

Pay for Politicians and Candidate Selection: An Empirical Analysis

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Abstract

A growing theoretical literature on the effect of politicians' salaries on the average level of skills of political candidates yields ambiguous predictions. In this paper, we estimate the effect of pay for politicians on the level of education of parliamentary candidates. We take advantage of an exceptional reform where the salaries of Finnish MPs were increased by 35 % in the year 2000, intended to make the pay for parliamentarians more competitive. A difference-in-differences analysis, using candidates in municipal elections as a control group, suggests that the higher salary increased the fraction of candidates with higher education among female candidates, while we find no significant effect for male candidates.

JEL-Code: D72, J30, J45.

Keywords: pay for politicians, candidate selection, gender differences in politics.

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1. Introduction

Representative democracy can be regarded as a principal-agent relationship where voters delegate political power to selected candidates. When doing this, voters face adverse selection and moral hazard problems. The adverse selection problem results from asymmetric information concerning the quality of candidates, as well as from the fact that voters can select politicians only from those citizens who run for office. Selection into politics can be analyzed using the citizen-candidate models of representative democracy, pioneered by Osborne and Slivinski (1996) and Besley and Coate (1997). A moral hazard problem arises, as politicians need not act in the interest of their voters. Since it is difficult to provide formal incentives in politics, implicit incentives in the form of career concerns may mitigate the moral hazard problem (Holmström, 1982, and Persson and Tabellini, 2000).

A central tenet in the labor market literature is the idea that higher salaries can mitigate both adverse selection and moral hazard problems: higher salaries attract more talented applicants and increase effort by employees, thus increasing the aggregate output per worker. An important question when planning compensation for elected officials is whether this holds also in politics.

The question of whether a higher pay results in a political class of higher abilities has recently attracted increasing interest – for theoretical analyses on the topic, see Besley (2004), Caselli and Morelli (2004), Messner and Polborn (2004), Poutvaara and Takalo (2007) and Matozzi and Merlo (2008). The theoretical models yield ambiguous predictions. For example, Besley (2004) finds that increasing the salaries of elected politicians need not result in a more qualified candidate body, due to a conflict between intrinsic and extrinsic motivations. A higher pay for politicians may actually result in a worse candidate pool, as extrinsic monetary incentives crowd out intrinsic public service motivations. Further, the presence of separate intrinsic and extrinsic motivations is not a necessary condition for the possibility that a salary increase would fail to attract better politicians. Poutvaara and Takalo (2007) present a model of costly campaigning that produces informative but noisy signals of candidates' abilities. They show that the common

view that increasing the salaries of elected politicians improves their average abilities need not hold when campaigning is costly, even in the absence of any intrinsic motivations.

We contribute to this discussion by providing an empirical analysis of the effect of politicians' salaries on the set of candidates. Our analysis takes advantage of a reform where the salaries of Finnish MPs were increased by 35 percent in the year 2000. The main argument for this salary increase was that by increasing the salaries of elected politicians, it would be possible to attract more skillful citizens to politics. We examine whether the increase in the pay for MPs increased the average level of education of candidates in parliamentary elections. We use education as a proxy for skill, as more educated people typically work in more demanding jobs and receive higher pay.

There is little earlier empirical evidence on the effects of the pay for politicians on the selection of candidates and politicians.¹ Groseclose and Krehbiel (1994), Hall and Van Houwelling (1995) and Diermeier et al. (2005) examine the effects of financial incentives on the related question of whether incumbents re-run for office. Ferraz and Finan (2009) and Gagliarducci and Nannicini (2009) find that a higher pay attracts better educated municipal candidates in Brazil and Italy, respectively. To our knowledge, the present study is the first empirical analysis of the effect of politicians' salaries on the selection of candidates in national politics.

To be able to distinguish the effect of the salary increase from other factors that may have affected the level of education and demographic characteristics of candidates, like the increase in the average level of education over time and the aging of the baby-boomers, we have collected information on the age, gender, education, and electoral success of all parliamentary and municipal candidates in four parliamentary elections (1995, 1999, 2003 and 2007) and three municipal elections (1996, 2000 and 2004). Formally, the set of potential candidates in the

¹ A number of recent empirical papers analyze the relationship between politicians' pay and moral hazard. Gagliarducci et al. (2008) study the interplay between serving in politics and outside earnings. Di Tella and Fisman (2004) find that there is a negative relationship between per capita tax payments and gubernatorial pay in the United States, and conclude that it is strong evidence of reward for performance. From the other side of the coin, Becker et al. (2009) examine the effects of political competition on politicians' outside earnings, finding that politicians facing low competition have higher outside earnings.

parliamentary elections is our treatment group, and the set of potential candidates in the municipal elections serves as a control group. Having a treatment and a control group and data from several elections allows us to perform a difference-in-differences analysis to estimate what effects, if any, the salary increase appears to have had on the set of candidates in the parliamentary election.

A challenge for our analysis is that the changes in the fraction of candidates with higher education appear to have been different for candidates in parliamentary and municipal elections preceding the salary reform. These differing changes for the treatment and the control group imply that the assumptions for a simple difference-in-differences analysis appear not to be satisfied for the set of candidates taken as a whole. In the econometric analysis, we address this problem in four ways. Firstly, we analyze female and male candidates separately. As there is a significant gender gap in the labor market, as documented for example by Napari (2009) for Finland and by Blau and Kahn (2000) more generally, women and men may respond differently to the salary reform. Secondly, we focus on the age group 25 to 50, where the underlying assumption of a similar change in the treatment and control group before the salary increase appears to be satisfied for both male and female candidates. The lower bound is motivated also as many candidates below 25 are still likely to be students. Thirdly, we control for factors that may have affected the development of the educational background of electoral candidates over time by including age and party dummies. Fourthly, we perform a corresponding analysis using municipal candidates in largest cities as an alternative control group. This group can be expected to be more similar to parliamentary candidates than municipal candidates in the whole country.

Both descriptive analysis and formal econometric evidence suggest that the 35-percent salary increase would have resulted in a more educated set of female candidates. Our qualitative results hold whether we consider the set of all female candidates (new candidates as well as incumbents) or new candidates only. On the other hand, the reform appears to have had no effect on the average level of education of male candidates. One possible explanation for these findings is the gap between the outside wages of men and women, which makes a politicians' salary relatively more attractive for highly educated women. Furthermore, many highly educated women work in

the public sector in which the income distribution is narrower than in the private sector, which further increases the relative attractiveness of politics for highly educated women.

The paper is organized as follows. In Section 2, we discuss the theoretical background for our analysis. In Section 3, we present institutional facts about the Finnish political system, and an overview of our data. Section 4 summarizes how the salary of Finnish MPs has changed over time, and describes the salary reform implemented in the year 2000. Section 5 presents descriptive analysis of the development of the fraction of candidates with higher education in parliamentary and municipal elections. An econometric analysis of the effects of the 2000 salary reform is contained in section 6. Section 7 provides some further discussion of our results and section 8 concludes.

