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How individuals' social characteristics impact the likelihood to waste a vote – evidence from Great Britain, Germany and France

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ABSTRACT


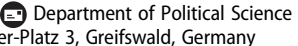
Which social characteristics of voters reduce the chances to waste a vote? Surprisingly, little is known about the commonalities and differences of citizens who do (not) make their vote count. In this article, we argue that levels of education and income, gender and age shape the likelihood to waste a vote through two channels: the voting motivation and the ability to correctly assess the viability of candidates. Drawing on data from the Comparative Study of Electoral Systems, we analyse voting behaviour in six elections in Great Britain, Germany and France between 2005 and 2015. Our analyses demonstrate that holding a university degree is not related to effective voting. Differences in cognitive capacities as a consequence of formal education are hence not decisive for voters' ability to assess candidates' viability correctly. Instead, our results show that many of those wasting their ballots are male and young voters who tend to knowingly decide to support candidates unlikely to win. Overall, these findings shed light on wasted votes as one of the factors that might balance and reinforce existing social inequalities in the political process.


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KEYWORDS Wasted votes; electoral behaviour; social characteristics; education; gender; age

Introduction

The idea that all citizens are equal is the basis of democracy. Most importantly, everyone should have a voice in the election of politicians who will represent and govern and, through this mean, impact future decision-makers and decisions. In reality, however, the political process does not include all societal

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groups equally as low levels of turnout among the youngest and the poorest indicate (Leighley and Nagler 2013; Bartels 2016; Gallego 2007; Goerres 2007; Rubenson et al. 2004; Lewis-Beck et al. 2008; Norris 2001). Another source of imbalance in the electoral process might stem from unequal likelihood to make a ballot count. Research on electoral behaviour describes this phenomenon as *wasted votes*, i.e. ballots cast for candidates with little chances to win (meaning neither for the successful competitor(s) nor the first loser) (Cox 1997). The explanations for this type of behaviour are manifold, including sending signals to other voters or political parties, expressing identities, or incorrect information. A commonality of all individuals who waste their vote is that, even though they usually prefer one of the leading contenders over the other, they do not directly affect the race between the top runners in the respective election (Cox 1997). While this type of electoral behaviour appears relatively often (Ugglå 2008) – for instance, every 4th voter wasted the ballot in the UK’s House of Common election in 2015¹ – previous research has not studied the social characteristics of these citizens. To further enhance our understanding about the extent to which the outcomes of the electoral process are biased towards certain societal groups, this article answers the question as to *which social characteristics reduce the chances to waste a vote*.

We explore the impact of education, income, gender and age on individuals’ propensity (not) to make a vote count. For this purpose, we draw on data from the Comparative Study of Electoral Systems (CSES) for six elections in three countries: the parliamentary elections in Great Britain in 2005 and 2015, the German parliamentary elections 2009 and 2013 (district votes), as well as the French parliamentary election in 2007 and the presidential election in 2012 (first rounds). Albeit in different ways, all elections under study are majoritarian in nature. However, all Western developed democracies are likely to display similar patterns, since even in the Netherlands, a country with a highly proportional electoral system, 1.5% of all votes were casted for parties unlikely to enter parliament in the 2017 election.²

Through our focus on the individual level, this research goes beyond earlier studies of wasted votes which analysed macro-level factors moderating individuals’ strategic behaviour (Anckar 1997). Our findings demonstrate that gender and age are the social characteristics most decisive for the chance to spoil a ballot. Women and the elderly maximize their impact on who is having a say in politics via their vote choices, while men and the young more frequently waste their vote. Effective vote choices thus enhance women’s impact on politics, while ineffective vote choices reinforce the exclusion of young citizens. These insights enrich our understanding of the mechanisms driving unequal representation by adding voting behaviour to existing explanations such as turnout or presence in parliament (Norris and Lovenduski 1995; Bernauer, Giger, and Rosset 2015; Bartels 2016; Lefkofridi, Giger, and Kissau 2012). Furthermore, our analyses indicate that educational

attainment does not affect the chances to waste a vote. Differences in cognitive capacities that follow from varying levels of formal education are hence not clearly linked to (in-)effective voting – an insight that mirrors recent literature from tactical voting in Great Britain (Eggers and Vivyan 2018) and protest voting (Kselman and Niou 2011). Instead, certain social background characteristics are associated with higher likelihoods to knowingly waste votes.

