

Returns to Office in National and Local Politics: A Bootstrap Method and Evidence from Finland*

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Abstract

We estimate the private returns to being elected to parliament or to a municipal council using a regression discontinuity (RD) design. We first present a bootstrap method for measuring the closeness of elections, which can be applied to any electoral system. We then apply the method to perform an RD estimation in Finland, where seats are assigned according to a proportional open list system. Becoming a member of parliament increases annual earnings initially by about €20,000, and getting elected to a municipal council by about €1000. Subsequent earnings dynamics reveal that the returns to parliamentarians accrue mainly during the time in office, while the effect on later earnings is small. We also find a relatively weak individual incumbency advantage of 18 percentage points in parliamentary elections; the incumbency effect in municipal elections is negligible.

Keywords: returns to office, close elections, regression discontinuity

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1 Introduction

Financial rewards—obtained both during a political career and afterwards—are likely to have profound societal implications by affecting the selection and behavior of politicians. The remuneration of elected politicians is among the most contentious political issues, especially relative to its share of aggregate public expenditure, and perceived high compensation is often the subject to public outcry. Yet, as elected politicians bear the opportunity cost of forgoing alternative career opportunities, it is not obvious that the monetary returns to winning an election are positive even when salaries are relatively high. We use Finnish data on candidates in 11 parliamentary elections from 1970 to 2007 and in four municipal elections from 1996 to 2008 and apply a regression discontinuity (RD) design to estimate the effect of getting elected on politicians’ incomes, including how those incomes evolve during their later careers.

In the RD design, the post-election incomes of close election losers serve as the counterfactual for the post-election incomes of close winners. As usual, the basic idea is to exploit the discontinuity of electoral outcomes in the number of votes: while election winners are likely to differ from losers in many unobservable ways that affect income, the differences between close winners and close losers should be essentially random—if “close” is appropriately defined. The Finnish electoral system has open lists and multi-seat districts, which result in multiple competitive margins for individual candidates and makes it challenging to measure the closeness of their electoral outcomes. We introduce a bootstrap method for measuring electoral closeness, which makes it straightforward to apply an RD design under any electoral system. The bootstrap method is based on resampling votes from the actual distribution of votes; the closeness of actual electoral outcomes is measured by how often they appear in the bootstrapped distribution of electoral outcomes.

Our election data covers 12,398 and 93,741 unique candidates in parliamentary and municipal elections respectively. Their income data comes from the tax register, which covers both earnings and capital income between 1993 and 2011. We find that getting elected to the parliament caused an increase in earnings of about €20,000 per year during the first electoral period after election. This implies that, among marginal candidates, the earnings of those elected are on average 25% above their contemporaneous outside opportunities. However, the effect fades out over time: the effect is halved during the second electoral period after getting elected, and from the third subsequent electoral period onwards it stays at about €3000-€6000 per year but is no longer statistically significant. Getting elected to a municipal council increased annual earnings only by about €1000. Winning either type of election has no discernible effect on subsequent capital income.

The returns to getting elected to parliament occur mainly while in office, whereas

effects on subsequent earnings outside politics appear small. This also implies that there is no earnings penalty for having held a political office, despite the loss of non-political work experience that it entails. However, it should be noted that the causal effect of winning an election does not measure the lifetime return from holding electoral office, because political careers may entail costs or benefits that affect the incomes of both winners and losers prior to the election. Such effects could arise, for example, from the opportunity cost of time spent campaigning or from connections made while furthering one's political career.

Eggers and Hainmueller (2009) were the first to use the RD design in estimating the economic return to getting elected; they had data on the value of estates of British politicians at the time of their death and found significant returns for members of the Conservative Party. Two other papers that use wealth data in an RD design find positive returns to holding political office: Querubin and Snyder (2013) for the 19th century United States; and Fisman, Schulz, and Vig (2014) for contemporary India. The effects on accumulated wealth could result from differences in earnings, savings, or returns to investment. Like us, researchers in Sweden and Norway use register data on income: Willumsen (2011) provides the only other estimates of direct earnings effects in national politics. He studies the effect after the end of the political career and finds an effect of 10-15%. Lundqvist (2011) uses data on candidates in local elections in Sweden and finds that there are no significant returns. Folke, Persson, and Rickne (2016) exploit close elections between left and right bloc parties (which tend to form coalitions) to measure the returns to close relatives of top executives of Swedish municipalities; they find no effect for siblings but an increase in the average earnings of children.

The challenge in applying the RD design to complex electoral systems is that there is no obvious way of defining electoral closeness that would be comparable across districts. In single-winner electoral systems the closeness of a victory can be measured by the difference in vote shares between winners and losers. In systems with proportional elections and multi-member districts there is no particular individual vote share that could be used as a dividing line between all winners and losers. The bootstrap election is conceptually a very simple method for measuring electoral closeness. The key idea is to resample votes from the actual vote tally, and then to identify close winners and losers from the probability of getting elected in the simulated elections. Intuitively, candidates who lose many simulated elections but were in reality elected are close winners. The resulting assignment variable is continuous and can be subjected to standard RD validity checks; it is also comparable across elections in different districts and years, where the number of seats and the number of voters may differ. The purpose is to have an intuitive and transparent method that is simple to implement. The same method could be used under any electoral rule, and even when electoral rules differ between elections.

There is some earlier literature that extends the use of close election RD designs to multi-seat electoral systems. Pettersson-Lidbom (2008) studied the impact of political majority on policies in Swedish municipalities, after first transforming the election results into a two-party framework by aggregating most parties to either left or right groups. In closed-list proportional systems—where voters vote for parties that compete in multi-member districts—there is no competition between individual candidates and it is still possible to derive closed-form formulae for the distance of a party’s vote share from winning one more or less seat in a district, as shown by Folke (2014). He uses Manhattan distance between actual and counterfactual vote vectors, and measures the closeness of an electoral outcome for a party as the distance from the nearest counterfactual vote vector that would result in the gain or loss of a seat for a party. He studies the impact of party strength on various local policy outcomes in Sweden. Freier and Odendahl (2015) study the effect of a party’s political power on tax policy in a multiparty system, using a simulation where they add normally distributed noise to observed party vote shares in order to compare the impact of different parties on local tax policies in Germany.

Finally, we also estimate the incumbency effect, i.e., how much does getting elected help a candidate to get elected again in the future? The open-list electoral system where voters vote for individual candidates (rather than parties) enables us to estimate the individual incumbency effect (as distinct from a party incumbency effect).¹ Inasmuch as the returns to getting elected accrue as direct benefits while in office, the strength of the incumbency effect plays an important role in determining the durability of private returns to getting elected in any given election. Winning a seat in Finnish parliamentary elections increases the individual’s probability of winning a seat in the subsequent election by 18 percentage points. In municipal elections, the incumbency advantage is small or non-existent. The limited staying power of close winners restricts the durability of any direct earnings benefits from getting elected, and largely explains why the returns in parliamentary elections fade over time.

2 Measuring Electoral Closeness

2.1 Motivation

In this section we present a resampling method meant to identify close winners and losers under any electoral rule. The aim is to provide a measure of “closeness” to be used as the assignment variable in RD estimation, where the purpose is to estimate causal effects of being elected in the presence of unobserved confounding variables that may be driving

¹See Gelman and King (1990) and de Magalhaes (2015) for a discussion on the difficulty of disentangling the incumbency effects for individuals and parties.

individual electoral success.²

Most election RD applications have been in the context of First-Past-The-Post (FPTP) elections and two major parties. There a candidate's share of the two-party vote provides a simple and reasonable measure of closeness; it also defines a sharp discontinuity at 50%. Not all electoral systems provide such an obvious assignment variable with a predetermined point of discontinuity. A simple way to translate the natural closeness measure of FPTP elections is to calculate the "shortfall" in vote share that a candidate would have needed to get (or lose) in order to "flip" the outcome from a loss to win (or vice versa). This would be straightforward under many electoral systems, but not in general, and our context is a good place to understand why.

In the Finnish electoral system votes can only be given to individual candidates, but party affiliations also matter for seat allocation. The seats in each election (district-year) are apportioned to parties based on the total vote received by all of their candidates. The D'Hondt method is used to calculate a "competitive index" for each candidate: it is the party's total vote count, divided by the candidate's rank in the within-party ordering by votes. Finally, all seats in the district are allocated to the candidates with the highest competitive indices. (There are further details on the Finnish system in the next section.) This system results in three complications for the "vote share shortfall" approach.

The first complication is that every candidate competes on multiple margins both within and across parties. Candidates can be close to multiple members of their own party and to multiple members of other parties at the same time, in the sense that a swing of a small number of votes would switch the status of a candidate from winner to loser or vice versa. The "shortfall" approach admits only one competitive margin, but a candidate who was close on many margins is in practise closer to be elected "in aggregate" than another who had only one but slightly closer margin.

The second complication is that the electoral outcome of a candidate is non-monotonic in the votes of competing candidates from the same party. Consider, for example, what happens to the best-performing losing candidate X in a party if another losing candidate Y in the same party were to receive more votes, holding everyone else's votes fixed. At first, a small number of extra votes to Y is beneficial for X , because it increases the total vote tally of the party, which can thereby gain an additional seat that is allotted to X . However, adding even more more votes to Y takes Y ahead of X in the within-party rank, thus taking the seat away from X to Y . Finally, adding even more votes to Y results in the party getting another additional seat, in which case X is then elected after all.

The third complication is the non-neutrality of candidates' electoral success to changes between vote shares of other candidates. For example, if X is a marginal winner in one

²Lee and Lemieux (2010) provide an introduction to the usage of RD in economics, including several applications that exploit close elections.

party and Y a marginal loser in another party, then their outcome may flip even if their vote shares stay the same. This would happen if an inframarginal candidate from the party of X loses votes to a candidate in some other party (not necessarily that of Y).

A method based on resampling does not require us to be able to enumerate all possible ways in which a candidate may be “close”, and it provides an intuitive way of aggregating closeness across multiple competitive margins to a single measure of closeness.

2.2 Bootstrap Elections

Consider an election where N candidates compete for S seats. Here “election” refers to one electoral district in one election year. The data consists of the empirical vote shares $\theta = (\theta_1, \dots, \theta_N)$ and an electoral rule $\mathcal{H} : \Delta^N \rightarrow \sigma^N$, where Δ^N is the unit simplex and $\sigma^N = \{0, 1\}^N$ the set of feasible seat allocations, so that $\sum_n \sigma_n = S$. The actual seat allocation vector is, by definition, $\sigma = \mathcal{H}(\theta)$, where $\sigma_n = 1$ for winners and $\sigma_n = 0$ for losers. The mapping \mathcal{H} incorporates all features of the election other than votes that can affect the outcome. In our application \mathcal{H} includes information about the party affiliation of each candidate, the apportionment rule used to divide seats between parties, and the rule for allocating a party’s seats to its candidates. It is useful to think of \mathcal{H} as an algorithm that processes the data of vote shares and outputs the subset of S winners from the set of N candidates (it may even involve randomization, e.g., to break ties). \mathcal{H} is what stays fixed in the simulation, while new vote share vectors are generated using repeated randomizations.

The simulation consists of bootstrapped elections, where the basic idea is to resample with replacement m votes from the empirical distribution of votes, then recalculate the winners according to the actual electoral rule \mathcal{H} . Thus each resample consists of m trials from a multinomial distribution, where the empirical vote shares θ_n define the probability of each trial (simulated vote) being given to candidate n . The resampled total vote vector, divided by the number of trials m , yields one instance of a simulated vote share vector t^j , and a resulting seat allocation $s^j = \mathcal{H}(t^j)$. This “bootstrap election” is repeated M times, and the results are used to calculate for each candidate n the fraction $p_n = \sum_j s_i^j / M$ of bootstrap elections where that candidate was elected. Candidates with $p_n \approx 1$ can be called “safe” and those with $p_n \approx 0$ “no-hoppers.” (Note, however, that p_n is not the probability of being elected in an ex ante sense, but the probability of being a winner in the bootstrap election.) The same intuition works under any voting system, such as transferable voting or indeed under arbitrarily complex electoral rules.

The number of simulated elections M should be set so high that p is stable to adding more repetitions. (Under simple electoral rules it would be feasible to calculate the exact expected value of p conditional on θ , m , and \mathcal{H} .) While bigger M is always better, it is not desirable to set the vote resample size m as high as possible, because the simulated vote

shares t would converge to the empirical vote shares. The purpose of the simulation is to provide deviations that are related to actual vote patterns while preserving the actual vote shares as the expected values of the simulated elections. While our motivation for this method is purely heuristic, the bootstrap can also be interpreted as a counterfactual in a probabilistic voting model, where each candidate has a set of supporters who only turn out at some probability. In the simulation, each resampled vote represents a block of voters who support the same candidate and whose turnout realizations are perfectly correlated within block.