2. Theoretical background

In an archetypal citizen-candidate model any citizen may enter electoral competition at a cost, and then all citizens elect politicians from the group of self-declared candidates. This approach is taken by Caselli and Morelli (2004) and Messner and Polborn (2004) who emphasize the payoff from winning an election and the opportunity cost of candidacy in determining the quality of politicians. Caselli and Morelli (2004) assume that candidates know in advance whether they can convince the electorate of their quality. Messner and Polborn (2004) assume that the abilities of potential candidates are known to voters, but their opportunity costs are private information.

Poutvaara and Takalo (2007) extend the citizen-candidate approach to take into account the role of political parties as the gatekeepers in modern democracies. In their model, political parties first select their candidates who then face each other in the general election. There are three key parameters: the reward for office holders, campaigning costs, and the citizens' ability level. The values of the parameters specify the choice between politics and a private career. Citizens contemplating candidacy weigh the expected payoff from winning an election against campaigning costs and income available outside politics. The citizens differ in their earning potential outside politics and in their competence in the office but, for each citizen, earning

potential and competence are positively correlated. Voters would like to have competent office holders, but candidates have private information about their ability. Campaigning creates a noisy signal of the candidates' ability. The parties organize primary elections to screen the candidates so that the ability distribution of the candidates in the general election will be improved.

There are two key forces that affect the interplay between an individual's skill level and the attractiveness of becoming an electoral candidate: A highly skillful candidate has *ceteris paribus* a higher opportunity cost of entering politics (due to having a higher outside wage), but also a higher probability of winning an election. It is therefore not clear whether more or less skillful candidates find politics more attractive, and thus the ability range from which candidates appear at a given level of wages is unclear, *à priori*.

A further complication arises if we take into account that when politics becomes more attractive to all citizens, competition within politics tightens. While the direct effect of a salary increase encourages entry into politics, the indirect general equilibrium effect through an increased competition goes the other way. Poutvaara and Takalo (2007) analyze the overall effect when ability follows the uniform distribution, showing that the overall effect on the average ability of candidates may go either way. Increasing salaries attracts more able candidates when the initial salaries are low, and this may also result in lower-ability citizens leaving politics as the competition gets tougher and their electoral chances get worse. When salaries become sufficiently high, low-ability citizens again start entering politics, as the higher gain in case of winning outweighs the low probability of winning. In this case a further salary increase would reduce the average quality of the political class.

3. Institutional facts and data

3.1. Institutional facts

The political setting for this study is Finland, which is a multi-party democracy with a proportional electoral system and a personal vote. Candidates are selected from electoral lists in

an order determined by the number of personal votes they receive. Unlike in some other countries with proportional representation, it is not possible to vote just for a party list without specifying a candidate. Finland has a one-chamber legislature, and the country is divided into fourteen mainland districts electing in total 199 legislators and the autonomous province of Åland electing one. Elections are held every four years. The number of MPs elected from the 14 mainland districts varied in 2003 between 7 and 32.

In each parliamentary district, parties present lists of their candidates, typically in alphabetical order but sometimes with incumbents listed first, and each voter chooses one candidate on one list. The number of candidates that a party can present equals the number of representatives elected from the district, if this is 14 or more. In small districts with less than 14 seats, parties can present 14 candidates. The legislature seats of a given district are allocated based on party vote shares to the candidates in accordance with “competitive indices” as set by d’Hondt’s method. In each party, the candidate with the highest number of votes receives as his or her competitive index the total number of votes obtained by his or her party, the candidate with the second highest number of votes obtains an index calculated as half of the party votes, the third candidate gets an index equal to a third of the party votes, etc. Then all candidates are ranked on the basis of their indices, and from this list, as many candidates as there are seats in the electoral district will be elected.

Altogether eight different parties have seats in the parliament elected in 2007. The five largest parties are the National Coalition Party (51 seats), Centre Party (51), Social Democratic Party (45), Left Alliance (17) and the Green League (14). Each major political party has typically several male and female candidates in each parliamentary district. In the 2007 parliamentary election, 40 % of the candidates were female. They received approximately 42% of the votes and 84 of the 200 elected members of parliament were women.

Municipal elections also take place every four years. Seats are allocated using the same method as in parliamentary elections, with each municipality forming a district. The number of elected municipal councilors depends on the size of the municipality, reaching a maximum of 85 in

Helsinki. In municipal elections each party is allowed to present one and a half as many candidates on its list as the number of seats in the municipal council.

3.2. Data

We have obtained panel data on all electoral candidates in four parliamentary elections (1995, 1999, 2003 and 2007) and three municipal elections (1996, 2000 and 2004). We have information on the age, gender, political party, incumbency, and the number of personal votes of each candidate, as well as which candidates were elected. Furthermore, we have information on the candidates' level of education, measured at the end of the year preceding the election.

The register data has been obtained from various different sources. Data on education and occupation comes from Statistics Finland, while all other data on electoral candidates comes from the Ministry of Justice databases, administered by Tieto Corporation. Data on MP's salaries was provided by the secretariat of the Finnish parliament.

In total, we have information on 8,109 candidates in parliamentary elections and 122,754 candidates in municipal elections. The descriptive statistics for the elections in our data are given in Tables 1a and 1b. We are mainly interested in selection into politics and therefore the group of non-incumbent candidates appears particularly relevant from the point of view of our analysis. On the other hand, incumbents also need to decide whether or not to re-run, and this decision may be affected by MP's salaries. We thus present the descriptive statistics for all candidates as well as for non-incumbents separately. In most of the subsequent analysis, we focus on results for non-incumbent candidates, but report the results of the econometric analysis in Section 6 also for non-incumbents and incumbents taken together.

The summary statistics reported in Table 1a indicate that the fraction of male candidates stays relatively constant in parliamentary elections, with the exception of the election of 1999 in which their share of all candidates increases. However, the total number of all candidates dropped from 1995 to 1999 and the total number of male candidates also dropped. In municipal elections, there

has been a steady but relatively modest decrease in the fraction of male candidates. The average age of candidates, on the other hand, has increased slightly in both parliamentary and municipal elections.

Table 1a: Candidates in parliamentary elections

	1995		1999		2003		2007	
	All candidates	Non-incumbents	All Candidates	Non-incumbents	All candidates	Non-incumbents	All candidates	Non-incumbents
# of candidates	2,083	1,922	1,993	1,815	2,029	1,860	2,004	1,832
% of males	60.9	60.8	63.0	63.0	60.2	60.1	60.1	60.0
Average age	44.5	44.2	46.5	46.1	47.0	46.7	47.2	46.8

Table 1b: Candidates in municipal elections

	1996		2000		2004	
	All Candidates	Non-incumbents	All candidates	Non-incumbents	All candidates	Non-incumbents
# of candidates	43,104	34,217	39,744	31,050	39,906	31,236
% of males	63.7	61.7	61.8	59.3	60.1	58.3
Average age	45.2	44.0	46.1	44.9	46.9	45.6

Table 1c: Candidates in municipal elections in large cities

	1996		2000		2004	
	All Candidates	Non-incumbents	All candidates	Non-incumbents	All candidates	Non-incumbents
# of candidates	5,692	5,012	5,944	5,220	6,566	5,841
% of males	60.0	59.6	59.2	58.8	57.1	56.6
Average age	45.1	44.5	45.9	45.2	46.1	45.3

Table 1c presents the corresponding statistics for municipal candidates in the largest cities. The set of large cities includes the largest city in each of the 14 mainland districts apart from Uusimaa, from which we include the two largest cities as these are both part of the same metropolitan area and are among the largest cities in the whole country.² For this group, average age is very close to the average age of all municipal candidates whereas the fraction of male candidates is slightly lower.

