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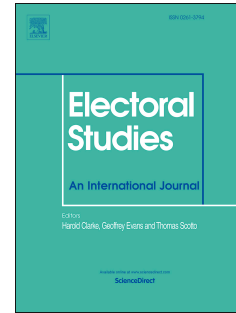
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Multi-dimensional Policy Preferences in the 2015 British General Election: A Conjoint Analysis

Abstract

This research explores voter preferences in the multi-dimensional policy space of the 2015 UK general election, as well as the influence of those preferences on vote choice. In our original pre-election survey, we apply a conjoint experimental design where we use actual party manifestos to examine voters' policy preferences across five main policy domains. This design allows us to both identify voters' sincere preferences, as estimated by their responses to hypothetical policy packages, and to reveal the influence of these preferences on voter support in the actual election. Our analysis reveals a considerable level of congruence between voters' underlying policy preferences and their vote choice in the 2015 election. Our results also speak to the previous literature on policy preferences and vote choice by demonstrating that voters not only weigh the importance of particular policy domains differently, but also have clear preferences regarding specific policy positions in a given domain, which eventually influence their support for a party in the election.

Keywords

Policy preferences; conjoint analysis; United Kingdom

1. Introduction

Do voters care about parties' policy positions? To what extent do voters make decisions at the polls according to their policy preferences versus other non-policy considerations? These are the core questions tapping the key assumptions in one of the most predominant theories on electoral competition and voting behavior. On the one hand, in the tradition of spatial theory of electoral competition, voters are assumed to have well-defined policy preferences and make voting decisions by grasping the policies that political parties propose during an electoral campaign (e.g., Downs, 1957; Adams et al., 2005). On the other hand, non-policy considerations such as party image, party competency, and overall evaluations of government performance play an important role in voters' decisions in other theories, such as the so-called "valence voting" or "issue competence" model (e.g., Stokes, 1992; Clarke et al., 2011). Given this, understanding voters' awareness of and responses to parties' policy position-taking is of crucial importance, as these are foundational mechanisms for the electoral competition of parties (e.g., Ezrow et al., 2011; Klüver and Spoon, 2016), its consequences (e.g., Huber and Powell, 1994; Powell, 2000), and, ultimately, the functioning of representative democracies.

This paper is one such effort. In particular, we assess voter responses to policy issues in the 2015 UK general election, using an original pre-electoral survey with an embedded conjoint experiment. In the specific election under investigation, the Conservative Party won a parliamentary majority, and the UK Independence Party (UKIP) enjoyed increased support in the popular vote. Within this context, different theoretical approaches provide distinct perspectives on the role of policy preferences in vote choice. However, we argue that there are several critical limitations when using the typical survey questions to measure the core

concepts of these theories. These limitations include the endogeneity problem (or the possibility of reverse causality), whereby vote choice (the outcome) could also influence the core explanatory variables, such as the perceived policy positions of parties (e.g., in the spatial model of voting) and the evaluation of parties' issue competencies (e.g., in the issue competence model). Moreover, there are limitations to exploring policy preferences and vote choice using survey questions, most notably vis-à-vis the multidimensional policy preferences underlying a voter's single choice. In every election, political parties propose policies as a package in the form of party manifestos, and it is likely that voters respond to multiple policy concerns when evaluating the policy packages.

In this article, we explore the multidimensional structure of voter policy preferences and its relationship to vote choice. First, we investigate whether voters respond to policies presented outside the context of real-world party politics (i.e., without party labels), and if so, to what extent those underlying policy preferences are reflected in actual vote choices in the 2015 general election. Second, we rank-order the popularity of policy packages proposed by major parties and assess the importance of that popularity for each party's electoral performance. We examine different sub-groups of voters and investigate the differences and similarities in their policy preferences. Finally, our analyses also examine whether voters prefer the policy package proposed by the party they intended to support over the packages proposed by other parties.

To carry out this analysis, we use a conjoint survey experiment that allows us to estimate the relative importance of individual policy positions in various policy domains, as well as which policies are particularly influential for electoral support among specific subsets of voters. For our conjoint survey experiment, we constructed a set of major issues during the

election period using news coverage and party manifestos. We then presented survey respondents with two hypothetical policy packages randomly constructed from policy positions on the major issues and asked them to choose their preferred policy package.

Our conjoint design is analogous to the design implemented by Horiuchi, Smith and Yamamoto (2018) for the 2014 general election in Japan, in the sense that the policy components used to build up hypothetical policy packages in the experiment are derived from actual party manifestos. Their analyses concluded that policy preferences mattered little for voters' choice in the election: the Liberal Democratic Party of Japan, a governing party that enjoyed a decisive victory, had proposed a policy package that turned out to be one of the least popular among the general electorate. We find a quite different story in the UK 2015 general election: there is considerable congruence between voters' preferences for party policy packages and their vote choices. In particular, supporters of the parties with the three largest vote shares – the Conservatives, Labour, and UKIP – clearly preferred the policy package of the party for which they intended to vote.

In the following two sections, we provide a brief description of the context of the election and discuss how the insights from our conjoint analysis compare to the way existing theories would interpret the election results. By highlighting the potential shortcomings of conventional survey-based approaches, our research shows how conjoint experiments can be an effective tool for advancing our understanding of the role of voters' policy preferences. In Section 4, we document the methodology used for our conjoint design. We then discuss the results and implications, focusing on the similarities and differences between conventional survey data analysis and our conjoint analysis in order to push forward our understanding of voters' decision making in the 2015 British election.

2. The 2015 British General Election

The UK 2015 general election was held on May 7, 2015 after the scheduled end-of-term dissolution of Parliament. The Conservatives won enough votes to secure the outright majority of seats – 36.1 percent of votes, with a decisive margin of 7.1 percentage points over Labour. The UK Independence Party (UKIP) placed third, with 12.6 percent of votes, although it secured only one seat due to the party's geographically dispersed support and lack of resources (Cutts et al., 2017). The Scottish National Party (SNP), which placed fourth overall, swept the Scottish constituencies, winning more than 95 percent of the seats allocated to Scotland.

Two major political events in 2014 foreshadowed the electoral success of the SNP and UKIP. The first was the Scottish referendum for independence. Although the 'No' side won by a narrow margin, the result manifested the growing support for the SNP (Fieldhouse and Prosser, 2018). The second was the breakthrough of UKIP in the 2014 European Parliamentary election, where the party surpassed the two major parties to win a plurality in votes and seats. The growing Euroskeptic sentiments among voters hinted that immigration and the UK's EU membership would become the central issues of the 2015 general election.