Wasted votes and their explanations in the literature

In line with Cox (1997), we understand wasted or ineffective votes as ballots casted for candidates that neither win, nor are close to winning (i.e. the first loser) and, in consequence, are unlikely to affect the electoral race. The opposite type of behaviour is not wasted or effective vote choice, as these ballots stand good chances to exert an influence on the outcome of the race. This distinction builds on Duverger's (1954, 47) expectation that in majoritarian electoral systems "the electors soon realize that their votes are wasted if they continue to give them to the third party" and, therefore, rational voters try to avoid wasting their vote through tactical choices (see also Downs 1957).³ In the subsequent paragraphs, we argue that wasted votes occur, first, if tactical voters have false beliefs about candidates' viability, second, if voters expressing their identity through the ballot support inviable candidates by coincidence and, third, if long-term instrumental considerations and the desire to protest against established parties motivate voters. Ineffective voting can thus originate in both, conscious decisions and errors.

For the purpose of explaining the likelihood to vote ineffectively, voters can be distinguished along their voting intentions: (short-term) tactical, long-term instrumental or expressive considerations. Tactical voters driven by short-term considerations aim to impact the electoral race and are willing to abandon their preferred party for a less favoured option to reach this objective (Duverger 1954; Cox 1997). An extensive literature shows that contextual factors such as electoral rules, in particular district magnitude and electoral thresholds (Cox and Shugart 1996; Sartori 1968; Cox 1997; Anckar 1997; Crisp, Olivella, and Potter 2012), as well as electoral formula (Cox and Shugart 1996; Riera 2013) affect tactical voting. Long-term instrumental voters wish to influence future elections or policy decisions (Downs 1957). This group includes voters who decide to support an outsider to signal to the remainder of the electorate that, in future elections, this contender might win. Moreover, citizens, who hold a sincere preference for a leading candidate, might make the long-term strategical choice to support a third party belonging to the same policy space to impact the policy agenda and/or the future strategies of their preferred actor (Kselman and Niou 2011; Myatt 2016). Lastly, some voters might aim to express their identity or protest through their vote. Some of these voters wish to publicly display

their “beliefs, values, ideology, identity or personality regardless of any impact of the vote for the outcome of the election” (Hamlin and Jennings 2011, 646). Others aim to show their dissatisfaction with the political system in general, or with established parties in particular by voting for outsiders (Kselman and Niou 2011; Alvarez, Roderick Kiewiet, and Núñez 2018).

How these differences in voting motivations affect wasted ballots depends on the perceived chances that voters ascribe to candidates, the actual chances of their vote choices, and the combination of these two factors. Least likely to vote inefficiently are short-term tactical voters because they reflect on the viability of candidates and adapt their choice according to their beliefs about contenders’ chances to win. However, if the perceived and actual viability of candidates deviate (e.g. due to lack of information or political cues), they will waste their vote. The chances to vote effectively are moderate for voters who aim to express their identity through their ballot, since their support is independent of candidates’ chances. Finally, long-term instrumental and protest voters are most likely to waste their vote, as they aim to cast the ballot for outsiders.

Expectations about the impact of social characteristics on the likelihood to waste a vote

We hypothesize that individual characteristics affect the propensity to waste a vote through two channels: the voting motivation and the ability to correctly assess the viability of candidates. Gender, income and age, might affect the chances to make tactically or expressively motivated choices and, in consequence, the likelihood to waste a vote. Education might, beyond influencing the voting motivation, also impact the propensity to make false decisions.

First of all, voters with a university degree might be less likely to waste a ballot than those who do not possess one. Holding a degree increases the sense of internal efficacy and, hence, the motivation to vote instrumentally. Indeed, higher educated are systematically more likely to believe that their political actions can make a difference (Hayes and Bean 1993), eventually enhancing the desire to vote tactically in the first place. Moreover, education should positively affect the ability to correctly assess the viability of candidates. An effective vote entails information costs to distinguish situations where preference voting would ultimately result in a wasted vote (Hall and Snyder 2015). Citizens with diplomas have cognitive expertise that enables more efficient collection and processing of political information. They appear to have more information on candidates and campaigns (Milligan, Moretti, and Oreopoulos 2004), thus, their capacity to correctly perceive candidates’ viability should be higher. These considerations inform our first hypothesis:

H₁: Voters with a university degree are less likely to waste their votes than voters who do not possess a diploma.

Economic well-being, or level of income, might be a second factor influencing individuals' likelihood to waste a vote given the strong relationship between income and the motivation for protest voting. These voters voice their disaffection towards established parties to express discontent regarding their economic situations, the inequality and disadvantage they experience on a daily basis (Amengay and Stockemer 2018). Since wealthier citizens are not personally concerned, they are less likely than those with low incomes to make use of their vote to signal dissatisfaction with the performance of established parties. Furthermore, the risk of having to carry higher financial burdens might motivate the rich to take short-term strategical considerations, while the poor lose less by voting expressively or long-term instrumentally. The fact that individuals' financial resources increase the likelihood to participate in elections (Smets and van Ham 2013; Carpini and Keeter 1996; Verba and Nie 1972; Kasara and Suryanarayan 2015) suggests that such income-dependent differences in the voting behaviour exist. Following this rationale, we hypothesize that:

H₂: Voters with high income are less likely to waste their votes than voters with low income.

