A woman's touch

The impact of gender on political priorities

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Preface

This thesis would have been nothing if it was not for the rich data set I had at hand. I would therefore like to thank Jon H. Fiva and Gisle J. Natvik for assigning to me the task of downloading and organizing this data[1], including me in their discussions and encouraging me to use the data set in a study of my own.

I am also grateful to Jon for being a great supervisor: Thank you for your enthusiasm, support and constructive comments, for pushing me on the IV estimation part but also for knowing when it was time to stop and concentrate on reaching the finish line.

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The latter goes for my friends at campus as well, both those of you who are still around and those who have started your career lives. Every dinner, lunch and ice cream break with you guys have been essential for getting through this semester.

[1]The data used in this thesis is from the municipality database ('Kommunedatabasen') hosted by the Norwegian Social Science Data Service (NSD). Except for the municipal accounting data, the data has been collected by Statistics Norway (SSB). Neither NSD nor SSB is responsible for the analysis of the data or the interpretations made here.

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1 Introduction

Women's place in politics is a long debated subject. Many countries did not admit women the right to vote before long after most men had received this right. And even long after they were granted suffrage, women remain under-represented in electoral politics.

In Norway, five of the seven biggest political parties have imposed quota rules to achieve a certain share of women on election lists. One justification of this is that men are favored in the nomination process, and that this needs to be corrected for to ensure equal opportunities. Based on ideas of social justice, quotation is then necessary to ensure equal rights of participation. However, other reasons are often stated, mainly that more equal representation also makes the views of the democratic institution in question more representative.

In this thesis I will not discuss which one of these reasons is the 'best', or whether any of them are good at all.[2] However, both from a political and an economic-theoretic point of view, it is of high interest to investigate the empirical validity of the second: Does increasing representation of women in politics really lead to policy outcomes which are more favoured among women? If this is the case, that the degree to which a the demands of a group are met by democratic institutions depends on its direct representation in these institutions, this certainly says something about how (or how well) the democracy is working. Secondly, it will help us answering a central question in political economics: Do politicians act according to their personal preferences when deciding on policies?

The literature is divided on this, but an increasing number of empirical studies have presented evidence indicating that personal preferences do matter. In chapter 2, I will give a brief review on some of the theoretical discussion concerning this question and a more detailed survey on empirical literature. To motivate the empirical analysis I also present formally a citizen-candidate type of model where the differences between men and women are given an explicit role. The model is based by the one by Besley and Coate (1997) but with the distinctive feature that access to political positions differs between women and men. I show that changes in this imbalance can result in changing

[2]For a critique of the latter type of reasoning, see e.g. Skjeie and Teigen (2003), chapter 10.

political priorities.

In the same chapter I go through some of the quite recent literature in economics on the role of women in politics, some of which does not focus directly on women as *politicians* but which I nevertheless regard as a helpful basis for my study. The examples of other studies illustrate that women in politics has been a highly popular subject of study in political economics during recent years.

I then examine the question empirically myself, testing whether there is an effect of female representation in Norwegian local politics on the composition of local public spending. For this I use spending data for all Norwegian municipalities during the period 1972-1999. This data is highly suitable for several reasons: (1) Norwegian municipalities operate within the same institutional environment. (2) It covers a period of time with large variation in the key explanatory variable, namely the shares of women in the local councils. And (3), this variation can be argued to be driven by exogenous factors, making it possible to separate this variable's effect on the political outcome. Section 3 describes the institutional features of Norwegian local politics and the data set.

Chapter 4 contains the main empirical analysis of my thesis. Regressions are carried out using a fixed effects (FE) model. This implies that all statistical inference comes from variation over time within each municipality. I employ a rich set of political, demographical and socio-economic control variables. In most specifications I estimate effects on different budget shares (eight in total), but I also include a slightly different specification for the prioritization between spending on childcare, education and elderly care. This is done in order to compare my results with those of Svaleryd (2009), who has done a similar study of Swedish local politics.