To implement the bootstrap for parliamentary elections we set $M = 20,000$ and $m = 10,000$ in all 15 districts. For municipal elections the setting is more complicated, due to the larger number of districts (445) and much more variability in the “size” of the election (N,S) . We adapted the bootstrap parameters (M,m) by district in order to economize on computation time. Some elections with very closely tied vote outcomes required many more resamples M before p converged. If p had not converged after 2000 resamples we kept adding another batch of 10,000 resamples until convergence.³ We also allowed the number of votes m to be higher in larger municipalities, but less than proportionally; on average m was 14% of actual vote count.⁴

2.3 Usage in RD

It is useful to normalize the measure of closeness in such a way that all losers are below and all winners are above a given threshold. This normalized measure can then be used as the standard assignment variable in sharp RD designs, and can be subjected to standard RD validity tests and bandwidth choice algorithms. To achieve this, for each combination of year, district, and party, we define the “pivotal p ” as the mean of highest unelected p_n and lowest elected p_n . For lists where no one is elected the pivotal p is defined as 100. The variable $pmargin$ is then calculated as the candidate’s level of p_n minus the pivotal p . This way all winners have positive and all losers have negative $pmargin$, and there is a sharp discontinuity at zero.

The results of the bootstrap procedure for the 1970-2007 parliamentary elections and 1996-2008 municipal elections are presented in Figure 1, which shows the distribution of $pmargin$. A large fraction of candidates are “no-hoppers” with $p_n \approx 0$, which causes a large peak at low levels of $pmargin$. In order to get a clearer picture of the more relevant parts of the histogram, we have cut out the left-most bin, which consists of no-hoppers from combinations of year, district, and party where no one was elected ($pmargin = -100$).

³The criterion for convergence was that, within every party, the ordering of candidates by p_n did not violate the ordering by actual electoral success (except for those with actual tied votes). The code package that implements the simulation is available from the authors.

⁴Number of “voter blocks” m was set at 20 times the number of seats, which is determined by a legal formula whereby council size increases less than proportionally in population.

The crucial fact for the validity of RD is that there is no jump in the density of the assignment variable at zero, which is confirmed by the McCrary test for both elections. In the end, the validity and usefulness of this forcing variable is in the empirical RD results, including the balancing tests of predetermined variables and the robustness to covariates (we report these in what follows).

<< Figure 1 about here >>

3 Institutional background

Finland is a multi-party democracy with a unicameral parliament. The parliament has the legislative power; it has to approve the budget, vote on the confidence of the government, and ratify international treaties.

The parliament has 200 seats divided between fifteen districts. District borders are fixed but the number of seats varies in proportion to the population (an exception is the small autonomous province of Åland with one seat). In each district, parties present a list of candidates and each voter votes for one candidate. Parties are also allowed to form (election- and district-specific) alliances. In an electoral alliance, two or more parties present candidates on a joint list. For the purposes of seat allocation, an electoral alliance is treated as one party.

The electoral system is proportional with a personal vote. Unlike in some other countries with proportional representation, it is not possible to vote just for a party list without specifying a candidate. The seats in each district are apportioned according to the D'Hondt method (see previous section).

Elections are held every four years.⁵ The number of seats in the mainland districts varied between 6 and 34 between 1970 and 2007; the median district size was 13 seats. The maximum number of candidates that can be included on a party list equals the number of representatives elected from the district, or 14 if the district has less than 14 seats. Local party associations select the candidates, most commonly using a party primary if more than the maximum number of willing candidates have been put forward.

A total of 21 different parties have had at least one seat in the parliament between 1970 and 2007, typically with between 8 and 11 parties having seats at any one time. The three largest parties, the Centre Party (Centre), the National Coalition Party (NCP) and the Social Democratic Party (SDP), have gathered on average 70% of all seats.

⁵The earliest parliamentary elections in our data are an exception to this rule: they were held in 1970, 1972, 1975, due to early elections in 1972 and 1975. Thereafter elections have been held every four years.

The parliament meets in the plenary session usually more than a hundred times annually. In addition, much of the work by the MPs takes place in various committees. Therefore, while there is no legal requirement for MPs to quit other jobs (with some exceptions), in practise being an MP is a full-time job and opportunities to spend time on other jobs while in office are limited. In 2011, the last year in our analysis, the average salary of MPs was about €78,000, while the starting salary was €74,500. MP's salary increases with experience, and those holding important positions of trust, like being group leaders or committee chairpersons, also receive an extra compensation. In addition to salaries, MPs receive tax-free compensation for expenses, which depends on commuting distance. MPs also receive pension benefits after they have turned 65. Former MPs who were elected for the first time before 2011 and have served as MP for at least seven years are entitled to receive the pension already before the age of 65 in case of not finding a job. As pensions are taxable income, these benefits are included in our data.

Electoral campaigns are conducted both by political parties and by individual candidates. Most candidates who run a serious campaign also buy electoral ads in newspapers, and distribute leaflets, both on the streets and through mail. In parliamentary elections, a significant fraction of candidates also run ads on television and radio. We return to the campaign costs later when we discuss our findings.

Turning to institutions in local politics, the municipal council is the highest decision-making body at the municipal level. It decides on the municipal budget, including municipal income tax rate, as well as deciding on city-planning and organizing municipal services and administration. Municipalities are the lowest level of government in Finland but they are more important than in most countries, being responsible for the provision of services such as health care and education. Municipal elections take place every four years. Seats are allocated using the same method as in parliamentary elections, with each municipality forming one district. The number of councilors depends on the size of the municipality, with a minimum of 13 for the least populous municipalities, and reaching a maximum of 85 in Helsinki. In municipal elections each party is allowed to present one and a half times as many candidates on its list as the number of seats in the municipal council. Councilors are paid a compensation for participating in meetings, and may also be nominated to some other local government positions with varying levels of remuneration. In the largest municipality, Helsinki, the municipal council meets about 20 times each year. In some small municipalities, the municipal council may meet just a few times annually. In addition, it is common for councilors to take part in committees, which meet roughly as often as the council. Thus municipal councilor is a part-time position that typically does not interfere with day jobs, but it could reduce the possibility for overtime work in the evenings.

4 Data

Our election data covers all candidates in the 11 parliamentary elections between 1970 and 2007 and in the four municipal elections between 1996 and 2008. This amounts to 12,398 unique candidates in parliamentary elections, and 93,741 unique candidates in municipal elections. The data includes information on each candidate's name, date of birth, party, electoral district, number of votes, and whether he or she was elected. For elections since 1995 this data was obtained from the Ministry of Justice, and for earlier elections it was scanned from printed official statistics published by Statistics Finland except for dates of birth. Dates of birth for pre-1995 winners are listed on the official web site of the parliament, but those for losing candidates had to be collected by hand from various sources (archives of the major parties, archives of election councils in some districts). Names and dates of birth were used to match the election data with the earnings data.

We obtained data on candidates' earnings for the years 1993 and 1995-2010 from the official tax registry. Earnings are subject to individual taxation in Finland, and the earnings variable includes the total sum of individual earnings from both primary and secondary jobs. For parliamentarians, therefore, it includes their official salaries as well as any other earnings that they may have. Tax-free compensation for expenses is not included in this variable. (The implications of tax-free compensation for our results are discussed in Section 5.) Naturally, any unofficial income not reported to tax authorities is not included in the variable either. Nevertheless, official remuneration from any secondary jobs or assignments, such as memberships in company boards while in office, or higher earnings after exiting politics, would show up in our data.

Selected summary statistics of the earnings data as well as some background characteristics of the candidates are presented in Table 1.⁶

<< Table 1 about here >>

Table 1 presents the summary statistics for candidates in parliamentary elections 1970-2007 and in municipal elections in 1996-2008, separately for elected and defeated candidates. The unit of observation is candidate-election year. The variable "Register data found" gives the percentage of candidate-election years which we were able to match with the tax registry. In parliamentary elections, income data was found for nearly all (99.7%) winning candidates and for 85% of the defeated candidates. However, the success rate was much higher for candidates who lost narrowly, with only around 5% of missing data near the threshold of getting elected. For candidates in municipal elections, income

⁶The indicator for "previously elected" is missing for municipal election data, because there we do not have data on who was elected prior to 1996.

data was found in practically all cases, because this data is from recent elections where dates of birth are included in the official election data.

Table 1 shows that the fraction of men is slightly higher among those candidates who were elected and winning candidates are slightly older than losing candidates. The fraction of incumbents and parliamentary candidates who have been elected in some previous parliamentary election is higher among winning candidates.⁷ Elected candidates had higher earnings both before and after the election. Clearly, as expected, winning and losing candidates are different in many dimensions—so conceivably also in those that we cannot observe. Our estimates use data on candidates who were close to getting elected; among these candidates, any differences in both observable and unobservable background characteristics should be randomized out. Indeed, we show in Section 5.2 that close winners and losers are similar by their observable background characteristics.

In what follows, we use three year windows between elections for the purpose of measuring average earnings during a given electoral period (e). We drop the earnings from election years, since they include both pre- and post-election earnings.⁸ Earnings in the first electoral period ($e = 1$) after getting elected at time t therefore refers to the average earnings in years $(t + 1)$ - $(t + 3)$, the second electoral period ($e = 2$) refers to earnings in years $(t + 5)$ - $(t + 7)$, and so on. Similarly, $e = -1$ corresponds to average earnings in the last electoral period before the election, i.e., $(t - 3)$ - $(t - 1)$. All income variables were deflated by the cost of living index from Statistics Finland and are measured in 2011 euros.

5 Parliamentary elections

5.1 Results

We first present a graphical analysis of the data on parliamentary elections. In Figure 2, the candidates have been arranged by the measure of electoral closeness (see Section 2 for details on $pmargin$) and divided into bins of width 1. Extreme bins, where $|pmargin| > 50$, are excluded from the figure for clarity.⁹ Zero on the horizontal axis is the threshold between losers and winners. In Figure 2, we plot the bin averages of candidates' average earnings in the first electoral period after the election. (Marker size is proportional to the number of observations in the bin). We also fit a series of local linear regressions of the income variable on $pmargin$ using a triangle kernel and optimal bandwidth as defined by

⁷The information on whether a candidate was elected in pre-1970 elections was collected from the official web site <http://www.eduskunta.fi/thwfakta/hetekau/hex/hxent.htm>.

⁸Parliamentary elections take place in March, and the new parliamentarians start their term right after the election. Municipal elections take place in October, and terms start in the following January.

⁹Candidates with extreme values of electoral closeness do not affect RD estimates except by affecting the optimal bandwidth.

Imbens and Kalyanaraman (2012). The solid line shows the fitted values and the dashed lines show the associated 95% confidence intervals.

<< Figure 2 about here >>

Figure 2 reveals that getting elected to parliament increases the subsequent annual earnings of close winners: there is a clear jump of about €20,000 at the threshold of getting elected. We report RD estimates of the causal effect of getting elected to parliament on subsequent average annual earnings in Table 2. We again use the optimal bandwidth in the main specification, but to have a first impression of robustness, we also report the results at 1/2 of the optimal bandwidth. In Section 5.2, we further show that the results are robust to a reasonable range of bandwidths.

<< Table 2 about here >>

It is important to note that in each column of Table 2 we look at the effect of getting elected once, at time t , on earnings at a different time horizon.¹⁰ The individual may or may not be elected in subsequent elections (i.e. between $e = 1$ and $e = 2$, for example). This does not pose a problem for our analysis: to the extent that such re-election is a consequence of getting elected at time t , any effect that it has on subsequent earnings is part of the causal effect on earnings of getting elected at time t , and will show up in our estimates of the earnings effect at longer horizons ($e = 2$ and later).

The first column of Table 2 shows the impact of getting elected to parliament on average earnings in the first electoral period after getting elected. The estimated effect of about €20,000 per year is quite large, corresponding to approximately 25% of annual pre-election earnings of close candidates. As shown in Table A.1 in the Online Appendix, this finding is robust to using alternative specifications of the earnings variable. However, the effect declines quite rapidly over time. In the second electoral period after getting elected (column 2), the effect diminishes to about €8000 but is still statistically significant. By the third electoral period (column 3), the effect is no longer significant at the optimal bandwidth. Column 4 shows that getting elected increases average annual earnings after the election by approximately €8000 when we average over all post-election years (i.e. all years after time t).¹¹ Pooling data enables us to use data from all elections, but also implies that the effect is measured at very different lags for different individuals, with up

¹⁰For the precise definition of electoral periods ($e = 1, e = 2, \dots$) see section 4.

¹¹We use the optimal bandwidth of the main specification (column 1) in all specifications in Table 2. The optimal bandwidth for longer lags is larger, and yields larger point estimates. However, a larger bandwidth may increase bias (as we would ideally want an estimate of earnings arbitrarily close to the cutoff on each side).

to a 30-40 year lag for candidates who got elected in the 1970s. Results at 1/2 of the optimal bandwidth provide a similar picture.

Figure 3 illustrates the duration of the effect on earnings. It shows the estimated effect of getting elected to parliament on average earnings during subsequent electoral periods, up to seven electoral periods after the election. At longer lags the number of observations becomes low and standard errors become very large. The effects in periods 1-3 correspond to the estimates presented in the first three columns of Table 2. It is notable that a small effect of around €5000 appears to persist for a long time, even though it is not statistically significant for any single electoral period beyond the second. A stronger effect can be detected when we pool all electoral periods after the election (see Table 2), as we then have twice as many observations and hence more power to discern smaller effects. Figure 3 also shows the estimated effect in two electoral periods before the election, when we should of course observe no effect; this is indeed what we find.