Voters' gender constitutes a third individual characteristic that might be related to the chance to waste a vote, since men and women tend to differ in their voting motivations. In contrast to women, men are more likely to be protest voters and show their discontent with established parties by supporting the radical right (Givens 2004; Hartevelt et al. 2015; Immerzeel, Coffé, and van der Lippe 2015; Spierings and Zaslove 2015) and left (Spierings and Zaslove 2017). A first explanation for this pattern is that the extremist or outsider image used by this type of candidates repels female voters (Immerzeel, Coffé, and van der Lippe 2015). Gender further determines policy attitudes, such as dissatisfaction with politics and preferences on issues such as immigration, which predict support for radical right parties. Since they are not attractive to the median voter who tends to prefer moderate political positions (Downs 1957; Cox 1997), votes for these parties are more frequently ineffective for the race between the leading contenders. In turn, gender differences in support for more extreme parties systematically impact the likelihood to waste a vote. These rationales inform our third hypothesis:

H₃: Male voters are more likely to waste their votes than female voters.

Finally, age might affect the voting motivation due to different value orientations of older and younger citizens. The literature on post-materialism (Inglehart 1990; Norris 1999) argues that young cohorts benefitting from

material comfort are more likely to express themselves in the voting booth than older ones. They tend to cast their ballot for their preferred party independent of its chances to succeed. Context-specific evidence from single countries supports this claim by showing that smaller parties such as the Greens or Free Democrats in Germany attract higher vote shares amongst the younger cohorts (Kobold and Schmiedel 2017). In addition, the young have a higher propensity than the elderly to be protest voters (Ford, Goodwin, and Cutts 2012; Mayer 2002; Norris 2005). Our last propositions thus states that:⁴

H₄: Older voters are less likely to waste their votes than younger voters.

Research design

To test these hypotheses, we study voting behaviour in three European democracies: Great Britain, Germany and France. We selected these cases since they provide a comparable contextual set-up, while displaying variation in the types of majoritarian electoral systems. All countries are established democracies with a long-standing history of democratic elections based on the same type of electoral system so that voters are familiar with its functioning. They have stable party systems that enable voters to predict electoral outcomes and reduce the risk to waste votes due to a lack of information. Furthermore, the countries apply three different, but common types of majoritarian electoral systems, allowing us to draw inferences across cases. Great Britain uses a first-past-the-post system, Germany has one tier with single-member districts as part of a mixed electoral system⁵ and France a two-round run-off system for which we study the first round. We include two elections per country to ensure that election-specific effects do not drive the findings.⁶ For the French case, we consider a parliamentary and a presidential race.⁷ This case selection permits to reveal how social characteristics impact individuals' likelihood to vote inefficiently independent of the differences in the design of the majoritarian electoral system. Data for all elections is provided by the CSES (wave 2–4), which comprises complete information for 6468 respondents.⁸

Dependent variable: wasted votes

We measure (in-)effective voting through a binary variable that takes the value "1" if a vote was wasted. In single-round single-member-district elections, the set of viable vote choices includes the two most successful candidates in the district. In the French two-round system, voting for the three top candidates might be considered effective, since the first round produces two winners who qualify for the final race. We code votes for any other candidate as wasted.

Independent variables

In accordance with the hypotheses presented above, we focus on four social characteristics as explanatory variables for wasted votes:

University degree: Our main models include a binary measure for having a university-level degree.⁹

Income: The measure for income is a five-point scale from “lowest national quintile” to “highest national quintile”.

Gender: A binary variable takes the value “1” for female respondents and “0” for male respondents.

Cohort: The variable “cohort” groups respondents by years of birth. The oldest cohort (born 1910–1920) receives the highest value (9) and with every decade, the assigned value decreases one point.¹⁰

Control variables

We include individual-, district- and election-level control variables.

Political knowledge: Voters who have more knowledge about politics should be less likely to waste their ballots given their higher level of information about the functioning of the electoral process and candidates’ chances (see e.g. Bartels 1996; Dolan and Holbrook 2001; Meffert and Gschwend 2010). Depending on the wave, the CSES includes three to four political knowledge questions. Based on these items, we created an additive index on a scale from one to four with higher values indicating more correct responses.¹¹

Party identification: To what extent voters are willing to deviate from their first choice most likely depends on the presence of party identifications. Those voters who feel close to a particular party are less likely to support other contenders for tactical reasons, making them more likely to waste their vote (Niemi, Whitten, and Franklin 1992). We include a binary variable that takes the value “1” if respondents report to feel close to any party and “0” if not.