I find a modest but highly significant positive effect of the share of women in the council on the budget share devoted to childcare. This estimate is highly robust to inclusion of control variables. I also find a positive effect on the spending on church and cultural services and a negative effect for spending on central administration, though these have lower levels of significance and are sensitive to the choice of time period.

In chapter 5 I discuss the results, pointing at potential problems of omitted variables and endogeneity in the regressors. I argue that the fact that the estimated effects are

so stable across specifications with different controls could indicate that these problems are not of major concern, but emphasize that I do not have proof on this.

In an attempt to overcome this uncertainty, I examine in chapter 6 whether the share of women in the council could be instrumented using the introduction of party-specific rules for gender quotation in candidate nomination processes. Using time-invariant proxies for party strength and female under-representation, I find that the introduction of such rules in the Labour Party in 1983 had a significant effect on the female share in local councils in municipalities where the Labour Party had a strong position and where this share previously had been low. I do not find similar effects for the other parties which have introduced quota rules.

This chapter also contains the results of a two-stage least squares regression when the instrument which is shown to be significant is used. The estimated effects of women in the council on public spending from this regressions are however too imprecise to say anything about the validity of the results of section 4. This is probably because the instrument gives us too little variation.

Chapter 6 sums up and concludes.

2 The role of politicians

One baseline model in political economy and political science is the median voter model (Downs, 1957). This theory postulates that in a representative democracy with two candidates, both candidates' platforms will converge to the policy preferred by the median voter. This again determines the policy outcome. Neither party affiliation nor personal characteristics (the two of which are essentially equivalent in this setting) of the candidates will hence matter for policy, and who wins the election is uninteresting.

This result has been challenged both theoretically and empirically, especially in recent studies. To a non-theorist, it might seem odd why it should be difficulty to crack a result which is so far from how we think about politics. People engage in politics because they want to make a difference, not because they want to implement the same policies that would have been implemented anyway. However, politicians presumably have little joy from having a different opinion if they have no influence on

the implemented policy. Hence it seems plausible that they do everything they can to attract enough votes to win the election. In fact, we also see this in election campaigns in real life: Candidates try to please all the voters, and we seldom have an 'extreme' election winner.

However, the complete convergence postulated by the median voter model has been shown not to be the only possible outcome if central assumptions are changed. The Downsian result relies on the assumption that politicians commit to their policy platforms. In the citizen candidate class of models, developed by Osborne and Slivinski (1996) and Besley and Coate (1997), the assumption is that there is no such commitment. It is then a dominant strategy for an elected candidate to implement the policies which he or she prefers. Voters take account of this and base their decisions on whom to vote for on these observed preferences, not on policy promises.

Testing empirically whether politics result from the preferences of voters, parties or individual politicians is not straightforward. Obviously, voters' preferences for policy will (at least partly) determine who they vote for. And these preferences cannot be perfectly observed and measured. [3]

Pande (2003) exploits Indian legislation for the representation of low-caste members and tribes in state politics to investigate the effects of politicians' identity. The Indian system implies that legislator positions in some jurisdictions are reserved for members of these groups, but there is still an election where all voters can vote. Pande finds significant effects of such reservation on the implementation of policies which matter particularly for low-caste and tribe members, something which contradicts the median voter result saying that only voter preferences matter.

Levitt (1996) uses a simple but elegant utility-function approach to measure the weights US senators, in their voting, put on voter preferences, the preferences of the voters supporting them, party ideology and personal ideology, respectively. He finds that all weights are positive, but that the latter factor is by far the most influential.[4]

[3]Gerber and Lewis (2004) criticize earlier studies rejecting the median voter theorem, arguing that they do not include good enough measures of the median voter's preferences.

[4]A relevant question is however if everything which is not included in the first three factors should be regarded as personal 'ideology'. I suspect that it could also reflect personal self-interest or commitment to lobby groups.