<< Figure 3 about here >>

Finally, column (5) of Table 2 shows the effect of a parliamentary election win on capital income. It is not obvious which way this effect should go, since capital income depends on factors such as individual savings behavior. We find no clear effect on capital income in the first electoral period after getting elected, and we can rule out large effects in any direction. Figure A1 in the Online Appendix illustrates the impact on capital income over time, analogously to Figure 3. It seems clear that getting elected to parliament does not have sizeable effects on capital income in the longer term either, although a small negative effect (under € 5,000) appears in the third electoral period.

5.2 Validity and robustness

We have so far presented two crucial pieces of evidence for the validity of our RD design. First, the distribution of the assignment variable is continuous at zero, as confirmed by the McCrary-test, and seen in Figure 1. Second, the estimated effect of getting elected on earnings *prior* to the election is zero, as seen in Figure 3.

As for bandwidth choice, we have used as baseline the optimal bandwidth as defined by Imbens and Kalyanaraman (2012), henceforth IK, but there are also many other ways of choosing the bandwidth for RD estimation. The key point about bandwidth choice is to notice that our results are robust to a wide range of bandwidths, as can be seen from Figure 4 where we plot our main RD estimate and its confidence intervals against the bandwidth. Bandwidths that are much more narrow still produce quantitatively similar and reasonably precise estimates; for example, using a bandwidth that is 10% of the IK bandwidth results in a slightly higher and a clearly significant estimate at 25,000

€/year.¹²

<< Figure 4 about here >>

One drawback of the IK bandwidth criterion is that it does not take into account the need to balance predetermined variables. Next, we check whether there are any jumps in predetermined variables at the threshold of getting elected, by plotting similar figures as Figure 2 for our predetermined variables. Here we use the same set of individuals as used in the main specification and in Figure 2, which means dropping those for whom earnings data could not be matched. We first do this analysis for two measures of pre-election earnings (average earnings in the last electoral period before the election, and average earnings in all years prior to the election, see Figure 5). Online Appendix shows corresponding figures for our other predetermined variables (incumbency status, the status of never having been elected to parliament, vote share, gender, age, region, and indicator variables for membership in the three main parties). At the IK bandwidth one of the important predetermined variables, incumbency status, would appear to show a jump at the electoral threshold that is just barely significant at 5% level; the same is true for the ever-previously-elected status, which is highly correlated with incumbency. However, all these variables (and all other predetermined variables) balance cleanly at the more conservative 1/2 of IK bandwidth. This is another reason why we report in our tables, for all RD specifications, the coefficient of interest also as estimated at 1/2 of the relevant IK bandwidth. The full table of all background balance checks at both bandwidths is included in our Online Appendix.

The most important predetermined variable is, of course, the pre-treatment level of the outcome variable itself. Average yearly income prior to the election is clearly continuous at the election threshold, even at the relatively wide IK bandwidth, as can be seen from Figure 5. We show in the Online Appendix that our main specification is also robust to the inclusion of various individual control variables.¹³

<< Figure 5 about here >>

¹²Our results are also robust to using the bias corrected RD estimation procedure and robust variance estimator introduced by Calonico et al. (2014). The estimate for the earnings effect in $e = 1$ using a local linear specification and the Calonico et al. optimal bandwidth is €16,940 (standard error 3625). A specification using 4th order polynomials on both sides of the cutoff, for candidates with $-50 < pmargin_i < 50$, yields an estimate of €16,033 (5020). See, however, Gelman and Imbens (2014), on the pitfalls of polynomial specifications.

¹³In a valid RD design, adding control variables can make the estimate more precise, but should not have a large effect on its magnitude; this is indeed what we find.

5.3 Results by subgroup

Table 3 presents results for our main outcome variable—earnings in the first electoral period after getting elected—for various subgroups. The grouping for continuous variables (age, pre-election income) is done by splitting the sample at the median. There are some differences in the point estimates, e.g. women seem to gain more than men. Centre Party candidates seem to gain more than candidates from the other two major parties (SDP and NCP). These differences are likely to be driven by differences in outside options: women (outside politics) in general earn less than men, and the Centre Party has typically been prominent in rural areas where outside earnings are likely to be lower. However, the differences between the subgroups are not statistically significant, so our evidence of heterogeneous effects is only suggestive.

<< Table 3 about here >>

There are two instances where we do find significant differences among subgroups. First, low income individuals gain more than high income individuals. This is a mechanical effect of a low outside option. However, a more substantive finding is the difference between candidates in elections prior to the year 2000 and those who ran in later elections: the estimated effect for the former is about €12,000 and about €30,000 for the latter, and the difference is statistically significant. This finding reflects the fact that the salaries of Finnish MPs were increased by approximately 35% in September 2000. Note, however, that in the estimates reported in column (17) of Table 3, some of the earnings observations of candidates elected in the 1999 election are before and some after the salary reform. Therefore the division at the median election year in Table 3 does not coincide exactly with the occurrence of the salary reform. The contrast between the estimates in columns (17) and (18) motivates us to discuss the impact of the salary reform in more detail in the next subsection.

5.4 Discussion

What might explain the change in earnings caused by getting elected into parliament? First, there is a direct wage effect: it may be that parliamentarians receive a salary that exceeds the earnings that they would have obtained outside politics. It is not obvious that this effect has to be positive: being an MP is a full-time job, so entering national politics has a direct opportunity cost of lost earnings outside politics. Second, there may also be indirect effects: if political connections are a valuable asset outside politics, then becoming a parliamentarian may be a stepping stone into profitable secondary assignments, such as memberships in company boards. In fact, more than half of MPs elected in 2011 had

at least one position of trust in a private or state-owned company board or governing council, and some of these positions pay quite well.

Next we present two lines of analysis that complement our main findings on the effect of a parliamentary election win on earnings, and help cast some light on the mechanisms involved. The first set of findings is related to the time profile of the earnings effects. The second set of findings relates to the individual incumbency effect, that is, the causal effect of getting elected at a given election on the chances of getting elected at later elections.

Time profile of earnings effects

A number of factors point towards direct wage effects being the key factor behind our results. First, we found the largest impact on earnings in the first electoral period after getting elected (see Figure 3). This is a period where winning candidates were all MPs by definition, which points towards a direct wage effect. By contrast, indirect benefits from connections made while in parliament could take some time to come to fruition.

In Figure 6 we investigate to what extent the decline in the earnings effect, evident in Figure 3, is due to close winners leaving the parliament in subsequent elections. There each point estimate represents a comparison of earnings at electoral period e between the following groups of candidates: (i) close winners who are *also* in parliament during electoral period e ; and (ii) close losers who are *also* not in parliament during electoral period e . Hence, at each point in time, we are comparing individuals who are still in parliament and thus enjoying a parliamentarian's salary to individuals who are not in parliament. These estimates cannot be given a causal interpretation, because individuals who are elected on several occasions may systematically differ from others, even if they were all close winners or losers at some point in time. Nevertheless this figure is useful for illustrating different career paths after a close election.

Contrary to Figure 3, the time profile of the effects in Figure 6 is not decreasing over time. This suggests that the relatively quick disappearance of the effect on income is due to a significant fraction of initial close winners not getting re-elected or dropping out of parliament. (The picture is very similar if we compare those close winners at time 0 who were elected in *every* election until electoral period e to close winners at time 0 who were *not* elected in any of the next e elections. Leaving out the observations after the 2000 salary reform does not affect the overall shape either.) Therefore, it appears that the returns from getting elected occur mainly during the individual's political career, while the effect on subsequent earnings outside politics is limited.

<< Figure 6 about here >>

We also examine the returns to getting elected separately before and after the year

of the salary reform. The reform went into effect in September 2000, when MPs' salaries were increased on average by about 35%. Figure 7 shows the average yearly earnings in the first electoral period after getting elected, separately for the 1991 and 1995 elections (left), and for the 1999–2007 elections (right).¹⁴ It is clear that the returns to getting elected are sizeable only after the salary reform, where the estimated effect is about €28,000 per year (and highly significant), considerably higher than the effect estimated from the full data reported in Table 2. This also suggests that the bulk of the returns comes from the direct wage effect.

<< Figure 7 about here >>

Our individual earnings data does not provide a breakdown by source, so we do not observe individual salaries (MPs can have other sources of earnings). Figure 8 depicts average salaries of all and first-term parliamentarians from 1992 to 2011.¹⁵ These figures include the taxable compensation for expenses that was paid until January 2000. Prior to the reform, the salaries of Finnish MPs were the lowest in the EU (Makkonen, 2000). The average salary in the two electoral periods prior to the 1999 election was €52,000, and Figure 7 suggests that the average outside income (i.e. the average income of close losers) was close to €60,000. It is quite striking that the average salary of MPs used to be lower than the average income of close losers. Prior to the salary reform, only side jobs appear to have allowed close winners to reach about the same taxable income as close losers. After the year 2000, the average salary of MP's was much higher at €72,000.

MPs were always well paid relative to the general working age population: A year prior to the salary reform and in the absence of any side jobs the average MP would have been in the 94th percentile in the distribution of taxable earnings among the working-age population; a year after the reform the average MP would have been in the 97th percentile.

The actual income of MPs includes not just the taxable salary but also a monthly tax-free compensation for expenses (which does not show up in our individual earnings data). The size of this compensation depends on whether the MP lives in or near Helsinki (where the parliament is located) and on whether they have a second home there. The average annual amount for those living in or near Helsinki was €11,000 prior to the salary reform, whereas those elected from the rest of the country received on average €20,000 if they had a second apartment in Helsinki. (These amounts were not significantly affected by the salary reform.) Taking this tax-free compensation into account, one could argue that there was in fact a small return to getting elected already before the salary reform,

¹⁴Here we exclude earnings in 2000, since it involves a mixture of pre- and post-reform earnings.

¹⁵Data source: Authors' calculations based on data provided by the Parliament Information Department and Accounts Office.

because anecdotal evidence suggests that a considerable part of this compensation is, in effect, additional disposable income for the MPs.

<< Figure 8 about here >>

The estimated income gain of about €30,000 per year after the year 2000 means that close winners benefit on average about €120,000 over a four-year term, before possible additional benefits from tax-free compensation for expenses. To put this gain into perspective, private campaign spending by MPs and those elected as deputies in 2011 averaged €12,000, with only 2% spending more than €50,000 of their own money.¹⁶ Total spending, when including money from other sources, averaged €32,000, with less than a fifth spending over €50,000 and none exceeding €100,000.¹⁷ Unsuccessful candidates are, unfortunately, not required to report their campaign costs. It is nevertheless clear that those who get elected to the Finnish parliament increase their earnings by much more than is spent on a typical campaign.

Incumbency advantage

Incumbency effect is the causal effect of winning an election on the probability of winning subsequent elections. In this section we estimate the individual incumbency effect in our parliamentary election data. This is partly of independent interest, but also helpful in further examining whether the longer-term economic returns of getting elected are driven by subsequent re-elections.

<< Table 4 about here >>

Our estimation of the incumbency effect in parliamentary elections is shown in the first column of Table 4. Incumbency advantage is relatively modest in Finnish parliamentary elections, about 18 percentage points.¹⁸ Note that in a two-party FPTP system, the incumbency effect necessarily includes a party effect (i.e., the candidate's party won the seat in the district), but under the Finnish electoral system, where parties typically win multiple seats in each district, we estimate the incumbency effect for individuals. The estimated effect is again robust to the bandwidth choice, remaining almost the same when

¹⁶The closest loser in every district-party with at least one MP becomes a deputy MP. Deputy MPs step in only if an MP becomes incapacitated for the whole remaining term.

¹⁷Data from <http://www.vaalirahoitus.fi/fi/index/vaalirahailmoituksia/ilmoituslistaus/EV2011.html>, maintained by the National Audit Office. This data is not available for earlier elections.

¹⁸To be exact, we estimate the impact on the combination of running for election and winning; see Lee (2008). He finds that districts where a Democrat narrowly won an election are 45 percentage points more likely to elect a Democrat in the next election than those where a Democrat narrowly lost.

the bandwidth is halved from the IK benchmark. Figure 9 shows the persistence of the incumbency effect, where we plot the effect of getting elected at time 0 on the likelihood of getting elected at an election e elections later. The effect loses its strength relatively quickly, becoming insignificant in the third subsequent election. This is again consistent with the direct earnings effect driving the estimated return to being elected. The direct effect attenuates over time as the impact of the close win on still being elected wears out.

<< Figure 9 about here >>

6 Municipal elections

Next we present a similar analysis as in the previous section for municipal elections. We omit repeating many of the definitions and procedures that are the same as in the previous section, and some of the figures are relegated to the Online Appendix. Similar to Figure 2, Figure 10 plots candidates' average earnings in the first electoral period after getting elected against our measure of electoral closeness. The figure reveals a slight upward shift in subsequent earnings at the threshold of getting elected, but the effect is an order of magnitude smaller than in parliamentary elections. The much larger number of observations nevertheless allows this small effect to be measured quite precisely.

<< Figure 10 about here >>

We report our main RD estimates in Table 5. Getting elected to a municipal council increased annual earnings in the first electoral period by approximately €1300. Over time the effect remains small, and the number of observations and the precision of the estimate keep getting smaller. The “pooled” estimate indicates that getting elected increased subsequent annual earnings by approximately €1000. Getting elected to a municipal council has no effect on capital income.