Throughout the paper, we use education as a proxy for the skill level of candidates. Education is recorded annually (on December 31st) and we use education in the year preceding the election to measure the education level of each candidate in a given election.³ From the point of view of viewing education as a proxy for skill, the Finnish system has the advantage that higher education is free of charge for the students, and therefore access to higher education is less likely to be affected by financial considerations (and more likely based on applicants' ability).

In addition to the data on educational background, Statistics Finland also collects information on occupation, which could be considered as an alternative (or complementary) measure of skill relevant for our analysis, in particular as one of the main motivations for the salary reform was to make a career as a parliamentarian more competitive with other demanding jobs. However, as occupational data is gathered only very infrequently (1990, 1995, 2000 and 2004) we unfortunately cannot perform a reliable analysis on how the salary reform affected the occupational composition of the candidate pool. Occupation is also likely to be a much less stable characteristic than education. For example, some individuals may temporarily be in an occupation that does not match their qualifications. This instability would be a problem in itself for using occupation as a proxy for skill, but the problem becomes more severe given the low frequency at which the data is gathered.

² The metropolitan area comprises three main cities, Helsinki, Espoo and Vantaa. Espoo and Vantaa are part of the Uusimaa voting district, whereas Helsinki forms its own district.

³ Parliamentary elections take place in March and municipal elections in October.

4. The reform

The salaries of Finnish parliamentarians have typically been lower than the salaries of MPs in most other Western European countries: a study by the secretariat of the Finnish parliament shows that in 1999, the real starting salaries of Finnish parliamentarians were lowest in the European Union. During the period 1986-1999, the salaries of MP's had also increased considerably more slowly than average earnings (Makkonen, 2000). Shortly after the 1999 parliamentary election, a proposal was made to increase the attractiveness of serving as an MP by increasing the salary of parliamentarians. The reform was accepted and the salary increase took effect on September 1, 2000. Therefore, the first election in which the candidates were affected by the reform was in 2003.

Figure 1 depicts the development of the starting salary of Finnish MPs. The figure shows that the salary change that took place in the year 2000 is both significant and unique over the time period that we are studying. The real starting salaries of MP's were practically flat preceding the reform. The reform increased the monthly starting salary of Finnish MPs from approximately 3000 € to 4600 €. The change in the average salary of MPs was slightly lower, and the average effect of the reform has been calculated to have been approximately 35%.⁴

⁴ At the beginning of the year 2000, there was also a small reduction in the amount of compensation for expenses incurred by MPs. At the same time, however, the compensation was made tax exempt, and the overall effect depends on each MP's marginal tax rate. Any negative effects that there may have been were nevertheless very small compared to the magnitude of the salary increase.

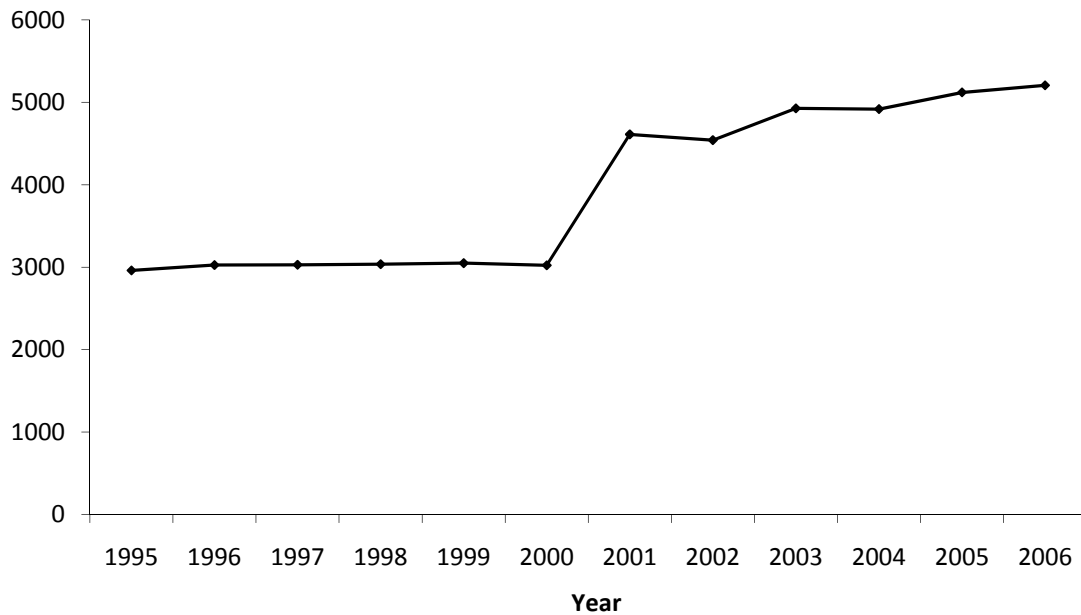


Figure 1: Starting salary of Finnish MPs (in 2002 euros)

Our econometric strategy aims at using municipal candidates as a control group for parliamentary candidates, and performing a difference-in-differences estimation to assess the effects of the reform on the educational level of parliamentary candidates. It is therefore important that the remuneration of municipal councilors should have remained constant over time. Indeed, municipal councilors do not receive a salary, but only a modest compensation for participation in meetings. There was no significant change in that compensation over the time period covered by our analysis.