Left-right self-placement: The ideological positioning of respondents widely determines the degree to which they can identify with the largest parties. Respondents with ideologically extreme positions are less likely to feel represented by parties in the centre (which are most likely the main players) and should, in consequence, waste their vote more frequently than voters with moderate ideological positions (Amengay and Stockemer 2018). We use a squared term of the left-right self-placement (on a scale from 0 “left” to 10 “right”) to capture this relationship.

Voting makes a difference: Voters who feel like their vote choice does not affect the electoral outcomes should also be particularly likely to waste their vote (if they cast a ballot at all). The lower respondents support for the statement “Voting makes a difference” the more likely they support a candidate with little chances to win the election (Kselman and Niou 2011). We

include a five-point ordinal measure ranging from 1 “voting makes no difference” to 5 “voting does make a difference”.

Urban vs. rural district: Earlier research suggests that voters in urbanized regions have a higher exposure to diverse sources of political information, candidates and political issues than those in rural regions, e.g. through the availability of a higher number of newspapers (Mutz 2001). As a result, they live in contexts which reduce costs for individuals to obtain information and should be more likely to make informed and accurate predictions about who is likely to win. Wasted votes based on false information should hence be less likely to occur in urban than rural environments. We therefore include a four-point measure from 1 “very rural” to 4 “very urban”.

Closeness of race 1 (in %-points): If the second loser appeared to be a viable choice to voters, the chance to waste votes (unintentionally) increases (Blais et al. 2001). We control for the distance between the proportions of votes of the two contenders as a proxy for perceived closeness.¹²

Closeness of race 2 (in %-points): The expected distance between the winning candidate and the one that performed second sets incentives for effective voting. If one candidate is perceived as a clear winner, respondents should be more likely to feel like voting does not impact the electoral outcomes and be more prone to waste a vote (Blais et al. 2001; Kouba and Lysek 2019). We thus control for the distance between the results of the first and second candidate in a district.

Election fixed effects: We further include a dummy variable for each of the six elections. Through this mean, we model variation at both the country- and the election-level. This variable absorbs all differences at the macro level (Allison 2009) such as the number of parliamentary parties or the nature of the majoritarian system (for a summary discussion see Norris 1997).

How social characteristics impact different types of wasted votes in majoritarian elections in Europe

Across the six elections in the three countries under study, 29.38% of all votes were wasted. Figure 1 reveals pronounced variation within countries across elections, with Germany displaying the highest proportion of ineffective votes (41.73% in 2009) and the lowest one (24.37% in 2013). The differences between countries are also considerable, with France showing the lowest share of wasted votes averaged over two elections (26.10%), followed by Great Britain (30.47%) and Germany (33.05%).

As Figure 2 depicts, diverse parties profit from wasted votes. Right-wing populists such as the Alternative for Germany, United Kingdom Independence Party and the National Front constitute one set of actors winning these votes. Nevertheless, between a maximum of 98% of all ineffective votes in Germany (2013) and a minimum of 51% in Great Britain (2015) go to other contenders.

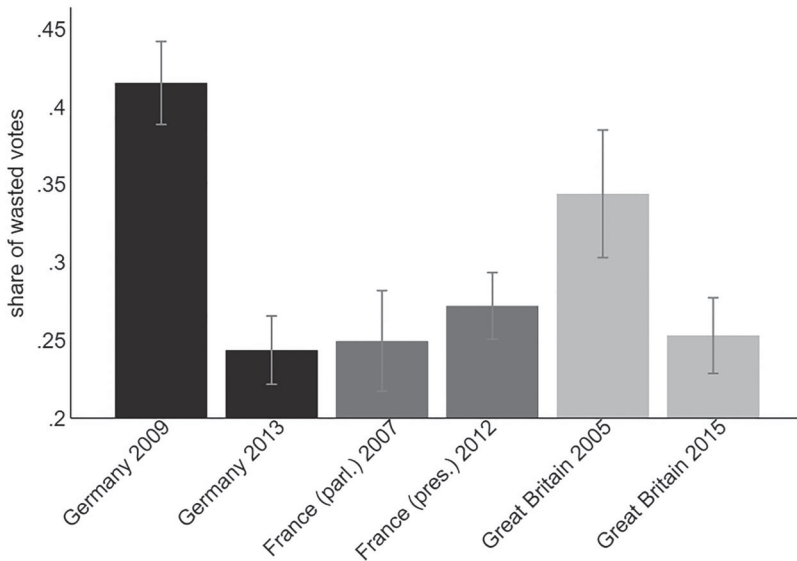


Figure 1. Proportion of wasted votes per election with 95% confidence intervals.

Liberal and green parties are major receivers of wasted ballots as well as regionalists in Great Britain and leftist parties in Germany and France. In addition, a small number of diverse groups (labelled “others”) collects votes in all countries despite their lacking chances to win mandates in any electoral district. Voters wasting their vote hence seem to support contenders along the whole range of the ideological spectrum as well as single-issue parties. This insight provides a first hint that citizens vote ineffectively for a variety of reasons including protest votes for extreme parties but also identity expressions through support for green, regional, or liberal parties.