<< Table 5 about here >>

As shown in Table A.4 in the Online Appendix, the results are robust to alternative income measures. We also ran the same battery of validity and robustness checks for the municipal level RD estimation as we did for parliamentary elections, and none of the checks indicate any problems. Overall the results are qualitatively similar to what we found for parliamentary elections, but all magnitudes are much smaller. Estimates by subgroup (similar to Table 3) reveal no significant differences between groups; they are

reported in the Online Appendix.

Municipal councilors receive only a fairly modest compensation for attending meetings. The councilors continue in their civil occupations during their time in office. There may be indirect wage effects from working in politics at local as well as national level: if politicians acquire human capital or form local political connections that are valuable for employers, this can translate to higher pay in one's main job. Again, it is also possible that the opportunity cost of spending time at council meetings or other related activities result in negative monetary returns for some councilors.

Unfortunately, data on compensation received by municipal councilors has not been systematically collected in Finland. The average compensation per meeting (calculated across municipalities) was €60 in 2009, and the average number of meetings per year was 8 in 2007.¹⁹ Multiplying these figures together yields a crude estimate of the average annual compensation at €480. This is approximately half of the size of the effect that we have estimated.

Several factors need to be kept in mind when interpreting the above figure. First, there is large variation in the compensation per meeting as well as the number of meetings across municipalities, with larger municipalities usually holding more meetings and paying higher compensation per meeting. Second, the head of the municipal council, as well as other councilors holding some leading positions within the council, receive higher compensation. Thus the crude proxy calculated above for the average annual compensation is an underestimate of the true compensation. On the other hand, it is also an *overestimate* in the sense that compensation is only paid for those meetings actually attended by each councilor, and the above calculation assumes the attendance rate to be 100%. Unfortunately, we have no data on attendance rates at council meetings.²⁰

An important issue to note is that, in municipal elections, the closest losers in each party that win seats become deputy members of the municipal council. Thus in our municipal election data almost all close losers are deputy councilors. The deputy members attend municipal council meetings when any of the actual councilors from their own party cannot.²¹ We do not have data on attendance by deputy members, but anecdotal

¹⁹This data is available on the website of the Association of Finnish Local and Regional Authorities at <http://www.kunnat.net/fi/tietopankit/tilastot/kuntavaali-ja-demokratiatilastot/kuntien-luottamushenkiloiden-palkkiot-ja-korvaukset/Sivut/default.aspx> (In Finnish only). Data on the number of meetings is available for 2007 only, whereas municipal-level data for compensation per meeting is available for 2009. Unfortunately these data are not available for the same year.

²⁰Average duration of council meetings is available for 2007. Combined with the compensation data for 2009, this allows us to calculate a proxy for the average hourly compensation for attending council meetings. For example, in Helsinki, it was €70 per hour.

²¹This problem does not arise in the parliament as there are no deputy members who would participate in meetings when the MP is absent. In case an MP dies or resigns during the electoral period, he or she is replaced by the closest loser from the same list.

evidence suggests that this occurs regularly, in particular in large municipalities and for major parties. Further, close runners-up are also often nominated to various positions of trust in local politics. These two facts together offer one explanation why the returns to office in local politics were found to be modest, as many narrow losers get part of the same “treatment” as those elected.

Campaign costs in municipal elections are usually rather modest. In 2012, 38% of those who were elected members or deputy members in the municipal council of Helsinki spent less than €1000 of their own money, while only 5.3% spent more than €10,000 of their own money in campaigning.²²

Finally, for independent interest, we report our estimates of the individual incumbency effect in municipal elections in the second column of Table 4. We find a very modest incumbency effect, about 2.5 percentage points, so much smaller than the 18 percentage points we found for parliamentary elections. This incumbency effect is just barely significant at the 5% level and declines to close to zero when the bandwidth is halved. This is consistent with recent findings of Hyytinen, Meriläinen, Saarimaa, Toivanen and Tukiainen (2014), who use the same municipal election data as we do. They find that the RD-estimated incumbency effect is not robust to bandwidth selection, and that among the subset of 1350 exact within-party ties (where the winner was selected by lot) the null hypothesis of no incumbency effect cannot be rejected. One feature that may explain the lack of an economically significant incumbency effect at the municipal level is that there is not much difference between incumbents and challengers in terms of the amount of media coverage, as both get very little of it.

7 Conclusion

We presented a simple bootstrap approach for calculating the electoral closeness of candidates under any electoral rule, and applied it to study private returns to getting elected in Finnish politics. We showed that getting elected to the parliament increases annual earnings initially by approximately €20,000, which amounts to 25% of pre-election earnings of close candidates. By contrast, the impact of getting elected to the municipal council is only about €1000 per year. The gain from being elected to the parliament went from an insignificant amount to about €30,000 per year after salaries were increased by about 35% in the year 2000.

The time profile of yearly earnings shows that the positive effects on earnings accrue mainly during the time in office and then wear out fairly quickly. This rapid decline is most likely related to the relatively weak incumbency effect of about 18 percentage

²²Source: <http://www.vaalirahoitus.fi/fi/index/vaalirahailmoituksia/ilmoituslistaus/KV2012/091.html> maintained by the National Audit Office.

points in parliamentary elections. Indeed, while a significant portion of MP's earnings arises from side jobs, much of the positive effects for MPs are direct effects from MPs having higher salaries than is the outside option of a typical close election winner. MPs also receive tax-free compensation for expenses that are not included in registry data on taxable earnings, so our estimates are more likely to be understated than overstated.

The return to winning an election should not be interpreted as measuring the return to a political career per se, as parliamentary candidates are likely to have invested considerable amounts of time to building a political career even prior to running in an election. Also, as is always the case with RD estimates, they only recover the causal effect for marginal winners: landslide winners and their returns could conceivably be quite different.

Earlier literature has emphasized that returns to political office arise through lucrative outside opportunities (Eggers and Hainmueller 2009), insufficient control of politicians (Querubin and Snyder 2013) or outright corruption (Fisman, Schulz, and Vig 2014). We analyze the returns to getting elected in a country with a very low level of corruption, and find that returns nevertheless amount on average to a 25% increase in earnings above the outside opportunities of the marginal candidate.²³ Such returns are important for selection into politics. For example, Kotakorpi and Poutvaara (2011) found that the 2000 salary reform in Finland had a positive effect on the education level of female candidates in parliamentary elections. In a similar vein, Ferraz and Finan (2009) and Gagliarducci and Nannicini (2013) used differences in compensation across municipalities and found that a higher pay level of politicians increases candidate quality. Higher salaries for politicians also make re-election more attractive, giving politicians stronger incentives to behave as voters wish. Di Tella and Fisman (2004) found a negative correlation between gubernatorial pay and per capita tax payments in US states, which they interpret as pay for good performance; however, Besley (2004) warns that extrinsic motivation in the form of higher pay may crowd out intrinsic motivation.

In order to apply an RD design in what is a relatively complicated electoral system we introduced a bootstrap method to obtain a measure of closeness for electoral outcomes. This method is not only applicable in RD designs, but it can be applied in any other setting that requires a measure of the competitiveness of an election outcome. Hyytinen, Saarimaa, and Tukiainen (2014) use it to generate counterfactual election outcomes in case of municipal mergers, to measure the impact of proposed municipal mergers on the safety of personal re-election of incumbent municipal councilors. (They find that re-election prospects have a clear impact on how individual councilors vote on merger decisions.) Our method could also be used to measure how close a party or a coalition is

²³According to Transparency International, the 12 countries with lowest level of corruption in 2014 were the Nordic countries, New Zealand, Switzerland, Singapore, the Netherlands, Luxembourg, Canada, Australia, and Germany.

to gaining a majority in a legislature. In case of multiple districts, the simplest approach would be to assume that each district has an independent resampling of votes. A more realistic approach would be to allow correlation between vote realizations of competing parties in different districts, perhaps using historical covariance patterns. More generally, our method can be applied to any mechanism that maps the “realizations” of participants to “outcomes”. One potential application outside politics is to measure the closeness of admission results in school systems, where different schools may have different and complicated admission criteria.

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Table 1. Summary statistics for elected and defeated candidates.

VARIABLES	Parliamentary elections 1970-2007						Municipal elections 1996-2008														
	(1)	(2)		(3)		(4)	(5)		(6)		(7)	(8)		(9)		(10)	(11)		(12)		
	<i>N</i>	Not elected	Mean	SD	<i>N</i>	Elected	Mean	SD	<i>N</i>	Not elected	Mean	SD	<i>N</i>	Elected	Mean	SD	<i>N</i>	Elected	Mean	SD	
Female	16,361	0.338	0.473	0.473	2,200	0.312	0.463	2,200	0.463	114,125	0.403	0.491	47,138	0.346	0.476	47,138	0.346	0.476	47,138	0.346	0.476
Age	14,077	44.98	12.00	12.00	2,196	46.95	9.294	2,196	9.294	114,125	45.85	12.84	47,138	47.95	10.86	47,138	47.95	10.86	47,138	47.95	10.86
Incumbent	16,363	0.0277	0.164	0.164	2,200	0.619	0.486	2,200	0.486	114,125	0.0629	0.243	47,138	0.580	0.494	47,138	0.580	0.494	47,138	0.580	0.494
Previously elected	16,363	0.0431	0.203	0.203	2,200	0.666	0.472	2,200	0.472	114,125	0.005	0.005	47,138	0.0225	0.0149	47,138	0.0225	0.0149	47,138	0.0225	0.0149
Vote share	16,363	0.005	0.010	0.010	2,200	0.0371	0.0411	2,200	0.0411	114,125	0.005	0.005	47,138	0.0225	0.0149	47,138	0.0225	0.0149	47,138	0.0225	0.0149
District size (seats)	16,363	16.53	7.076	7.076	2,200	16.42	6.489	2,200	6.489	114,125	40.29	16.50	47,138	33.68	13.47	47,138	33.68	13.47	47,138	33.68	13.47
District size (votes)	16,363	228,820	97,078	97,078	2,200	226,995	89,696	2,200	89,696	114,125	21,815	46,124	47,138	9,964	25,182	47,138	9,964	25,182	47,138	9,964	25,182
Southern districts	16,363	0.672	0.004	0.004	2,200	0.673	0.010	2,200	0.010	114,125	0.194	0.395	47,138	0.176	0.381	47,138	0.176	0.381	47,138	0.176	0.381
NCP	16,363	0.117	0.321	0.321	2,200	0.211	0.408	2,200	0.408	114,125	0.242	0.428	47,138	0.361	0.480	47,138	0.361	0.480	47,138	0.361	0.480
Centre	16,363	0.104	0.305	0.305	2,200	0.217	0.412	2,200	0.412	114,125	0.222	0.416	47,138	0.211	0.408	47,138	0.211	0.408	47,138	0.211	0.408
SDP	16,363	0.114	0.317	0.317	2,200	0.266	0.442	2,200	0.442	114,125	0.342	0.474	47,138	0.252	0.434	47,138	0.252	0.434	47,138	0.252	0.434
Other parties	16,363	0.666	0.472	0.472	2,200	0.305	0.461	2,200	0.461	114,125	0.342	0.474	47,138	0.252	0.434	47,138	0.252	0.434	47,138	0.252	0.434
Register data found	16,363	0.851	0.356	0.356	2,200	0.997	0.0563	2,200	0.0563	114,125	0.999	0.0317	47,138	0.999	0.0226	47,138	0.999	0.0226	47,138	0.999	0.0226
Avg. Earnings 1993-2011	13,508	31,533	28,030	28,030	2,081	67,344	41,611	2,081	41,611	114,010	23,334	14,639	47,114	30,254	19,915	47,114	30,254	19,915	47,114	30,254	19,915
Avg. Capital income 1993-2011	13,495	3,843	38,334	38,334	2,076	7,804	44,325	2,076	44,325	114,010	1,790	8,787	47,114	4,767	37,374	47,114	4,767	37,374	47,114	4,767	37,374
Avg. Earnings in $e = 1$	8,622	31,049	23,671	23,671	999	81,793	32,947	999	32,947	114,000	24,665	16,688	47,114	32,482	22,451	47,114	32,482	22,451	47,114	32,482	22,451
Avg. Earnings in $e = 2$	8,017	32,804	25,262	25,262	995	80,203	39,482	995	39,482	85,469	25,400	17,880	36,628	32,939	24,338	36,628	32,939	24,338	36,628	32,939	24,338
Avg. Earnings in $e = 3$	7,052	34,505	27,710	27,710	986	79,781	47,713	986	47,713	57,087	25,519	18,883	24,546	32,557	27,278	24,546	32,557	27,278	24,546	32,557	27,278
Avg. Earnings in $e = -1$	7,249	28,622	27,639	27,639	800	67,882	34,343	800	34,343	113,995	22,829	15,705	47,113	29,469	22,095	47,113	29,469	22,095	47,113	29,469	22,095

Notes: Total number of unique candidates is 12,398 in parliamentary elections and 93,741 in municipal elections. Total number of annual earnings observations is 1,654,635.

Table 2. Effect of getting elected to parliament on later income.