5. Educational background over time: Descriptive analysis

Figure 2 depicts the development of the fraction of non-incumbent parliamentary and municipal candidates with higher education (Master's degree⁵ or more) in various elections. The fraction is calculated out of the population of all candidates, including those whose level of education is not known. We present the results for municipal elections for the whole country, and separately for

⁵ A master's degree in the Finnish system typically involves 5 to 6 years of university education.

the biggest cities. We observe that the fraction of candidates with higher education is considerably higher in parliamentary elections, varying between 20 and 30 percent, while it is around 20 percent in municipal elections in large cities and 10 percent in municipal elections in the whole country. Over the three municipal elections covered by our data, the fraction of those with university-level education increases monotonically from 9.5 percent to 12.3 percent in the whole country. In the large cities, the fraction increased moderately from 19.7 percent to 21.1 percent. In the parliamentary elections, there is no monotonic trend. The fraction of candidates with university-level education declines from 25.5 percent in the 1995 election to 22.2 percent in the 1999 election, then recovering to 25.5 in the 2003 election and further increasing to 27.1 percent in the 2007 election.⁶

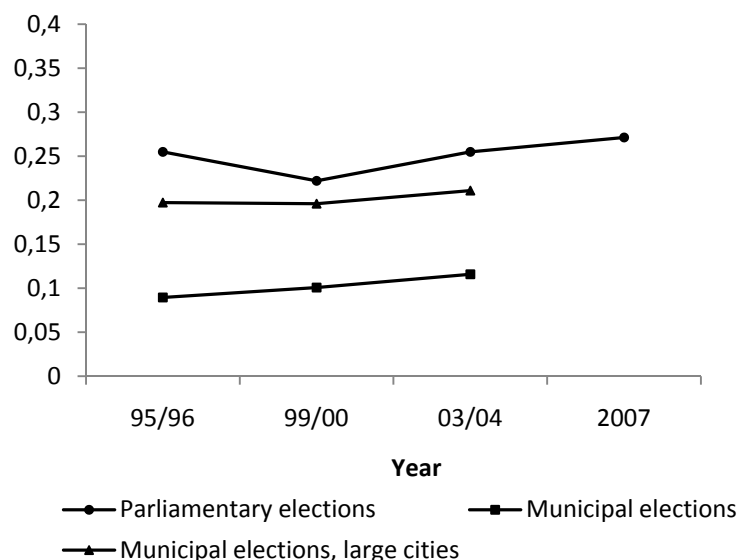


Figure 2: Proportion of non-incumbent candidates with higher education

It is interesting to note that the development in the educational composition of the pool of candidates in parliamentary elections seems consistent with the hypothesis that salaries have a positive effect on the educational level of candidates. As the salaries of parliamentary candidates remained flat in the period prior to the reform, it is clear that the salary development of MPs

⁶ Excluding candidates with missing observations on education does not change the qualitative picture. The only difference arises due to a larger number of missing observations in the 2007 parliamentary election.

dragged behind that of other occupational groups (as on average, there was an increase in real wages over the period). That is, salaries in effect got worse when compared to wages outside politics i.e. the opportunity cost of running for office increased. Correspondingly, there was a decline in the fraction of highly educated candidates in parliamentary elections prior the reform. The education level of candidates recovered after the salary increase.

However, the fact that the fraction of parliamentary candidates with higher education was reduced between the two elections *preceding* the salary increase, whereas the educational level of municipal candidates increased monotonically, poses a challenge for our formal econometric analysis. In order to address this problem, we focus on candidates in the age group 25 to 50 in all subsequent analysis. Both very young candidates as well as older candidates who are closer to retirement age are potentially problematic for our analysis. In the case of young candidates, a significant proportion of these individuals are likely not to have yet completed their education. Therefore, their current level of education would yield misleading information about their true ability level.⁷ For older candidates, on the other hand, the motivation behind entering politics may differ in important ways from those of younger candidates who potentially have a longer career ahead of them. In the age group 25 to 50, the assumption of common changes in the treatment and control groups before the reform appears to be satisfied.⁸ This age group covers over half of all male candidates (51% in parliamentary elections and 54% in municipal elections) and over 60% of female candidates (63% in parliamentary elections and 61% in municipal elections).

Further, as there is a significant gender gap in earnings in the labor market, we study men and women separately. Given that women earn less than men, on average, the pay for politicians is

⁷ Unfortunately, our data does not allow us to observe student status or, for instance, whether an individual is registered as a university student.

⁸ The discrepancy in the changes in the control and treatment groups before the reform appears to have been mainly due to male candidates in the age group 50 or over. It appears that the behavior of candidates in this group cannot be adequately explained by the controls that we have. If we were to be able to also analyze this group formally, our hypothesis is that the effects in this group would be smaller than for the age group 25 to 50, as the salary reform is likely to have less relevance for older candidates. However, it is interesting to note that in the case of men, we find insignificant effects even for the age group 25 to 50. For women, the results for the entire pool of candidates are very similar to the results for the age group 25-50 – see section 6.4.

likely to be relatively more attractive for women. Another reason for looking at men and women separately is that there are likely to be important gender differences in preferences (see e.g. Croson and Gneezy 2009) that may affect an individual's willingness to take on gambles such as putting oneself forward as a candidate in an election (where both the financial and reputational stakes are potentially high).

In figures 3a and 3b, we report the proportion of candidates with higher education among non-incumbent male and female candidates in the age group 25 to 50. Comparing Figures 3a and 3b reveals that while the fraction of non-incumbent male parliamentary candidates with higher education has stayed relatively flat over the entire period covered by our data, the proportion of non-incumbent female parliamentary candidates with higher education stayed flat in the two elections before the reform, then increasing markedly between the 1999 and 2003 elections, after the salary increase. These descriptive statistics should not be interpreted as any claim about causality, and we perform the formal econometric analysis of the effect of the reform in the next section.

For comparison, Figure 4 shows the development in the educational background of the adult population (individuals aged 15 or over) as a whole. While low compared to the educational level of parliamentary candidates, the education level of both men and women has increased steadily over time. This gives us confidence that there should have been no changes in the educational composition of the electorate that would obfuscate the analysis. The fraction of highly-educated increased more among female than male municipal candidates, just as the fraction of women with higher education has increased more in the general population.

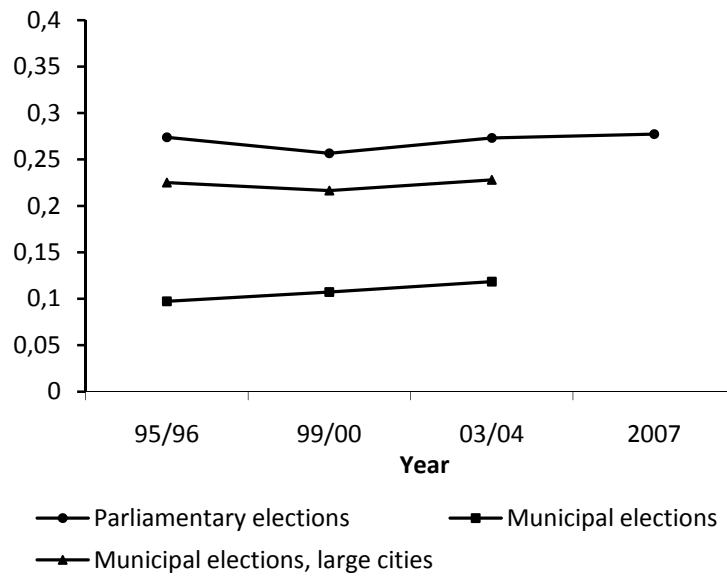


Figure 3a: Proportion of non-incumbent male candidates with higher education (age 25 to 50)

