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ABSTRACT

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A large theoretical and empirical literature explores whether politicians and political parties change their policy positions in response to voters' preferences. This paper asks the opposite question: do political parties affect public attitudes on important policy issues? Problems of reverse causality and omitted variable bias make this a difficult question to answer empirically. We study attitudes towards the signature policies of small parties in Sweden using panel data from 290 municipal election districts. To identify causal effects, we take advantage of large nonlinearities in the function which assigns council seats, comparing otherwise similar elections where one party either barely wins or loses an additional seat. We estimate that a one seat increase for the anti-nuclear party reduces support for nuclear energy in that municipality by 3.3 percentage points. In contrast, when an anti-immigration or far left politician gets elected, negative attitudes towards immigration decrease by 4.8 percentage points and support for a six hour workday falls by 3.2 percentage points, respectively, in opposition to each party's policy position. Mirroring these attitudinal changes, the anti-nuclear party receives more votes in the next election after gaining a seat, while the anti-immigrant and far left parties lose their incumbency advantage. Exploring two possible mechanisms, we find evidence that when the anti-immigrant party gains an extra seat, they draw in lower quality politicians and receive negative local newspaper coverage. These findings have important implications for the theory and estimation of how voter preferences enter into electoral and political economy models.

JEL Classification: D72, H70

Keywords: voter preferences, incumbency effects, media influence

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1 Introduction

A sizable theoretical and empirical literature explores whether politicians change their policy positions in response to voters' preferences. Building on the classic work of Downs (1957b), this research generally assumes voters' tastes are fixed, and theorizes that politicians trade off their own preferred policies with the probability of getting elected.[1] In this paper, we ask the reverse question: do political parties affect voters' attitudes on important policy issues? If voter preferences are not exogenous, but can be influenced by elected officials, this changes the calculus of political competition. Theoretical and empirical models which do not account for this endogeneity will be misspecified. More generally, whether those elected to positions of power have the ability to shape public attitudes is inherently important, independent of the implications for electoral models.

The power of political representation to shape public attitudes could arise if being elected provides politicians with a platform to express ideas and increased media attention. It is important to recognize, however, that this influence need not be positive for the party. A politician or a party's message could be placed under greater scrutiny after an election and the resulting debate could increase or decrease support for a party's policies. Ultimately, whether the ascension to political power results in the persuasion or alienation of voters is an empirical question.

The challenge is how to empirically identify causal effects. If voter attitudes depend on which parties are in power, and which political parties are in power depends on voter attitudes, there is an issue of reverse causality. While the possibility that politicians can influence voter preferences has been recognized theoretically, existing empirical work is scant and has not convincingly estimated causal effects.[2] The main contribution of this paper is to provide well-identified evidence on whether political representation affects public attitudes, along with an exploration of possible mechanisms.

Our analysis takes advantage of large nonlinearities in the way seats are assigned in Swedish elections. The average municipal council has 45 elected seats, with 8 main parties competing for these seats. Sweden uses a variant of the Sainte-Laguë method to allocate seats. While details of the method will be discussed later, the assignment of seats is a discontinuous

[1] For example, see Alesina (1988), Besley and Case (2003), Besley and Coate (1997), Calvert (1985), Downs (1957b), Fujiwara (2015), Lee, Moretti and Butler (2004), Levitt (1996), Persson, Roland and Tabellini (2007), Stratmann (2000), Strömberg (2004) and Washington (2008).

[2] See Dunleavy and Ward (1981, 1991), Gerber and Jackson (1993), Matsubayashi (2013), Stubager (2003) and Ward (2006). Downs himself mentions the possibility that voter preferences could be endogenous in his book: "though parties will move ideologically to adjust to the distribution [of voter preferences] under some circumstances, they will also attempt to move voters towards their own location, thus altering it" (1957a, p. 140).

function not only in a party's own vote total, but also in the mix of votes received by the other parties. Using a control function approach which has similarities to a univariate regression discontinuity, but allows for multiple running variables which interact to determine the cutoff, we compare otherwise similar elections where one party either barely wins or loses an additional seat. Using this threshold variation from many local quasi-experiments, we estimate whether gaining an additional seat on the municipal council changes local attitudes after the election.

The presence of small, issue-focused parties in Sweden provides an ideal setting for this identification approach. First, it is clear which public attitudes might be affected by a party which champions a specific policy reform. Second, the first or second seat won by a small party in a municipal election is likely to have a larger impact compared to, for example, the 15th or 16th seat for a larger party. We link attitudinal questions to the signature policies of three small parties: the abolition of nuclear energy and the Green Party, dramatically reduced immigration and the Sweden Democrats, and a six hour workday and the Left Party. While it would be interesting to study attitudinal shifts for other issues and parties, as we document, either the relevant attitudinal questions were not asked or the policies are not primarily associated with a single party.

For each of our policy issues, we find strong evidence that public attitudes are indeed affected by the election of a party championing an issue. The Green Party was formed in the eighties with a primary goal to shut down nuclear power plants in Sweden. We estimate that a one seat increase for the nascent Green Party reduces support for nuclear energy in that municipality by 3.3 percentage points, or 22% relative to the mean. Much of this change is accounted for by a change in the number of undecided individuals. This change in public attitudes has a reward at the ballot box, with a one seat increase leading to 8% more votes in the next election.

Our second party is the Sweden Democrats, which focused on sharply reducing the flow of immigrants into Sweden. When these politicians are elected, they reduce negative attitudes towards immigration, which is opposite the party's policy position. After the Sweden Democrats gain one more seat, negative attitudes towards immigration in the municipality decrease by 4.8 percentage points, or 9% relative to the mean. Consistent with this change in attitudes, the number of votes received by the party in the next election does not increase, wiping out any incumbency advantage.

Our third policy issue is the imposition of a six hour workday, as proposed by the Left Party. Formerly known as the Communist Party, this party has campaigned for the rights of workers since its inception, and in particular for a shorter, six hour workday. The election of an additional Left Party politician reduces support for a six hour workday by 3.2 percentage

points, or 6% relative to the mean. Mirroring this attitudinal change, the party loses their incumbency advantage in the next election.

The estimated effects are robust to a variety of alternative specifications, including the use of control functions of varying flexibility to isolate the jumps in elected seats, as well as a univariate regression discontinuity (RD) approach which reduces the multiple running variables to a single dimension. Using quasi-random variation arising from the election rules matters empirically. Naive OLS estimates lead to the mistaken conclusion that the Green Party and the Sweden Democrats do not change attitudes when they are elected and that the Left Party's effect is only modestly negative. OLS also estimates unreasonably large incumbency effects for all three parties.

We next explore two possible mechanisms for our findings. We first investigate whether marginally elected seats are filled with lower quality politicians, as measured by whether the seat is able to be filled with minimal turnover until the next election. Excessive turnover could be due to less committed politicians being assigned to a seat as well as forced and voluntary resignations related to internal party conflicts or pressure from the public.[3] Using the quasi-random variation from the election rules, we find the Sweden Democrats have more trouble keeping their seats filled, suggesting they had a relatively hard time finding quality politicians to serve. The same is not true of either the Green Party or the Left Party.

The second mechanism we explore is the influence of the media. Using a panel of 139 local and regional newspapers, we find causal evidence that the election of a Sweden Democrat politician increases their party's mention in local newspapers by 10%. Increased newspaper mentions for the other two parties are approximately half this size, but not estimated precisely enough to be statistically significant. More importantly, we find causal evidence that much of the post-election coverage of the Sweden Democrats is not favorable, with the negative words "racism" and "xenophobia" being mentioned in conjunction with the words "Sweden Democrat."[4]

Taken together, our results provide convincing evidence that politicians can in fact change public attitudes (and voting behavior), demonstrating that voter preferences are not fixed, but rather endogenous to political representation. Interestingly, politicians do not always sway voters to favor their preferred policies, and we find some evidence that the quality of a

[3]To cite two examples, one Sweden Democrat politician was expelled since he broke local election laws and failed to attend local council meetings (*Arbetarbladet*, October 28, 2014), while another was expelled after repeatedly posting racist statements on social media (*Eskilstunakuriren*, April 14, 2011).

[4]These empirical findings are consistent with interviews of newspaper editors and journalists by Häger (2012) who reports that many newspapers consciously chose to oppose the Sweden Democrats and their anti-immigration stance. For example, on election day in 2010, the front page of the newspaper *Expressen* was covered with a large "NO!" In the background was a crumpled ballot for the Sweden Democrats and a sentence which read "Today we vote for Sweden and against xenophobia."

politician and their treatment by the local media play a role in the direction of attitudinal changes. This has important implications for both how voter preferences should enter into political economy models and the estimation of those models. Forward-looking politicians should take this into account when calculating how to trade off preferred policies and the probability of both election and re-election. More broadly, our results point to the important influence those in positions of power have to change public opinion.

Our paper is related to a variety of additional literatures. It complements a growing set of papers dealing with (i) how prominent individuals or groups shape attitudes in other settings,[5] (ii) incumbency effects in both majoritarian and proportional election systems,[6] (iii) political representation and changes in public policy,[7] (iv) the influence of the media on voting behavior and political involvement,[8] and (v) the effect of media slant on public opinion.[9]

The remainder of the paper proceeds as follows. In Sections 2 and 3, we explain how local council seats are allocated and discuss our model and estimation approach. Sections 4 and 5 provide background information on the three policy issues and describe our various datasets. Section 6 presents our main results for changing attitudes along with a series of robustness checks. Section 7 reports incumbency effects. In Section 8, we explore two possible mechanisms for our findings. The final section concludes.

2 Swedish Elections

2.1 Local Municipal Councils

Our setting is local municipality elections in Sweden.[10] Municipalities are smaller than counties, but can encompass more than one city. There are currently 290 municipal councils across all of Sweden, with an average of approximately 45 seats to be filled in each council. The median number of citizens in a municipality is around 15,000 (mean $\cong$ 30,000), and

[5]Bassi and Rasul (2016), DellaVigna and Gentzkow (2010), Gabel and Scheve (2007) and Stroebel and van Benthem (2012).

[6]Ferraz and Finan (2008), Hirano and Snyder (2009), Lee (2008) and Liang (2013).

[7]Ferreira and Gyourko (2009), Folke (2014), Mullainathan and Washington (2009), Pettersson-Lidbom (2008) and Snowberg, Wolfers and Zitzewitz (2007).

[8]Drago, Nannicini and Sobbrio (2014), Gentzkow (2006), Gentzkow, Shapiro and Sinkinson (2011), Kendall, Nannicini and Trebbi (2015) and Snyder and Strömberg (2010).

[9]Chiang and Knight (2011), DellaVigna and Kaplan (2007), Adena, Enikolopov, Petrova and Zhuravskaya (2013), Gentzkow and Shapiro (2010) and Gerber, Karlan and Bergan (2009).

[10]We focus on local elections because there are not enough national elections (1 per election year) or county elections (20 per election year) to provide sufficient variation. For more details on municipal elections in Sweden, see Folke (2014), Liang (2013) and Pettersson-Lidbom (2008).

around 70% of the population is old enough to vote.[11] Elections happen every 3 years up to 1994 and every 4 years thereafter. Voter participation is high in these elections, with around 80% turnout.

Swedish municipal councils have large autonomy. They levy local taxes of around 30% of earnings, with the largest expenditures being for education, elderly care and childcare. They typically also arrange for the local provision of electricity and decide on local policies, such as refugee placement/immigrant integration plans and employment contracts for municipal workers. Municipal councils are also a venue for politicians to advocate for a party's national platform and a springboard for politicians with ambitions at the national level.

In the time periods we study, there are eight main political parties in any given election, along with several tiny parties which do not get enough votes to be represented in the national parliament. Figure 1 shows the average municipal vote shares for each of the main parties over time. The largest parties are the Social Democrats and the Moderates, with the Center and Liberal Parties being the next largest. Smaller parties include the Left Party, the Christian Democrats, the Green Party, the Sweden Democrats and the New Democracy. Each of these parties received at least a 4% vote share at some time during the time period, the minimum threshold needed to receive representation in the national parliament. The New Democracy Party existed in the earlier period (1991 and 1994 elections), being replaced by the Sweden Democrats in later years (2002 elections and onwards).

2.2 Seat Assignment Function

To understand our estimation approach, the first step is to understand how municipality seats are assigned. Sweden uses a variant of the Sainte-Laguë method to allocate seats in these elections.[12] The Sainte-Laguë method is a "highest quotient" method for allocating seats in a party-list proportional representation voting system.

The method works as follows in Sweden. After the votes, v^p, for each party have been tallied, successive quotients, q^p, are calculated for each party:

$$q^p = \begin{cases} \frac{v^p}{1.4} & if\ a^p = 0 \\ \frac{v^p}{2a^p+1} & if\ a^p \geq 1 \end{cases} \tag{1}$$

[11] By law, there must be an odd number of council seats and a minimum number depending on the size of the local electorate. There must be at least 31 seats in municipalities with 12,000 or fewer eligible voters; 41 for 12,001 to 24,000; 51 for 24,001 to 36,000; 61 for 36,001 or more; and at least 101 in Stockholm. The population of Stockholm municipality is roughly 900,000 while the smallest municipalities have as few as 2,500 residents.

[12] The general method has also been used in New Zealand, Norway, Denmark, Germany, Bosnia and Herzegovina, Latvia, Kosovo, Bolivia, Poland, Palestine and Nepal.

where a^p is the number of seats a party has been allocated so far. In each allocation round, the party with the highest quotient gets the next seat, and their quotient is updated to reflect their new value for a^p. The quotients for the other parties do not change, as their seat total has not changed. The process is repeated until there are no more seats to allocate. For example, if a party has not received any seats yet, their quotient is calculated by dividing their votes by 1.4. After receiving one seat, their vote total is divided by 3, and after receiving two seats, their vote total is divided by 5, with this process continuing with the odd number divisors of 7, 9, 11, 13, 15, etc.[13]

The first panel in Table 1 provides a simple example of how this process plays out. In this example, there are three parties vying for seats and five seats to allocate. As indicated in the table, the first seat goes to Party A, since they have the highest quotient of 4,142.9. The second seat goes to Party B since their quotient of 2,071.4 is higher than Party A's new quotient of 1,933.3 and Party C's quotient of 928.6. This process of comparing updated quotients continues until all five seats have been allocated. The third and fourth seats go to Party A, and the fifth to Party B. In this baseline example, Party C does not receive a seat.