	(1)	(2)	(3)	(4)	(5)
	Average annual earnings in $e = 1$	Average annual earnings in $e = 2$	Average annual earnings in $e = 3$	Average annual earnings after the election	Average annual capital income ¹ $e = 1$
Elected	19,999** (2,546)	7,823** (2,971)	5,995 (3,115)	7,986** (2,299)	2,671 (4,791)
Elected (1/2 bandwidth)	17,478** (3,544)	7,189 (4,262)	8,606* (4,320)	8,623** (3,222)	1,022 (7,447)
N	9,621	9,012	8,038	15,544	8,376

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 40.58, which is the optimal IK bandwidth (Imbens and Kalyanaraman, 2012) for column (1), the main specification.

¹One outlier candidate with very high capital income is removed.

Table 3. Effect of getting elected to parliament on average annual earnings in $e = 1$:
Estimates by subgroup.

	(1)	(2)	(3)	(4)	(5)	(6)
	Male	Female	Young	Old	South	North
Elected	18,445**	23,106**	19,828**	19,131**	17,773**	24,489**
	(3,308)	(3,552)	(2,740)	(3,936)	(3,256)	(3,957)
Elected (1/2 bandwidth)	15,640**	21,448**	19,052**	15,905**	13,790**	25,168**
	(4,312)	(5,951)	(4,099)	(5,288)	(4,331)	(6,047)
<i>N</i>	5,849	3,772	5,027	4,594	6,700	2,921
	(7)	(8)	(9)	(10)	(11)	(12)
	Low income	High income	Incumbent	Not incumbent	Previously elected	Never previously elected
Elected	40,524**	21,121**	23,245**	19,068**	24,483**	17,720**
	(4,309)	(3,089)	(4,687)	(3,355)	(4,210)	(3,513)
Elected (1/2 bandwidth)	40,221**	19,890**	17,717**	17,537**	20,164**	16,103**
	(6,871)	(4,165)	(5,802)	(4,482)	(5,504)	(4,656)
<i>N</i>	4,022	4,022	812	8,809	989	8,632
	(13)	(14)	(15)	(16)	(17)	(18)
	SDP	Centre	NCP	Other parties	Pre 2000 elections	Post 2000 elections
Elected	18,724**	26,751**	9,560	22,912**	12,552**	30,697**
	(4,517)	(4,061)	(7,284)	(4,513)	(2,994)	(4,141)
Elected (1/2 bandwidth)	10,901	26,728**	8,637	24,169**	14,366**	22,581**
	(6,420)	(5,448)	(9,171)	(6,722)	(4,276)	(5,751)
<i>N</i>	1,121	1,071	1,105	6,324	5,601	4,020

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with same bandwidth (40.58) as in the main specification; see Table 2.

Table 4. Incumbency effect.

Dependent variable: Same candidate elected in the next election.

	(1)	(2)
	Parliamentary	Municipal
Elected	0.1788** (0.0361)	0.0254* (0.0126)
Elected (1/2 bandwidth)	0.191** (0.0504)	0.00593 (0.0171)
N	16,559	122,754
Bandwidth	28.35	20.81

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$.

Local linear regression using triangle kernel with IK bandwidth.

Table 5. Effect of getting elected to a municipal council on later income.

	(1)	(2)	(3)	(4)	(5)
	Average annual earnings in $e = 1$	Average annual earnings in $e = 2$	Average annual earnings in $e = 3$	Average annual earnings after election	Capital income in $e = 1$
Elected	1,255** (462.8)	882.7 (566.8)	1,444 (777.2)	1,044* (479.9)	188.1 (378.1)
Elected (1/2 bandwidth)	1,188 (611.9)	558 (758.2)	1,353 (1,084.7)	870 (641)	521.0 (464.3)
N	161,114	122,067	81,633	161,116	161,114

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 19.01, which is the optimal IK bandwidth for column (1), the main specification.

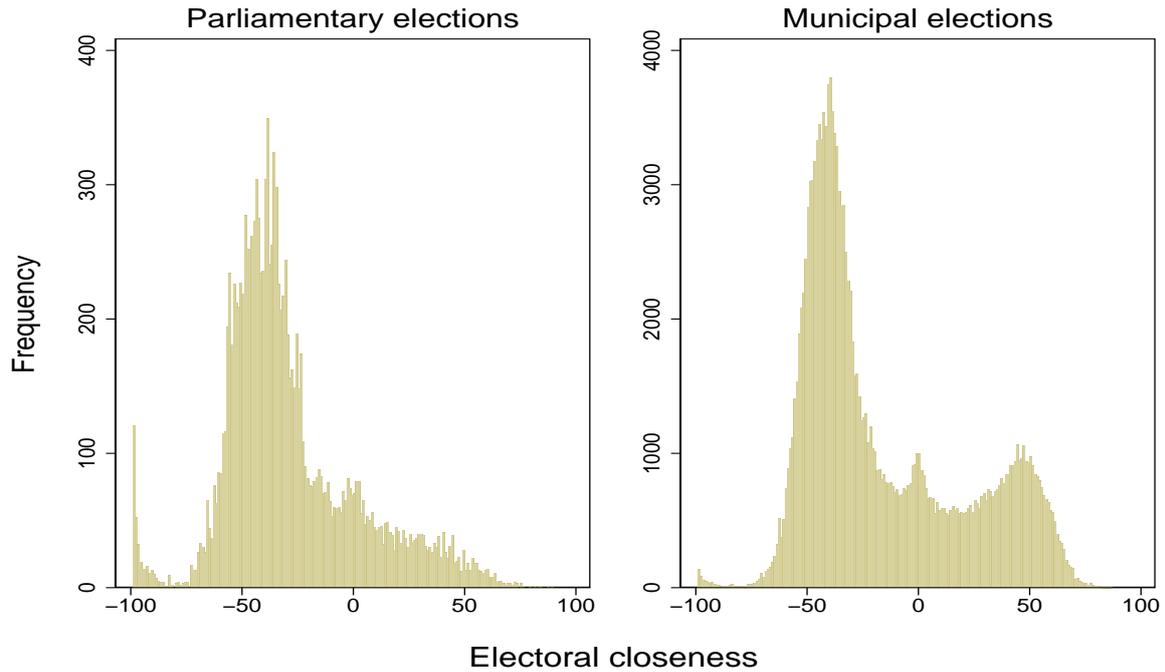


Figure 1: Distribution of the forcing variable. McCrary-test detects no discontinuity at the cutoff (0) in either case: the test statistic has value (std. dev) 0.081 (.084) for parliamentary and -0.0067 (.0294) for municipal elections.

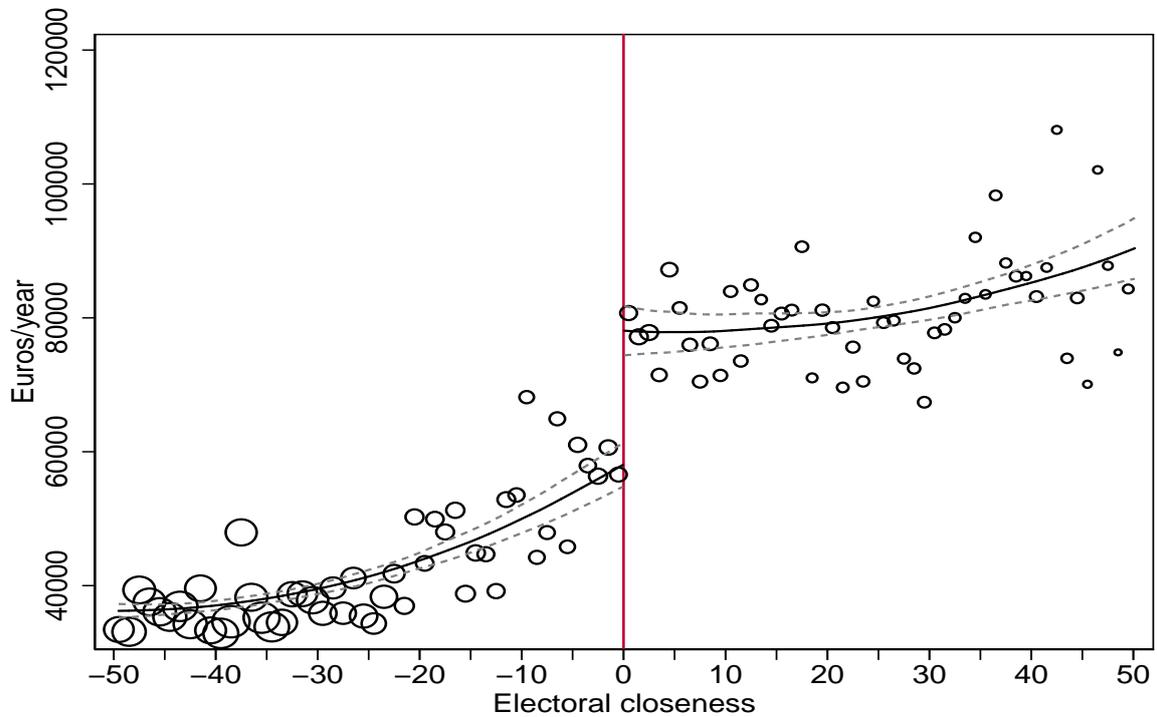


Figure 2: Estimated effect of being elected to parliament on earnings in the first electoral period after getting elected.

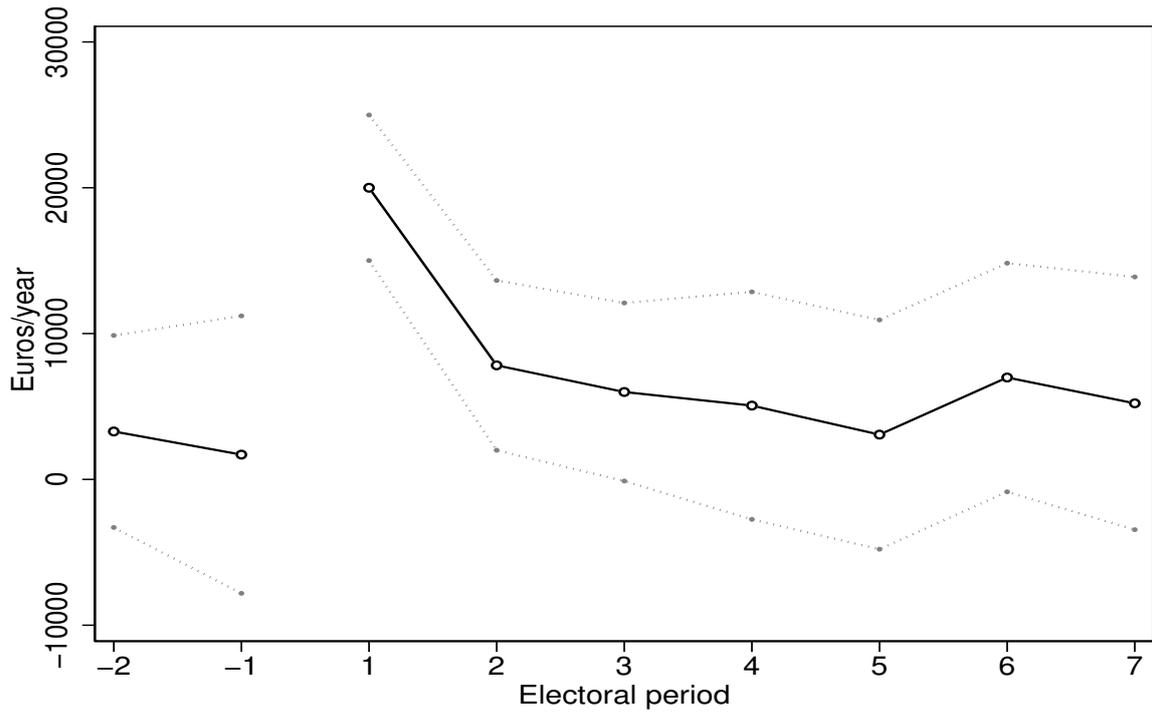


Figure 3: Estimated effect of being elected to parliament on earnings by electoral period. Negative periods refer to electoral periods before the election.