On the other hand, the electoral success of the Conservative party was surprising to many. During the campaign period, opinion polls indicated that the competition between Labour and the Conservatives was too close to predict the winner, and it was thus expected that the election would likely result in another hung parliament. Among the twelve articles submitted for a special issue of *Electoral Studies* focused on forecasts for the general election, only a bare majority of seven predicted that the Conservatives would be the plurality

winner, and none predicted a single-party majority for either of the two major parties (Fisher and Lewis-Beck, 2015).

3. Voter Preferences and Vote Choice

There are several possible ways to explain this election outcome, especially in relation to the role of voters' policy preference and vote choice. First, the traditional spatial models of voting assume that voters have a uniquely defined preference ordering across the variety of policy options suggested by different political parties. According to this theory, the 2015 election result would be an aggregate expression of voters' general policy preferences, since voters would support a party based on their own calculation of the proximity between their own positions and those of the parties (Downs 1957, Adams et al. 2005). Second, the issue competence model – perhaps a more prominent model of voting in the British context – emphasizes the decisive role of party issue competencies (Green and Jennings, 2017).

Unlike spatial models, which emphasize 'pro-con' positions in relation to which voters line up on the same policy space, the competence model claims that images of parties' issue competencies are an important determinant of vote choice, and that a party's competence image is formed by several factors – such as the party's perceived competence to handle important issue(s) at the time of an election, voters' evaluation of the party's previous performance in the government, and party leader image (Clark et al. 2009, 2011). The issue competence theorists would therefore interpret the success of the Conservative party, for

example, as attributable to its perceived economic competency, and the success of UKIP to its perceived strength in dealing with immigration.¹

The validity of these arguments has been empirically tested using election surveys. The typical way of testing the special model has been to use survey questions that capture a respondent's position on various issues, the position of parties on the relevant issues (either perceived by the respondent or measured in a more objective way, e.g., using party manifestos), and her vote choice. The competence model has also been extensively tested using survey questions about the most important issue facing the country (MII), and which party a respondent considers best able to handle the issue (BPI) (Clarke et al., 2009, 2011; Sanders et al., 2011).²

These theories and empirical tests provide distinctive perspectives on the relationship between policy preferences and vote choice. However, using survey questions to validate their core arguments on the role of policy preference in determining vote choice presents important limitations. Here we address potential limitations of the typical survey questions and demonstrate how conjoint experiments could advance our understanding of voters'

¹ For example, Tonge and Geddes (2015: 256) remarked: "the Conservative election victory in 2015 [...] was due to two principal factors; greater economic trust invested in the party compared with Labour and, in David Cameron, possession of a leader seen as far more Prime Ministerial than his Labour counterpart."

² Some scholars incorporate certain aspects of party position-taking into the competence model such that competence can both be about valence issues and positional issues, and that a voter would not support a party that is known to be competent on an issue when the voter disagrees with the party's position (e.g., Green and Jennings, 2017; Pardos-Prado, 2012). Nevertheless, the main argument of the competence model is still based on the issue ownership theory that emphasizes the image of parties' "competence" on a certain issue more than parties' actual position taking. And the issue that the parties' competence matters is typically valence issues where there exists a widespread consensus among the public upon the desired policy outcomes – such as the economy and corruption (Stokes 1992).

policy preferences and vote choice, as well as address the shortcomings of the traditional survey questions.³

First, employing survey questions can create issues with endogeneity. For example, the typical research design for the spatial or competence models of voting measures the outcome choice variable (e.g., party support or vote choice) separately from the main explanatory variable (i.e., the policy proximity between a voter and parties' policy positions for the former case, and the voters' evaluation of parties' issue competence or valence images for the latter). In doing so, the explanatory variables may actually be endogenous to voters' party support, such that respondents may place the policy position of the party they support as being closer to their own, and they may more favorably evaluate the competence or images of their preferred party.

To take an example from the 2015 British Election Survey (BES),⁴ there is very high overlap between the BPI and vote intention: more than 80 percent of the BES respondents stated that they would vote for the party that they reported to be most capable of handling their most important problem. Despite the strong correspondence between BPI and vote intention, explaining an election outcome based on this relationship is nevertheless problematic, as the high level of correspondence does not necessarily mean that voters' trust in a party's competence actually led them to vote for the party. Voters may not have firm opinions about issues and political parties' issue competency (Wagner and Zeglovits, 2014)

³ Although this study eventually aims to tell whether and how policy preferences influence vote choice with findings from our conjoint experiment, it should be made clear that it is not our goal to assess these theories as such.

⁴ We use the MII and BPI questions from the 2015 British Election Study (Wave 5 of the 2014-2017 British Election Survey Internet Panel), fielded during the campaign period.

and the high level of correlation cannot rule out a reverse causality or endogeneity explanation.⁵ It is also likely that there are common causes for the BPI and vote intention, such that respondents' partisan attachment drives both the vote choice and the perception of the BPI. This problem could also be present for the spatial voting models, such that survey respondents who have already decided which party to vote for might perceive the party's policy position closer to hers, or that her partisan attachment drives both the vote choice and her perception of party policy positions.

In the face of such concerns, conjoint experiments provide several features that, by design, make our inferences about the role of policy preferences less vulnerable. First, respondents in the conjoint experiment are presented with two hypothetical policy packages and asked to choose the one they prefer. And the hypothetical packages in our conjoint design are composed of randomly selected policy positions. This makes the packages highly unlikely to be identical to any of the actual policy packages provided by political parties in the real world. Therefore, respondents are forced to express their preferences upon the evaluation of policies in an anonymized, party-label free context, detaching their responses from other considerations (see Section 4 for more details).

Second, traditional approaches to exploring policy preferences and vote choice using survey questions are limited in their ability to reflect multidimensional policy preferences. In every election, parties propose policies as a package in the form of party manifestos, and voters make a discrete choice whether to support the party. However, that does not necessarily

⁵ Moreover, individuals may interpret the meaning of 'importance' in the MII question differently (Johns, 2010).

mean that a given voter approves of all of the policies proposed by her preferred party.

Rather, it is more likely that the voter likes her preferred party's policy on some issues, but not on others. If this is the case, it is important to uncover the differential role of each policy in attracting votes for the party, as well as the heterogeneity of voters' multidimensional preferences across different voter groups.