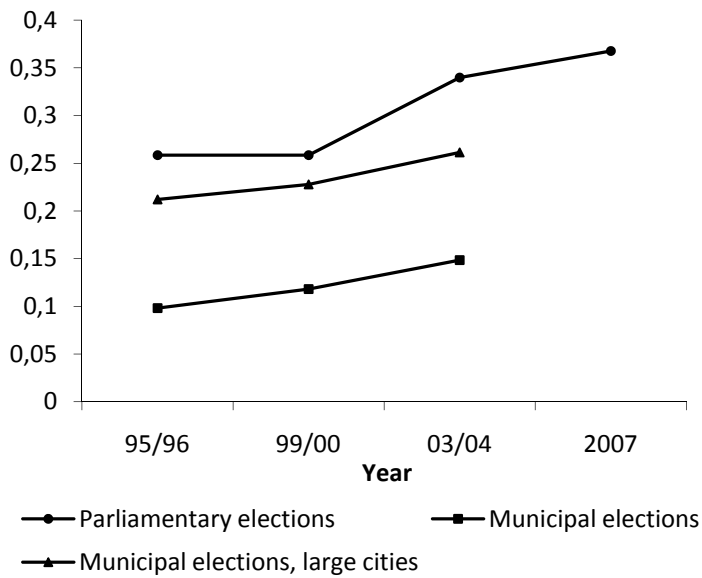


Figure 3b: Proportion of non-incumbent female candidates with higher education (age 25 to 50)

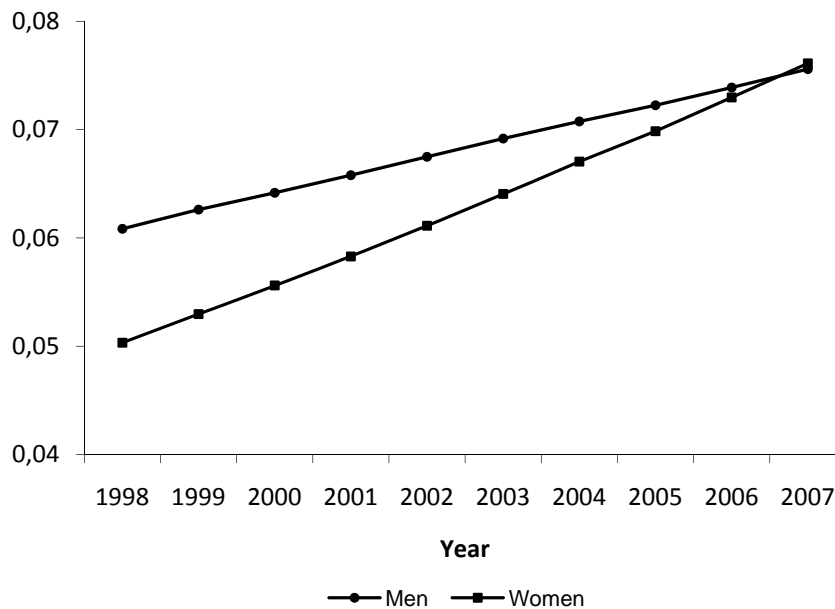


Figure 4: Proportion of adult citizens with higher education

6. Salary reform and candidate pool: An econometric analysis

6.1 Econometric method

Our econometric strategy aims at using municipal candidates as a control group for parliamentary candidates, and performing a difference-in-differences estimation to compare how the development in the fraction of highly-educated parliamentary candidates differs from the development in the fraction of highly-educated municipal candidates. However, as is evident from Figure 2, a simple difference-in-differences analysis of the entire candidate pool would be problematic, as the changes in the fraction of candidates with higher education appear to differ between parliamentary and municipal elections even before the reform. A t-test for the equality of the changes in the treatment and control groups before the reform gives the same result: the difference-in-differences approach would not be reliable for studying the effects of the salary reform for the whole candidate population.

Therefore, we now turn our attention to subgroups of candidates for whom the underlying assumptions appear to be satisfied, that is, we examine candidates in the age group 25 to 50. To ensure the validity of our approach, we perform a t-test to examine whether the change in the proportion of candidates with higher education from the 1995 to the 1999 parliamentary election for female and male candidates aged 25 to 50, differed in a statistically significant way from the corresponding change in that proportion from the 1996 to the 2000 municipal election, i.e. in the electoral periods before the reform. The null hypothesis that these changes are equal is not rejected for either group (the p-value is 0.46 for women and 0.22 for men).⁹

In order to analyze the effect of the salary reform on the average level of education of candidates in parliamentary elections, we estimate the following regression:

$$(1) \quad he_{it} = \alpha + \beta_1 \cdot pe_{it} + \beta_2 \cdot after_t + \beta_3 \cdot pe_{it} \cdot after_t + \gamma \cdot X_{it} + \varepsilon_{it},$$

where the dependent variable (he_{it}) is a dummy for whether candidate i in election period¹⁰ t has a higher education. The parliamentary election dummy (pe_{it}) takes into account the difference in the overall education level of parliamentary and municipal candidates. The dummy for the time after the reform ($after_t$) controls for the time trend in the level of education. The coefficient β_3 for the interaction term between these two dummies gives the difference-in-differences estimate for the effect of the salary reform on the education level of candidates in parliamentary elections. Finally, X_{it} is a set of additional control variables (which we discuss below) that may be included in the estimation, and ε_{it} is an error term.

We carry out the estimation using a linear probability model (OLS). To account for the fact that some individuals appear several times in the data (as the same individuals run for several

⁹ Even though the difference in the changes before the reform is not statistically significant, the reader might worry about the slight dip in the fraction of candidates with high education before the reform, apparent in the raw data for male candidates aged 25 to 50 in parliamentary elections. Note however that the test we perform here is in fact unnecessarily strong – below we add controls that may account for some of the apparent difference in the changes before the reform, and what we finally require is that the changes before the reform should be similar *conditional* on the controls. This is confirmed by t-tests.

¹⁰ We take an election period to mean a 4-year period covering one parliamentary and one municipal election. Note that municipal elections take place in the year after each parliamentary election.

elections) and that there is naturally a strong correlation in the education level of a given candidate in different elections, we cluster the standard errors by candidate. Note that in all the estimations, we use data for the 1995, 1999 and 2003 parliamentary elections and 1996, 2000 and 2004 municipal elections; we have dropped the data for the 2007 parliamentary elections, as we do not have a control group for this set of candidates.

6.2 Results for male and female candidates in the age group 25 to 50

The estimation results for non-incumbent candidates in the age group 25 to 50 are reported in Table 2. Columns a) and c) provide a simple difference-in-differences analysis without covariates (that is, the variables X_{it} are omitted) for female and male candidates, respectively. This preliminary analysis appears to suggest that the reform had no statistically significant effect on the level of education of the candidates in either group.

