administered by Centerdata (Tilburg University, The Netherlands).

Liu, Licheng, Ye Wang, and Yiqing Xu. 2022. A practical guide to counterfactual Estimators for causal inference with time-series cross-sectional data. *American Journal of Political Science* (first view, August 2022) https://doi.org/10.1111/ajps.12723.

Marks, Gary, David Attewell, Liesbet Hooghe, Jan Rovny, Marco Steenbergen. 2022. The social bases of political parties: A new measure and survey. *British Journal of Political Science* (online first, Feb 2022).

Oesch, Daniel. 2006. 2006. Coming to grips with a changing class structure. *International Sociology* 21(2): 263-288.

Piketty, Thomas. 2020. *Capital and Ideology.* Cambridge: Harvard University Press.

Scherpenzeel, A.C., and Das, M. (2010). "True" Longitudinal and Probability-Based Internet Panels: Evidence From the Netherlands. In Das, M., P. Ester, and L. Kaczmirek (Eds.), Social and Behavioral Research and the Internet: Advances in Applied Methods and Research Strategies. (pp. 77-104). Boca Raton: Taylor & Francis.

Schmader, Toni. 2023. Gender inclusion and fit in STEM. *Annual Review of Psychology* 74: 9.1-9.25.

Scott, Ralph. 2022. Does university make you more liberal? Estimating the within-individual effects of higher education on political values. *Electoral Studies* 77: 102471.

SOEP (German Socio-Economic Panel Study (SOEP-Core) Available at DOI (doi:10.5684/soep-core. v37o).