To identify the characteristics that increase individuals’ likelihood to belong to the group of vote wasters, we estimated three logistic regression models displayed in [Table 1](#). All models include election fixed effects and robust standard errors. The coefficients display odd ratios and reveal changes in the predicted likelihood to waste a vote. The first model includes all respondents in the three countries, allowing us to uncover the individual determinants of ineffective votes ($N = 6468$). The second and third model reveal how individual social characteristics correlate with different types of wasted votes outlined earlier and enables us to narrow down the causal mechanisms at play. For this purpose, Model 2 only includes voters who state to sincerely prefer a party unlikely to win ($N = 4067$). Within this sub-group, those who waste their votes either aim to inform other voters about the chances of a minor party in future elections, engage in expressive voting for small contenders or are tactical voters who made false decisions. The third model includes

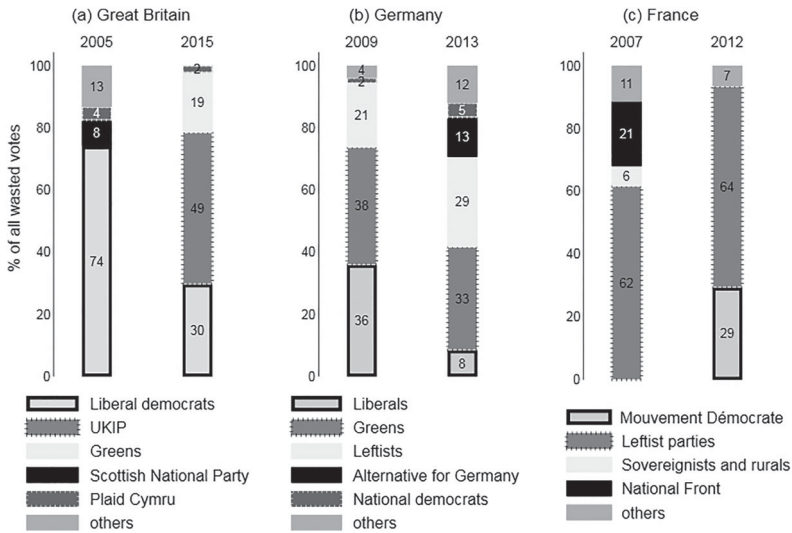


Figure 2. Party vote share of wasted votes for (a) Great Britain in 2005 and 2015, (b) Germany in 2009 and 2013 and (c) France in 2007 (parliamentary election) and 2012 (presidential election).

Annotations: Others include the Green party and the United Kingdom Independence party in 2005. Others include the Alternative for Germany in 2009. For France, leftist parties include le Parti Communiste Français (PCF), Extrême Gauche and Les Verts for 2007; Jean-Luc Mélenchon (Front de Gauche), Eva Joly (Europe Écologie Les Verts), Nathalie Arthaud (Lutte Ouvrière) and Philippe Poutou (Nouveau Parti Anticapitaliste) for 2012. Sovereignists and rural parties include Movement pour le France (MPF) and Chasse, Pêche, Nature Tradition (CPNT) for 2007. Others include Parti Radical de Gauche, Divers Gauche, Nouveau Centre, Divers Droite, Autres Ecologistes, Régionalistes for 2007; and Nicolas Dupont-Aignan (Debout la République) and Jacques Cheminade (Solidarité et Progrès).

only observations of voters whose first preferences is a viable choice ($N = 4621$).¹³ In this case, voting ineffectively means to either (again) hold false beliefs about candidates' chances to win or to sincerely prefer a party with good chances to win but waste the vote by supporting a minor player. Logically, the latter behavioural pattern appears if citizens aim to send signals to their preferred party to revise their agenda and strategies.

Overall, our analyses stress the importance of voters' social characteristics in explaining the likelihood to make a vote count, but do not confirm all expectations. Figure 3 provides a visualization of the effects of the key explanatory variables in the first model. Notably, holding a university degree does not execute any impact on the odds to waste a vote, even though education is one of the most powerful explanations for turnout (see e.g. Smets and van Ham 2013; Blais 2000). This null finding concerning Hypothesis 1 also holds for the sub-groups of voters preferring minor and major parties. Despite the expected differences in the likelihood to vote tactically and to make correct assessments of candidates' viability between the highly educated and all

Table 1. Logistic regression of social characteristics on the likelihood to waste a vote in Germany, France and Great Britain.