However, in order for the simple difference-in-differences analysis to provide a full picture, we would have to assume that all relevant background characteristics that may affect the level of education have changed in a similar way for candidates in parliamentary and municipal elections. In particular, any changes in the educational composition of candidates may also be explained by changes in the age structure of candidates, given that younger cohorts are typically better educated, and some of the youngest candidates might not yet have completed their education.¹¹ Further, we need to account for the possibility that candidates in different parties may have different backgrounds. In particular, candidates of the Green League and the National Coalition Party appear on average to be more highly educated, and candidates of the left-wing parties (Social Democratic Party, Left Alliance) and especially of the populist party True Finns are less highly educated than candidates of other parties. This might affect our results if the numbers of candidates from different parties vary between elections.¹² In columns b) and d) of Table 2 we

¹¹ This may be the case despite the fact that we have imposed a lower age limit on the pool of candidates that we consider. In Tables 2 and 3, the omitted category is candidates aged 25-29, and their level of education indeed appears to be lower than that of the other age groups.

¹² For instance, True Finns was formed in May 1995 and therefore had no candidates in the 1995 election. In the 1999 election, they had 55 candidates.

therefore report the results from regressions where we include dummies for different age cohorts as well as dummies for the five largest parties and True Finns in the set of control variables X_{it} .

For non-incumbent female candidates aged 25 to 50, adding the controls makes a difference to the results: the effect of the reform is now significant at the 5%-level and the reform appears to have been associated with an approximately 5%-point increase in the fraction of candidates with higher education in this group. For non-incumbent male candidates aged 25 to 50, adding controls does not change the results of the simple difference-in-difference analysis: The reform appears to have had no significant effect on the average level of education in this group.

The results for all candidates (including incumbents) in the age group 25 to 50 are reported in Table 3. As was mentioned above, this analysis is relevant as incumbents also need to decide whether or not to re-run for office, and this decision may be affected by the salary increase. The regressions reported in Table 3 are otherwise similar to those in Table 2, except that we further include an incumbency-dummy to control for the different backgrounds of incumbent and non-incumbent candidates. For the entire pool of female candidates in this age group, the effect of the reform is clearly significant at the 5%-level (both with and without the controls). For men, there is no statistically significant effect.

Table 2: Salary reform and higher education of non-incumbent parliamentary candidates (age 25 to 50) using candidates in municipal elections as control group

Dependent variable: Higher education dummy				
	Women		Men	
	a)	b)	c)	d)
Parliamentary election	0.151*** (0.015)	0.129*** (0.015)	0.165*** (0.013)	0.140*** (0.013)
Time after reform	0.041*** (0.004)	0.037*** (0.004)	0.017*** (0.004)	0.014*** (0.003)
Time after reform *	0.040	0.050**	-0.010	-0.006
Parliamentary election	(0.025)	(0.025)	(0.022)	(0.021)
Age: 30-34		0.055*** (0.008)		0.072*** (0.006)
35-39		0.060*** (0.007)		0.076*** (0.006)
40-44		0.040*** (0.007)		0.081*** (0.006)
45-50		0.027*** (0.007)		0.066*** (0.005)
Party: Left Alliance		-0.085*** (0.010)		-0.104*** (0.008)
Social Democratic Party		-0.066*** (0.009)		-0.078*** (0.007)
Green League		0.140*** (0.015)		0.145*** (0.016)
Centre Party		-0.049*** (0.008)		-0.043*** (0.008)
National Coalition Party		0.060*** (0.010)		0.040*** (0.009)
True Finns		-0.122*** (0.010)		-0.119*** (0.010)
Constant	0.107*** (0.003)	0.088*** (0.009)	0.102*** (0.002)	0.067*** (0.007)
Number of observations	26,042	26,042	34,630	34,630
Adjusted R-squared	0.016	0.057	0.014	0.056

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. ** denotes significance at 5% level and *** at 1 % level.

Table 3: Salary reform and higher education of all parliamentary candidates (age 25 to 50) using candidates in municipal elections as control group

Dependent variable: Higher education dummy				
	Women		Men	
	a)	b)	c)	d)
Parliamentary election	0.156*** (0.015)	0.141*** (0.015)	0.180*** (0.013)	0.159*** (0.013)
Time after reform	0.041*** (0.004)	0.036*** (0.004)	0.019*** (0.003)	0.015*** (0.003)
Time after reform * Parliamentary election	0.049** (0.023)	0.057** (0.023)	-0.023 (0.021)	-0.019 (0.020)
Age: 30-34		0.058*** (0.007)		0.072*** (0.006)
35-39		0.061*** (0.007)		0.078*** (0.006)
40-44		0.039*** (0.007)		0.080*** (0.006)
45-50		0.021*** (0.007)		0.0670*** (0.005)
Incumbent		0.086*** (0.008)		0.030*** (0.005)
Party: Left Alliance		-0.081*** (0.010)		-0.104*** (0.008)
Social Democratic Party		-0.061*** (0.009)		-0.079*** (0.007)
Green League		0.154*** (0.016)		0.157*** (0.016)
Centre Party		-0.047*** (0.008)		-0.050*** (0.007)
National Coalition Party		0.068*** (0.010)		0.049*** (0.009)
True Finns		-0.121*** (0.010)		-0.122*** (0.009)
Constant	0.118*** (0.003)	0.085*** (0.009)	0.106*** (0.002)	0.066* (0.007)
Number of observations	30,463	30,463	43,047	43,047
Adjusted R-squared	0.016	0.063	0.013	0.058

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. ** denotes significance at 5% level and *** at 1% level.

6.3 Robustness checks

As a first robustness check, we have estimated the effect of a pseudo-reform, assumed to have taken place one electoral period earlier, following the approach suggested by Bertrand et al. (2004). Regressions equivalent to those in columns b) and d) of Table 2 but assuming that the reform took place between the 1995 and 1999 elections, indicate that such a pseudo-reform is not statistically significant for either non-incumbent female or male candidates in the age group 25 to 50 (the p-value is 0.56 for women and 0.20 for men).

As a further robustness check, we have used as an alternative control group candidates in the municipal elections in large cities. We included the largest city in each district, apart from the district of Uusimaa for which we included the two largest cities as these are part of the same metropolitan area, and are both among the largest cities in Finland. This alternative control group can clearly be expected to be more similar to the treatment group of parliamentary candidates than the set of all municipal candidates. For example, the pre-reform difference in the fraction of candidates with higher education declines to 4 to 5 %-points (compared to over 15 %-points when using our original control group – see Tables 2 and 3).

The results with this alternative control group are reported in Tables 4 and 5. We find that the qualitative results are very similar to those reported in tables 2 and 3, although the level of statistical significance for the result for female candidates is somewhat lower. For men, we again find no statistically significant effects. The effects of the corresponding pseudo-reforms are also not statistically significant.