Lee et al. (2004) also investigate voting patterns. They use a regressions-discontinuity (RD) approach. This method utilizes that in close election, who actually gets elected can be regarded as quasi-random. Their main result is that members of the US House of Representatives do not change their voting as responses to exogenous changes in electoral strength. This is consistent with the predictions of the *no* convergence-hypothesis, and Lee et al regard it as evidence supporting the assumption that politicians cannot credibly commit to other policies than those preferred by themselves.

A Scandinavian study finding that convergence to the median is far from perfect is the one by Pettersson-Lidbom (2008), who studies the effect of socialist and non-socialist rule in Swedish municipalities. Petterson-Lidbom's also uses the RD approach. Arguing that Swedish local politics are to a large extent bipolar, he then utilizes the outcomes of elections where the socialist and the non-socialist party blocks received almost half of the votes. He finds substantial effects on several economic variables of whether the majority in the council is left- or right wing, in particular that left-wing local regimes have higher taxes and public spending and lower unemployment rates. Petterson-Lidbom also points out that those studies which focus on voting (e.g. Levitt (1996) and Lee et al. (2004)) do not say much about what determines policy *outcomes*, because the degree to which the votes are decisive differs a lot between vote casts.

Ferreira and Gyourko (2009) also examine party effects in local politics using the RD design. They find that in US cities, which party holds the mayor's position does *not* matter for the size and composition of local public spending or the crime rates. Among their possible explanations for this, one is that the populations within cities are more homogenous than those of US states. This is consistent with the results of Gerber and Lewis (2004), who find that politicians representing homogenous districts are much more restricted in their choice of policies than those representing heterogenous districts.

2.1 Women in politics

On of the most prominent examples of empirical studies finding an effect of politicians' personal characteristics is in fact about women. Chattopadhyay and Duflo (2004) utilize the Indian system of reservation of council head positions for women. The

system implies that one third of all such council leaders ('pradhans') have to be women, but it is randomly decided which districts are affected by the reservation each period. Moreover, the female pradhan candidates still have to run for election. Duflo and Chattopadhyay find that reservation affects policy outcomes and that these effects are in accordance with the stated demands of women in the two states which they study (West Bengal and Rajasthan). They also find that the effects persists when controlling for other characteristics of the female council leaders, implying that gender seems to be the decisive characteristic.

Rehavi (2007) uses the RD approach to investigate the effects of female state legislature on public spending, utilizing that state house elections often are close races between two candidates. She finds a positive effect on health spending and a negative effect on the spending on corrections institutions, but no effects on other spending purposes often associated with women. Rehavi also provides some discussion on how one could expect the results to differ when using RD regression compared to more traditional estimation techniques.

A study which lies close to what I do in my empirical analysis is the one by Svaleryd (2009). She first uses survey data on politicians' preferences to investigate the effects of gender, and then uses Swedish municipality-level panel data to investigate the relationship between women in the local council and spending on child care, education and elderly care. She controls for demographical and socio-economic as well as other political variables.

The effects she finds are significant and relatively large, with women spending more on kindergartens and elderly care and less on schools. However, unlike the studies mentioned above, Svaleryd cannot rely on any random or quasi-random variation in the electorate. However, she argues that the fact that Swedish voters cannot vote for candidates directly makes this a lesser concern. In addition, she comments, the pressure to increase the number of female candidates often comes from the national party leadership, something which I will come back to.

What is striking about Svaleryd's study is the degree of correspondence between the results from the examination of survey data and those from the spending data regression. As she comments however, neither of the two include information on other

personal characteristics of the politicians, like age or occupation, which could be important for the results.[5] Hence she argues that the reported results need not necessarily be interpreted as the effects of gender alone but perhaps as the effects of personal characteristics which are more common for female politicians, for instance low age and experience.

Also Besley and Case (2003, p44) include in their study a panel-data regression investigating showing the effect of female legislators in the upper and lower houses of US states. Their advantage is survey data on citizens' preferences. Controlling for these as well as demographical and economic variables, they find that women in the lower and upper house, at least jointly, have statistically significant positive influence on family assistance and child support laws.