The second panel in Table 1 illustrates one way Party C could gain a seat. Suppose 54 additional people (who didn't vote at all in the first panel) decide to vote for Party C. In this case, Party C is now awarded the fifth seat instead of Party B. The third panel illustrates another way Party C could get a seat, this time without changing the number of votes for Party C or the total number of voters in the election. In this panel, 115 voters switch from voting for Party A to voting for Party B, and Party C is awarded the final seat. The final panel illustrates yet another way for Party C to get a seat. In this example, 37 voters switch from Party B to C, while the number of votes for Party A remain unchanged.

The key insight is that in all four panels, the vote shares for the various parties, and the total number of voters are very similar, but small shifts in votes result in discrete changes in whether Party C gets a seat. It is this type of threshold variation among otherwise similar elections that we exploit for identification.

In reality, there are 8 or more parties competing for an average of 45 seats. For a smaller party seeking a seat, the number of votes needed can be quite small. In a median sized municipality with 15,000 residents, 70% of the population being voting age and 80% of eligible voters participating, there will be a total of 8,400 votes cast. In our data, the median number of votes needed to get one seat is less than 250. Moreover, with so many seats and so many parties, there are many ways for seats to shift among the parties at the margin. This means it will be hard to predict how many votes are needed to win an additional seat, making it difficult for the parties to perfectly manipulate vote shares to guarantee they get a marginal

[13]Using a divisor of 1.4 instead of 1 makes it harder for a party to get their first seat.

seat. This feature is useful for causal identification.

3 Model and Identification

3.1 Public Attitudes and Political Representation

We are interested in the causal relationship between public attitudes and political representation. Attitudes are measured after the seats have been allocated, and are allowed to depend on the number of seats held by each of the parties:

$$y_{ijt} = \alpha_j + \delta_t + \beta x_{ijt} + \pi^1 \tilde{s}^1_{j,t-1} + \pi^2 \tilde{s}^2_{j,t-1} + ... + \pi^{P-1} \tilde{s}^{P-1}_{j,t-1} + u_{ijt} \tag{2}$$

where the subscripts i, j and t index individual, municipality and time period, respectively, and the superscript labels political parties. The outcome variable y measures attitudes, x contains a set of demographic controls and u is an error term. The $\tilde{s}^p$ variables are the number of seats held by each of the P parties, and are determined by the seat assignment rule described in equation (1).

The model written above makes two assumptions for tractability. First, it assumes additive separability for the effect of seats held by the various parties, which rules out interactive effects between the number of seats held by different parties. Second, the model assumes a constant treatment effect for each of the seat variables. This means the effect of gaining and losing a seat is symmetric and that the effect of party 1 getting an extra seat does not depend on which party they take the seat away from. If there are heterogeneous effects, then the estimated coefficient will capture a weighted average of these effects. With more data, both of these assumptions could be relaxed.

For ease of interpretation, we absorb the seats for all the parties except the party of interest into the error term for our baseline model. In this case, the coefficient for the party of interest is interpreted as the effect relative to a weighted average of the effects for the other parties who would have gotten the marginal seat instead.[14] Another modification which turns out to be useful for empirical implementation is to model attitudes as a function of seat shares, instead of seats. This makes it easier to compare municipalities which have a different number of council seats.[15] Letting s^1 denote the seat share (rather than seats) for the party of interest, the model becomes

[14] It is easy to show that θ^1 in equation (3) equals π^1 minus a weighted average of the other π's in equation (2), where the weights are functions of the probabilities each party gets elected. As a specification check, we will present results which include the seat share variables for all of the other parties, with the party of interest as the excluded category.

[15] In the empirical work which follows, we will present results which show that using the number of seats instead of seat shares does not materially affect the main findings.

$$y_{ijt} = \alpha_j + \delta_t + \beta x_{ijt} + \theta^1 s^1_{j,t-1} + u_{ijt}. \tag{3}$$

An obvious concern for estimating equation (3) is that votes in the prior election are likely to be related to prior attitudes. Since the number of seats a party gets is a function of how individuals vote, this creates a problem of reverse causality. Indeed, one could easily imagine a regression where the number of seats appears as the left hand side variable and attitudes right before the election appears as a right hand side variable. Since attitudes are likely to be correlated over time, this will create an omitted variable bias. A related concern is that politicians might change their policy positions based on public attitudes to increase their chances of getting elected, which would introduce a similar type of omitted variable bias.

3.2 Estimation Approach

To identify a causal effect, we take advantage of the nonlinear threshold variation in seat assignments. Other researchers have also used threshold variation in voting rules, both in majoritarian and proportional election systems (e.g., Folke (2014), Lee (2008), Lee, Moretti and Butler (2004) and Liang (2013)).

To better understand our estimation approach, which will be used for a proportional election system with many parties competing for seats, consider first the simpler case when there are just two parties competing in a majoritarian election. In this simplified setting, θ^1 in equation (3) captures the effect of party 1 winning the election compared to party 2. A standard regression discontinuity (RD) estimator would use the vote share for party 1 as the running variable, and augment equation (3) with a flexible control function of this running variable. The control function is usually either a global polynomial or separate polynomials to the left and right of the cutoff of 50%.

Our setting differs, because there is not a single running variable which determines whether a party gets an extra seat. Instead, there are multiple running variables which interact to determine the cutoff, as described in Section 2.2. Therefore, we implement our approach by augmenting the outcome equation in (3) with a flexible control function of all of the running variables which determine the cutoff, namely, the vote shares for each of the parties, the total number of votes and the total number of seats in the last municipal election:

$$y_{ijt} = \alpha_j + \delta_t + \beta x_{ijt} + \theta^1 s^1_{j,t-1} + f(v^1_{j,t-1}, v^2_{j,t-1}, ..., v^P_{j,t-1}, tv_{j,t-1}, ts_{j,t-1}) + e_{ijt} \tag{4}$$

where v^p measures the vote share for party p, and tv and ts indicate the total number of

votes and the total number of seats in a municipality and election period.[16]

Adding in a sufficiently flexible $f(\cdot)$ function ensures the variation we use to identify θ^1 only comes from the sharp nonlinearities in the voting algorithm. This is similar to a standard univariate RD, but with more running variables in the control function. That is, we are controlling for the vote shares for the different parties, as well as the total number of votes and seats, in a flexible way, and are left with the jumps in seat shares because of the threshold rules of the voting algorithm for identification.

To implement our approach, we use a global polynomial of all the running variables, including interaction terms, as the control function. It is not possible to have separate polynomials to the "left" and "right" of a cutoff, as is often done with univariate RD designs, as the concepts of "left" and "right" cannot be defined in a setting with many running variables and multiple seats. Because of this, the seat allocation rule described in equation (1) and the control function $f(\cdot)$ are both functions of the same set of underlying variables, just as they would be in a univariate RD with a global polynomial in the running variable. Hence, θ^1 will only be identified if $f(\cdot)$ and the seat allocation rule have different relationships to the inputs $v^1, v^2, ..., v^P, tv$ and ts. The discontinuous nature of seat assignments is therefore the primary driver of identification.

In practice, the control function needs to be estimated flexibly, without sacrificing too much precision. To avoid bias, the function $f(\cdot)$ needs to be flexible enough to capture the true expected relationship between attitudes and the vote share variables, total votes and total seats. But if the function is too flexible, we will not be able to separately identify the jumps in the seat shares from the control function. Empirically, we try control functions with as few as 10 terms to as many as 152 terms. We also try control functions where the terms are chosen parsimoniously using a covariate selection method. As we will show, the effect of a seat share jump is empirically identified even when the control function includes many terms. More importantly, the estimates are stable after including a modest number of second-order polynomial terms.[17]

As a robustness check, we also implement univariate RDs which collapse the multiple running variables down to a single running variable using the insight of Folke (2014). These univariate RD estimates are similar to our main control function estimates, but because they do not account for all of the variation contained in the multiple running variables, the

[16] One could equivalently include a control function in the votes for each party and the total number of seats (rather than vote shares, total votes and total seats), since the algorithm described in equation (1) can be written as a function of either set of variables; the formulation in (4) is more natural when municipalities differ in the number of voters.

[17] We also include municipality fixed effects in our baseline model, since then $f(\cdot)$ only needs to capture how changes in attitudes are affected by vote shares, total votes and total seats. We obtain broadly similar results when not including fixed effects (see Table 4).

standard errors increase by as much as 50%.

4 Policy Issues

We study whether political parties affect public attitudes on three hotly debated policy issues in Sweden: ending nuclear energy, reducing immigration and imposing a six hour workday. We focus on small, issue-focused parties, namely, the Green Party (anti-nuclear energy), the Sweden Democrats (anti-immigration) and the Left Party (pro six hour workday).

The reason to focus on these three policy issues is that they are strongly associated with a party and can be linked to available attitude questions. We require policy issues which are (i) clearly identified with one party, rather than many parties, and (ii) a core platform of the party, rather than a secondary issue which might not receive much emphasis. We further need to be able to match these signature policies to questions which have been asked consistently over time.

In Appendix Table A1, we list the 62 available attitude questions from surveys conducted by the SOM Institute at the University of Gothenburg. Details about these surveys will be discussed in the next section. Thirty seven of the questions are not asked in at least three consecutive post-election periods. We require three periods because our baseline model includes municipality fixed effects and our control functions use up several degrees of freedom. An additional three do not ask about a single, clear policy issue. This leaves 22 possible policy attitude questions.

To identify signature issues for a party from this list, we turn to exit poll surveys which asked voters to list which policy issues they most associated with the various parties. We tabulate up the top three issues associated with a party for each election year. For 17 of the remaining 22 questions, no party has a top three association in any election year. For 2 of the policy issues, taxes and EU membership, many parties have a top three association.

Only for nuclear power, immigration, and the six hour workday do we find strong links primarily for a single party. Nuclear power is associated with the Green Party as a top three policy issue in 5 out of 7 exit poll surveys. Although the Center Party was also against nuclear power, it is only a top three issue for them in 1 exit survey. The issue is never associated with any other parties. Likewise, immigration/refugee policy is associated with the Sweden Democrats as their top issue, but is not a top three issue for any other party except the Liberal Party. An examination of party platforms makes clear the Sweden Democrats wanted to reduce immigration (which is what the policy question asks about), while the Liberal Party focused on how to integrate immigrants into society.[18] Finally, only the Left Party is

[18]For the immigration issue, the SOM survey asks whether the number of refugees should be reduced.

strongly associated with the six hour workday policy, with it being listed as a top 3 issue in 40% of elections.

An advantage of focusing on these signature issues is that it is clear what attitudes might be affected after the party wins an additional seat. In contrast, for a party with a multidimensional platform and a variety of viewpoints within the party, it would be harder to pick up attitudinal changes on specific policy issues.[19] The fact that the parties are relatively small is also useful for identification. These parties usually have between zero and five seats on a local municipal council, so the relative increase in representation is large when an additional seat is won; a marginal seat is less likely to be influential for a party which already has a large number of seats.

A natural question is what role small parties play at the local level. Given the low vote shares of the Green Party, the Sweden Democrats and the Left Party, their legislative influence is likely to be small unless they are pivotal in forming a coalition. In addition, their ability to affect policies is limited to the municipality level: the Sweden Democrats could affect local immigrant policies, and the Left Party could push for six hour workdays for municipal workers, but municipalities have no authority to close down nuclear power plants. However, local policy formulation is not the only role for these minor parties. Being elected could also provide a platform to disseminate the party's policy positions, which could then increase support for the party in national elections. Moreover, serving in a municipal government is often a springboard for politicians to enter the national parliament.

4.1 Nuclear Energy and the Green Party

Our first policy issue and party is nuclear energy and the Green Party. Given the party's origins and the availability of our preferred survey question, we focus primarily on the period from 1988 to 1998.

A brief historical timeline of nuclear energy in Sweden helps to place our sample period in context. In the 1960s, nuclear energy was promoted as safe and affordable by experts in Sweden and in the 1970s, nuclear power plants were built at four sites in Sweden. Since the mid 1980s, nuclear power has accounted for between 38 and 52% of Sweden's electricity production. The public became increasingly negative towards nuclear energy after the Three Mile Island meltdown in the U.S. in 1979. In 1980, a national referendum about the future

We were able to obtain a question from another survey (FSI, discussed in the data section), which asks a similar question, but includes the word immigrants. We use the FSI immigrant question as our main attitude variable, with the SOM refugee question being a robustness check.

[19] Other policy issues could be of secondary importance to a party, but running a large number of regressions without guidance on which issues are strongly associated with the various parties could quickly run into multiple hypothesis testing issues.

use of nuclear energy was conducted in Sweden. The referendum was contentious, because it only allowed voters to choose from 3 options, which were all harder or softer "no" votes on nuclear energy. Even though public opinion was divided, the national parliament decided in 1980 that no additional reactors should be built and that nuclear power should be completely phased out by 2010.

The Chernobyl accident in the former USSR in 1986 brought the issue of nuclear energy to the forefront again.[20] After many prolonged debates, in 1997 the national parliament scheduled the shut down one of the nuclear sites (Barsebäck); while the original timeline was altered by subsequent governments, the first reactor was shut down in 1999 and the second in 2005. However, no reactors at any other power plants have been shut down, and in 2010 the national parliament voted to allowing existing reactors to be replaced.

The anti-nuclear movement sparked by the Three Mile Island accident and the outcome of the referendum led to the formation of the Green Party in 1981. The party started out slowly, failing to get enough votes to be represented in the national parliament in the 1982 and 1985 elections (receiving around 2% of seats in the corresponding municipal council elections). But in the 1988 election, two years after the Chernobyl accident, the party received 5.6% of the votes in the municipality elections, and enough votes to be represented at the national level for the first time. In the 1991 and 1994 national elections the party remained small, receiving 3.6% and 5.3% of the votes, respectively, thereby losing its representation in the national parliament in 1991 but returning again in 1994.

A primary goal of the Green Party has always been to phase out nuclear power. The first policy aim of the party's 1988 platform was to "...phase out nuclear power within three years..." The demand to shut down the nuclear power plants continues to this day, although the party's platform has evolved to include and emphasize additional issues in more recent years (for example, in 2002 nuclear power was the 27th policy listed among 38 total in the party's official platform).