Yet exploring such multidimensional nature of preferences is difficult with the traditional, survey-question approaches. For example, within the framework of spatial models, the proximity between a voter and a party can be measured on multiple issue dimensions. But the proximity on each policy issue then needs to be aggregated to represent the voter's overall utility for each party. In this process, it is almost impossible to reveal the effect of a particular policy in competition with other policies in the same package without imposing arbitrary weights across issues (see Horiuchi et al., 2018 for a formal representation of this problem). This limitation is more apparent when it comes to the issue competence models, as they typically focus on only one issue: namely, the one that is perceived to be the most important one in the survey.

Here again, however, conjoint experiments offer a route forward, with the potential to advance our understanding of policy preferences and vote choices by accounting for the multidimensional structure of policy preferences. During electoral campaign periods, parties propose bundled policy packages and voters respond to the proposals by making a single vote choice – and this is exactly the context in which our respondents express preferences in the conjoint experiment. And our subsequent analysis of conjoint experiments allows us to simultaneously identify both the weight of issue area(s) (i.e., the importance of issue

domains for vote choice) and the popularity of specific policy positions within a policy area for different groups of voters.

4. The Conjoint Experiment

To explore the multidimensional policy preferences of UK voters and their relations with vote choices, we implemented a conjoint survey design developed by Hainmueller, Hopkins and Yamamoto (2014). The survey was carried out from April 30 to May 4, 2015, the week before the election. We recruited respondents from the Survey Sampling International's Online Panel, matching census demographics on gender and age to the adult population of the UK (N=1,394).⁶ Below, we first provide a brief overview of the methodology and then explain its application to the present study.

4.1. Methodology

A conjoint design in survey experiments is a powerful tool to study how different *attributes* of some objects will influence the choice of individuals. For instance, consumer behavior research often simulates choice environments by presenting a list of attributes of a product (e.g., color, size, and make of cars) with different *levels* for each attribute (e.g., red, yellow or black for the color, and compact or midsize for the size attribute of a car) to participants in the experiments. The attributes and their levels together construct a profile of a (hypothetical) product (e.g., a red, mid-sized Ford), and the participants are asked to make a

⁶ While our sample is not a probability sample, the sample is roughly representative of the general population in terms of basic demographics and partisan composition demonstrated in the popular vote share in the 2015 general election. The sample's characteristics are also very similar to those found in a large-scale representative sample used in the British Election Study (BES). See Table A for the comparison of sample characteristics between the SSI sample and the BES Wave 5 (core) of the 2014-2017 panel survey.

choice among the multiple (hypothetical) products or rate their preferences for each of the products. Analyzing these outcome choices or ratings, conjoint experiments allow us to detect the extent to which different attributes and levels influence the choice of products. Because of its intuitive design and ease of application, conjoint design has also been widely used in political science research to examine numerous topics, such as: support for immigrants' naturalization applications (Hainmueller and Hopkins, 2015; Hainmueller et al., 2015); evaluations of incumbent legislators (Vivyan and Wagner, 2016); preferences for presidential candidates (Hainmueller et al., 2014); and voters' evaluations of party policy platforms (Horiuchi et al., 2018).

To estimate causal effects from conjoint surveys, Hainmueller, Hopkins and Yamamoto (2014) propose a randomized conjoint design where levels of each attribute are randomly displayed. This setup is particularly advantageous for a complex experimental design, where the effects of multiple attributes with multiple levels should be tested simultaneously.

There are a multitude of ways to present profiles and to measure outcome variables in conjoint experiments. In this study, we use the paired profile with forced choice conjoint design, where respondents are shown two bundled policy packages in a table and are asked to choose their preferred package.⁷ With this design, we estimate causal effects with the Average Marginal Component Effect (AMCE), the marginal effect of each component in the treatment against a baseline. When the treatment is fully randomized, which is the case in our study, the AMCE can be estimated simply using linear regressions with all

⁷ This paired profile design is known to outperform other designs (e.g., single profile design) both in replicating actual decision-making processes and reproducing the substantive effects of attributes observed in the real world (Hainmueller et al., 2015).

components (multiple levels of various attributes) included as dummy variables. In our paired profile design, we anonymize the names of parties for policy positions – i.e., respondents express their preferences regarding the two hypothetical policy packages without knowing the source of the policy positions. Therefore, the estimated effects (i.e., the importance of policy preferences on vote) are constructed independently of vote intention and voters' valence attached to a specific party.

4.2. Selection of Conjoint Items

We use actual election manifestos to construct the attributes and levels of conjoint items, analogous to Horiuchi, Smith and Yamamoto's (2017) study of the 2015 Japanese general election. We collected news articles about election campaigns to select attributes and levels (i.e., policy domains and contents) to be included in our conjoint design. Specifically, we used summaries of party positions and policy discussions published in major news outlets in the UK: the Guardian, the Economist, the Telegraph and the BBC.⁸ After crosschecking whether these summarized positions correctly represented actual proposals by parties, we created annotated summaries of parties' policy positions. We limited the number of attributes to five, namely: the Economy and Government Deficits, Jobs, Immigration, the EU, and Education. In doing so, we excluded some issues where the policy differences between parties were unclear. We obtained the policy positions of the major contenders in England – the Conservatives, Labour, Liberal Democrats, UKIP, and Greens – to construct

⁸ Below are the web links (accessed in April, 2015):

- <http://www.telegraph.co.uk/news/general-election-2015/11552253/Policy-comparison-summary.html>
- <http://www.bbc.com/news/election/2015/manifesto-guide>
- <http://www.economist.com/ukelection2015/>
- <http://www.theguardian.com/politics/ng-interactive/2015/apr/22/election-2015-what-do-the-party-policies-offer-you>

conjoint items.⁹ Table 1 lays out the specifics of our conjoint design, listing all of the policy issues (attributes), the policy positions (levels) for each policy issue, and the political parties with corresponding policy positions.

Table 1. Attributes and Levels in Conjoint Design

Issue	Position in Manifesto	Party
Economy	Eliminate the deficit during the next parliament	Cons, Lab, Libdem, UKIP
	End austerity and reverse public sector cuts	Greens, (SNP)
Jobs	Extend apprenticeships and vocational training	Cons, Libdem
	Prioritise British citizens for jobs	UKIP
	Increase minimum wage	Labs, Greens, (SNP)
Immigration	Four-year wait before EU migrants can claim benefits	Cons
	Introduce point system to select skilled migrants. Five-year wait before migrants can claim benefits.	UKIP
	Progressively remove migration controls	Greens
	Restore full entry and exit border checks	Libdem
	Two-year wait before EU migrants can claim benefits	Lab
EU	Hold a referendum on Britain's EU membership	Cons, Greens
	Leave the EU	UKIP
	Reform the EU and keep Britain in it	Lab, Libdem, (SNP)
Education	Create more free schools	Libdem, Cons
	Cut university tuition fees by a third	Lab
	No university tuition fees for all students	Greens
	No university tuition fees for natural science students	UKIP

Note: The table contains the positions of five parties. When SNP positions are close to one of these policy items, we include its name in parentheses.