In addition to these studies, there are a number of others focusing on women in the *electorate*: Edlund and Pande (2002) examine the political gender gap among voters in the US. Today it is common knowledge that women are more likely to vote for the Democratic Party, but this is actually a recent phenomenon. Edlund and Pande finds that the rise of the gender gap can be attributed to the increase in divorce risk, which causes women of lower income-groups to vote democratic because it is in their economic interest. Lott and Kenny (1999) provide evidence that the early growth of the US public sector can be attributed to women receiving the right to vote. They hence argue that the gender gap is a much older phenomenon than commonly believed, but that it could have been clouded in the 60s and 70s when men moved towards women in political stands.

Funk and Gathmann (2008) employ micro-level data on the reported voting of Swiss citizens. As is well-known, in Switzerland a lot of political decisions are made by referenda, also decisions concerning public spending. Funk and Gathmann find that women vote for more spending on environmental protection, health care and welfare and less on agricultural subsidies and military. The estimated effects mostly also change very little when other personal characteristics like age, marital status and employment are controlled for.

[5]The survey data do include some information of this, but as Svaleryd points out it is of little value to include it the first party of her study when it cannot be controlled for in the second.

When arguing for the broader relevance of their results, one of the points made by Funk and Gathmann is that studies of electoral reservation like the one by Chattopadhyay and Duflo (2004) cannot fully capture the effect of female policy-makers because reservation requirements also change the electoral environment. More specifically, it could reduce political competition, which again potentially gives more room for the female politicians to act according to their own partisan preferences.[6]

To be a bit bold, I would say that this point goes in favour of studies like mine and Svaleryd's, which may have other weaknesses but where gender effects are examined in a 'natural' political environment without gender reservation. The results of Funk and Gathmann can only be generalized to electoral democracies if (1) female politicians have the same preferences as women in general and (2) they enjoy room to pursue their own interests once elected. (2) is the main subject of this thesis. Concerning (1), Ågren et al. (2007) find that the preferences of voters and female politicians differ, also when they are of the same sex.[7] This does however not mean that female politicians cannot still be more similar to female voters in their preferences than male politicians are.

All these studies add proof to the rather generally accepted view that the political preferences of men and women differ. In what *directions* men and women differ is however expected to largely depend on characteristics of the political system of study. According to Dufly and Chattopadhyar, pure drinking water is an essential political demand for women in India. In Scandinavia on the other hand, child care coverage is a more natural choice of dependent variable.

2.2 Theoretical framework

Among the empirical studies mentioned above, several refer rather directly to the 'citizen-candidate' model, claiming that their results provide support for this class of

[6]Indeed, Svaleryd (2009) finds some evidence that female politicians have less of an impact on policy outcomes when political competition is strong. Her interpretation of this is that low political competition enables politicians (most of them being men) to further their own interests instead of those of the electorate (of which women make up about one half).

[7]More specifically, they find that there is a significant effect of being a politician on preferences, also when controlling for gender as well as other personal characteristics.

models. The popularity of the citizen-candidate model in this setting is due both to the fact that it allows for policy divergence and that it offers an explicit role for individual preferences in determining this divergence. To get some intuition for why the role of women in politics might matter, I here present a slightly altered version of the model.

Both the model here and the discussion of its equilibria is based on the one-dimensional example given by (Besley and Coate, 1997, p98). It differs from their model in that it divides the citizens into two groups, men and women, based on the assumption that these groups differ in both their preferences and their ability to engage in politics. It is hence similar to the one by Chattopadhyay and Duflo (2004), but while they take these participation opportunities as given and discuss the effect of *reserving* the political position for women, I show what happens if there is a structural change in these gender differences in candidate recruitment.[8]