4.2 Immigration and the Sweden Democrats

Our second issue and party is immigration policy and the Sweden Democrats. Our analysis examines the link between the Sweden Democrats and attitudes towards immigration from 2002 to 2012, a period chosen based on when the party gained a non-trivial following.

Since the end of World War II, Sweden has been a net immigration country. In 2010, 15% of the Swedish population was foreign born, with roughly one-third of the foreign born coming from other EU countries and two-thirds coming from outside the EU. The most

[20]Given their geographical proximity, the Nordic countries were directly hit with fallout from the Chernobyl accident. See Almond, Edlund and Palme (2009) and Black, Bütikofer, Devereux and Salvanes (2013).

common foreign born inhabitants are from Finland, Iraq, Yugoslavia, Poland and Iran.

The Sweden Democrat party was officially formed in 1988 with roots in the racist "Keep Sweden Swedish" and the Sweden Party movements. Given the party's extreme right-wing stance, it gained less than 0.4% of the votes in the 1988, 1991, 1994 and 1998 elections. Starting in the mid 1990s the party began a moderation campaign, and in the 2000s expelled the most extreme factions from the party. This moderation has coincided with a steady increase in votes, with the party receiving a 1.4% vote share in 2002, 2.9% in 2006, 5.7% in 2010 and 12.9% in 2014 in the national elections.

The main policy issue for the Sweden Democrats has always centered on reducing immigration. The party believes that Sweden has too much immigration, and that this has eroded Sweden's sense of national identity and cultural cohesion. The Sweden Democrats' platform calls for "responsible immigration policy" by which they mean strong restrictions on immigration and a redirection of funds used for immigrant integration to subsidies for immigrants to voluntarily return back to their home countries (Sweden Democrat Party Platform, 2010). The party also advocates for increased law and order, and an exit from the EU, two issues which they feel are tied to immigration policy.

4.3 Six Hour Workday and the Left Party

Our third issue and party is the six hour workday and the Left Party. Our analysis covers 1996 to 2012, the period for which we have available attitude data.

The Left Party had its origins near the end of the first world war, although its name has changed several times since then. From 1921 to 1966 it was known as the Communist Party, from 1967 to 1989 as the Left Party-Communists, and from 1990 to the present as the Left Party. The party is rooted in Marxist ideology and is generally critical of capitalism. In recent years, it has become a feminist party as well.

The Left Party has consistently campaigned for the rights of workers, with a recurring stance of "Work for Everyone." The party has championed the idea of limiting the workday to six hours, as well as the number of days worked per week, for the entire period for which we have survey data. As an example, their 1998 party platform reads in part: "Shorter working hours: Now is the time to reduce working hours... The goal is that the standard for full-time work is cut from eight hours per day, without a reduction in pay. Shortening the workday will create more jobs." Their arguments for such a policy are that there will be more jobs to go around, worker well-being will increase, productivity will increase and wage inequality will fall. The issue remains hotly debated to this day. For example, in 2015 the Left Party in Gothenburg successfully pushed for a one-year trial of a six hour workday at a municipality-controlled retirement home (*New York Times*, May 20, 2016).

5 Data

We use a variety of data sources which can be linked at the municipality level across election cycles. Our election data comes from Statistics Sweden. We collected a panel of election outcomes for 290 municipalities which each have their own council, with slightly fewer municipalities in existence in the earlier years. These data contain the number of votes for each party and the seats awarded to each party. Our main analysis links this election data to attitude data from surveys taken after each election.[21] We also obtained data on municipality characteristics from Statistics Sweden. We limit our main analysis to municipalities which were in existence throughout the relevant sample period and where the party of interest has five or fewer seats, with all municipalities included as a robustness check. The five seat restriction drops 21 out of 852 possible municipality election years for the Green Party analysis, 25 out of 870 for the Sweden Democrats and 210 out of 1,435 for the Left Party.

Our survey data on nuclear energy comes from the SOM Institute at the University of Gothenburg. Since 1986, the survey has been conducted yearly on a random sample of the Swedish population. The survey was conducted as a mail-in survey, with a response rate of roughly 70% during our time period. We use a question which was consistently asked from 1988 to 1997: *"In 1980 we had a referendum on nuclear power in Sweden. After the referendum, Parliament decided to phase out nuclear power by 2010. What is your opinion about nuclear energy use in Sweden?"* Respondents could choose among the options listed in Figure 2. For the main analysis, we classify an answer of *"Stop nuclear power immediately"* or *"Stop nuclear power earlier than 2010"* as a negative attitude towards nuclear energy. By this measure, between 13 and 18 percent of respondents have a negative attitude, depending on the time period. This measure of negative attitudes lines up closely with the Green Party's policy position to get rid of nuclear energy quickly. For our sample and time period, there are 14,645 individual respondents who answer the nuclear energy question.

In 1998, the question on nuclear energy changed. The preface "In 1980 we had a referendum on nuclear power in Sweden. After the referendum, Parliament decided to phase out nuclear power by 2010" was removed, and the question changed to "What is your opinion about nuclear energy's *long-term* use as an energy source in Sweden?" Even more importantly, the two answers of "Stop nuclear power immediately" and "Stop nuclear power earlier than 2010," which we define as a negative attitude corresponding to the Green Party's policy stance, were removed as response options. Instead, the previous response "Phase out nuclear power by 2010" was changed to "Phase out nuclear power by 2010 *at the latest*," which became the

[21] For larger municipalities, there can be up to six election units within a municipality which allocate seats based on votes. We aggregate these units up to the municipality level, because councils operate at the municipal level and because this is the finest geographical level for our attitude measures.

most negative response. The more positive responses changed as well, including building new reactors as an option. More minor wording changes for the possible responses occurred again in 2005 and 2011. This means there is no question which covers the whole period from 1988 - 2013. Fortunately, the period for which we can identify strongly negative attitudes (1988-1997) lines up well with when the Green Party focused prominently on shutting down nuclear power plants in their party platforms.

For the immigration issue, we use annual survey data collected by FSI, a Swedish research institute which measures various attitudes of the Swedish population. The FSI attitude survey has been conducted each year since the 1980s on a random sample of individuals. The survey was conducted as a mail-in survey, with a response rate around 60%. We use annual survey data after the elections in 2002, 2006 and 2010. The attitude question on immigration which was consistently asked is: "*Should Sweden continue accepting (refugee) immigrants to the same extent as now?"*[22] The possible responses are contained in Figure 3. We classify respondents as having a negative attitude toward immigration if they answer "*To a lesser extent*". This corresponds to the Sweden Democrat's preferred policy of reducing immigration. The time period we study is one of mildly decreasing opposition of immigration. In our sample, there are a total of 23,226 respondents.

For the six hour workday issue, we use a question which has been asked by the SOM Institute from 1994 to 2010. The preface to the question is: *"Below are a number of proposals which have occurred in the political debate. In each case, what is your opinion?"* followed by *"Adopt a six hour workday."* We have 27,427 respondents to this question for our sample. The five possible responses are found in Figure 4. We classify an answer of either *"very good proposal"* or *"good proposal"* as having a positive attitude to a six hour workday. The time period is one of decreasing support for a six hour workday overall, with positive attitudes falling from almost 60% in 1994 to roughly 45% in 2010.

The three panels in Figure 5 document the distribution of attitudes for all three policy issues at the municipality level. The variance in attitudes across municipalities is large. For the nuclear energy issue, the 10th and 90th percentiles for the share of negative attitudes are .08 and .27, respectively. For the immigration issue, these same percentiles are .45 and .70. And for the six hour workday, they are .44 and .64, respectively.

The opinion surveys also include basic demographics and geographic information which allows us to map individuals to municipalities. Summary statistics for the demographic variables and municipality characteristics can be found in Appendix Table A2. Appendix Table A3 documents how attitudes are influenced by our demographic variables, in a regression model with municipality fixed effects. The estimates reveal that women, the least educated and the

[22]In some years the wording was "refugee immigrants" while in others it was just "immigrants."

young are most negative towards nuclear energy. Males, the least educated, older individuals, and non-immigrants are more likely to have a negative attitude towards immigration. And women, the least educated and the young are more likely to favor a six hour workday.

We collected several supplemental datasets to study possible mechanisms. For our analysis of party instability in terms of keeping seats filled, we collected data from the website "Valmyndigheten" (www.val.se), which since 2006 has tracked the names of the individual politicians filling elected party seats. For our analysis of media coverage, we make use of a database owned by Retriever Sweden Inc., which contains the text of newspaper articles in Sweden. The database has extensive coverage of local newspapers starting in 2006. We exclude the three national newspapers from the sample, leaving us with a set of 139 local newspapers, some of which cover more than one municipality. Eleven municipalities which are small and sparsely populated do not have a local newspaper.

6 Attitude Results

6.1 Empirical Specifications

To estimate whether political representation can causally affect citizens' attitudes, we regress individual level attitudes in surveys after elections on the seat share of the party of interest for each policy issue. We present naive OLS estimates based on equation (3), followed by a series of control function estimates based on equation (4) with increasing flexibility. To control for fixed heterogeneity in attitudes across municipalities, the main regressions include municipality fixed effects. The regressions also include survey year fixed effects and controls for the individual characteristics appearing in Appendix Table A3. We combine the vote shares of the parties which never receive enough votes to be in the national parliament into one group (the omitted category) in the control function.

Having a control function which is flexible enough to capture how the inputs in the seat assignment function affect attitudes is key for identification. We therefore estimate regressions with control functions having as few as 10 terms to as many as 152 terms. We also use a statistical algorithm to pick a parsimonious set of terms to include in the control function as a robustness check.

Our first control function includes the levels of all the input variables which enter into the seat allocation rule described in equation (1). For the Green Party and the Sweden Democrats, this first order polynomial includes 10 terms: the vote shares of each of the main parties, the total number of votes in a municipality and the total number of seats in a municipality. Since the Left Party spans a longer time horizon, it has one extra main party, and therefore 11 first order terms. To make the control function more flexible, we

next estimate specifications which include squares of each of the input variables, as well as two-way interactions involving the party of interest, for a total of 30 terms (33 for the Left Party). We then consider a complete second order polynomial expansion of the inputs, for a total of 65 terms (76 for the Left Party). Finally, we supplement the complete second order expansion with cubes of each of the inputs as well as three-way interaction terms involving the party of interest, resulting in 130 terms in all (152 for the Left Party).[23]

Our variable selection method chooses a limited number of second and third order terms for inclusion in the control function. We use a stepwise regression method similar to that proposed by Imbens (2015). To summarize, the first step includes all first order terms and adds second order terms in a stepwise manner based on whether they are above a pre-specified significance threshold. The second step chooses among a limited set of possible third order terms in a similar way.[24]

As our results will show, the estimates are generally stable after including a moderate number of control function terms and robust to using the variable selection approach. As a further specification check, in Section 6.5.3, we also consider alternative univariate RD estimators and find similar results, but with larger standard errors.

6.2 Nuclear Energy and the Green Party

We begin by reporting estimates for how post-election attitudes towards nuclear energy change when the Green Party increases their seat share. These results appear in panel A of Table 2, where the dependent variable is a dummy for having a negative attitude towards nuclear energy. The first column uses naive OLS, and finds no effect on attitudes when the Green Party increases their seat share.

The next four columns in panel A add in control functions of varying flexibility so as to isolate the random jumps in seat shares which occur when a party barely gains or loses an additional seat. The addition of the first order control function in column (ii) reveals a sizable and significant increase in the estimated coefficient, in contrast to the naive OLS

[23]Gelman and Imbens (2014) argue that high order polynomials (third, fourth or higher) should not be used in RD type designs. Our results are not driven by such high order polynomials; indeed our preferred estimates use second order polynomials, with third order polynomials being used to demonstrate robustness.

[24]As in Imbens (2015), we choose among a set of possible polynomial terms in a stepwise fashion, with different thresholds based on the order of the polynomial. Other methods, such as lasso, could also be used. We begin by including all first order terms. We then set a threshold p-value of .30 for adding second order terms based on forward stepwise regressions. The forward stepwise algorithm adds each possible second order term as one additional covariate to a separate regression, finds the term which is most significant among all the regressions, and adds that term to the model if it is below the threshold. The process repeats, continuing to add additional terms until there are no new terms below the threshold. For the next step, we limit the possible set of third order terms to those which can be linked to the set of second order terms chosen in the first step. We set a threshold p-value of .20 for the addition of third order terms. There are no formal results about the optimal values for the thresholds. See Imbens (2015) for further details.

estimate. The next columns considers a limited second order expansion with 30 terms and finds a fairly similar estimate compared to the first order expansion. Column (iv) uses a complete second order polynomial control function; the addition of these terms causes the estimate to increase. Adding in cubes and a limited number of third order interaction terms in column (v) likewise results in a sizable estimate, but the addition of all these terms comes at the cost of increasing the standard error by almost 25%. The final column of the table uses the variable selection procedure described above to choose among the many possible second and third order terms. The control function in this column has 35 terms, and yields an estimate of similar magnitude.

All of the control function estimates point to a similar conclusion: Green Party representation causes attitudes towards nuclear energy to become more negative, in line with the party's objectives. To understand the magnitude of the estimated effect, consider our baseline specification, which includes a complete second order polynomial expansion in the control function. We use this specification as our baseline for robustness checks since it contains a rich set of voting share controls without adding too many terms. The estimate of .0145 reported in the table means that when the seat share for the Green Party increases by 1 percentage point, negative attitudes towards nuclear energy increase by 1.45 percentage points. Stated somewhat differently, since one seat equates on average to a seat share of approximately 2.3, an additional seat increases negative attitudes towards nuclear energy by roughly 3.3 percentage points. Compared to the overall average of 15% of voters who are negative towards nuclear energy, this is a sizable 22% increase.

6.3 Immigration and the Sweden Democrats

We next turn to immigration attitudes and the Sweden Democrats in panel B of Table 2. As before, we start by showing the naive OLS estimate, which finds a small and insignificant effect of Sweden Democrat seat share on attitudes. The first control function specification in column (ii) shows that merely controlling for the votes shares of all parties (and the total number of seats and votes) causes the coefficient to increase five fold in magnitude. Adding in second order terms in columns (iii) and (iv) increases the coefficient even more. The addition of cubes and third order interactions involving the Sweden Democrats in column (v) has almost no additional effect on the estimate. Finally, the variable selection model, which chooses a parsimonious number of second and third order terms, also results in a similar estimate.