⁹ The SNP is excluded because its policy positions on several issues were only applicable to the residents of Scotland (such as its pledge on immigration policies to 'Support immigration policies that meet Scotland's economic needs'). In addition, although the party was expected to significantly increase its seats in the Parliament, less than ten percent of the population resides in constituencies with SNP candidates.

In the survey, respondents were presented with a table containing two hypothetical parties' policy positions across the five policy domains and asked to choose their preferred policy package among the two. The respondents repeated this task four times. In each round, a policy position (level) belonging to each attribute was randomly selected. The order of the five policy domains (attributes) shown in the table was randomized at the individual respondent level. Figure 1 presents an example of the conjoint tables from the survey.

Figure 1. An Example of Conjoint Table (Screenshot)

Suppose that two parties with the issue positions described below had nominated candidates in the general election. Which of these two candidates would you be most likely to vote for? Even if you are not entirely sure, please choose the one that you most prefer.

	Party A	Party B
EU	Leave the EU	Hold a referendum on Britain's EU membership
Jobs	Allow firms to prioritise British citizens for jobs	Extend apprenticeships and vocational training
Deficit and the economy	Eliminate the deficit during the next parliament	End austerity and reverse public sector cuts
Education	Create more free schools	No university tuition fees for natural science students
Immigration	Restore full entry and exit border checks	Four-year wait before EU migrants can claim benefits

Which candidate would you support?

Candidate from Party A



Candidate from Party B



5. Results

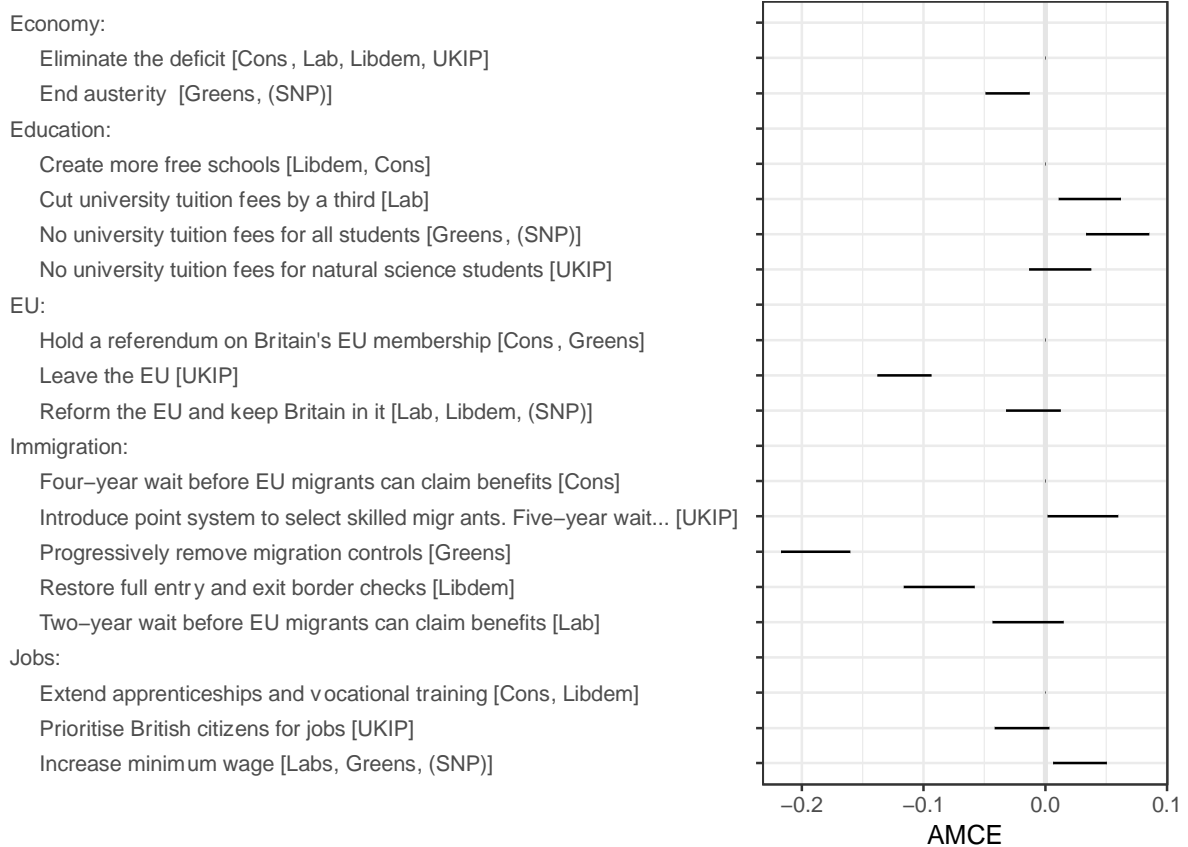
In this section we first show the AMCE for *all respondents* to identify the relative importance of the policy domains. We then examine the heterogeneity in AMCEs for different *groups of voters* (i.e., groups based on the party they intended to support in the general election) to account for the heterogeneity among the voter groups in the relative importance of policy domains and preferred policy positions. Lastly, we investigate the popularity of party policies based on the results from the second analysis.

5.1. Estimating the General Effects of Policy Positions

We first estimate the AMCE using responses from all survey participants. Figure 2 demonstrates the estimated effect of each policy position on vote intention (using `cjoint` package in R).¹⁰ We set the policy positions of the Conservatives as the baseline for all attributes, and estimate the AMCEs of other components against this baseline. In the Figure, we provide party names in square brackets, next to their corresponding policy positions. The dots indicate the point estimates and the solid horizontal lines indicate the 95 percent confidence intervals. A point estimate of a positive value with a confidence interval not crossing the zero line demonstrates that the policy position contributes to garnering significantly more votes against the baseline policy of the Conservatives in that policy domain.

¹⁰ Our results are robust against the use of population weight. We reproduced the main results (Figures 2 to 4) with the post-stratification weight calculated from the census age, gender, and education. See Online Appendix.