For simplicity, I assume that the policy space is one-dimensional and voter preferences are euclidian (Besley and Coate, 1997, p98). The set of possible policies is then $[0, 1]$. On this interval, each man i and each woman j has an ideal point ω_i or ω_j. I further assume that the population is finite and odd-numbered and that men are located on $[0, m - \epsilon)$ and women on $[m - \epsilon, 1]$, where m denotes the preferred policy of the median voter (who could be either a man or a woman) and ϵ is a small positive or negative number. This implies that the two groups are of about the same size and that their preferences do not overlap. (The latter is of course a dramatic simplification.) Following Besley and Case I also assume that voters vote strategically.[9]

Central in citizen-candidate models is that the set of candidates is endogenous. Let $\aleph$ be the set containing all citizens. Any citizen $i, j \in \aleph$ will choose to run for election if the benefit exceeds the cost, denoted as δ. The setting is as follows (Persson and Tabellini, 2000): First citizens decide on whether to enter the election or not. Then the election is held. If several candidates receive the same number of votes (and no one else receives more), we assume that they can all win with equal probability (e.g.

[8] In addition, Chattopadhyay and Duflo assume that the policy implemented is partly determined by the power of the 'local elite' no matter who wins the election, something which I regard as being of lesser relevance for my discussion.

[9] This basically means that they do not necessarily vote for the candidate whose preferences are closest to their own, but consider also who has the chance of winning.

1/2). Third, the candidate chooses which policy $x \in [0, 1]$ to implement.

Without a commitment device, it is a dominant strategy for each candidate to implements the policy he or she prefers the most if elected. Any other strategy would be based on a non-credible promise and could hence not be part of a subgame perfect equilibrium. If no candidate runs for election, the default policy 0 is implemented. (Unless campaign costs are very high, this will not happen.) Hence the utility from winning is equal to $\omega_i - \delta$ if a man wins and $\omega_j - \delta$ if a woman does.

Let us now assume that the costs of running for election differ for women and men (Chattopadhyay and Duflo, 2004). This could for instance be due to the party systems favouring male candidates or economic or social obstacles in the society facing women who want to engage in politics. I assume $\delta_I < \delta_J$, where I denotes male and J denotes female candidates. There are no differences in the campaign costs among women or among men. Additionaly, I assume $\delta_I \geq 2\epsilon$.

Several equilibria are possible in this model. Firstly, there exists an equilibrium where only the male candidate i runs for election if and only if

(1M) $\omega_i \geq \delta_I$
(2M) there exists no other male candidate k such that $\omega_i + \delta_I < \omega_k$
(3M) there exists no female candidate l such that $\omega_i + \delta_J < \omega_l < 2m - \omega_i$

Similarly, there exists a single-candidate equilibrium with a female candidate j if and only if

(1W) $\omega_j \geq \delta_J$
(2W) there exists no other female candidate l such that $l < \omega_j - \delta_J$
(3W) there exists no male candidate k such that $2m - \omega_j < \omega_k < \omega_j - \delta_I$[10]

These conditions are in principle the same as those stated by Besley and Coate (1997, p98). Conditions (1M) and (1W) simply mean that the candidate must find it worthwhile to run for election given that no one else does (considering the default policy as the alternative). (2M) and (2W) state the requirement that the candidate is

[10]Chattopadhyay and Duflo (2004) show the conditions for never having a female candidate, but I find this to be of lesser relevance here.

not so far away from the median that there exists a more moderate candidate of the same sex who is both willing to run and will win if he or she does. Conditions (3M) and (3W) require that the same is also true for a competitor of the opposite sex.