Our baseline estimate using a complete second order expansion implies that when the Sweden Democrats' seat share increases by 1 percentage point, negative attitudes in the corresponding municipality decrease by 2.1 percentage points. This translates to a 4.8

percentage point drop in negative attitudes towards immigration for one additional seat. Relative to the average number of voters who express anti-immigration views (55%), this is a 9% decrease in negative attitudes. These control function estimates imply that after a Sweden Democrat gains a seat, attitudes do indeed change. But the striking finding is that individuals become less negative about immigration, which is exactly opposite the party's policy position.

6.4 Six Hour Workday and the Left Party

Panel C of Table 2 reports similar results for how the Left Party affects attitudes towards a six hour workday. Naive OLS finds a modestly negative effect which is statistically significant. Including either a first order or limited second order control function roughly doubles the magnitude of the OLS estimate. The final three control function estimates likewise yield a large negative effect which are fairly similar to each other.

Focusing on the baseline estimate in column (iv), when the Left Party increases their seat share by 1 percentage point, positive attitudes towards the six hour workday fall by almost 1.4 percentage points. This translates to a 3.2 percentage point drop in positive attitudes towards a shortened workday for one additional seat. Fifty-one percent of individuals favor a six hour workday, so relative to the mean, this represents a 6% drop in positive attitudes. As with the Sweden Democrats, while the causal estimates imply a change in attitudes, it is opposite the party's stated policy position.

For all three policy positions, the control function estimates stand in sharp contrast to the naive OLS estimates. Taken at face value, the naive OLS estimates would lead one to conclude that an increase in representation for the Green Party or Sweden Democrats does not significantly change attitudes, and that the Left Party has a moderately negative effect. These would not be surprising results, since the low seat shares of these parties might simply mean they have little influence or voice at the local level. But the control function estimates indicate this would be the wrong conclusion. Perhaps even more important, the control function estimates reveal that a party does not always cause attitudes to change in the party's preferred direction. We explore two possible reasons for why this might be so in Section 8.

6.5 Exogeneity and Robustness

6.5.1 Exogeneity tests. The nature of the seat assignment rule creates many hard to predict ways for seats to shift among the parties at the margin, so a priori, there is little chance for manipulation which would invalidate our design. To empirically test for exogeneity, in

Appendix Table A4 we analyze whether a party's seat share is significantly associated with lagged attitudes or municipality characteristics. The regression for lagged attitudes mirrors the baseline specification with a complete second order expansion for the control function, but instead of regressing post-election attitudes on a party's seat share, it regresses pre-election attitudes on a party's seat share. Since these seats have not been allocated yet, they should not effect pre-election attitudes. As expected, there is no statistical evidence that future seat shares affect lagged attitudes for any of our three party's signature policies.

As a second set of tests, we regress a variety of municipality characteristics on the seat share variables, again using our baseline specification. There is little evidence the seat shares of either party are related to any of these variables, with only one out of 21 coefficients being statistically significant at the 10 percent level.

6.5.2 Specification checks. Our main estimates combine all of the parties except the party of interest into the omitted category for ease of interpretation. This enables the seat share coefficient for the party of interest to be interpreted as the effect relative to a weighted average of the effects for the other parties who would have gotten the marginal seat instead. In Table 3 we repeat the baseline specification of Table 2, column (iv), except that we include the seat share variables for all of the other parties, and use the party of interest as the omitted category. This allows us to examine whether the estimated effects are driven by some parties and not others.

For all three policy issues, we find that it does not matter much which party gets a marginal seat instead of the party of interest. For example, in column (i), which reports estimates for negative attitudes towards nuclear energy, all of the other party seat share coefficients are negative and most are statistically significant. In other words, relative to the Green Party gaining another seat, when any of the other parties gain a seat instead, negative attitudes towards nuclear energy decrease. Similar patterns hold for the immigration and six hour workday policy issues, with all of the estimates having the expected sign and all but two of them being statistically different from zero. We conclude that while the individual estimates vary somewhat across parties, not much information is lost by using the simpler baseline model with a single seat share variable for the party of interest. Moreover, the results argue against systematic coalition formation with the party of interest related to these three policy issues.

Table 4 contains a series of further robustness checks. The first specification reports our baseline estimates for comparison. So far, we have regressed attitudes on seat shares. As specification 2 shows, when we use the number of seats instead, the results are qualitatively similar. To see this, divide the seat coefficients by 2.3 (the average seat share corresponding to

one seat); these normalized coefficients are of the same magnitudes as the baseline coefficients appearing in Table 2. As a second robustness check, we remove the restriction that the number of seats for the relevant party must be less than or equal to 5 in the municipality. These estimates are somewhat smaller as expected, as one would predict an additional seat should matter less if the party already has many seats. The estimates change less for the Green Party and the Sweden Democrats, since they seldom have more than 5 seats. In specification 4, we estimate regressions which do not include municipality fixed effects. For the Green Party and the Left Party, the estimated coefficients are similar to baseline, while for the Sweden Democrats, the estimated coefficient is somewhat smaller but still statistically significant. We next omit the individual characteristics, and find little change in the estimated coefficients.[25] In specification 6, we exclude municipalities which never experience a change in the number of seats for the party of interest. Since we include municipality fixed effects in the regression, municipalities with a constant number of seats across elections help to estimate the effect of other variables, including the control function, but not directly the seat share coefficient. These estimates are similar to baseline, but with larger standard errors.

Finally, we explore alternative survey questions. During roughly the same period (1988-1996) as for our main nuclear energy question, the SOM survey asked respondents about the policy proposal "Keep nuclear power even after 2010." Twenty percent of respondents thought this was a "bad proposal" or "very bad proposal." Using this as the definition of a negative attitude and our baseline specification, the estimated coefficient is .0111 (s.e. = .0057) and significant at the 10% level. There is also an alternative question related to immigration/refugee attitudes which asks individuals their opinion on the policy proposal "Accept fewer refugees to Sweden." We categorize an answer of "very good proposal" or "good proposal" as a negative attitude towards immigration. The estimated coefficient is -.0055 (s.e. = .0039). This magnitude is not directly comparable to our baseline result as the mean for this outcome is 22% (versus 55%), but in percent terms the estimates are not too far apart.

6.5.3 Univariate RD estimators. As a final robustness check, we estimate RD models which collapse the multiple running variables down to a single running variable. A key contribution from Folke (2014) is how to create a univariate measure for the closeness of an election in a multi-party, multi-seat setting. He proposes using the minimum number of aggregate votes that would need to change for the party of interest to either lose or gain a seat, normalized by the total number of votes for all parties in the election. Returning to the example in Table 1, the minimum vote change is found in panel B, where 54 new votes are added to party C.[26]

[25] We also explored the margins of going from 0 to 1 seat, 1 to 2 seats, 2 to 3 seats, etc. and found no statistical evidence for a nonlinear effect, although the individual estimates were imprecise.

[26] In panel D, switching 37 votes from party B to C counts as 74 vote changes according to Folke's measure.

More generally, the calculation of this measure is more complicated, and can involve two or more parties.[27]

The collapsing of the multi-dimensional running variables down to a single dimension does not come for free, however. The cost is a loss in precision, as the univariate closeness measure does not differentiate between vote switches which are more or less likely. For example, it may be relatively easy for the Left Party to take 50 votes away from a liberal party like the Social Democrats, but more difficult for them to take 50 votes away from a more conservative party. Yet both would count as being equally close to the threshold. This matters because liberal and conservative voters may have different attitudes about a shortened workday on average. Using Folke's definition, switching a single vote from one party to another is equivalent to two new votes for a party, which could similarly result in a noisy measure of closeness.

With a single running variable in hand, the effect of an increased seat share on attitudes can be modeled in a univariate, sharp RD framework as

$$y_{ijt} = \alpha_j + \delta_t + \beta x_{ijt} + g_l(r_{j,t-1})(1[r_{j,t-1} < 0]/ts_{jt}) + (g_r(r_{j,t-1}) + \theta^1)(1[r_{j,t-1} \geq 0]/ts_{jt}) + v_{ijt} \quad (5)$$

where the notation is similar to equation (3), with the addition of the univariate running variable $r_{j,t-1}$ and the functions g_l and g_r of the running variable to the left and the right of the cutoff. The indicators for being being above or below the threshold of zero are divided by the total number of seats so as to scale the winning of an additional seat into a seat share.

Specification 7 of Table 4 estimates a univariate RD using Folke's closeness measure, separate linear trends on each side of the cutoff and triangular weights. Since it increases precision somewhat, we also include the control function $f(\cdot)$ from equation (4) in the set of control variables. For the Green Party, the estimate is positive, but not statistically significant. This is in part because the standard errors are 50% larger compared to our baseline, multivariate control function approach of Table 2. The Sweden Democrat estimate is similar in magnitude to baseline, and statistically significant despite an increase in the standard error. Likewise, the Left Party estimate is comparable to baseline and statistically significant, but again with a larger standard error. Appendix Figure 1 plots corresponding RD graphs for each of these estimates.

The univariate RD estimates are robust to excluding municipalities with no seat changes across elections, omitting the control function $f(\cdot)$, omitting individual level controls, trimming

[27]We implemented the algorithm for calculating the minimum number of aggregate vote changes in the programming language Visual Basic. We make two minor improvements to Folke's algorithm. First, we take into account that a party cannot take/give a seat from/to itself. This is relevant when a party gets a seat in two consecutive seat allocation rounds. Second, we allow for the possibility that it may be more efficient to take away votes from two or more parties (versus just one party) when compared to giving votes to the party of interest. These two improvements make a difference in around 5% of elections.

the window, and using alternative collapsing methods for the running variable.[28] In the table, we only report estimates for what happens when excluding municipalities with no seat changes, as this is the specification which changes the estimates the most. In this specification, the Green Party coefficient is larger and significant at the 10 percent level, while for the Sweden Democrats, the coefficient falls but remains significant at the 10 percent level. The coefficient for the Left Party barely changes, which is typical across the various robustness checks not shown.

The final specification reports estimates using the RD specification Folke adopted in his paper. Instead of having separate linear trends to the left and right of the cutoff, he specifies a window around the cutoff and compares levels within that window (i.e., in his specification, the g_l and g_r functions are constants). Folke's specification allows observations outside of the window to contribute to the identification of the other coefficients in the model, including those related to municipality fixed effects, time fixed effects, individual characteristics and the control function in the parties' vote shares.[29] These other variables and observations outside the window are not needed to identify the treatment effect, but should increase the precision of the estimator. Using Folke's RD specification with a window of 0.4 percentage points, so that between 30 and 45 percent of observations are in the identifying window, we again find similar RD estimates for the three parties.[30]

6.6 Persuasion, Information and Polarization

Whose attitudes are changing when a party gains an extra seat? Political representation might bring a party's policy issues to the forefront of public debate. This could have two effects, both of which could show up as changes in support for a party's preferred policies, even though preferences for the median citizen remain unchanged. First, it could increase the amount of information individuals have about the issue, causing fewer people to be undecided. Second, it could symmetrically increase (or decrease) polarization. That is, political representation could cause neutral and moderate individuals to symmetrically adopt more extreme opinions (or conversely, cause polarized individuals on both sides of an issue to

[28] One alternative collapsing is to use the number of new votes gained or existing votes lost by the party of interest, holding the votes of all other parties fixed. Another alternative is the minimum number of votes which need to be transferred among parties, holding the total number of votes in the election fixed. In addition to scaling by the total number of votes, we also tried scaling by the number of votes required to get the last seat. All of these alternative running variables yield similar results.

[29] For comparability with specification 7, we use $f(\cdot)$ as the control function. Folke's paper uses a fourth order polynomial, without interaction terms, in the vote shares of each party as his control function. Both control functions yield similar estimates.

[30] The window choice is a judgment call, and as Folke points out, optimal bandwidth tests cannot be used in this setting. Somewhat smaller or larger window choices yield similar results.

moderate their views). Alternatively, political representation could shift the distribution of attitudes towards (or away from) a party's preferred policy.

We test for these possibilities in Table 5. We first run regressions similar to those in Table 2, but replace the left hand side variable with an indicator for whether the respondent had no opinion. To conserve on space, we focus on OLS, the baseline control function and the covariate selection control function. We find evidence that when a Green Party Politician is elected, a sizable portion of previously undecided voters form an opinion on nuclear energy. Multiplying the seat share coefficient by 2.3 (the average seat share for a seat), the election of a Green Party politician causes an 18 percentage point drop in the number of individuals without an opinion. This is large compared to the overall average of 12 percent of undecided voters. It can also explain over half of the increase in negative attitudes observed in Table 2. In contrast, there is no evidence of the Sweden Democrats causing fewer people to be undecided about immigration flows, with estimates that are close to zero and statistically insignificant.[31] A similar analysis cannot be done for the Left Party, as "no opinion" / "do not know" was not an option for survey respondents.

To test for polarization on the issue of nuclear energy, we create a dummy variable for the most extreme pro-nuclear view on the survey. An average of 25% of respondents favored the extreme position of never phasing out nuclear energy. We find no evidence for a symmetric increase in polarization: while more people are becoming anti-nuclear after a Green Party politician is elected, there is not a corresponding rise at the other extreme. The survey question for immigration is less well-suited for studying polarization, since there are only three possible responses: less immigration, the status quo, and more immigration. With this caveat in mind, the regressions in panel B indicate the election of a Sweden Democrat politician does not increase support for more immigration. However, for the Left Party, we see a large and statistically significant increase in the number of respondents with a negative attitude towards a six hour workday, defined as a response of "bad proposal" or "very bad proposal". This is the opposite of what would happen with polarization. Instead, it appears that the election of a Left Party Candidate both decreases positive attitudes and increases negative attitudes towards a shorter workday.

These results imply parties are actually persuading (or dissuading for the Sweden Democrats and the Left Party) individuals about the merits of their policy issues, convincing undecideds and/or shifting the distribution of attitudes towards (or away from) their position. There is no discernible evidence for an increase in polarization.