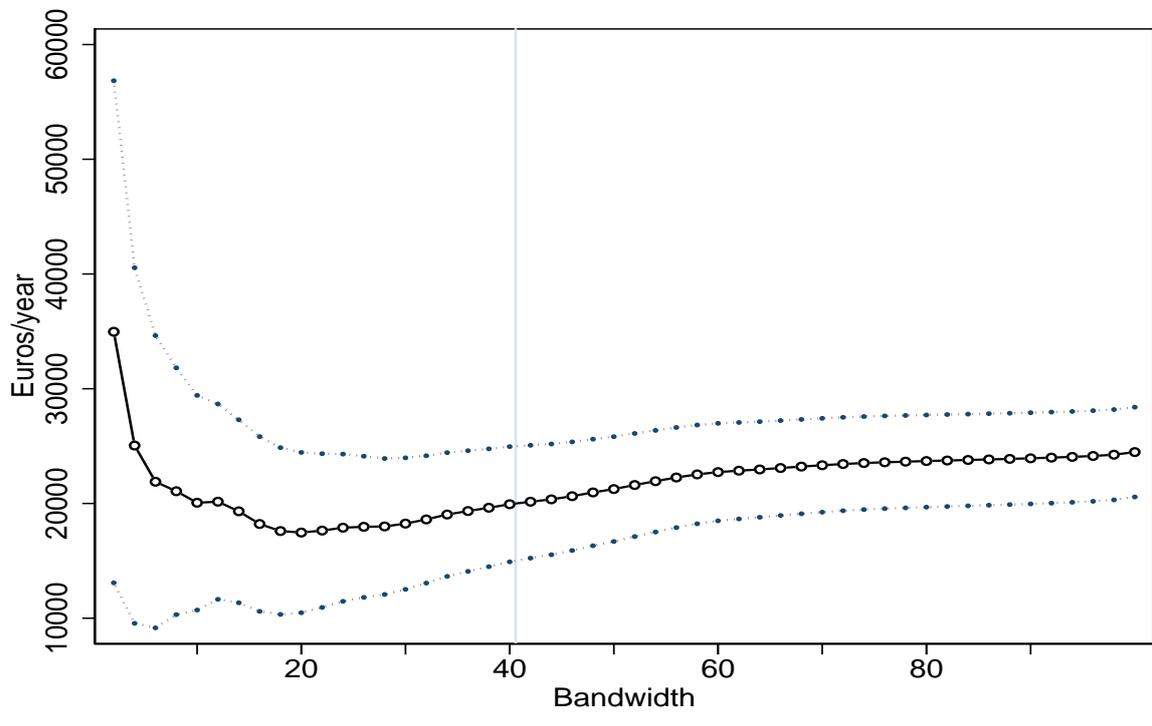


Figure 4: Robustness to bandwidth: Estimated effect of being elected to parliament on earnings in the first electoral period after election. Vertical line marks the Imbens-Kalyanaraman bandwidth.

Average earnings before the election

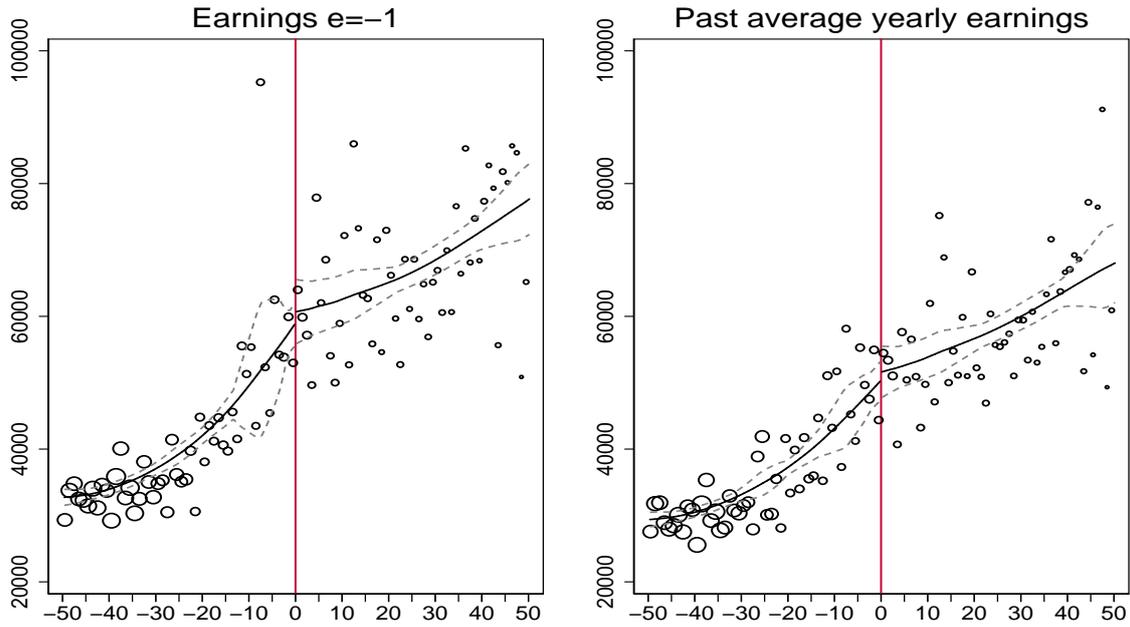


Figure 5: Continuity of pre-election earnings (parliamentary elections). See Online Appendix for figures of other predetermined variables.

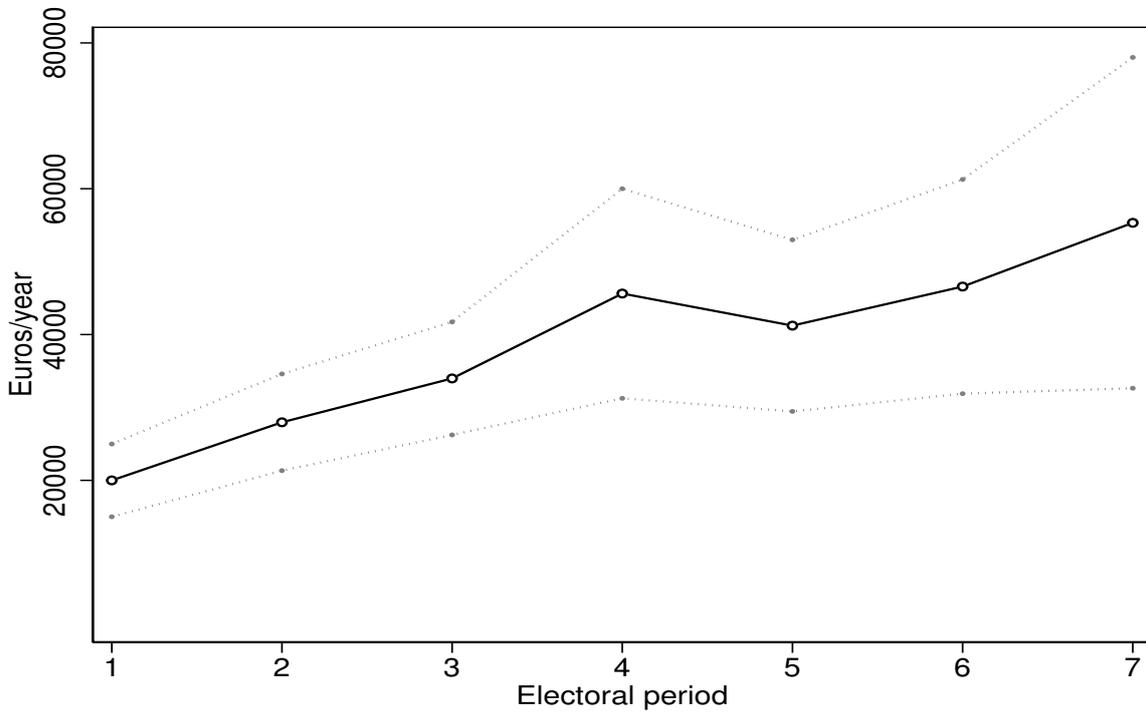


Figure 6: Time profile of the difference in earnings between (i) close winners who are in parliament and (ii) close losers who are not in parliament, e electoral periods after the close election. This is not a causal estimate (except at $e=1$) as selection out of politics is unlikely to be random.

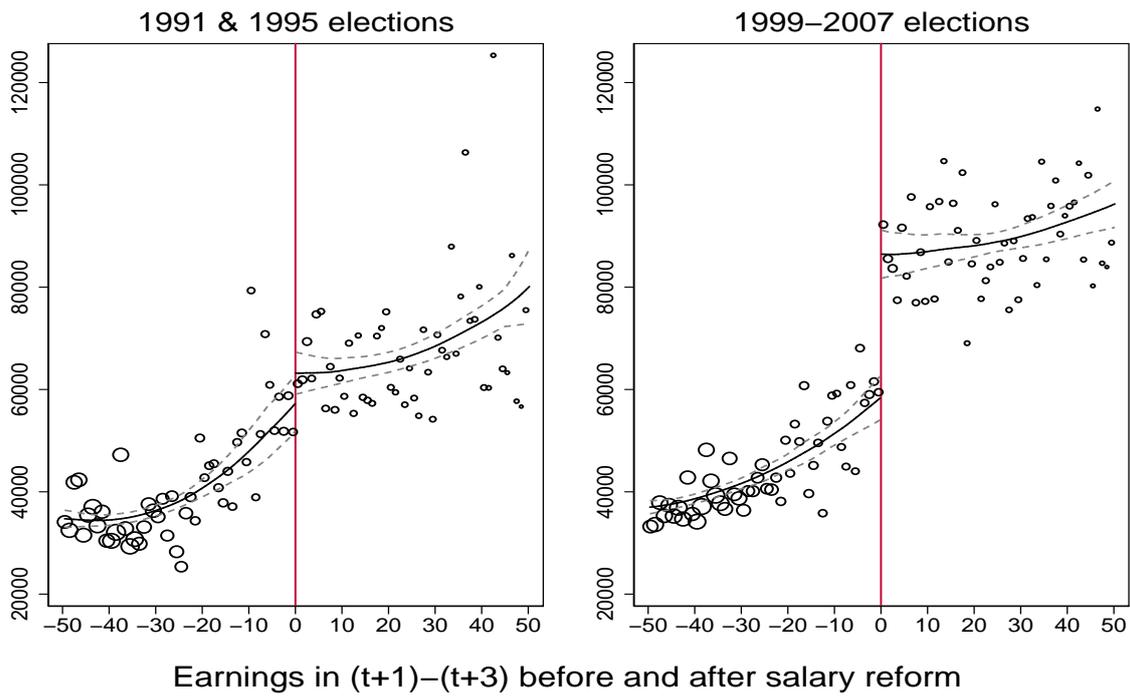


Figure 7: Estimated effect of being elected to parliament in the first electoral period after the election, before and after the salary reform of 2000. Left panel includes candidates in 1991 and 1995. Right panel includes post-2000 earnings for candidates in 1999, 2003, and 2007 elections.



Figure 8: Average and starting salaries of MPs.

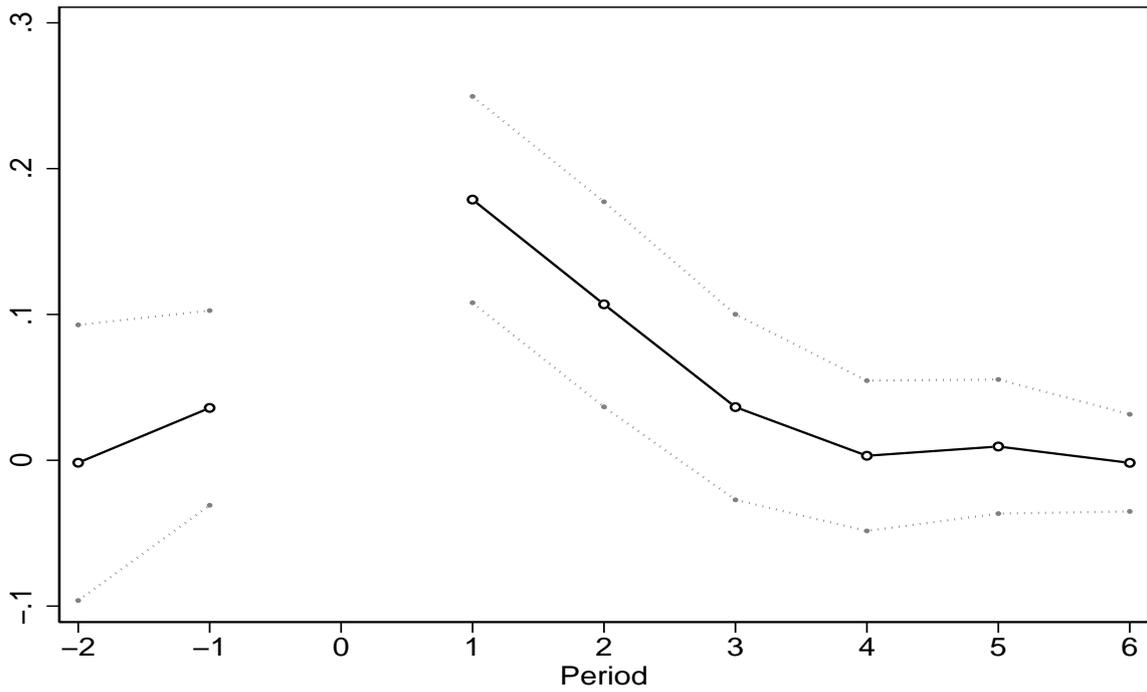


Figure 9: Incumbency advantage in parliamentary elections: Estimated effect of getting elected in electoral period 0 on the likelihood of getting elected e electoral periods later.