However, since $\delta_M < \delta_W$, these conditions are not the same for women and men. Exactly how strict they are depend on the actual set of possible candidates, which is finite. However, (3M) is 'less likely' to be violated than (3W) because the higher campaign costs imply that a challenger of the opposite sex is less likely to exist. At the same time, (2W) is less restrictive than (3W), reflecting that a female candidate is also less likely to be challenged by a more moderate candidate of the same sex. This has some intuitive appeal. [11]

A two-candidate equilibrium exists if and only if (I) $(\omega_i+\omega_j)/2 = m$, that is if a male and female candidate are equally preferred by the median voter, and (II) $|\omega_i - \omega_j|/2 \geq \delta_W$. The second condition says that the female candidate must find it worthwhile to run for election given she only has 1/2 probability of winning.[12] (This is trivially satisfied for the male candidate since his cost of running is smaller.) This also makes intuitive sense: If the cost of running for election is high, only women who disagree relatively much with their male combatant will decide to run against him. With strategic voting and mild assumptions on the distribution of citizens' preferences, Besley and Coate (1997) show that there are no equilibria with more than two candidates.

How can this help when discussing the effects of women's involvement in politics? Say that there is a decrease in δ_W due to for instance political parties actively promoting female candidates, while at the same time everything else is left unchanged. This will make condition (3M) stricter, implying that some single-candidate equilibria with very 'pro-male' candidates are no longer equilibria.

Secondly, (2W) will be stricter because a relatively 'pro-women' female candidate is

[11] If we had however assumed that the population was infinite and continuous in their set of preferences, we see that (2W) is trivially satisfied if (3W) is. The other conditions become (2M*) $\omega i > m - \epsilon - \delta_M$, (3M*) $\omega i > m - \frac{1}{2}\delta_W$ and (3W*) $\omega j < m + \frac{1}{2}\delta_M$. In this case we see that (3W*) explicitly requires female candidates in a single-candidate election to lie closer to the median than does (3M*). (2M*) is also stricter than (3W*) except for in the special case where $\epsilon = \delta_I$.

[12] Due to the assumption on the small magnitude of ϵ, there is no equilibria with two candidates of the same sex.

more likely to be challenged by a more moderate woman. For this to matter however, the female candidate must be relatively far from the median and it must be the case that there are no male candidates in the moderate subset of $[0, m - \epsilon]$ who would otherwise breach condition (3W). [13]

Thirdly, the set of possible two-candidate equilibria will be larger because the required political distance between the male and the female candidate is smaller.

Because of the multiple equilibria feature the model does not give a clear answer to whether lowered campaign costs δ_W lead to more women in politics[14], although it shows how this could be the effect. And if it does, the model is also not perfectly clear on whether this leads to more women-favoured policy outcomes. (Recall condition [2W].) This ambiguity can be considered a strength of the model, because it opens up for a different role of 'moderate' women entering politics. The model also shows how improved conditions for female involvement in politics may force male candidates to moderate themselves.

What is clear however is that if there is a structural change leading to more women being elected as politicians and these women differ from their male colleagues in some preference dimension, this will unambiguously affect the policy outcome. This is because the elected candidate always implements his or her preferred policy. This effect occurs even though voter preferences have not changed. The citizen candidate model hence predicts that there could be an independent effect of legislator identity, which the median voter model does not.

At the same time, voters preferences still have an important role, because a candidate can only win if she is either close enough to the median voter to run uncontested or equally preferred by the median voter as another candidate. (And in the latter case, each candidate is expected to win half of the elections.) If the voters preferences change in a 'female' direction (here modeled as an increase in ϵ, meaning that the actual female share of the population increases), this will lead both to more women being elected and more women-preferred policy outcomes. The model hence underlines the importance of separating between the effects of voter's preferences and of those of

[13] With a continuous set of preferences, there would hence be no effect of a change in δ_W on these equilibria.

[14] unless of course, if the cost initially is so high that it is prohibitive

politicians themselves.

It is important to note that the implications of the citizen candidate model is not that there is always policy divergence away from the median voter's preferences. Besley and Coate (1997) show that if there exists a voter for which m is the ideal point and δ is sufficiently small, the only single-candidate equilibrium possible is the one where the median voter herself is elected. For small δ the distance between the competitors in a two-candidate equilibrium can also be very small.