[31] It is possible that a survey answer of "no opinion" does not actually mean the respondent has no opinion, but rather that they are hesitant to express their views. If this is true, the estimates remain causal, but their interpretation changes.

In Appendix Table A5 we explore which types of individuals, based on observables, are most likely to change their policy opinions. The table mirrors the baseline attitude regressions, but with interactions between the seat share variable and observable demographic characteristics. We find little evidence of heterogeneity by education, gender, age or immigrant status. We also find only modest differences based on the size of the municipality.

7 Incumbency Effects

The attitude results provide three examples of how political representation causally changes attitudes on important policy issues, even if not always in the party's intended direction. An important question is whether these stated preferences on opinion surveys actually translate to observed changes in voting behavior.

To examine this question, Table 6 regresses the log number of votes for a party in the next election on the party's seat share in the last election, with controls for election year. The naive OLS estimates point to a strong incumbency effect for all three parties, with a 1 percentage point increase in the seat share variable resulting in 30%, 26% and 15% more votes, for the Green Party, the Sweden Democrats and the Left Party, respectively. Since an additional seat equals a 2.3 seat share on average, this translates roughly into 69%, 59% and 35% more votes, after the respective parties get one more council seat.

To arrive at causal estimates, we add the baseline control function and then the covariate selection control function. For the Green Party, the incumbency effect is more modest than OLS would suggest, but still present. Focusing on the baseline control function specification in column (ii), a one percentage point increase in the seat share for the Green Party results in 3.4% more votes in the next election. This incumbency estimate translates into roughly 8% more votes in the next election after the Green Party gets an additional council seat. The effect is significant at the 10% level for the baseline estimate and at the 5% level for the covariate selection estimate. In contrast, for both the Sweden Democrats and the Left Party, the control function estimates find no evidence of incumbency effects. The point estimates are close to zero and statistically insignificant.[32] The finding of no incumbency effect for either the Sweden Democrats or the Left Party is all the more interesting and unique when one considers that most studies report modestly sized incumbency effects in both majoritarian elections (e.g., Lee, 2008) and multiparty elections (e.g., Liang, 2013).

Thinking about the attitudes and incumbency results in tandem, the Green Party suc-

[32]It is interesting to note that for these incumbency regressions, the covariate selection approach picks a large set of control variables. This is likely due to autocorrelation in voting behavior. Indeed, the addition of the control function variables, which include lagged vote shares for the various parties, increases the R-squared of the regressions substantially.

cessfully changed attitudes towards their preferred policy position, and appear to have been rewarded at the ballot box for doing so. In contrast, the Sweden Democrats and the Left Party caused a swing in attitudes against their preferred policy position, negating any incumbency effect they may otherwise have had. More generally, these patterns provide a possible explanation for observed incumbency effects in other settings (Ferraz and Finan (2008), Hirano and Snyder (2009), Lee (2008), Liang (2013)).

8 Two Possible Mechanisms

The fact that attitudes causally change after a party gets elected has important implications for political economy models. A novel finding of our paper is that this effect does not always go in the anticipated direction, as demonstrated by the difference between the Green Party's success and the Sweden Democrats' and Left Party's failure to get individuals to adopt their policy views. A natural follow-up question is: What mechanisms explain our findings?

In this section, we explore two possible reasons why political representation might matter for attitudes: politician quality and the power of the local media. The data used to construct each of these measures first becomes available for the 2006 and 2010 elections, so our analysis is limited to those two post-election periods. This is an ideal period to study the Sweden Democrats, since it coincides with when they begin to gain seats and advocate their anti-immigration agenda. It is useful for the Left Party as well, as it overlaps with our attitude data and the party's continual push for a six hour workday. It is less ideal for the Green Party, since nuclear energy was more prominent in the party's platform in the earlier period, and it does not line up time-wise with our attitude question. With this caveat in mind, we use the same identifying variation as before, namely, the quasi-random variation in seat shares due to the election rules to study these two mechanisms. Other channels, such as the ability to implement policies which are popular or unpopular at the local level are also possible (e.g., Folke, 2014), but not explored in this paper.

8.1 Politician Quality

The first mechanism we examine is whether marginally elected seats are filled with lower quality politicians, as measured by whether the seat is able to be filled with minimal turnover until the next election. Excessive turnover could be due to less committed politicians being assigned to a seat as well as forced and voluntary resignations related to internal party conflicts or pressure from the public. A less committed, uncooperative or inept politician could appear uninformed about an issue, make offensive statements or otherwise be ineffective in getting the party's message across. There are several anecdotes of this type of unprofessionalism at

the local level for the Sweden Democrats (see footnote 3). Lower quality politicians could alienate voters from the party and its message, causing a backlash in attitudes and a lower re-election probability for the party.

Specifically, we define seat instability, our proxy measure of politician quality, as a dummy variable which equals one if either the party cannot fill a seat or if a seat is filled with at least three different appointed politicians between elections. Our definition is based on the observation that among small parties, occasional turnover in politicians is normal, but that repeat turnover for the same seat is likely to be indicative of more serious problems.[33]

Using this measure, the Sweden Democrats are revealed to have lower quality politicians compared to the Green Party and the Left Party. On average, 23% of Sweden Democrat seats were unstable after the 2006 and 2010 elections. This stands in stark contrast to a 6% seat instability for both the Green and Left Parties. Apparently, the Sweden Democrats had a much harder time filling, and keeping filled, the seats they won in local elections.

To see whether seat instability is causally linked to a marginally won seat, we perform a similar analysis as we did for the attitude regressions. The first column in Table 7 regresses seat instability on the seat share for each of the parties, controlling for year and municipality fixed effects. The OLS estimates for all three parties are small and statistically insignificant. However, when adding in the baseline and covariate selection control functions, the picture changes for the Sweden Democrats. For the baseline model in column (ii), the point estimate indicates that when the seat share for the Sweden Democrats goes up by 1 percentage point, seat instability goes up by 11 percentage points. The covariate selection specification finds a similar result. Since a seat share of 2.3 equals approximately one seat, this translates into an additional seat increasing instability by 25 percentage points. In contrast, the control function estimates for the Green Party and the Left Party show no statistical evidence that marginally elected politicians are less stable.

We infer the Sweden Democrats had a relatively hard time attracting quality politicians to serve at the local level, particularly on the margin, whereas the same is not true for the other parties. This sign of local disorganization and inexperience may have turned off voters to the Sweden Democrats and their policies, consistent with the attitude and incumbency results found earlier in the paper.

[33]Some turnover will occur naturally, for example, when a politician chooses to take maternity leave or moves to another locality. As an alternative measure, we also tried defining seat instability as equal to one if the party cannot fill a seat or if the seat is filled with at least two different politicians between elections. This yields results which are qualitatively similar.

8.2 Power of the Media

We now turn to the power of the local media to frame political parties and influence policy debates. A growing literature documents the impact of the media on voting behavior, both via television and newspapers (see footnote 8). Related research on media slant and persuasion (see footnote 9) generally finds that media plays a powerful role in shaping attitudes. If the media increases its coverage of a party after they win a seat, and this coverage is negative, this could provide another explanation for the attitude and incumbency results. In this section, we explore changes in local newspaper coverage and content after a party wins a seat, where as before, we take advantage of the sharp nonlinearities in the way seats are assigned for identification.

8.2.1 Setting and Statistical Inference Our setting is well-suited to study the effect of local media coverage, as Sweden has a large number of local newspapers. This is in part due to subsidies provided by the central government to encourage diversity in local newspaper markets. Data wise, nearly comprehensive coverage of local newspapers begins in 2006, when content becomes available in digital form from the media marketing company Retriever. We were able to compile information from 139 local and regional newspapers (we exclude the three national newspapers), which represents roughly 95% of newspapers in print. Because local newspaper data is not available for earlier time periods, we can only perform our analysis for this later period. This timing lines up well for the Sweden Democrats and the Left Party, but as previously mentioned, is less ideal for the Green Party.

We link municipal elections in 2006 and 2010 to subsequent newspaper content after each election, with municipalities being matched to newspapers which operate in their geographical area. While there are a handful of national and large regional newspapers, most newspapers serve just a few municipalities in Sweden. Almost half of newspapers cover just one municipality and over two-thirds of newspapers cover three or fewer municipalities.

For this analysis, we have fewer grouped observations than in our prior analyses. This is because we have fewer newspapers than municipalities (139 versus 290), and two election cycles instead of three or more. This has two practical implications. First, by necessity, our control functions will need to include fewer terms. It is infeasible with the available degrees of freedom to include the control functions in prior tables which included 65 or more terms. We will instead explore control functions that include all 10 first order terms (11 for the Left Party), all 21 first order terms and their squares (23 for the Left Party), and 30 first order terms, their squares and second order interactions involving the party of interest (33 for the Left Party). We will also include covariate selection models, but which are limited to

choosing among first and second order terms.[34]

Second, because we have fewer observations, we will report p-values which have better small sample properties, but still account for possible correlation in the error terms for a newspaper over time. In particular, instead of using clustered standard errors as in prior tables (or block bootstrap standard errors), we will report p-values and 95% confidence intervals based on the studentized block bootstrap. The idea is to use block bootstrapping to construct the distribution of the t-statistic, and use it to calculate p-values and confidence intervals. This procedure has faster convergence properties compared to clustering or the standard block bootstrap; it converges at the optimal parametric rate while the other methods converge at the nonparametric rate.[35] For our newspaper regressions, we find the studentized block bootstrap results in larger p-values and wider confidence intervals compared to using either clustered standard errors or the block bootstrap. Because of this, we use the more conservative, and arguably more accurately-sized, studentized block bootstrap to conduct statistical inference for our newspaper analysis.[36]

8.2.2 Results Our first question is whether local newspaper coverage increases after a party wins a seat. We answer this question in Table 8. To construct the dependent variable, we did a search on Retriever's database of every article in every newspaper for the names of our three parties. We add up the number of articles which mention a party after an election, but before the next election takes place, and take the natural log. We regress this newspaper coverage outcome on the seat share of the party of interest (in the municipalities covered by a newspaper), and include newspaper and election year fixed effects in the regression.

For the Green Party results in panel A, the control function estimates are all positive, but none are statistically significant. Likewise, the Left Party results in panel B have modestly sized control function point estimates, but the associated confidence intervals include zero. In contrast, the control function estimates reveal a strong and robust effect for the Sweden Democrats. Consider our preferred baseline estimate in column (iv). When their seat share goes up by 1 percentage point, mentions of the words "Sweden Democrat" rise by 22% in local newspaper articles. This translates into a roughly 11% increase in media coverage after the

[34]We do not include any control function terms a priori. We set a threshold p-value of .30 for adding first order terms based on forward stepwise regressions. For the second step, we limit the possible set of second order terms to those which can be linked to the set of first order terms chosen for inclusion. We set a threshold p-value of .20 for the addition of second order terms. See footnote 24.

[35]This procedure is sometimes also referred to as the percentile-t block bootstrap. The asymptotic refinement works because the t-statistic is a pivotal test statistic, and therefore uses a higher order approximation for the asymptotic distribution compared to the standard bootstrap. See Hall (1992) and Horowitz (2001).

[36]We also explored whether studentized block bootstrapping mattered empirically for our other analyses, such as the attitude regressions, where we have more groups and years. It did not; we found little difference in the calculated p-values.

Sweden Democrats win one more seat, since one seat equates on average to a little more than half of a seat share in municipalities covered by a newspaper. To put this in perspective, it implies that after the Sweden Democrats win an extra seat, another 45 articles per newspaper per election period are written mentioning the words "Sweden Democrat" compared to an average of 412 articles mentioning the party.

A natural follow up question is whether this increased coverage of the Sweden Democrats is positive or negative. If negative, newspapers could be turning off citizens to the party and its immigration stance. To answer this question, we carry out a content analysis of the types of words that appear in local newspapers. The analysis is the same as in Table 8, but with different search terms fed into the Retriever database. We also take the inverse hyperbolic sine (a function similar to the natural log but which includes zero) of the dependent variable, as some newspapers have zero articles for these more specialized searches.

We first search for variants of the terms "racism" or "xenophobia" in newspaper articles which also include the phrase "Sweden Democrat". These terms carry negative connotations in Sweden, and are generally used as reproachful and stigmatized labels. Using either the baseline specification (a control function with 30 terms) or the covariate selection method to select terms, the results are striking. For example, column (ii) in the upper left panel of Table 9 reveals that a 1 percentage point increase in the seat share results in a statistically significant 36% increase in negative articles written about the Sweden Democrats. Translating this result, when the Sweden Democrats win an extra seat, there is an 18% increase in the number of articles that mention racism or xenophobia in combination with the party's name. We also search for articles which mention racism or xenophobia, but not the Sweden Democrats. We find no statistical evidence the Sweden Democrats trigger a broader discussion of racism without a mention of their party; see the upper right panel of the table.

We next search for variants of the words "immigrant" and "integration" (both have to appear) in articles which also include the phrase "Swedish Democrat". These search terms were chosen to assess whether the election of a Sweden Democrat prompts a substantive policy debate in local newspapers.[37] The way searches can be done in the Retriever database do not allow us to assess whether these articles are favorable or unfavorable to the Swedish Democrats. But our interpretation, based on reading several articles, is that the combination of the words immigrant and integration signal a reasoned discussion about immigrant assimilation into society, rather than a judgmental labeling. Using these search terms, we find strong evidence the election of a Sweden Democrat causes their party to be mentioned in conjunction with these types of policy debates. Both the baseline specification with 30 terms and the

[37]Searches based on the word "immigrants" without also requiring the word "integration" are too broad, as such searches identify many articles related to historical immigration and other non-policy related issues.

more parsimonious covariate selection model suggest around a 24% increase in these types of newspaper mentions for each percentage point increase in the Sweden Democrats' seat share. This translates to roughly 12% more of these types of articles for each extra seat won by the Sweden Democrats. There is no statistical evidence of increased discussion about immigrants and integration in articles which do not mention the Sweden Democrats in the lower right panel, although the estimates are positive.

We performed a similar content analyses searching for "Left Party" and the phrase "six hour workday", and "Green Party" and the phrase "nuclear energy." The estimated control function coefficients are mildly positive, but in neither case do we find statistical evidence of an increase in newspaper articles (see Appendix Table A6). While the media may be exerting a modest influence on these topics after the election of a party, we do not have the precision to pick it up.