Figure 2. Average Effects of Policy Items on the Probability of Choosing a Hypothetical Manifesto



Note: The dots are the point estimates for the Average Marginal Component Effects (AMCE) of different policy positions on a respondent choosing the hypothetical party that takes the position. The horizontal lines indicate the 95-percent confidence intervals. The position of the Conservative party is the baseline in all five policy domains, and thus does not show confidence intervals.

The figure demonstrates that the estimated effects are negative for some policy positions and positive for others – namely, across all issue domains, we find significantly negative AMCEs in four policy positions and positive AMCEs in four other policy positions. However, the sizes of positive AMCEs tend to be smaller than those of negative ones. Given that we set the Conservatives' positions as the baseline, this indicates that the Conservatives' policy positions are, in general, more popular than the positions taken by other parties.

The AMCE estimates are significantly positive for two policy positions regarding university tuition cuts – one taken by Labour and the other by the Greens. This suggests that the reluctance to commit to a university tuition reduction may have been one of the factors that pushed some voters away from voting for the Conservative party and attracted them to opposition parties that advocated tuition reduction.

The effects of the education policy positions, however, are not as large as the impacts of other issues that might attract voters to the Conservative party, such as immigration and EU membership. These issues are typically thought to be the driving forces of UKIP's success in recent elections. However, our results suggest that UKIP's positions on these issues are actually very unpopular among the general public, in particular compared to the Conservatives'.

On the issue of immigration policy, voters in general prefer strict limitations on migrants' benefit claims by adjusting waiting periods, which corresponds to the Conservative party's position, to other types of restrictions suggested by the LibDems or the Greens (these two latter options are indeed highly unpopular). On the issue of the EU membership, the general public prefers either staying in the EU (with reforms to improve conditions in favor of the UK) or having a referendum. The UKIP is the only party that strongly urged exit from the EU, and this position is substantially divergent from the preference of the general public.

As such, the estimated AMCEs from the entire sample suggest the relative importance of policy domains and the popularity of various issue positions among the general public: the Conservatives' economic policy is more popular than its alternatives; voters like proposals

to reduce tuition fees in universities; and voter preferences regarding the EU and immigration seem to be more polarized than on other issues.

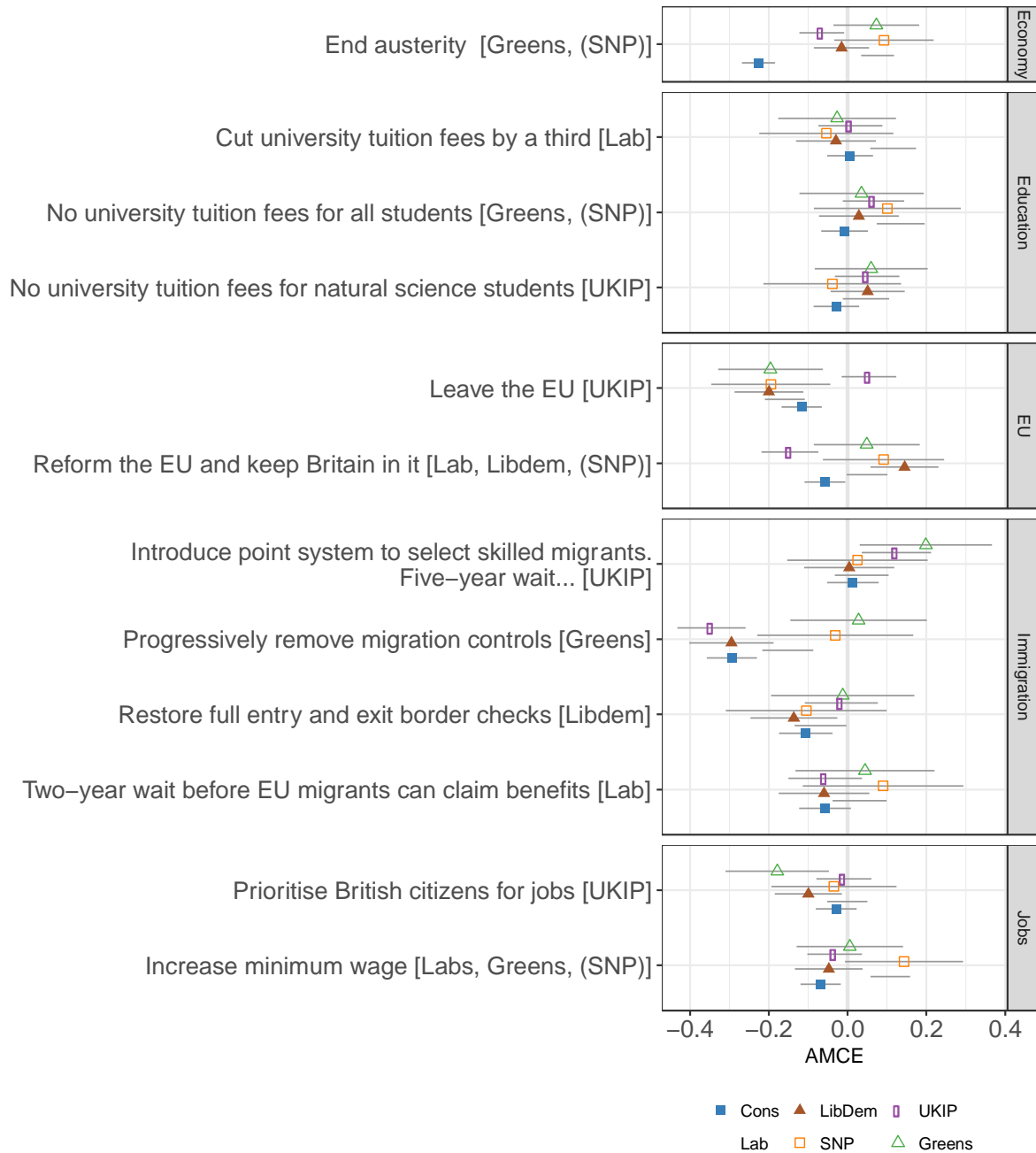
These general tendencies, however, do not allow us to uncover different policy preferences across different types of respondents. It is unrealistic to assume that respondents who support the Conservative party have a similar preference structure to the supporters of Labour or UKIP. Rather, it is more reasonable to expect that different types of respondents put different weight on the importance of each issue and that they have different preferred policy positions.

5.2. Exploring Heterogeneous Responses to Policy Positions Across Supporter Groups

To examine such heterogeneity of policy preferences, we analyze the conjoint experiments for each subset of respondents based on the political party they intended to support in the election (vote intention). We estimate the AMCEs separately for each sub-group. The estimates for each group's policy preferences are presented in Figure 3. There are six groups for the supporters of the six political parties, and the estimates and confidence intervals are presented for each group.¹¹ Similar to the analysis in the previous section, the baseline policy positions are the ones taken by the Conservative party (omitted from the figure).