Stylized as it is, when thinking about an American presidential election or a Congress election in a single-candidate district, this model actually provides intuition which can explain real-life phenomena.[15] But how relevant is it for explaining the policy outcomes of an electoral democracy like the one in Norwegian municipalities?

The model has significant drawbacks in this manner. The standard model assumes that voters vote directly for candidates and leaves no role for parties. Cadigan and Janeba (2002) have developed a model which also takes into account the role of party primary elections. However, also in their model voters in the general election vote directly for candidates, and not parties represented by several candidates. Moreover, party members voting in the primary also vote for only one candidate. If we move away from elections where the candidate who gets the most votes wins the whole district to elections where multiple candidates are to be elected from each district (as in Scandinavian local elections), the link between the model and the object of study becomes less clear.[16] Nevertheless, Besley (2005) argues that these models also are relevant when studying party politics since the identity of for instance party leaders can matter a lot for elections.

What I find appealing about the theoretical approach modeled here is that it underlines that it is not only the distribution of voter preferences but also the rules of the game - how candidates are recruited - that matter for who is elected and what policies are implemented. In fact, modeling this as changing costs of running for election for female and male candidates is a useful way to think about the changes which have

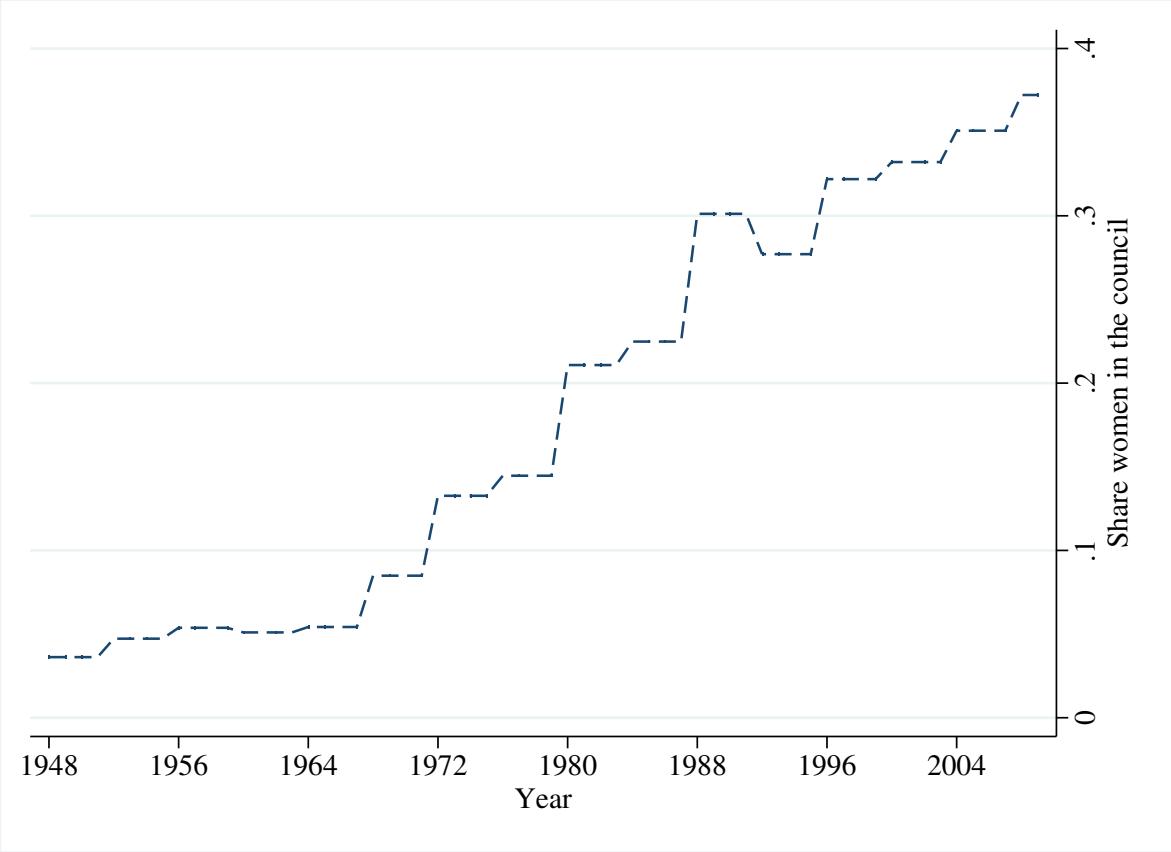
[15] Osborne and Slivinski (1996) also include a in their study results for a system with a second election if no candidate gets a majority in the first round, analogous to the French presidential election system.