Our interpretation of the newspaper results is that the election of an additional Swedish Democrat prompted a strong response by the local media, both in terms of negative attacks on the Sweden Democrats and in increased discussion of immigrant assimilation. These empirical findings are consistent with interviews of newspaper editors and journalists by Häger (2012) who found that newspapers consciously chose to oppose the Sweden Democrats and their anti-immigration stance (see footnote 4 for an example). More generally, our results point to the power the media has to frame political parties and policy issues.

9 Conclusion

Do politicians change public attitudes on important policy questions? Disentangling how politicians affect public attitudes from how public attitudes affect politicians' policy positions is a difficult empirical problem. In this paper, we isolate the effect of political representation on attitudes by taking advantage of large nonlinearities in the function which assigns seats in local municipality elections in Sweden. Using this threshold variation from many local quasi-experiments, we estimate whether gaining an additional seat changes attitudes about a party's signature policy issues after an election.

We estimate that after the Green Party gets an extra seat, there is an increase in anti-nuclear attitudes among the municipal population, consistent with the party's goals. In contrast, the election of a Sweden Democrat or a Left Party politician decreases negative attitudes towards immigration and a six hour workday, respectively, which is opposite each party's policy position. Mirroring these attitudinal changes, the Green Party receives more votes in the next election after gaining a seat, while the Sweden Democrats and the Left Party experience no such incumbency advantage. A key finding is that politicians can both

persuade and alienate citizens, as demonstrated by the difference between the Green Party's success and the Sweden Democrats' and Left Party's failure to get individuals to adopt their views. Exploring two possible mechanisms, we find that gaining an extra seat (i) draws in lower quality politicians and (ii) increases negative newspaper coverage for the Sweden Democrats, with no statistical evidence for these margins found for the the two other parties.

Our paper provides some of the first causal evidence that public attitudes are influenced by which political parties are elected to power. This has important implications, as it means naive models which regress a party's policy positions on voters' attitudes will suffer from reverse causality. It also means that electoral models of how politicians trade off election probabilities with preferred policies operate in a dynamic world: political representation can alter citizen's attitudes in ways that can improve (or hurt) future election success. Additionally, our results indicate the power politicians have to alter attitudes depends at least in part on outside forces, with the media playing an important mediating role in the framing of a political party and their message.

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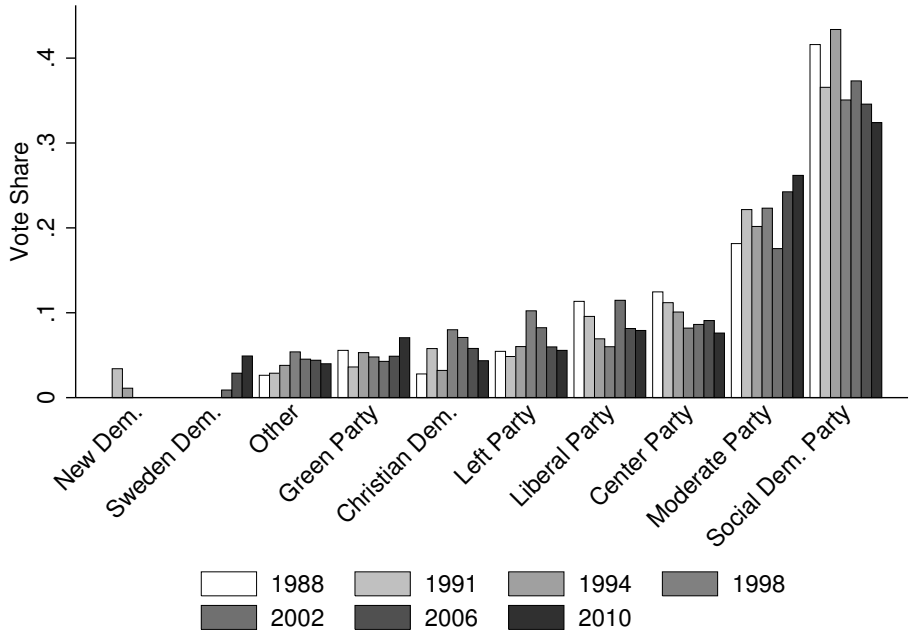
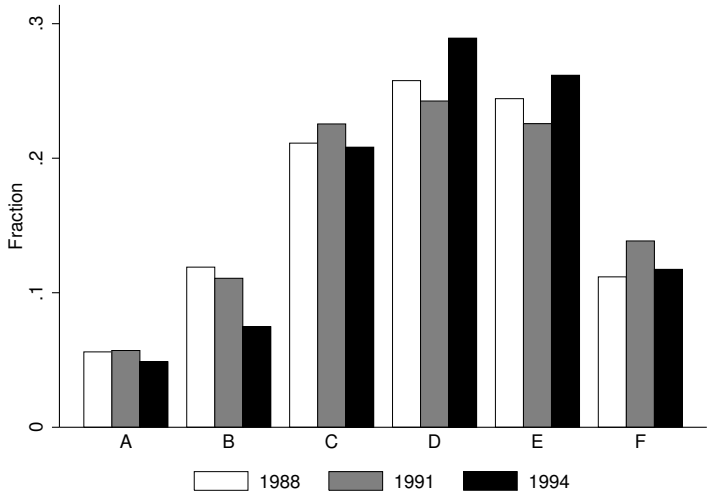
Figure 1. Party Vote Shares in Municipal Elections



Notes: Average party vote shares across municipalities. Election data come from Statistics Sweden.

Figure 2. Attitudes Towards Nuclear Energy

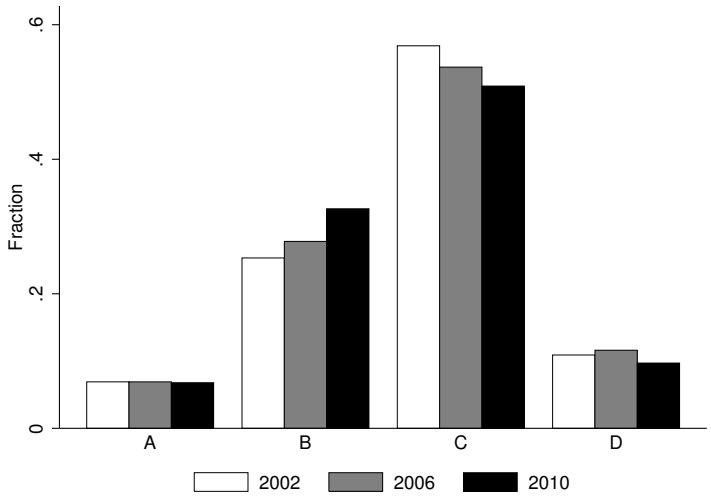


In 1980 we had a referendum on nuclear power in Sweden. After the referendum, Parliament decided to phase out nuclear power by 2010. What is your opinion about nuclear energy use in Sweden?

A) Stop nuclear power immediately
B) Stop nuclear power earlier than 2010
C) Phase out nuclear power by 2010
D) Phase out nuclear power, but after 2010
E) Do not phase out nuclear power at all. Keep using it
F) No opinion

Notes: Surveys of randomly sampled adults in Sweden conducted by the SOM Institute in the years after the 1988, 1991 and 1994 elections. 14,645 respondents across all survey years. A negative attitude towards nuclear energy is defined as an answer of A or B.

Figure 3. Attitudes Towards Immigration

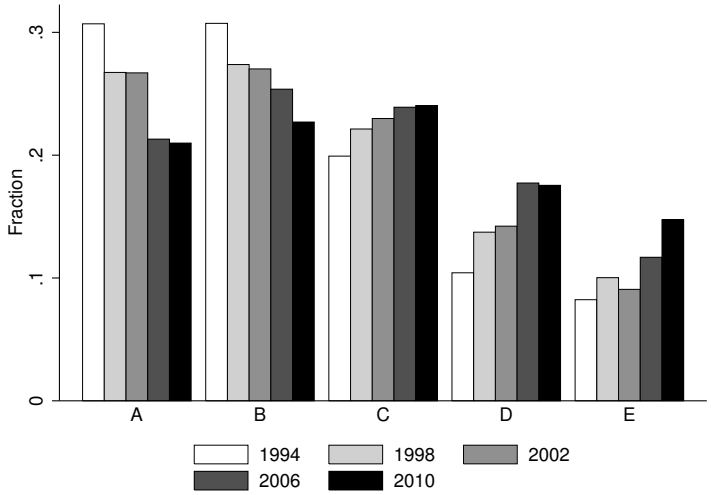


Should Sweden continue accepting (refugee) immigrants to the same extent as now?

A) To a greater extent
B) To the same extent
C) To a lesser extent
D) Do not know

Notes: Surveys of randomly sampled adults in Sweden conducted by FSI in the years after the 2002, 2006 and 2010 elections. 23,226 respondents across all survey years. In some years, the word refugee was included in the question. A negative attitude towards immigration is defined as an answer of C.

Figure 4. Attitudes Towards a Six Hour Workday

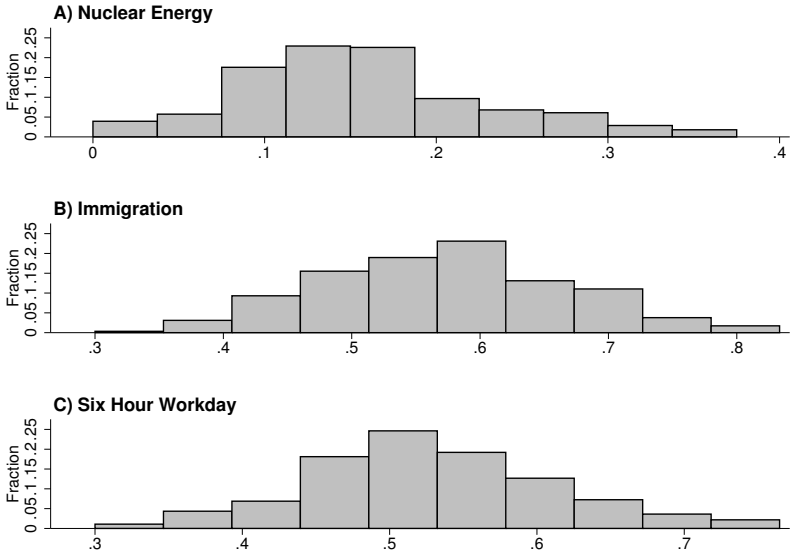


Below are a number of proposals which have occurred in the political debate. In each case, what is you opinion. Adopt six hour workday.

A) Very good proposal
B) Good proposal
C) Neither good or bad proposal
D) Bad proposal
E) Very bad proposal

Notes: Surveys of randomly sampled adults in Sweden conducted by the SOM Institute in the years after the 1994, 1998, 2002, 2006, and 2010 elections. 27,427 respondents across all survey years. A positive attitude towards a six hour workday is defined as an answer of A or B.

Figure 5. Distribution of Attitudes Across Municipalities



Notes: Attitudes are defined in the notes to Figures 2, 3 and 4. Distribution across 283 municipalities in panel A, 290 municipalities in panel B, and 280 municipalities in panel C. For visual clarity, four municipalities in the tails of the histograms are omitted from the graphs in Panels A and C.

Table 1. Examples of the Seat Allocation Formula with Five Seats and Three Parties

		Quotient			
Party	Votes	Votes/1.4	Votes/3	Votes/5	Votes/7
		A. Baseline example			
Party A	5,800	*4,142.9 (1)*	*1,933.3 (3)*	*1,160.0 (4)*	828.6
Party B	2,900	*2,071.4 (2)*	*966.7 (5)*	580.0	414.3
Party C	1,300	928.6	433.3	260.0	185.7
		B. An additional 54 people who did not vote in the baseline now vote for Party C			
Party A	5,800	*4,142.9 (1)*	*1,933.3 (3)*	*1,160.0 (4)*	828.6
Party B	2,900	*2,071.4 (2)*	966.7	580.0	414.3
Party C	1,354	*967.1 (5)*	451.3	270.8	193.4
		C. Party C votes unchanged from the baseline, but 115 voters switch from Party B to A			
Party A	5,915	*4,225.0 (1)*	*1,971.7 (3)*	*1,183.0 (4)*	845.0
Party B	2,785	*1,989.3 (2)*	928.3	557.0	397.9
Party C	1,300	*928.6 (5)*	433.3	260.0	185.7
		D. Party A votes unchanged from the baseline, but 37 voters switch from Party B to C			
Party A	5,800	*4,142.9 (1)*	*1,933.3 (3)*	*1,160.0 (4)*	828.6
Party B	2,863	*2,045.0 (2)*	954.3	572.6	409.0
Party C	1,337	*955.0 (5)*	445.7	267.4	191.0

Note: Numbers in parentheses denote which party is allocated the first, second, third, fourth and fifth seat, as determined by the seat assignment function described in Section 2.2.

Table 2. Political Representation and Public Attitudes: Control Function Estimates

	Dependent variable:							
	A. Negative attitude towards nuclear energy B. Negative attitude towards immigration C. Positive attitude towards 6 hour workday							
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	N	Dep. mean
A. Green Party seat share×100	.0003	.0094**	.0107**	.0145**	.0132**	.0124**	14,645	.15
	(.0024)	(.0040)	(.0045)	(.0050)	(.0062)	(.0043)		
Within R-squared	.044	.044	.046	.048	.054	.048		
B. Sweden Democrat seat share×100	-.0032	-.0160**	-.0178**	-.0212**	-.0208**	-.0223**	23,226	.55
	(.0031)	(.0055)	(.0060)	(.0061)	(.0064)	(.0062)		
Within R-squared	.047	.048	.050	.052	.055	.052		
C. Left Party seat share×100	-.0060**	-.0111**	-.0115**	-.0139**	-.0153**	-.0114**	27,427	.51
	(.0025)	(.0043)	(.0047)	(.0047)	(.0051)	(.0047)		
Within R-squared	.088	.088	.089	.091	.093	.091		
Control function (# terms for A, B, C)								
None (OLS)	0, 0, 0							
1st order		10, 10, 11						
1st + partial 2nd order			30, 30, 33					
2nd order (baseline)				65, 65, 76				
2nd + partial 3rd order					130, 130, 152			
Covariate selection						35, 38, 52		

Notes: All specifications include municipality fixed effects, survey year fixed effects and controls for the individual characteristics used in Appendix Table A3. The control function terms are described in Section 6.1. The sample is restricted to municipalities where the party of interest has less than or equal to five seats. Panel A has 283 municipalities for the election years of 1988, 1991 and 1994 and uses survey data on individual's attitudes from 1988 to 1997. Panel B has 290 municipalities for the election years of 2002, 2006 and 2010 and uses attitude data from 2002 to 2012. Panel C has 280 municipalities for the election years of 1994, 1998, 2002, 2006 and 2010 and uses attitudes data from 1996 to 2013. Standard errors clustered by municipality in parentheses; within R-squared is the within municipality R-squared.