	Model 1 b/(SE)	Model 2 b/(SE)	Model 3 b/(SE)
education = university degree	1.0433 (0.0827)	0.9208 (0.0902)	1.0010 (0.1315)
income quintile	0.9474** (0.0258)	0.9382* (0.0322)	1.0035 (0.0476)
sex = women	0.8509** (0.0558)	0.7625*** (0.0622)	0.9727 (0.1021)
cohort	0.8804*** (0.0182)	0.8849*** (0.0229)	0.9585 (0.0340)
individual-level controls			
political knowledge	1.0750** (0.0330)	1.0882** (0.0416)	1.0952* (0.0561)
closeness to a party	0.7999*** (0.0536)	0.9599 (0.0815)	0.4918*** (0.0529)
voting makes a difference	0.9141*** (0.0265)	0.9472 (0.0346)	0.8434*** (0.0389)
left-right self-placement (squared)	0.9882*** (0.0019)	0.9898*** (0.0025)	0.9870*** (0.0025)
district-level controls			
degree of urbanization	1.0220 (0.0315)	0.9978 (0.0371)	1.0820* (0.0514)
closeness of race 1 (gap in %)	1.0005 (0.0037)	0.9922* (0.0045)	1.0017 (0.0070)
closeness of race 2 (gap in %)	0.9678*** (0.0046)	0.9527*** (0.0059)	0.9793** (0.0084)
Country fixed effects			
Germany 2013	0.4909*** (0.0485)	0.9359 (0.1057)	0.8361 (0.1600)
France 2007	0.4081*** (0.0544)	0.2919*** (0.0421)	1.8617*** (0.3968)
France 2012	0.4577*** (0.0512)	0.8959 (0.1262)	1.6358** (0.3129)
Great Britain 2005	1.3476* (0.2057)	18.2330*** (6.3151)	0.7996 (0.3416)
Great Britain 2015	0.4429*** (0.0504)	1.1530 (0.1570)	0.6788* (0.1539)
Observations	6468	4067	4621

Annotations: Logistic regression with election fixed effects. Reference category for the fixed effects is Germany 2009. Displaying exponentiated coefficients. With * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The first column includes all respondents; the second one only those who have a sincere preference for a minor party, the third one only those who have sincere preference for a major party. Respondents might like a minor and major party equally well, so that they can be included twice.

others, in the three countries under study, voters are equally likely to waste their vote independent of their level of education.

We neither find hard evidence supporting a relationship between financial resources and (in-)effective voting (Hypothesis 2). Model 1 indicates that higher income decreases the chances to waste a vote. Having an income in a higher quintile increases the chances to make a vote count about 5.3 percent (with $p = 0.047$). The relationship holds only within the group of voters sincerely preferring a major party (Model 3), but not for the subset of voters preferring minor parties (Model 2). Substantially, this evidence

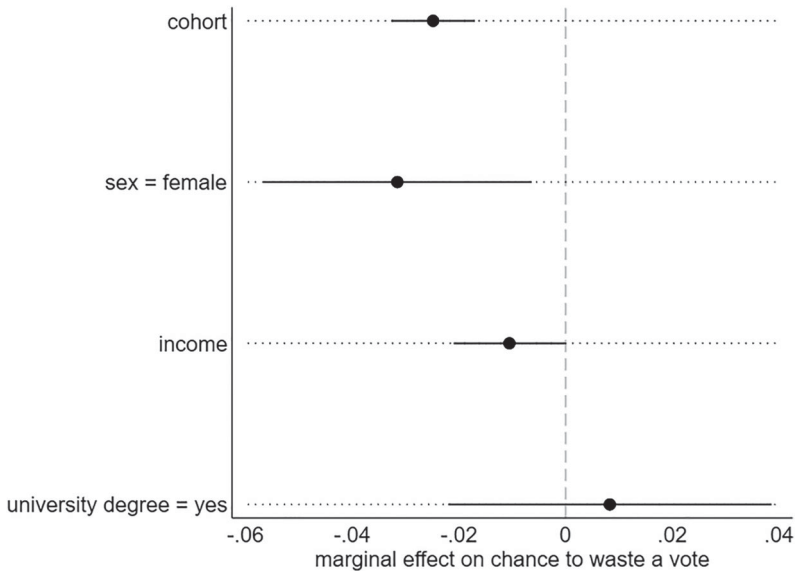


Figure 3. Marginal effects of education, income, gender and cohort on the likelihood to waste a vote with 95% confidence intervals.

Annotations: Figure based on Model 1 in Table 1.

indicates that citizens with lower levels of income are more likely to vote ineffectively if they prefer a party with chances to win (presumably to send signals to their preferred party). The wealthier, instead, tend to stick to their first and promising preference. However, the confidence intervals of the predicted probabilities between the highest and lowest income quintile overlap (for the predicted margins of Model 1 and 2). Even though earlier studies found a link between income and protest voting (Amengay and Stockemer 2018), we cannot be certain that the described pattern holds beyond the present population sample.