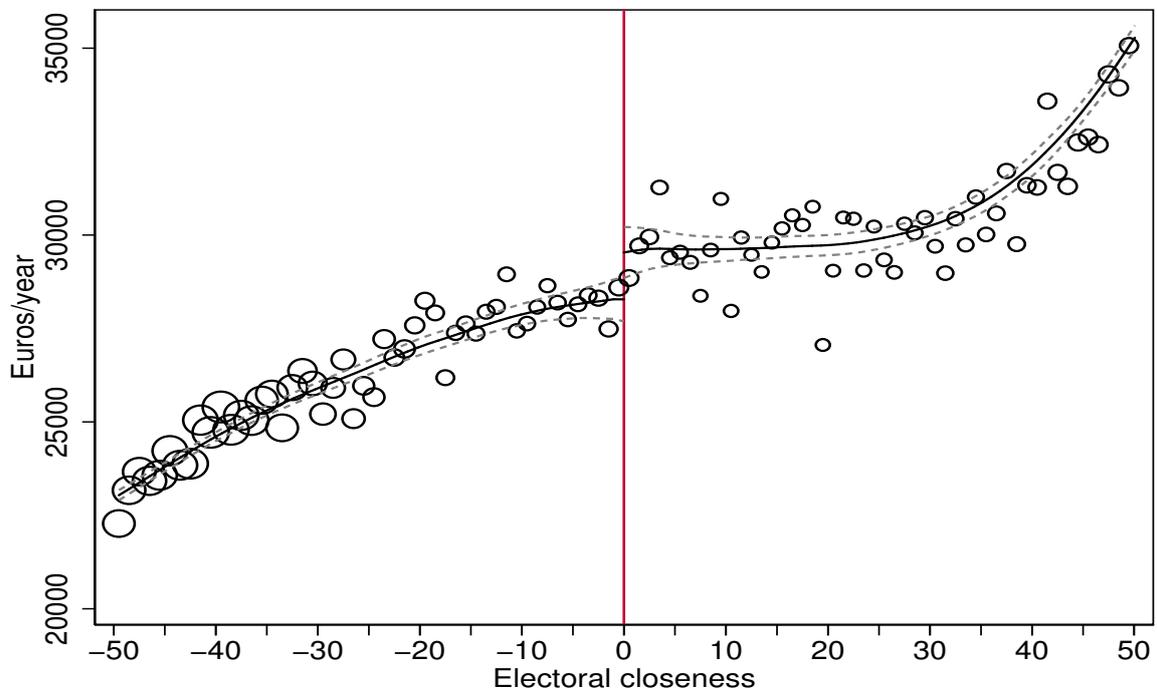


Figure 10: Estimated effect of being elected to a municipal council on earnings during the first electoral period after the election.

Online Appendix to Kotakorpi, Poutvaara, and Terviö (2017)

Supplementary Tables and Figures for “Returns to Office in National and Local Politics: A Bootstrap Method and Evidence from Finland” by Kotakorpi, Poutvaara, and Terviö. Journal of Law, Economics, & Organization, 2017.

Table A.1. Effect of getting elected to parliament on earnings: alternative measures.

	(1)	(2)	(3)
	Difference in average annual earnings between $e = 1$ and $e = -1$	Log earnings in $e = 1$	Log difference in earnings between $e = 1$ and $e = -1$
Elected	21,260** (3,734)	0.4189** (0.0429)	0.3294** (0.0507)
Elected (1/2 bandwidth)	24,247** (4,925)	0.353** (0.0648)	0.395** (0.0695)
N	8,044	9,525	7,931
Bandwidth	55.88	44.94	46.60

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with IK bandwidth.

Table A.2. Balance of predetermined variables (Parliamentary elections).

	Incumbent (1)	Never elected (2)	Female (3)	Centre (4)	NCP (5)	SDP (6)	Other (7)	South (8)
Elected ¹	0.105* (0.0428)	-0.0935* (0.0442)	0.0176 (0.0427)	-0.0273 (0.0406)	0.00434 (0.0380)	0.0458 (0.0395)	-0.0228 (0.0391)	0.0241 (0.0429)
Elected (1/2 bandwidth)	0.0235 (0.0613)	-0.00215 (0.0636)	-0.00747 (0.0591)	0.0285 (0.0566)	-0.0318 (0.0553)	-0.000222 (0.0571)	0.00348 (0.0548)	-0.0128 (0.0604)
<i>N</i>	9,621	9,621	9,621	9,621	9,621	9,621	9,621	9,621

	Average annual earnings in $e = -1$ (9)	Average annual earnings before election (10)	Vote share (11)	Age (12)	Year of birth (13)	Year (14)	Number of seats (15)	Number of votes (16)
Elected ¹	1,709.4 (4,853.1)	1,229.8 (2,972.9)	0.00251 (0.00210)	-0.391 (0.880)	0.240 (0.948)	-0.151 (0.516)	-0.853 (0.718)	-13,270.1 (9,760.3)
Elected (1/2 bandwidth)	-607.8 (4,899.4)	-1,079.4 (3,660.9)	0.00125 (0.00255)	-0.857 (1.214)	1.119 (1.286)	0.262 (0.713)	0.0110 (1.018)	-178.2 (13,897.8)
<i>N</i>	8,044	8,044	9,621	9,621	9,621	9,621	9,621	9,621

Standard errors in parentheses ** p<0.01, * p<0.05

Local linear regression using triangle kernel with bandwidth 40.58, which is the optimal IK bandwidth in the main specification; see Table 2 in the paper.

Table A.3. Robustness to control variables (Parliamentary elections).

Dependent variable: Average annual earnings in $e = 1$.			
	(1)	(2)	(3)
Elected ¹	19,894 ** (2,517)	19,861 ** (2,520)	19,638** (2,398)
Elected (1/2 bandwidth)	17,346** (3,499)	17,248** (3,443)	17,771** (3,278)
N	9,621	9,621	9,621
Year	x	x	x
District		x	x
Individual controls ¹			x

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 40.58, which is the optimal IK bandwidth in the main specification; see Table 2 in the paper.

¹ Age, age squared, gender, incumbency.

Table A.4. Effect of getting elected to a municipal council on earnings: alternative measures.

	(1)	(2)	(3)
	Difference in average annual earnings between $e = 1$ and $e = -1$	Log earnings in $e = 1$	Log difference in earnings between $e = 1$ and $e = -1$
Elected	655.6** (221.5)	0.0470** (0.0175)	0.0190 (0.0098)
Elected (1/2 bandwidth)	983.9** (295.8)	0.0461 (0.0240)	0.0226 (0.0139)
N	161,100	160,278	159,669
Bandwidth	33.74	22.01	48.40

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with IK bandwidth.

Table A.5. Balance of predetermined variables in (Municipal elections).

	Incumbent (1)	Female (2)	Centre (3)	NCP (4)	SDP (5)	Other (6)	Year of birth (11)	Year (12)	Number of seats (13)	Number of votes (14)
Elected ¹	0.00498 (0.0114)	-0.0228 (0.0119)	-0.0103 (0.0116)	-0.0342 (0.00976)	0.00365 (0.0101)	0.000799 (0.0105)				
Elected (1/2 bandwidth)	-0.00513 (0.0154)	-0.00914 (0.0161)	-0.00124 (0.0159)	-0.00128 (0.0132)	0.00260 (0.0134)	-0.000882 (0.0141)				
<i>N</i>	161,114	161,114	161,114	161,114	161,114	161,114				

	Average annual earnings in $e = -1$ (7)	Average annual earnings before elections (8)	Vote share (9)	Age (10)	Year of birth (11)	Year (12)	Number of seats (13)	Number of votes (14)
Elected ¹	331.8 (417.2)	245.1 (382.3)	-0.0000971 (0.000159)	-0.338 (0.291)	0.279 (0.301)	-0.0598 (0.110)	0.266 (0.332)	127.1 (610.3)
Elected (1/2 bandwidth)	15.45 (542.4)	-146.7 (500.2)	-0.0000633 (0.000221)	-0.406 (0.392)	0.386 (0.405)	-0.020 (0.149)	0.189 (0.449)	90.73 (834.9)
<i>N</i>	161,100	161,100	161,114	161,114	161,114	161,114	161,114	161,114

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 19.01, which is the optimal IK bandwidth in the main specification; see Table 5 in the paper.

Table A.6. Robustness to control variables (Municipal elections).

Dependent variable: Average annual earnings in $e = 1$.			
	(1)	(2)	(3)
Elected	1,292 ** (459.1)	1,187 ** (441.3)	1,056* (426.8)
Elected (1/2 bandwidth)	1,206* (606.9)	1,132 (581.4)	1,051.5 (561.5)
N	161,114	161,114	161,114
Year	x	x	x
Council size		x	x
Individual controls ¹			x

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 19.01, which is the optimal IK bandwidth in the main specification; see Table 5 in the paper.

¹ Age, age squared, gender, incumbency.

Table A.7. Effect of getting elected to a municipal council on average earnings in $e = 1$: estimates by subgroup.

	Incumbent	Non-incumbent	Female	Male	Large municipality	Small municipality	Young	Old
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elected ¹	985	1,366*	445	1,630**	1,728	1,094*	1,034	1,539*
	(850)	(557)	(679)	(618)	(925)	(499)	(575)	(729)
Elected (1/2 bandwidth)	1,399	1,097	-192	2,005*	1,216	1,188	521	1,966*
	(1,095)	(741)	(879)	(824)	(1,264)	(654)	(784)	(947)
N	34,484	126,630	62,253	98,961	67,023	94,091	81,463	79,651
	Low income	High income	SDP	Centre	NCP	Other parties	1996-2000 elections	2004-2008 elections
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Elected ¹	847*	978	1,216	887	1,671	1,575*	1,293*	1,293
	(379)	(655)	(748)	(667)	(1,483)	(793)	(548)	(750)
Elected (1/2 bandwidth)	773	680	1,280	1,260	908	1,312	938	1,512
	(506)	(860)	(1,030)	(898)	(1,893)	(1,054)	(752)	(969)
N	80,550	80,550	35,257	44,589	30,398	50,870	82,777	78,337

Standard errors in parentheses. ** $p < 0.01$, * $p < 0.05$

Local linear regression using triangle kernel with bandwidth 19.01, which is the optimal IK bandwidth in the main specification; see Table 5 in the paper.

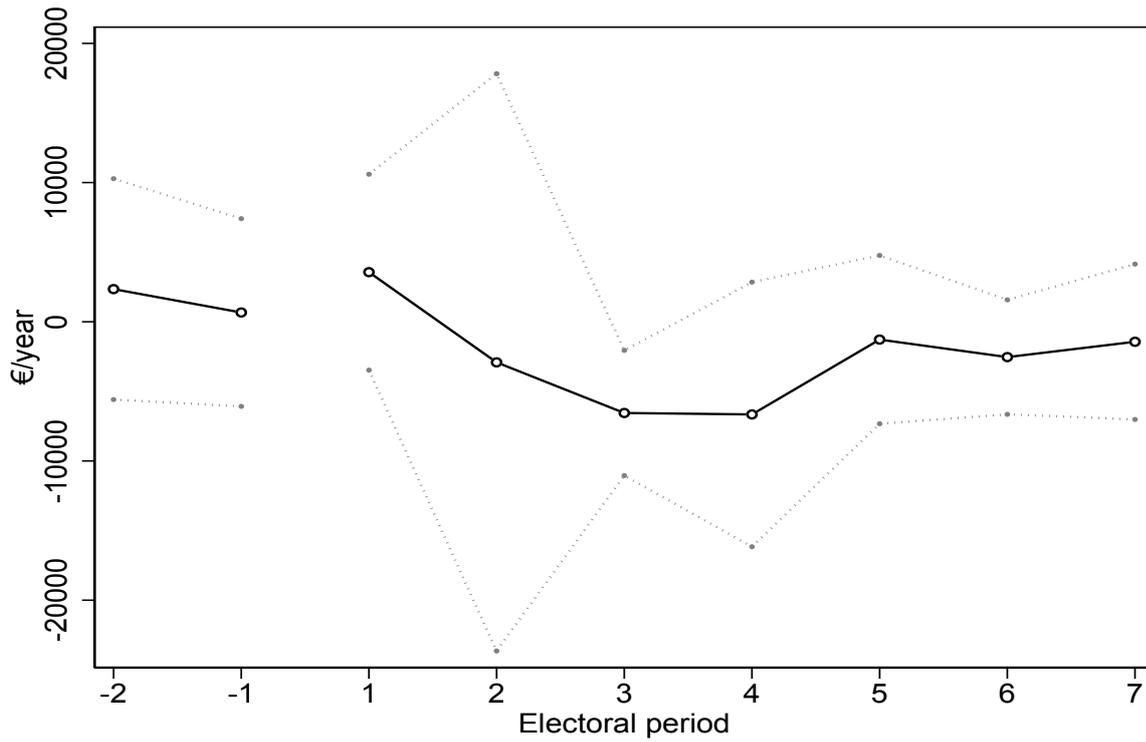


Figure A.1. Estimated effect of being elected to parliament on capital income by electoral period. Negative periods refer to electoral periods before the election.