Table 4: Salary reform and higher education of non-incumbent parliamentary candidates (age 25 to 50) using candidates in municipal elections in large cities as control group

Dependent variable: Higher education dummy				
	Women		Men	
	a)	b)	c)	d)
Parliamentary election	0.039** (0.017)	0.042** (0.017)	0.045*** (0.014)	0.051*** (0.015)
Time after reform	0.041*** (0.013)	0.037*** (0.013)	0.007 (0.012)	0.017 (0.011)
Time after reform *	0.040	0.048*	-0.000	-0.005
Parliamentary election	(0.027)	(0.027)	(0.02375)	(0.023)
Age: 30-34		0.120*** (0.020)		0.151*** (0.017)
35-39		0.168*** (0.021)		0.176*** (0.017)
40-44		0.120*** (0.019)		0.191*** (0.016)
45-50		0.093*** (0.018)		0.161*** (0.014)
Party: Left Alliance		-0.094*** (0.024)		-0.109*** (0.019)
Social Democratic Party		-0.027 (0.023)		-0.035* (0.019)
Green League		0.130*** (0.026)		0.139*** (0.024)
Centre Party		0.007 (0.026)		0.052** (0.022)
National Coalition Party		0.131*** (0.025)		0.137*** (0.022)
True Finns		-0.165*** (0.034)		-0.124*** (0.038)
Constant	0.220*** (0.009)	0.092*** (0.021)	0.221*** (0.008)	0.047*** (0.017)
Number of observations	5,245	5,245	6,851	6,851
Adjusted R-squared	0.006	0.056	0.002	0.061

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. * denotes significance at 1 % level, ** at 5% level and *** at 1 % level.

Table 5: Salary reform and higher education of all parliamentary candidates (age 25 to 50) using candidates in municipal elections in large cities as control group

Dependent variable: Higher education dummy				
	Women		Men	
	a)	b)	c)	d)
Parliamentary election	0.035** (0.016)	0.046*** (0.016)	0.051*** (0.014)	0.057*** (0.014)
Time after reform	0.044*** (0.012)	0.041*** (0.012)	0.002 (0.011)	0.012 (0.010)
Time after reform *	0.047*	0.050**	-0.006	-0.010
Parliamentary election	(0.025)	(0.024)	(0.022)	(0.022)
Age: 30-34		0.132*** (0.020)		0.142*** (0.016)
35-39		0.175*** (0.021)		0.172*** (0.017)
40-44		0.129*** (0.019)		0.190*** (0.016)
45-50		0.088*** (0.018)		0.168*** (0.014)
Incumbent		0.212*** (0.027)		0.131*** (0.024)
Party: Left Alliance		-0.091*** (0.026)		-0.121*** (0.019)
Social Democratic Party		-0.031 (0.024)		-0.059*** (0.019)
Green League		0.135*** (0.027)		0.133*** (0.025)
Centre Party		0.020 (0.027)		0.050** (0.023)
National Coalition Party		0.132*** (0.025)		0.135*** (0.022)
True Finns		-0.161*** (0.034)		-0.134*** (0.038)
Constant	0.241*** (0.010)	0.083*** (0.022)	0.235*** (0.008)	0.054*** (0.017)
Number of observations	5,781	5,781	7,497	7,497
Adjusted R-squared	0.007	0.080	0.003	0.072

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. * denotes significance at 10 % level, ** at 5% level and *** at 1 % level.

6.4. Results for all female candidates

In the above analysis, a primary reason for concentrating on the age group 25 to 50 was that the difference-in-difference assumptions did not appear to be satisfied for male candidates. The age restriction was needed to be able to analyze both men and women. In this subsection we show that the results obtained above for female candidates in the age group 25 to 50 hold also for the entire pool of female candidates.

Firstly, t-tests show that the change in the proportion of all female candidates with higher education from the 1995 to the 1999 parliamentary election did not differ in a statistically significant way from the corresponding change in that proportion from the 1996 to the 2000 municipal election. The null hypothesis that these changes are equal is not rejected for either non-incumbent candidates or all candidates including incumbents (the p-values are 0.20 and 0.33, respectively).

The estimation results for the entire pool of non-incumbent female candidates using our original control group of candidates in municipal elections in all municipalities are shown in Table 6. The results without controls are given in column a) and controls are added in column b). The corresponding results for all female candidates (including incumbents) are reported in Table 7. The results are very similar to the results reported above for the age group 25 to 50. The estimated effect of the reform for all female candidates is an approximately 4%-point increase in the fraction of candidates with higher education.

We have performed similar robustness checks for the analysis with all female candidates as we did above for candidates in the age group 25 to 50. Firstly, it should be noted that our results again hold also for the alternative control group of candidates in the municipal elections in large cities. These results are reported in Tables 8 and 9 for non-incumbent candidates and all candidates, respectively. Secondly, the pseudo-reforms corresponding to the regressions in Tables 6-9 are again not significant.

Table 6: Salary reform and higher education of non-incumbent female parliamentary candidates using candidates in municipal elections as control group

Dependent variable: Higher education dummy				
	a)		b)	
Parliamentary election	0.137***	(0.012)	0.117***	(0.012)
Time after reform	0.032***	(0.003)	0.032***	(0.003)
Time after reform *	0.034*	(0.019)	0.040**	(0.018)
Parliamentary election				
Age: 25-29			0.096***	(0.006)
30-34			0.150***	(0.006)
35-39			0.155***	(0.005)
40-44			0.135***	(0.005)
45-49			0.123***	(0.005)
50-54			0.126***	(0.005)
55-59			0.122***	(0.006)
60-64			0.093***	(0.006)
65+			0.079***	(0.008)
Party: Left Alliance			-0.074***	(0.007)
Social Democratic Party			-0.056***	(0.006)
Green League			0.133***	(0.012)
Centre Party			-0.037***	(0.006)
National Coalition Party			0.057***	(0.008)
True Finns			-0.104***	(0.008)
Constant	0.096***	(0.002)	-0.010*	(0.006)
Number of observations	40,916		40,916	
Adjusted R-squared	0.013		0.059	

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. * denotes significance at 10% level, ** at 5% level and *** at 1 % level.

Table 7: Salary reform and higher education of female parliamentary candidates using candidates in municipal elections as control group

Dependent variable: Higher education dummy				
	a)		b)	
Parliamentary election	0.149***	(0.012)	0.132***	(0.012)
Time after reform	0.032***	(0.003)	0.031***	(0.003)
Time after reform *	0.035**	(0.017)	0.041**	(0.017)
Parliamentary election				
Age: 25-29			0.099***	(0.006)
30-34			0.157***	(0.006)
35-39			0.160***	(0.005)
40-44			0.140***	(0.005)
45-49			0.124***	(0.005)
50-54			0.120***	(0.005)
55-59			0.115***	(0.005)
60-64			0.090***	(0.006)
65+			0.076***	(0.008)
Party: Left Alliance			-0.074***	(0.008)
Social Democratic Party			-0.056***	(0.007)
Green League			0.149***	(0.013)
Centre Party			-0.040***	(0.007)
National Coalition Party			0.061***	(0.008)
True Finns			-0.107***	(0.008)
Incumbent			0.062***	(0.006)
Constant	0.105***	(0.00212)	-0.012**	(0.005)
Number of observations	49,117		49,117	
Adjusted R-squared	0.013		0.064	

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. ** denotes significance at 5% level and *** at 1 % level.