The effect of gender is strong and straightforward: Women have a 14.9% smaller chance to waste their vote than men – everything else being equal (Hypothesis 3, according to Model 1, with $p = 0.014$). Models 2 and 3 reveal that supporters of minor parties drive this effect. For the group of voters with a sincere preference for a major party, gender does not make any difference for the chance to waste a vote. Neither men nor women are more prone to make use of their vote to send signals to their preferred major contender. However, within the group of the electorate favouring a competitor unlikely to win, women are considerably more likely than men to vote effectively (33.8%).

This insight points to support for extreme parties as an explanation for gender differences in (in-)effective voting. While only a limited proportion of all votes in our sample are cast for this type of parties (7.0%), these votes

are more frequently wasted than those for any other party (41.3% compared to 28.5%). The share of men supporting extreme parties is 2.3%-points higher than the respective figure for women (8.2% compared to 5.9%). Female voters display a tendency to support extreme parties if they are viable contenders but do not perceive them as acceptable choices if they are political outsiders. 36.6% of female votes for extreme parties are wasted compared to 45.3% of male votes. In consequence, gender differences in attitudes, policy preferences and acceptance for extreme parties' mode of communication (Immerzeel, Coffé, and van der Lippe 2015; Spierings and Zaslove 2015; Givens 2004) lead to varying chances to vote (in-)effectively.

Lastly, we find that voters belonging to older cohorts are less prone to waste their votes (Hypothesis 4). Respondents born in an earlier decade tend to have a 12% lower chance to vote for unpromising parties or candidates (according to Model 1, with $p < 0.001$). Overall, the predicted probability to vote ineffectively decreases from 0.39 to 0.20 from the youngest to the oldest cohort. Again, this effect is driven by voters who sincerely support minor parties (Model 2).

This finding indicates that younger voters with more pronounced postmaterialist values (Inglehart 1990; Norris 1999) tend to express their identity through votes independent of the (in-)efficiency of their choice. One party family that receives large shares of votes from the young generations are the Greens.¹⁴ In parallel to the gender gap in voting for extreme right parties outlined above, the generational gap in support for this party family becomes even more pronounced if votes for the Green parties are wasted. This implies that the young tend to show their sincere support for smaller parties either to signal to the remainder of the electorate that these are viable choices in future elections or for expressive reasons without any tactical intentions.

Looking at the remaining variables in the models, the individual- and country-level factors stand out as most influential, while those at the district-level have less explanatory power for the likelihood to waste a vote.¹⁵ Respondents' closeness to a party, their perceived efficacy and ideological orientations exercise the expected effects. Interestingly, higher levels of political knowledge make ineffective voting more likely, which implies that the capacity to correctly assess candidates' chances, resulting from political expertise, does not explain the likelihood to waste a vote. All other variables approximating voters' capacity to correctly identify viable candidates do not unfold a statistically significant impact according to our models (degree of urbanization, closeness of race 2). We thus do not find any evidence for unintended wasted votes in the three countries. This null-finding corresponds with recent insights on the likelihood to vote strategically, where citizens' understanding of politics seems to have little explanatory power (Eggers and Vivyan 2018). Given that we only study voting behaviour in single-member

districts, in which the complexity of the information is comparably low, different effects of education, political knowledge and the district-level determinants might persist in electoral systems with multi-member districts (Gallego 2010).

Turning to the election-level, voters in Great Britain (2005) were most likely to waste their vote (all individual- and district-level factors being equal compared to the reference category, Germany 2009). Focusing on the French case, the probability to vote ineffectively is highest for the presidential election, which is consistent with the literature indicating that this election displays a high proportion of ideological and protest votes than the first round of parliamentary elections (see e.g. Miguet 2002). However, neither of these difference that follow from the nature of the majoritarian electoral system, country differences in the political and party system, or election-specific factors compensates for the effects of gender and age on efficient voting.

Conclusion

This article explored the relevance of social characteristics for the likelihood to waste a vote. While most studies in the field so far focus on state- or district-level variables to explain strategic voting (Anckar 1997; Cox and Shugart 1996; Lago and Martínez i Coma 2012; Riera and Bol 2017; Tavits and Annus 2006), we draw attention to the role of voters' social characteristics. Through the analyses of six elections in three European countries, we uncover young men to be the archetypical "ballot wasters". Men's behaviour can be explained by their higher likelihood to be close to the attitudes and policy positions typical for extreme parties (Givens 2004), as well as women's resentments to the extremist and outsider images of these actors (Immerzeel, Coffé, and van der Lippe 2015). The young waste their vote more frequently than the elderly to express their identity through their support for a broad set of minor contenders. Differences in income and education, in contrast, do not impact the chances to vote effectively. In consequence, while individuals' capacities to correctly assess the chances of candidates are less decisive, differences in voting motivations, i.e. being long- or short-term tactical or expressive, explain why certain social groups are more or less likely to make their vote count.