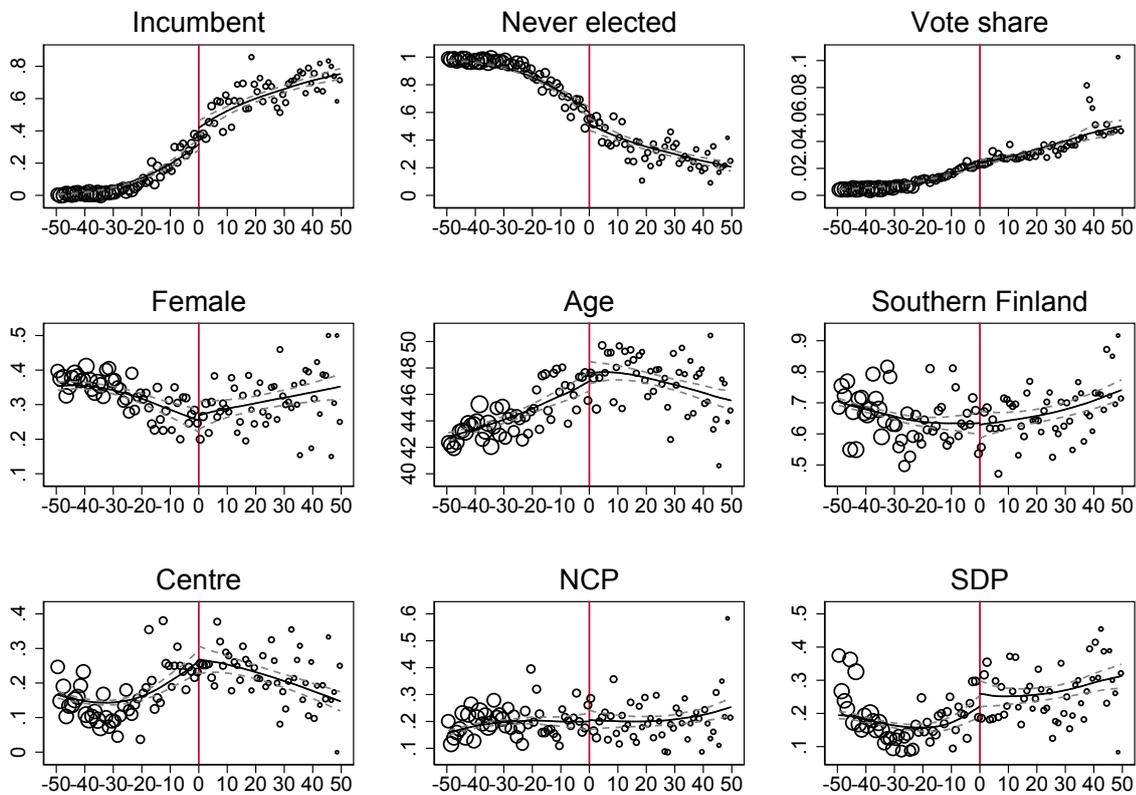


Figure A.2. Continuity of predetermined variables (parliamentary elections). For pre-election earnings see Figure 5 in the paper.

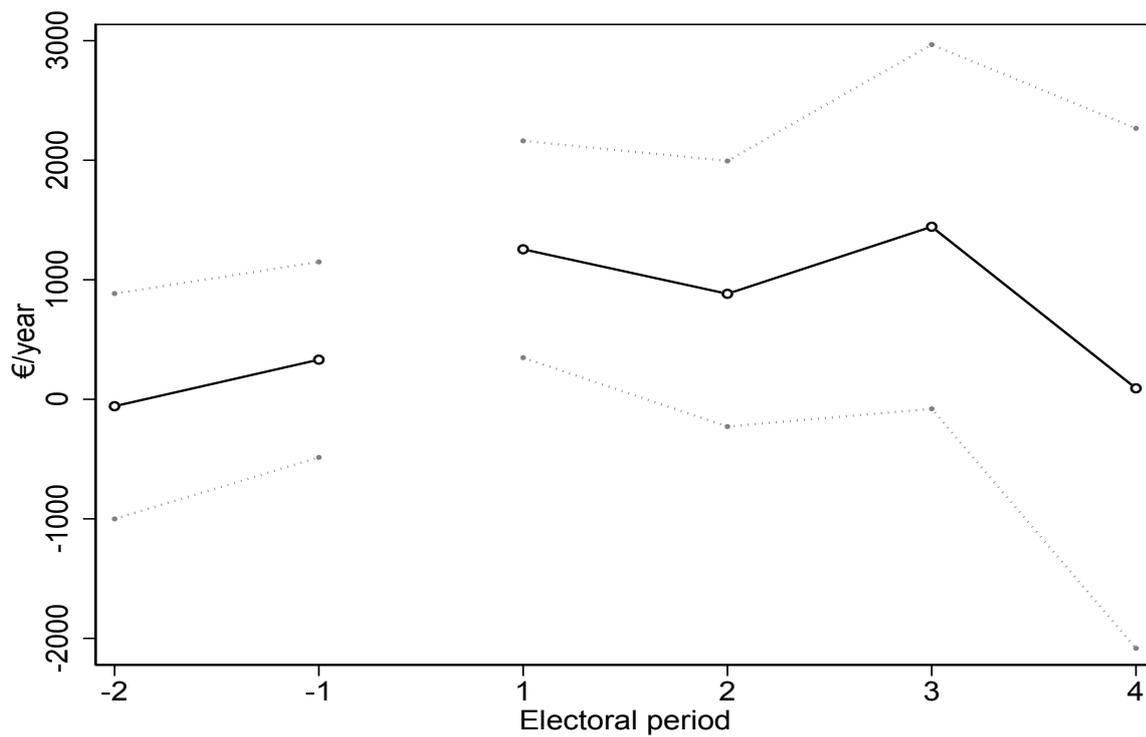


Figure A.3. Estimated effect of being elected to a municipal council on earnings by electoral period. Negative periods refer to electoral periods before the election.

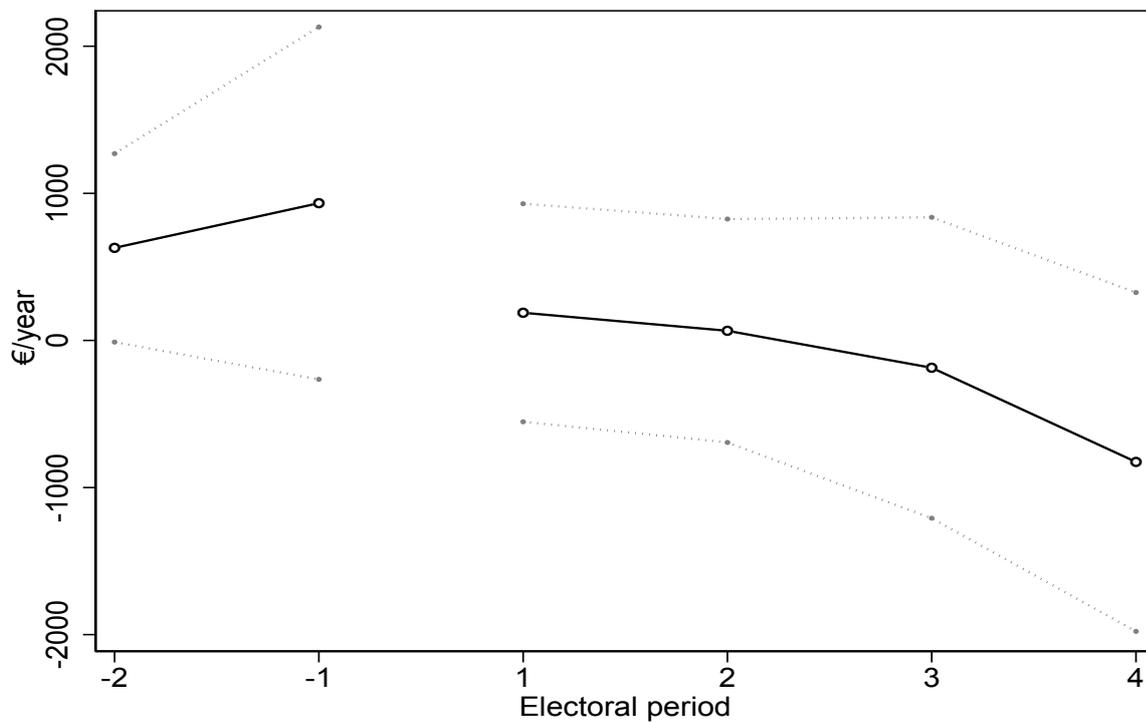


Figure A.4. Estimated effect of being elected to a municipal council on capital income by electoral period. Negative numbers refer to electoral periods before the election.

Average earnings before the election

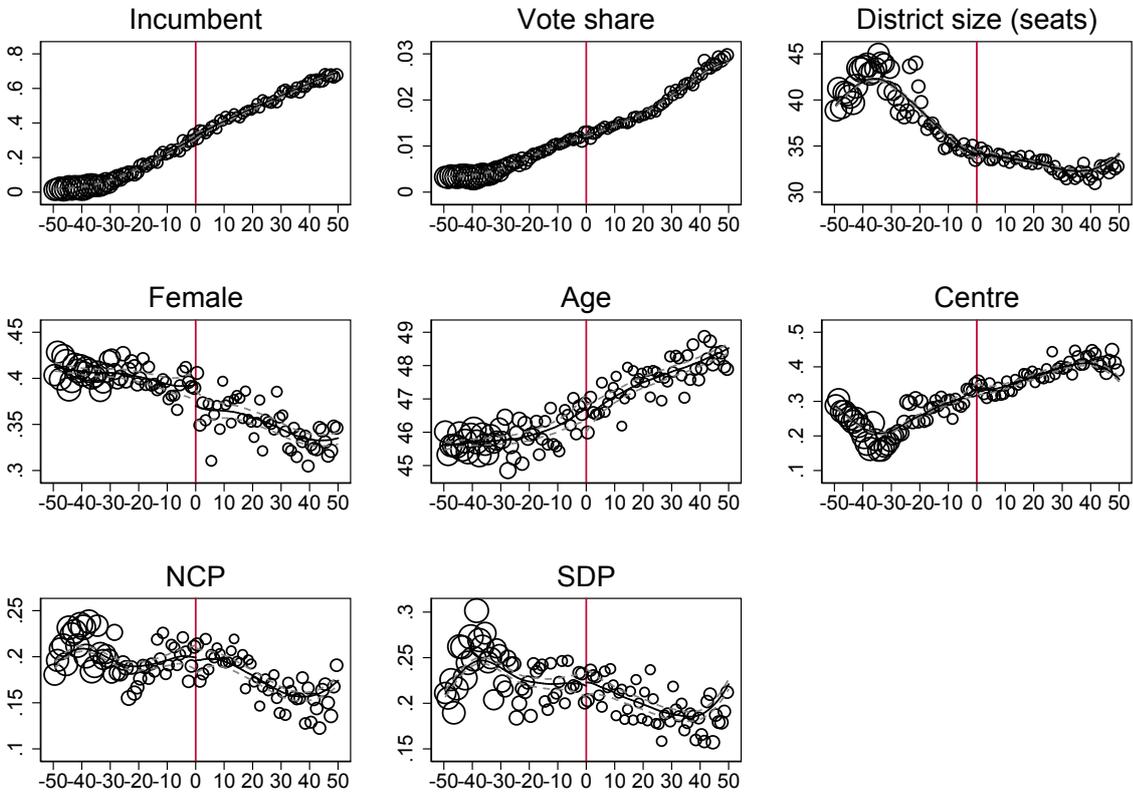
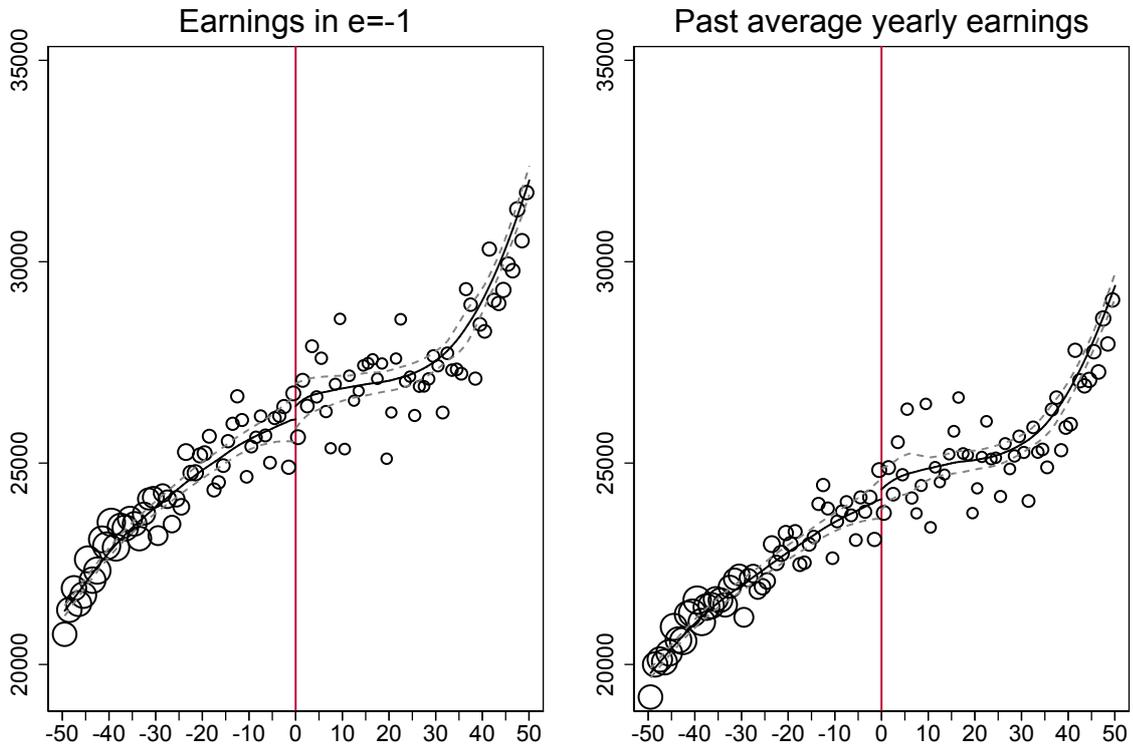


Figure A.5. Continuity of predetermined variables (municipal elections).