Table 8: Salary reform and higher education of non-incumbent female parliamentary candidates using candidates in municipal elections in large cities as a control group

Dependent variable: Higher education dummy				
	a)		b)	
Parliamentary election	0.046***	(0.013)	0.041***	(0.013)
Time after reform	0.029***	(0.009)	0.031***	(0.009)
Time after reform *	0.037*	(0.020)	0.044**	(0.019)
Parliamentary election				
Age: 25-29			0.139***	(0.014)
30-34			0.259***	(0.017)
35-39			0.307***	(0.017)
40-44			0.258***	(0.014)
45-49			0.231***	(0.013)
50-54			0.233***	(0.013)
55-59			0.204***	(0.014)
60-64			0.149***	(0.016)
65+			0.158***	(0.023)
Party: Left Alliance			-0.079***	(0.018)
Social Democratic Party			-0.021	(0.017)
Green League			0.134***	(0.021)
Centre Party			0.015	(0.019)
National Coalition Party			0.121***	(0.019)
True Finns			-0.129***	(0.026)
Constant	0.187***	(0.00691)	-0.047***	(0.012)
Number of observations	8,876		8,876	
Adjusted R-squared	0.0060		0.073	

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. * denotes significance at 10% level, ** at 5% level and *** at 1 % level.

Table 9: Salary reform and higher education of female parliamentary candidates using candidates in municipal elections in large cities as control group

Dependent variable: Higher education dummy				
	a)		b)	
Parliamentary election	0.047***	(0.013)	0.046***	(0.013)
Time after reform	0.033***	(0.008)	0.037***	(0.008)
Time after reform *	0.034*	(0.018)	0.038**	(0.017)
Parliamentary election				
Age: 25-29			0.137***	(0.014)
30-34			0.270***	(0.018)
35-39			0.313***	(0.016)
40-44			0.267***	(0.014)
45-49			0.227***	(0.013)
50-54			0.224***	(0.013)
55-59			0.199***	(0.014)
60-64			0.150***	(0.017)
65+			0.1631***	(0.023)
Party: Left Alliance			-0.081***	(0.019)
Social Democratic Party			-0.032*	(0.018)
Green League			0.136***	(0.022)
Centre Party			0.021	(0.020)
National Coalition Party			0.113***	(0.019)
True Finns			-0.130***	(0.026)
Incumbent			0.184***	(0.022)
Constant	0.207***	(0.007)	-0.048***	(0.013)
Number of observations	9878		9878	
Adjusted R-squared	0.006		0.093	

Notes: Standard errors in parentheses. Standard errors are robust and clustered on individuals. * denotes significance at 10% level, ** at 5% level and *** at 1 % level.

7. Discussion

At a first glance, it may seem surprising that the salary reform does not appear to have had significant effects for the average level of education of male candidates. However, as discussed in Section 2, such a result can be explained theoretically: a salary increase makes a politician's career more attractive for all educational groups, and the aggregate effect on the average level of education may go either way.

One further reason why politicians' salaries might not have large effects on the skill level of candidates is that a significant proportion of the impact on life-time earnings of serving as an MP may come from increased earnings once returning to a civil career *after* one's career in politics.¹³ This mechanism, as well as other factors affecting the attractiveness of a political career and therefore selection into politics, is an important issue for further empirical research.

It is also important to discuss the possible factors behind the different effects of the salary reform on men and women. Firstly, as mentioned above, the different labor market positions of men and women provide one possible explanation: due to the gap between outside wages of men and women, a politician's salary is more attractive for highly educated women.¹⁴ Further, not only the average outside wage but also the shape of the wage distribution plays a role here: if the distribution of female wages is relatively compressed for example because many highly educated women work in the public sector, a career in politics became relatively more attractive for highly educated women after the reform. For men the situation may have been different, as the salary increase may not have been as relevant for those individuals who aim at the very highest wages. The fact that politics is a labor market with a relatively compressed wage distribution tends to repel candidates with the highest outside earnings, regardless of the average salary of an MP. This effect is likely to be stronger for high-earning men in the private sector. Finally, it is interesting to note that our result is similar in spirit to the well-known finding from labor

¹³ Diermeier et al. (2005) find that in the United States, congressional experience increases post-congressional wages, both in the private and public sectors.

¹⁴ In 2002, the average monthly earnings in the private sector (excluding payments for overtime) in Finland were approximately 2 800 € for men and 2100 € for women. The corresponding figures for men and women with higher education were 3 000 € and 2 600 € respectively.

economics that female labor supply tends to be more elastic than male labor supply¹⁵, even though the precise mechanisms behind these findings are likely to be somewhat different.

Another interesting question is whether voters took advantage of the better educated set of candidates. That is, did the fraction of elected female MPs with higher education increase? The point estimate for women in the age group 25 to 50 is 6.6 %-points, but the effect is not statistically significant. This is understandable, however, as the number of female MPs aged 25 to 50 is small, being only 46 in the 1999 parliamentary election.

Finally, an important assumption in our analysis is that the salary reform of parliamentarians should have had no effect on the incentives of becoming a candidate in municipal elections. The reader might worry whether higher salaries for parliamentarians may also amount to higher prospective earnings for current municipal councilors, if being a municipal councilor serves as a stepping stone for later becoming an MP.¹⁶ This would imply that there is a positive treatment also for municipal candidates (though probably small compared to the treatment for parliamentary candidates). The possible effect of this consideration is slightly mitigated in our context by the fact that municipal elections take place in the year after parliamentary elections. It should also be noted that if such a mechanism is indeed operational, this would amount to a negative bias in our estimates of the effect of the reform on parliamentary candidates. The effects that we find should therefore be considered as the lower bound for the actual effect of the salary reform.

8. Conclusion

The purpose of this paper has been to shed light on the question of whether higher salaries for politicians attract political candidates with higher skills. We have studied whether a reform

¹⁵ See e.g. Meghir and Phillips (2010) for a recent review of the relevant literature.

¹⁶ Unfortunately, we do not have data on how many parliamentary candidates have previously served as municipal councillors. As an incomplete proxy, our data for the 2007 parliamentary elections shows that of the candidates in that election in the Helsinki constituency, 5.2% were current municipal councillors. This data is not available for the other elections or other constituencies.

where the salaries of Finnish MP's were increased by 35% in the year 2000, resulted in a more highly educated set of parliamentary candidates. For women, our results indicate that the salary increase has succeeded in increasing the fraction of highly-educated among female candidates by approximately 5 %-points. On the other hand, we do not find significant effects on the share of candidates with higher education among male candidates.

Our results suggest that it is important to study separately how male and female politicians react to economic incentives. Importantly, the effect of changes in the pay for elected politicians may be non-monotonic and depend on the starting level of politicians' salaries relative to outside earnings of potential candidates. We hope that our study serves as an inspiration for future research examining the effects of pay for politicians on the set of political candidates in other countries.

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