¹¹ Hereafter we use 'party support' or 'electoral support' to indicate 'intended party support in the election' based on respondents' reported vote intention in the survey.

Figure 3. Heterogeneity in the Marginal Effects of Policy Preferences on Vote Choice Across Different Party Supporter Groups



Note: The symbols indicate the estimates for the Average Marginal Component Effects (AMCE) of different policy positions on the probability of choosing the party that takes the position. The horizontal lines indicate 95 percent confidence intervals. Models are run separately for each party's intended voters. Baseline policy positions (the Conservatives' positions) are not plotted.

The estimates indicate the extent to which a specific policy is preferred by each group, in comparison to the baseline policy position of the Conservative party. For example, the negative estimate for Conservative supporters on the alternative Economic policy ('End austerity', the position taken by the Greens and the SNP) indicates a strong negative reaction to the non-Conservative policy position compared to the position of the Conservative party ('Eliminate the deficit', omitted in the graph); meanwhile, the estimated marginal effects for other respondent groups do not really diverge from the baseline policy position (clustered around the zero line), although UKIP supporters are slightly negative and Labour supporters are slightly positive about this issue. This indicates that these voters are almost indifferent to the various positions in the Economic policy domain. A plausible inference from these two interpretations is that the economic issue itself is exceptionally important among the voters who intended to support the Conservative party, but all other respondents' preferences are more or less identical. Thus, the Conservatives' position on this issue is possibly one of the most important factors for the party's electoral success.

The results also demonstrate variations in the degree of heterogeneity across policy positions. For some policy positions, the preference structure seems to be rather homogeneous across groups – e.g., 'No university tuition fees for natural science students' in Education and 'Two-year wait before EU migrants can claim benefits' in Immigration. In other words, respondent groups' preferences are not particularly different across these policies (compared to the baseline), indicating that taking these positions (rather than the baseline one) does not particularly benefit or harm the parties.

In contrast, there are policy domains where we find considerable heterogeneity across supporter groups. As mentioned above, this is the case for the Conservatives' position on

economic policy. On the education policies, Labour supporters are strongly in favor of cutting university tuition fees – ‘Cut university tuition fees by a third’ (proposal by Labour) and ‘No university tuition fees for all students’ (proposal by the Greens) – compared to the baseline position. Supporters for other parties are mostly indifferent to various education policies, from cutting tuition to creating more “free schools”.

UKIP supporters are notably different from other groups in their preferred positions on the issues supposedly most relevant to them. On the EU membership issue, only UKIP supporters responded favorably to the ‘Leave the EU’ option (p-value = 0.064), and ‘Staying in the EU without a referendum’ is clearly an unpopular option for them. Furthermore, UKIP supporters are apparently in favor of the most stringent restrictions on EU immigrants (‘Introduce point system to select skilled migrants, with five-year wait period’). The results indicate that it is with these Eurosceptic and anti-immigration policies that UKIP successfully attracted its core supporters (c.f. Dennison and Goodwin, 2017). UKIP’s position on employment also reflects their concerns about immigration (‘Jobs: Prioritise British citizens for jobs’), but this position is not notably more popular – even among UKIP supporters – than the baseline policy.

Another post-hoc implication from these results is that the demand for an EU referendum among UK voters was not as strong as the option of reforming the EU and staying in it, and the ‘Leave EU’ option did not attract voters outside of UKIP supporters. Additionally, the Conservatives’ promise to hold an EU membership referendum was not particularly attractive to non-UKIP voters compared to the EU reform option. Instead, our analysis shows that there was widespread support for stricter migration control, and this might be

one of the keys to understanding the outcome of the British referendum on EU membership, held a year after the general election (Hobolt, 2016).

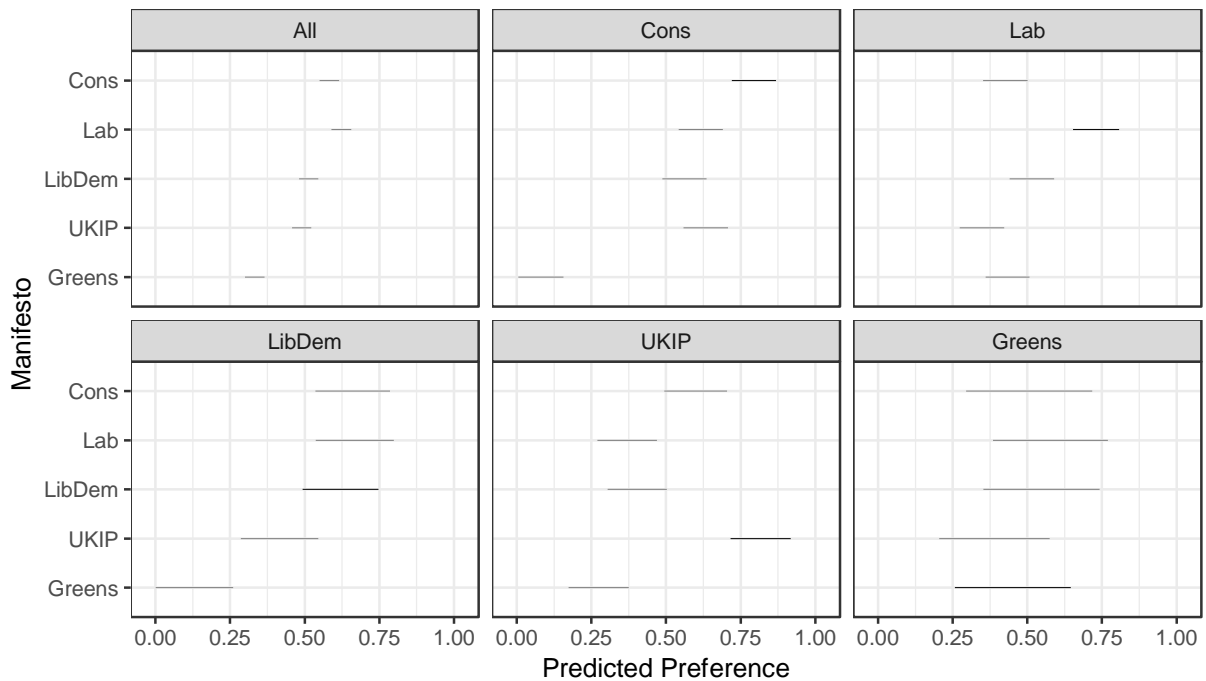
5.3. Preference Regarding Actual Party Manifestos

The analysis in Section 5.2 illustrated the heterogeneity in policy preferences across different party supporter groups. How does this preference heterogeneity translate into preferences for the *actual policy packages of parties* across different supporter groups? In other words, did Labour supporters, for example, prefer the policy package proposed by the Labour party over those of other parties? If the answer to this question is yes, it would suggest the face validity of the conjoint experiment.