***significant at the 5% level; *significant at the 10% level*

Table 3. Including the Seat Share Variables for All of the Other Parties and Using the Party of Interest as the Omitted Category

	Dependent variable:		
	A. Negative attitude towards nuclear energy B. Negative attitude towards immigration C. Positive attitude towards 6 hour workday		
	A. Green Party	B. Sweden Dem.	C. Left Party
	(i)	(ii)	(iii)
Moderates seat share×100	-.0072	.0262**	.0110**
	(.0069)	(.0079)	(.0059)
Center Party seat share×100	-.0147**	.0312**	.0163**
	(.0072)	(.0077)	(.0060)
Liberal Party seat share×100	-.0071	.0203**	.0111*
	(.0062)	(.0079)	(.0064)
Christian Democrats seat share×100	-.0127*	.0116*	.0129**
	(.0076)	(.0069)	(.0063)
Social Democrats seat share×100	-.0182**	.0200**	.0160**
	(.0058)	(.0076)	(.0054)
New Democracy seat share×100	-.0204**	–	.0212
	(.0093)		(.0243)
Other parties seat share×100	-.0280**	.0199**	.0078
	(.0067)	(.0081)	(.0060)
Green Party seat share×100	–	.0210**	.0168**
		(.0094)	(.0066)
Sweden Democrats seat share×100	–	–	.0155**
			(.0072)
Left Party seat share×100	-.0159**	.0370**	–
	(.0071)	(.0088)	
Within R-squared	.049	.052	.091
N	14,645	23,226	27,427

Notes: All specifications are the same as the baseline in Table 2 column (iv), except that the party of interest is left out and all other parties are included. The Sweden Democrats did not exist during the sample period in column (i), and New Democracy did not exist during the sample period in column (ii).
***significant at the 5% level; *significant at the 10% level*

Table 4. Robustness Checks

	Dependent variable: A. Negative attitude towards nuclear energy B. Negative attitude towards immigration C. Positive attitude towards 6 hour workday		
	A. Green Party (i)	B. Sweden Dem. (ii)	C. Left Party (iii)
1) Baseline			
Party seat share×100	.0145**	-.0212**	-.0139**
	(.0050)	(.0061)	(.0047)
2) Baseline, using seats instead of seat shares			
Party seats	.0270**	-.0338**	-.0247**
	(.0081)	(.0108)	(.0085)
3) Baseline, no restriction on # seats			
Party seat share×100	.0117**	-.0183**	-.0075*
	(.0045)	(.0056)	(.0038)
4) Baseline, omitting muni f.e.'s			
Party seat share×100	.0106**	-.0103**	-.0135**
	(.0038)	(.0052)	(.0040)
5) Baseline, omitting ind. characteristics			
Party seat share×100	.0138**	-.0207**	-.0150**
	(.0051)	(.0064)	(.0049)
6) Baseline, excluding muni's w/o seat change			
Party seat share×100	.0213**	-.0182**	-.0147**
	(.0053)	(.0069)	(.0051)
7) Univariate RD			
Party seat share×100	.0053	-.0200**	-.0158**
	(.0074)	(.0085)	(.0062)
8) Univariate RD, excluding muni's w/o seat change			
Party seat share×100	.0167*	-.0138*	-.0138**
	(.0095)	(.0080)	(.0066)
9) Univariate RD, Folke specification			
Party seat share×100	.0062	-.0247**	-.0149**
	(.0075)	(.0088)	(.0065)
Observations in identifying window	6,641	6,878	11,526

Notes: Specifications 1-6 mirror the baseline specification in Table 2 column (iv). Specifications 7 and 8 use the collapsed univariate running variable described in Section 6.5.3, allow for separate linear trends to the left and right of the cutoff and use triangular weights. Specification 9 follows Folke (2014), reducing the window size and comparing levels to the left and right of the cutoff. For further details, see the text. The number of observations for the three columns, in order, is 14,645, 23,226 and 27,427 for all regressions, except for specification 3, where the number of observations is 16,372, 24,126 and 44,147.
***significant at the 5% level; *significant at the 10% level*

Table 5. Information and Polarization: No Opinion and Opposite Attitude Regressions

	Dependent variable: "No opinion" (A) "Do not know" (B)					Dependent variable: Positive attitude (A and B) Negative attitude (C)				
	(i)	(ii)	(iii)	N	Dep. mean	(iv)	(v)	(vi)	N	Dep. mean
A. Green Party seat share×100	-.0054**	-.0075*	-.0077**	14,645	.12	.0045	-.0028	-.0019	14,645	.24
	(.0023)	(.0044)	(.0039)			(.0033)	(.0061)	(.0058)		
Within R-squared	.036	.041	.041			.052	.057	.056		
B. Sweden Dem. seat share×100	.0015	.0038	.0023	23,226	.11	.0022	.0029	.0028	23,226	.07
	(.0017)	(.0035)	(.0034)			(.0014)	(.0025)	(.0023)		
Within R-squared	.009	.012	.011			.026	.030	.031		
C. Left Party seat share×100						.0050**	.0125**	.0100**	27,427	.26
						(.0023)	(.0046)	(.0045)		
Within R-squared						.073	.077	.078		
Control function (# terms for A, B, C)										
None (OLS)	0, 0, 0					0, 0, 0				
2nd order (baseline)		65, 65, 76					65, 65, 76			
Covariate selection			42, 31, -					33, 50, 52		

*Notes: Regressions mirror the baseline specification (iv) and the covariate selection specification (vi) in Table 2, but with different dependent variables relating to nuclear energy, immigration attitudes, and six hour workday attitudes. An answer of "no opinion" or "do not know" is not an option for the six hour workday question. Standard errors clustered by municipality in parentheses; within R-squared is the within municipality R-squared. **significant at the 5% level; *significant at the 10% level*

Table 6. Incumbency Advantage: Party Representation and Votes in the Next Election

	Dependent variable: Log votes for party in next election			
	(i)	(ii)	(iii)	N
A. Green Party seat share×100	.2972**	.0341*	.0520**	831
	(.0266)	(.0197)	(.0190)	
R-squared	.317	.884	.903	
B. Sweden Democrat seat share×100	.2556**	-.0071	.0116	553
	(.0325)	(.0311)	(.0291)	
R-squared	.186	.836	.879	
C. Left Party seat share×100	.1506**	-.0109	-.0052	954
	(.0168)	(.0160)	(.0152)	
R-squared	.272	.881	.895	
Control function (# terms for A, B, C)				
None (OLS)	0, 0, 0			
2nd order (baseline)		65, 65, 76		
Covariate selection			63, 73, 116	

Notes: All specifications include election year fixed effects. There are 283 municipalities for the election years of 1988, 1991 and 1994 in panel A, 290 municipalities for the election years 2002 and 2006 in panel B, and 276 municipalities for the election years 1994, 1998, 2002 and 2006 in panel C. One observation in panel B is dropped since it has 0 votes for the party in the next election. Standard errors clustered by municipality in parentheses.

***significant at the 5% level; *significant at the 10% level*

Table 7. Politician Quality: Party Representation and Seat Instability

	Dependent variable: Unable to fill elected seat with a stable politician				
	(i)	(ii)	(iii)	N	Dep. mean
A. Green Party seat share×100	.0091	.0116	.0144	550	.06
	(.0102)	(.0245)	(.0198)		
Within R-squared	.007	.169	.137		
B. Sweden Democrat seat share×100	.0271	.1102**	.1219**	555	.23
	(.0182)	(.0310)	(.0251)		
Within R-squared	.029	.275	.223		
C. Left Party seat share×100	-.0024	.0186	.0128	535	.06
	(.0131)	(.0259)	(.0229)		
Within R-squared	.004	.150	.254		
Control function (# terms for A, B, C)					
None (OLS)	0, 0, 0				
2nd order (baseline)		65, 65, 76			
Covariate selection			25, 22, 31		

Notes: The dependent variable is an indicator which equals one if the party cannot fill an elected seat or if an elected seat is filled with at least three different appointed politicians between elections. All specifications include election year fixed effects. In panels A, B and C, respectively, there are 280, 284 and 276 municipalities for the election years of 2006 and 2010. Standard errors clustered by municipality in parentheses; within R-squared is the within municipality R-squared.

***significant at the 5% level; *significant at the 10% level*

Table 8. Power of the Media: Party Representation and Newspaper Coverage

	Dependent variable: ln(articles per election period) A. Search term: **"Green Party"** B. Search term: **"Sweden Democrat"** C. Search term: **"Left Party"**						
	(i)	(ii)	(iii)	(iv)	(v)	N	Ave. # articles
A. Green Party seat share×100	.0834	.0506	.0445	.0896	.0574	200	760
[95% c.i.]	[-.026, .193]	[-.062, .163]	[-.096, .185]	[-.068, .247]	[-.047, .162]		
Within R-squared	0.048	0.301	0.488	0.618	0.400		
B. Sweden Democrat seat share×100	.0281	.1910**	.1985**	.2159**	.1668**	268	412
[95% c.i.]	[-.041, .097]	[.080, .302]	[.057, .340]	[.050, .382]	[.053, .281]		
Within R-squared	.448	.552	.666	.705	.601		
C. Left Party seat share×100	.0170	.1120	.0978	.1340	.1388	206	646
[95% c.i.]	[-.113, .147]	[-.032, .256]	[-.106, .301]	[-.101, .369]	[-.043, .321]		
Within R-squared	.045	.351	.435	.497	.553		
Control function (# terms)							
None (OLS)	0, 0, 0						
1st order		10, 10, 11					
1st + squares			21, ,21, 23				
1st + partial 2nd order (baseline)				30, 30, 33			
Covariate selection (for A, B, C)					11, 11, 23		

Notes: The dependent variable in panel A, B and C is the natural log of the number of articles per post-election period appearing in a newspaper which include the search terms "Green Party", "Sweden Democrat" and "Left Party", respectively. All specifications include newspaper fixed effects. For the Sweden Democrats, there are 139 newspapers for the election years 2006 and 2010 for a total of 278 potential observations; because of the five seats or fewer sample restriction, the actual number of observations is 268. The data for the Sweden Democrats was collected in 2013, while the data for the Green Party and the Left Party was collected in 2016. Due to copyright issues, 11 newspapers were removed from the database in the intervening period, with 128 newspapers remaining. Combined with the five seats or fewer sample restriction, the actual number of observations is 200 for the Green Party and 206 for the Left Party. Reported p-values and 95% confidence intervals are based on 5,000 iterations of the studentized block bootstrap. See Section 8.2.1 for details. Within R-squared is the within newspaper R-squared.

***significant at the 5% level; *significant at the 10% level*

Table 9. Power of the Media: Sweden Democrat Representation and Newspaper Content

	Dependent variable : arcsin(articles per election period) – Search terms in **bold**					
	"Sweden Democrats" and ("Racism" or "Xenophobia")			**NOT "Sweden Democrats" and ("Racism" or "Xenophobia")**		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
SD seat share×100	.0527	.3556**	.2819**	-.0011	.0609	.0802
[95% c.i.]	[-.054, .160]	[.118, .594]	[.099, .465]	[-.074, .072]	[-.235, .357]	[-.085, .245]
Control function (# terms)						
A) None (OLS)	0			0		
B) 1st + partial 2nd order (baseline)		30			30	
C) Covariate selection			22			7
Within R-squared	.329	.622	.642	.039	.282	.190
Ave. # articles	79			259		
N	268			268		
	"Sweden Democrats" and ("Immigrant" and "Integration")			**NOT "Sweden Democrats" and ("Immigrant" and "Integration")**		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
SD seat share×100	.0597	.2369**	.2374**	-.1444**	.0642	.0866
[95% c.i.]	[-.0101, .129]	[.017, .457]	[.114, .361]	[-.247, -.042]	[-.206, .334]	[-.086, .259]
Control function (# terms)						
A) None (OLS)	0			0		
B) 1st + partial 2nd order (baseline)		30			30	
C) Covariate selection			12			17
Within R-squared	.073	.380	.339			
Ave. # articles	18			68		
N	268			268		