These results imply that wasted votes constitute one factor that might balance and reinforce existing inequalities in the political process. Those social groups frequently voting for the leading contenders have the chance to influence who wins a seat and, thereby, the policy agenda in a direct manner. While women struggle to reach numerical parity in parliaments around the world, with shares of female members of parliament stagnating far below fifty percent, female voters' tendency to influence immediate voting outcomes provides them with greater leverage than men on the

selection of legislators and the enacted policies. This insight bears the potential to enhance our understanding of puzzling findings in recent studies on representation, which revealed that women's presence in parliaments is not decisive for the degree to which political elites tend to be considerate of their gender's political preferences (Reher 2018; Bernauer, Giger, and Rosset 2015), and indicate that, instead, higher turnout of female voters enhances policy responsiveness towards women (Dingler, Kroeber, and Fortin-Rittberger 2019). On the other side of the coin, young people's low propensity to vote effectively reinforces the negative effects of their low turnout and (to the most parts) absence from parliament on their representation in the policy-making process. The elderly, beyond being the numerically larger group at the ballots in ageing Western societies and in legislatures, make use of effective vote choices and enforce their preferences while the political exclusion of the young becomes more pronounced.

Notes

1. Figures based on the Comparative Study of Electoral Systems 2018, wave 3 to 4.
2. Own calculation based on Kiesraad (2017). Votes are counted as wasted if neither casted for a party that won seats nor for the first loser.
3. As this study is interested in explaining the likelihood to make decisions that impact who wins, we include the first loser as a valid vote option. Instead, we do not follow "non-Duvergerian" definitions (Fisher 2004, 156) coding all votes for other actors than the winning party as wasted, because such a conceptionalization is best suited to study how votes translate into seats.
4. A small set of studies indicates that older voters also have a higher capacity to assess the viability of candidates correctly, because repeated participation in electoral contests creates a learning process that enhances the capacity to vote tactically (Tavits and Annus 2006; Lago and Martínez i Coma 2012). However, we follow the reasoning of Norris (1999, 2005), who provides solid evidence that voters' capacity to assess the viability of candidates is independent of their age.
5. For Germany, we only analyse votes for the first, majoritarian tier, but not the second, proportional tier.
6. We selected the last two elections covered by the CSES. These include: Germany (2009, 2013), France (2007, 2012), Great Britain (2005, 2015).
7. Including a presidential election provides an additional robustness test for our evidence, since voters' rationales seem to vary over different types of elections. Protest voting tends to be higher in the 1st round of presidential elections, e.g. 2002 French presidential elections, while there is also evidence that winning parties tend to overperform in parliamentary elections (Magni-Berton and Robert 2017).
8. All replication files are available online (<https://doi.org/10.7910/DVN/3YVOSM>). Appendix 1 presents summary statistics of all variables used in the analyses.
9. We calculated several robustness tests in Appendix 2 adding the (incomplete) information about the level of education as a continuous scale (Test 2), a nominally scaled variable (Test 3) and as a continuous variable with a logarithmic form (Test 4). Neither adaption changes the findings as presented in the text.

10. In Appendix 2, Test 5 provides a robustness test using age instead of cohort; Test 6 tests for a curvilinear relationship between cohort and the likelihood to waste a vote. The direction and statistical significance of the effect of age do not change.
11. Even though political knowledge is closely linked to education (and gender), these variables display moderate correlations in our data (for education Pearson's $R=0.22$; for gender Pearson's $R=-0.21$). The variance inflation factor (based on Model 1 below) indicates that little variation in these two variables of interest can be explained through political knowledge and the remaining variables (for education $VIF=1.64$, for gender $VIF=2.13$), making us confident that we can include all three variables into one model.
12. Even though this ex-post measure induces some error if perceptions differ from actual vote outcomes, it appears to be the best choice given that information on actual perceptions is not available and polling plays a secondary role for the perceived chances of candidates at the district-level (Blais and Bodet 2006).
13. The CSES asks respondents to rate each party according to their preference for it. We identified the party reaching the highest support value per respondent and separate respondents according to the success chances of this party. Voters who state to like minor and major parties equally are included in Model 2 and 3. This ensures a high robustness of our findings, given that the effects are probably stronger for citizens with a clear preference for a single (minor or major) party than for those indifferent between two choices.
14. In Germany, 24.2% of those born after 1990 vote for the Greens, but only 18.9% of those born between 1980 and 1990. In the UK, the 7.4% of the voters belonging to the youngest cohort support the Greens, but only 4.3% of the second youngest cohort. In both countries, the vote shares continue to decrease consistently with age. For France, the data does not include separate vote shares for this party family.
15. In additional models in the Appendix, we also cluster the standard errors at the district-level using a multi-level logistic regression model with voters nested in districts and regions (Test 8 in Appendix 2). This does not change the findings as discussed above.

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No potential conflict of interest was reported by the author(s).

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