To explore preferences regarding actual party manifestos, we first compute the predicted utility of each party's policy package as a bundle, using the estimates for individual policy positions from the sub-group analyses in Section 5.2. The predicted utility is simply calculated from the estimated linear model for the ACME of different voter groups, by inputting each party's actual policy package into the equation. Figure 4 shows the rank-ordering results. The party policy manifestos are arrayed on the y-axis and the dots indicate the level of preference for the corresponding party, with the 95 percent confidence intervals of the predicted utility. The larger the predicted values, the higher the utility voters get from the party's policy package. If there is no overlap between the confidence intervals for two predictions, difference in utilities between two manifestos is significant. There are six panels

in the figure – one for the preference of party manifestos among all respondents, and the remaining five for different party supporter groups.¹²

Figure 4. Popularity of Parties' Policy Packages by Vote Intention



Note: Each panel presents the results for a group of party supporters, except for the top left panel, which is for the general public (i.e., all respondents combined). The dots indicate predicted utility of the party manifestos and the horizontal lines indicate 95 confidence intervals. The black dots indicate the preference for the party each voter group intends to support.

The rank-order structure of the preferences for party policy packages varies across supporter groups, but in a sensible way. In general, party manifesto preferences and intended party support correspond. The proposed manifestos of the Conservatives, Labour, and UKIP are most liked by their own supporters. Particularly for Labour and UKIP supporters, the policy

¹² Since the SNP's positions are missing in several issue domains, we focus on the other five parties only.

package proposed by the party they intended to support is by far more attractive than the packages proposed by competing parties.

The supporters of the Liberal Democrats like that party's manifesto as much as that of the Labour and Conservative parties. The Liberal Democrats had failed to show their presence in the coalition government (Cutts and Russell, 2015), and again seemed to fail to differentiate their policy package from other parties (particularly the two major parties) in this campaign period. The results for the Greens are inconclusive, as the popularity of the Green Party's policy package among the party's supporters is not discernable from those of other parties'. This is partly attributed to the fact that their core policy area, the environment, is excluded from the conjoint design, and partly due to the small number of intended voters (which leads to wider confidence intervals around the estimates).

Lastly, the overall rank-order of party manifestos (top left panel) indicates that while the Conservatives' policy package is one of the two most preferred policy packages among the voters in general, it is not necessarily outstanding; the difference between the utility from Labour and Conservative popularity is not statistically significant at the 95% level. This opens up the possibility that the Conservatives' victory might not be solely attributable to the attractiveness of their policy package.

5.4. Validity Check

The particular conjoint design employed has important advantages over the typical survey questions used to study voter preferences and how they relate to voting decisions. By asking respondents to express their policy preference based on the whole policy package of hypothetical parties – as they would in a real-world election – the design jointly measures

how important each issue is for respondents in the choice of a hypothetical party, as well as which position on each issue is preferable compared to other positions. As Horiuchi et al. (2018) also point out, this particular feature helps to isolate voters' policy preferences from other factors – such as party labels – that may affect voters' decisions in elections.

The validity of the conjoint experiment thus relies on the assumption that respondents' choices are based on a comparison of the hypothetical policy packages, and not other considerations such as party attachment or vote intention. For example, if a respondent noticed that some of the policies shown to her (e.g., increase minimum wage) are the ones that her preferred party had advocated (e.g., Labour Party) and chose on that basis to support the package, then the subsequent results are contaminated by her attachment to the party and do not properly isolate her policy preference from the effect of party labels.

While such contamination is possible, there are several reasons to believe that it is unlikely to significantly threaten the validity of the results. In our randomized design, only less than three percent of the hypothetical packages shown to respondents are identical to real policy packages, and the rest of the hypothetical packages combine policies from two or more parties. If a respondent is sufficiently well informed politically to know that a policy belongs to a specific party, she would also be able to notice that other policies in the same hypothetical package do not belong to that party. If this is the case, the respondent would have to express her preferred policy package based on her policy preferences rather than other considerations.

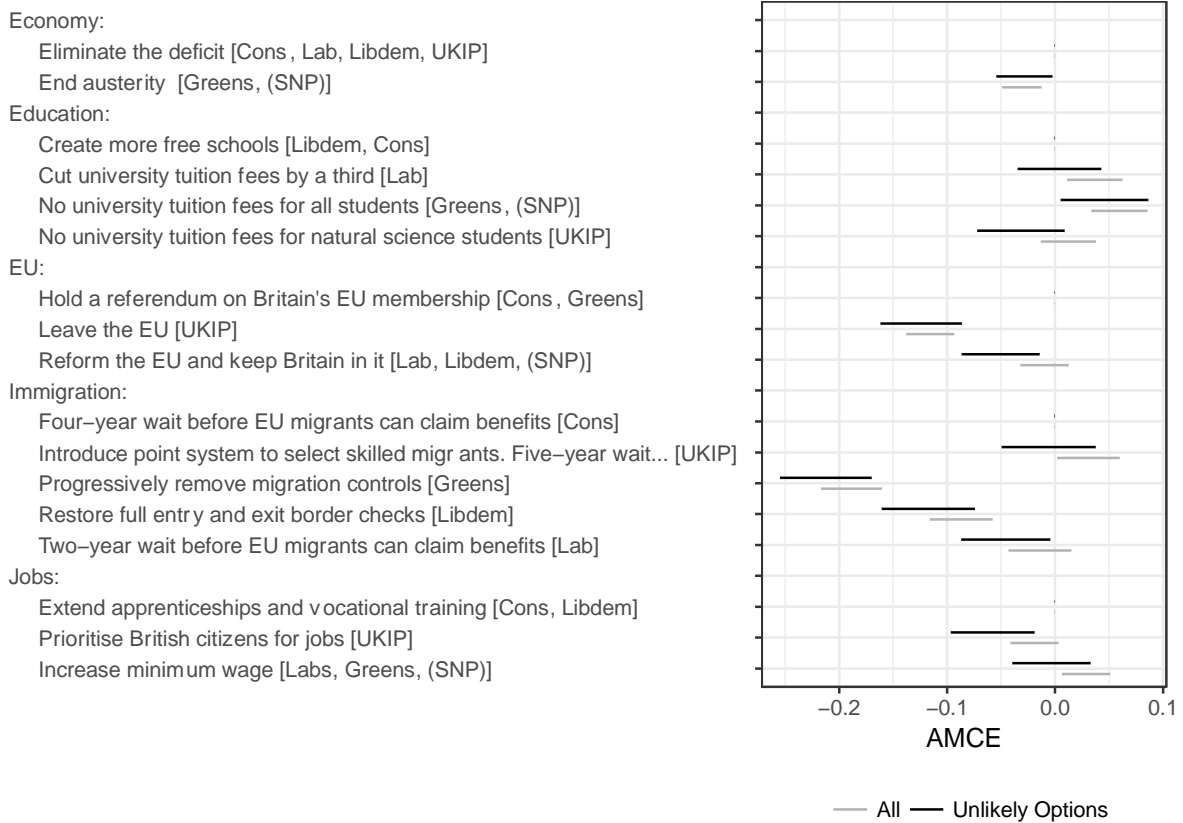
To address this validity concern empirically, we conduct an additional analysis using a subset of “highly unlikely profiles” from the data, where “highly unlikely profiles” are those