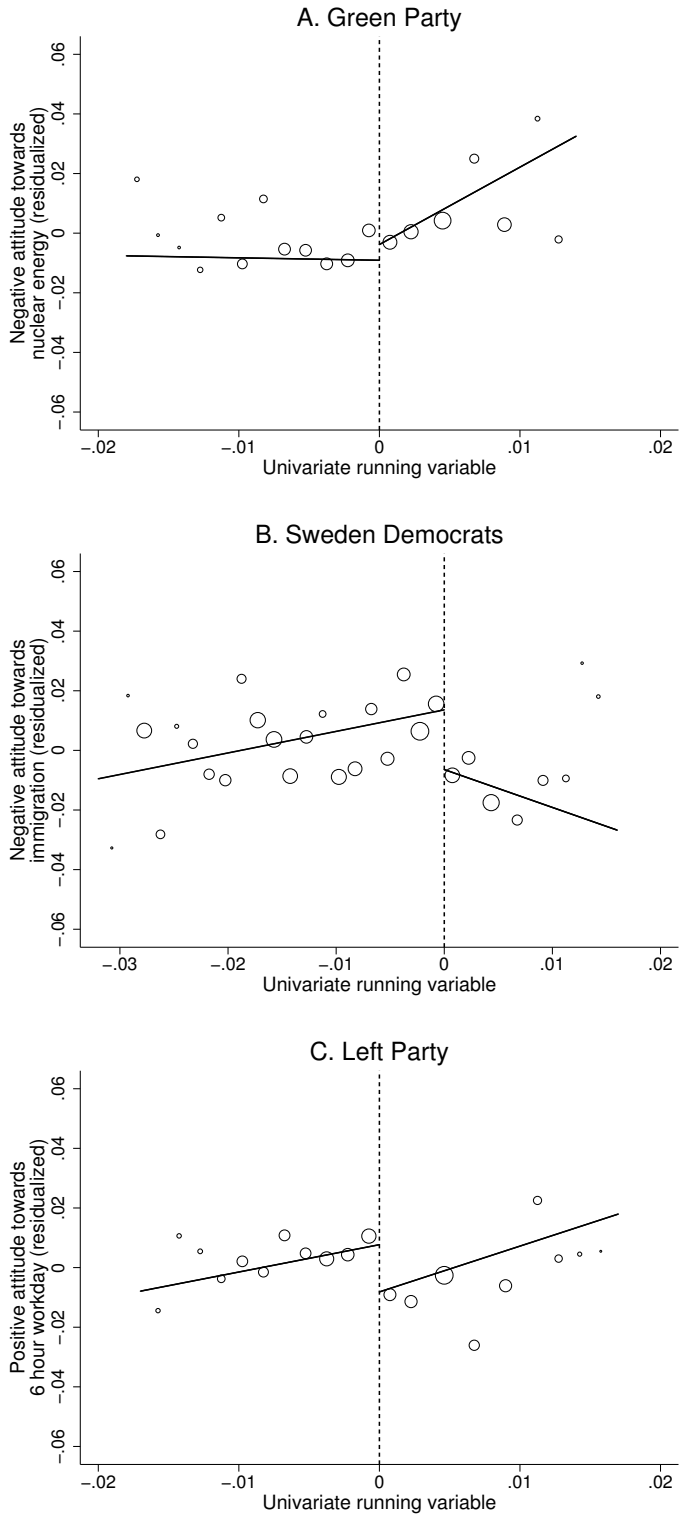
Notes: The dependent variable is the inverse hyperbolic sine of the number of articles per post-election period appearing in a newspaper which include the specified search terms. Specifications mirror those in Table 8 column (iv). Reported p-values and 95% confidence intervals are based on 5,000 iterations of the studentized block bootstrap. See Section 8.2.1 for details. Within R-squared is the within newspaper R-squared.
***significant at the 5% level; *significant at the 10% level*

Appendix Figures and Tables

"Do Politicians Change Public Attitudes?"

Magnus Carlsson, Gordon B. Dahl and Dan-Olof Rooth

Appendix Figure A1. Party Vote Shares in Municipal Elections



Notes: Each circle is the average value of residualized attitudes (regressing out municipality fixed effects, survey year fixed effects and individual characteristics) within equally spaced bins, where the size of the circle is proportional to the number of observations in the bin. For visual clarity, 0.3% and 0.6% of the data in bins more extreme than those shown are excluded from panel A and C, respectively. The solid lines are the linear trends estimated using specification 7 in Table 4, shifted so as to be centered around 0 at the average value of the running variable.

Appendix Table A1. Selection of Attitude Questions

Strong connection between a party and a policy issue in exit poll surveys (N=3)
Nuclear power (hb10_1987)
[related questions: hb10_1996, _2000, _2005, _2011 and hb900a, b, c]
Immigration (FSI)
[related question on refugees: SOM (fc900b)]
Six hour workday (db900b)

Too many parties associated with the policy issue in exit poll surveys (N=2)
Lower taxes (dc900b), Sweden should withdraw from the EU (fb900l)

No party associated with the policy issue in exit poll surveys (N=17)
Allow homosexual couples to adopt (bb900b, bb901b), Allow euthanasia (bb900a, bb901c), Ban stem cell research (bb901f), Establish a presidential republic (cd240a), Raise UI benefits (db900i), Increase number of private schools (ic900a), Increase private school support (ic900b), Reduce public sector (ea900a), Privatize more health care (ed900a), Privatize elderly care (ed900c), Reduce defense spending (fa900b), Lower foreign aid (fa900i), Seek membership in NATO (fa900t), Participate in EU defense cooperation (fb900g), Join the EMU (fb900j-2), Adopt the Euro (fb900j-3, fb900j), Legislate the sorting of household waste (ha900d)

No single, clear policy issue (N=3)
Prioritize an environmentally-friendly society even if it implies lower growth (ba900a, b), Prioritize a society with increased equality between women and men (ba900c), Strengthen animal rights (bb901a)

Question not asked in three consecutive post-election periods (N=37)
Restrict right to abortion (bb900c, bb901d), Death penalty for murder (bb901g), Ban face-covering veils (bb901i), Reduce income inequality (bd900a), Strengthen LGBTs' standing in society (bb900f, bb901j), Establish a republic (cd240b), Maintain or abolish monarchy? (cd245), Implement more municipal referendums (cd900a), Lower voting age to 16 in all elections (cd900b), Entrust important decisions to experts (cd900c), Lower the 4% threshold for parliamentary representation (cd900d), Implement more national referendums (cd900e), Stagger parliament and local government elections (cd900f), Weaken labor laws (db900a), Time limit on UI benefits (db900c), Increase wage inequality (db900d), Spend more on labor market policy measures run by AMS (db900e), Stricter requirements for unemployed to take available jobs (db900f), Stricter requirements for unemployed to move for a job (db900g), Raise taxes (dc900a), Reduce public spending (ea900b), Transfer state owned businesses into private hands (eb900a), Sell state-owned companies (eb900b), Re-introduce compulsory military service (fa900a), Cancel participation in UN military operations in Afghanistan (fa901a), Nordic countries should form a federal state (fa901c), Abstain from participating in military operations abroad (fa901d), Introduce common EU currency (fb900j-1), Grant Turkey EU membership (fb900m), Accept more refugees to Sweden (fc900a), Immigration policies should adapt refugees / immigrants to Swedish culture (fc900e), Immigration policies should preserve refugee / immigrant culture (fc900f), Prohibit chemical pesticides in agriculture (ha900a), Raise gasoline tax to improve environment (ha900b), Ban plastic bottles and aluminum cans (ha900c), Ban detergents containing brighteners (ha900e), Raise carbon tax on gasoline (ha900m, ha901a)

Notes: List includes all 62 potential attitude questions available in the SOM database between 1988 and 2013. See text for details on which policy questions can be linked to a party.

Appendix Table A2. Summary Statistics

	A. Nuclear energy sample period	B. Immigration sample period	C. 6 hour workday sample period
	(i)	(ii)	(iii)
1) Survey respondents			
Compulsory education	.31	.30	.25
Secondary education	.47	.28	.45
Some college or more	.19	.31	.28
Education missing	.02	.11	.02
Female	.50	.53	.51
Age	44	48	49
Immigrant	–	.19	–
Immigrant status missing	–	.10	–
N	14,645	23,226	27,427
2) Municipalities			
Fraction voting	.86	.82	.83
Fraction net migration	.29	.11	.08
Tax rate	.17	.21	.21
Fraction immigrant	.04	.04	.04
Fraction college graduate	.10	.16	.14
Fraction older than 45	.41	.47	.45
Unemployment rate	.05	.08	.09
N	831	844	1,225

Notes: The top panel reports average demographic characteristics of respondents for our baseline samples from the SOM surveys (nuclear energy issue, 1988-1997; six hour workday issue, 1994-2013) and the FSI surveys (immigration issue, 2002-2011). Data on municipality characteristics by election year in the bottom panel come from Statistics Sweden.

Appendix Table A3. Personal Characteristics and Attitudes

	Dependent variable:		
	A. Negative attitude towards nuclear energy B. Negative attitude towards immigration C. Positive attitude towards 6 hour workday		
	A. Green Party Sample Period	B. Sweden Dem. Sample Period	C. Left Party Sample Period
	(i)	(ii)	(iii)
Female	.1004**	-.0570**	.1960**
	(.0058)	(.0062)	(.0062)
Education			
Compulsory (omitted)	–	–	–
Secondary	-.0336**	-.0192**	-.0590**
	(.0073)	(.0087)	(.0081)
Some college or more	-.0124	-.2151**	-.1100**
	(.0089)	(.0089)	(.0093)
Age	-.0084**	.0037**	.0194**
	(.0013)	(.0014)	(.0009)
Age squared×100	.0066**	-.0021	-.0239**
	(.0013)	(.0015)	(.0010)
Immigrant		-.0599**	
		(.0089)	
Municipality f.e.'s	X	X	X
Within R-squared	.0435	.0474	.0874
Dependent mean	.15	.55	.51
N	14,645	23,226	27,427

Notes: All specifications include survey year fixed effects and indicators for missing values for the education, age and immigrant variables. See the notes to Table 2 for details on the sample. Standard errors clustered by municipality in parentheses; within R-squared is the within municipality R-squared.
***significant at the 5% level; *significant at the 10% level*

Appendix Table A4. Exogeneity Tests: The Effect of Political Representation on Lagged Attitudes and Predetermined Municipality Characteristics

	Dependent variables:									
	Individuals		Municipalities							
	Lagged attitudes		% voting	% net migration	Tax rate	% immigrant	% college	% older than 45	Unempl. rate	
	(i)	N	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	N
A. Green Party	-.0071	14,857	-.0223	-.0135	.0205	.0004	-.0063	.0035	.0124	831
seat share×100	(.0062)		(.0343)	(.0369)	(.0243)	(.0241)	(.0209)	(.0449)	(.0675)	
B. Sweden Democrat	.0049	25,769	-.0566	.0197	.0027	.0133	.0261	-.0243	.0746	844
seat share×100	(.0049)		(.0360)	(.0295)	(.0151)	(.0281)	(.0245)	(.0360)	(.0558)	
C. Left Party	.0082	25,153	.0117	.0018	-.0330*	.0356	.0298	-.0444	-.0600	1,225
seat share×100	(.0056)		(.0408)	(.0278)	(.0189)	(.0379)	(.0313)	(.0468)	(.0499)	

Notes: Column (i) mirrors baseline specification (iv) in Table 2, using lagged instead of future attitudes as the dependent variable. Columns (ii) through (viii) include election year and municipality fixed effects. Panel A includes the election years of 1988, 1991 and 1994; panel B includes 2002, 2006 and 2010; panel C includes 1994, 1998, 2002, 2006 and 2010. Standard errors clustered by municipality in parentheses.
***significant at the 5% level; *significant at the 10% level*

Appendix Table A5. Heterogeneous Effects of Party Representation on Attitudes

	Dependent variable:		
	A. Negative attitude towards nuclear energy B. Negative attitude towards immigration C. Positive attitude towards 6 hour workday		
	A. Green Party	B. Sweden Dem.	C. Left Party
	(i)	(ii)	(iii)
1) Education interactions			
Compulsory × seat share	.0141**	-.0234**	-.0138**
	(.0053)	(.0065)	(.0049)
Secondary × seat share	.0153**	-.0212**	-.0143**
	(.0053)	(.0067)	(.0048)
College × seat share	.0114**	-.0193**	-.0130**
	(.0056)	(.0067)	(.0052)
p-value (test of equal coeffs.)	[.482]	[.578]	[.887]
2) Gender interactions			
Female × seat share	.0133**	-.0233**	-.0139**
	(.0053)	(.0064)	(.0046)
Male × seat share	.0156**	-.0187**	-.0138**
	(.0051)	(.0062)	(.0050)
p-value (test of equal coeffs.)	[.384]	[.137]	[.977]
3) Age interactions			
age≤45 × seat share	.0145**	-.0218**	-.0154**
	(.0053)	(.0064)	(.0048)
age>45 × seat share	.0131**	-.0211**	-.0125**
	(.0052)	(.0062)	(.0050)
p-value (test of equal coeffs.)	[.633]	[.807]	[.197]
4) Immigrant interactions			
Native × seat shares	–	-.0208**	–
		(.0063)	
Immigrant × seat share	–	-.0234**	–
		(.0066)	
p-value (test of equal coeffs.)		[.491]	
5) Municipality size interactions			
Small muni × seat share	.0177**	-.0177**	-.0211**
	(.0076)	(.0078)	(.0061)
Large muni × seat share	.0131**	-.0221**	-.0078*
	(.0049)	(.0067)	(.0047)
p-value (test of equal coeffs.)	[.477]	[.482]	[.024]

Notes: Regressions mirror baseline specification (iv) in Table 2, with the addition of interaction terms involving the seat share variable. A large municipality is defined as having a population above the mean (roughly 30,000 for all 3 columns). Standard errors clustered by municipality in parentheses.
***significant at the 5% level; *significant at the 10% level*

Appendix Table A6. Power of the Media: Green Party and Left Party Representation and Newspaper Content

	Dependent variable : arcsin(articles per election period) – Search terms in **bold**					
	"Green Party" & ("Nuclear Energy")			**NOT "Green Party" & ("Nuclear Energy")**		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Green Party seat share×100	.1019	.0638	.0881	.1013	-.0118	-.0447
95% c.i.	[-.025, .229]	[-.243, .371]	[-.095, .271]	[-.051, .254]	[-.217, .193]	[-.231, .141]
Control function (# terms)						
A) None (OLS)	0			0		
B) 1st + partial 2nd order (baseline)		30			30	
C) Covariate selection			11			28
Within R-squared	.336	.567	.575	.183	.707	.764
Ave. # articles	57			391		
N	200			200		
	"Left Party" & ("Six hour workday")			**NOT "Left Party" & ("Six hour workday")**		
	(i)	(ii)	(iii)	(iv)	(v)	(vi)
Left Party seat share×100	.0210	.0628	.1493	-.0351	.0037	.0573
95% c.i.	[-.164, .206]	[-.246, .372]	[-.062, .360]	[-.194, .124]	[-.374, .381]	[-.191, .306]
Control function (# terms)						
A) None (OLS)	0			0		
B) 1st + partial 2nd order (baseline)		33			33	
C) Covariate selection			14			26
Within R-squared	.053	.384	.274	.003	.404	.520
Ave. # articles	4			5		
N	206			206		

Notes: The dependent variable is the inverse hyperbolic sine of the number of articles per post-election period appearing in a newspaper which include the specified search terms. Specifications mirror those in Table 8 column (iv). Reported p-values and 95% confidence intervals are based on 5,000 iterations of the studentized block bootstrap. See Section 8.2.1 for details. Within R-squared is the within newspaper R-squared.
***significant at the 5% level; *significant at the 10% level*