that contain at least one Labour and one Conservative policy proposal out of the four policy areas (excluding Economy, where these two parties' positions are not distinguishable in our conjoint design). The analysis includes roughly fifty percent of the sample.¹³ We assume that if this sub-sample analysis returns significantly different results from those illustrated in Figure 2, the resemblance of hypothetical policy profiles to real ones can alter respondents' evaluations. For instance, those who are presented with "highly unlikely profiles" might be more apt than other respondents to make choices based solely on policy preferences; respondents presented with profiles similar to real ones, by contrast, could be motivated by partisan predispositions if they recognize that a profile is sufficiently similar to a manifesto from the party they support or oppose. If the results are not significantly different, however, this would suggest that these sorts of non-policy considerations are not a major threat to the reliability of our policy preference estimates.

Figure 5 shows the findings from this subset analysis, along with the original estimates with the full sample. As the figure illustrates, the results do not show any strong evidence of contamination: none of the estimates from the "highly unlikely" sample are significantly different from the full sample estimates.

¹³ The test procedure is similar to Horiuchi, Smith, and Yamamoto (2018, 17) but we employ a more conservative criterion for the highly unlikely profiles. They defined highly unlikely bundles as those that contain at least one position from both the governing party and the three leftist opposition parties on their four divisive policy areas, leaving 74% of all possible bundles as being highly unlikely.

Figure 5. Average Effects of Policy Items on the Probability of Choosing a Hypothetical Manifesto for Highly Unlikely Profiles



Note: The dots are the point estimates for the Average Marginal Component Effects (AMCE) of different policy positions on a respondent choosing the hypothetical party that takes the position. The horizontal lines indicate the 95-percent confidence intervals. The full sample estimates, same as Figure 2, are presented in gray for comparison.

6. Discussions and Conclusion

In this article, we explored voter preferences regarding party policy proposals in the 2015 UK general election, as well as the relationship between those preferences and vote choice. The empirical results from our conjoint experiment are suggestive of well-defined policy preferences in the multidimensional policy space facing UK voters leading up to the 2015

general election. They also suggest that this preference structure differs across groups of party supporters, and that this heterogeneity at least partly explains vote choice: for most voters, the most preferred policy package was the policy package of the party they intended to support. This general finding – a broader correspondence between policy package preferences and vote intention – indicates that what parties promise in the electoral campaign matters, and that voters do indeed respond to parties' policy promises in a rational way.

Given this finding, the UK electorate in general appears capable of 'voting correctly' (Lau and Redlawsk, 1997). This contrasts with studies suggesting that a large portion of the electorate in many other countries fails to select a party that would best serve their interests, even in electoral contexts with a simple unidimensional policy space (Lau et al., 2014).

Lastly, an important lesson from this study is that the presence of electoral mandates need not be an assumption – it can, indeed, be the subject of empirical investigation. We find that the policy package of the winning Conservatives was actually quite popular among their supporters, and that this was also the case for other parties. Based on this finding, it seems reasonable to conclude that overall, there exists a considerable level of congruence between parties' policy proposals and their supporters' preferences, at least in the context of the 2015 UK general election. These findings are in stark contrast to the results from Horiuchi, Smith and Yamamoto (2018) on the 2014 general election in Japan, in which they found noticeable discrepancies between policy preferences and vote choice, leading them to conclude that a party's electoral victory does not necessarily guarantee that its supporters have given it an electoral mandate. In general, therefore, we should not presume the existence of electoral mandates – or lack thereof – without thoroughly examining the

multidimensionality of policy competition and the heterogeneity in voters' preference structure across diverse issues and policy positions. In this vein, conjoint design is a useful tool to obtain a more nuanced understanding of the matter.

ACCEPTED MANUSCRIPT

Appendix

Table A: Comparison of SSI and BES Samples

Variable	Mean SSI	Mean BES	Weighted Mean BES	N (SSI)	N (BES)	Min	Max
Age	46.737	48.773	46.420	1395	20614	16	93
Male	0.497	0.487	0.485	1395	20614	0	1
Education	3.834	3.676	3.598	1342	19930	1	5
Political interest	2.977	3.420	3.388	1226	20418	1	4
Party Identifier	0.809	0.800	0.805	1395	20614	0	1
<i>Proportion among party identifiers</i> [% popular vote in 2015]							
Conservative [36.8]	0.304	0.345	0.353	1127	16501	0	1
Labour [30.4]	0.324	0.362	0.383	1127	16501	0	1
LibDem [7.9]	0.091	0.096	0.117	1127	16501	0	1
SNP [4.7]	0.040	0.064	0.033	1127	16501	0	1
UKIP [12.6]	0.135	0.064	0.061	1127	16501	0	1
Green [3.6]	0.054	0.045	0.038	1127	16501	0	1

Note: For the BES, we use the wave 5 (core sample) of the 2014-2018 Internet Panel Study, which was administered in the similar period as our survey, and the weighting variable `w5core` to calculate weighted averages. “Interest in elections” question in the BES is used to make comparison with the typical “political interest” question in the SSI. Party Identification is a dichotomous variable where the value takes 1 when respondents are identified with any of political parties in the UK or think of themselves as closer to any of the parties.

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