[16] Neither Pettersson-Lidbom (2008) nor Svaleryd (2009) refer to the citizen-candidate model or any other theoretical model in a mathematic form.

occurred as women have fought themselves into politics during the last decades, three of which I will now study more closely.

3 Data

Figure 1: Female shares in municipality councils 1948-2009



(The average shares are calculated for the municipalities which existed at the beginning of each election period. Note that the female share is an unweighted mean of the the shares in all municipalities, not the fraction women among all local council representatives in Norway.)

To investigate the link between women in politics and public spending I utilize municipal accounting data and political, demographical and socio-economic variables from from the Norwegian Social Science Data Service (NSD). The data covers the period 1972-1999, a period where female representation in politics rose rapidly, as shown on figure 1. If this increase reflect changes in the barriers facing women in the electoral systems, which is likely, it should hence be suitable for studying the effects in which I are interested.

As of today, Norway has 430 municipalities. Their population sizes range from 228 (Utsira) to about half a million (Oslo). The local governments constitute a central part of the Norwegian welfare state and of the economy in general. In 2007, 19.4 percent of all of those working in Norway (excluding the offshore economy) were employed by the municipal sector and local public consumption amounted to 9.5 percent of Norway's gross domestic product (SSB, 2008).

One big advantage of the data set is the large number of observations. It covers 429 to 453 municipalities[17] over a time span of 28 years. Another advantage is that the institutional framework is to a large extent the same, both across municipalities and over time. (This is in contrast to for instance cross-country data.) At the same time, each local government enjoys considerable discretion in choosing the composition of spending.

3.1 Institutional characteristics

Each municipality in Norway is governed by a local council, which is elected by the citizens every forth year. The election system is proportional, meaning that seats are assigned to each party or election list based on the share of votes they receive in the municipality as a whole.

The council is led by the mayor, who is elected at the beginning of each election period. Except for in those few municipalities which have recently adapted the parliamentary model (and which are not included in my data), there is no political body representing the ruling party or coalition. Instead, there is an executive committee ('formannskapet'), where all parties are often represented.

Martinussen (2004) argues that prior to the local government reform in 1992, Norwegian local politics were to a large extent consensus-based. Before the reform, a qualified majority was required for most decisions. A ruling coalition (if one could call it that at all) either had to represent a large fraction of voters or reach agreements with some of the other parties when deciding on policies. This implies that representatives not belonging to the ruling party or coalition have some influence on the policy

[17] Oslo municipality is excluded for the four last election periods, because it adopted the parliamentary system in 1986.

decisions. The local administration also plays an important role, preparing the budget and giving its recommendations on various issues.

The local council votes over the municipality budget for each year. Among the spending purposes are education, elderly care, health and social services, kindergartens, housing and infrastructure. The municipalities are relatively free to prioritize between these. Considering childcare, Kröger (1997) argues that Norwegian municipalities have enjoyed much more discretion in determining the level of services to offer than their Swedish counterparts. At the same time, the size of the total budget is largely determined by grants from the central government. As apposed to those in Sweden, Norwegian municipalities are required to have a nonnegative net operating surplus (Borge, 2005, Pettersson-Lidbom, 2008). Moreover, they cannot freely choose the level of taxes, or at least they seldom do so, property taxes being an exception (Fiva and Rattsø, 2007).

3.2 Data set

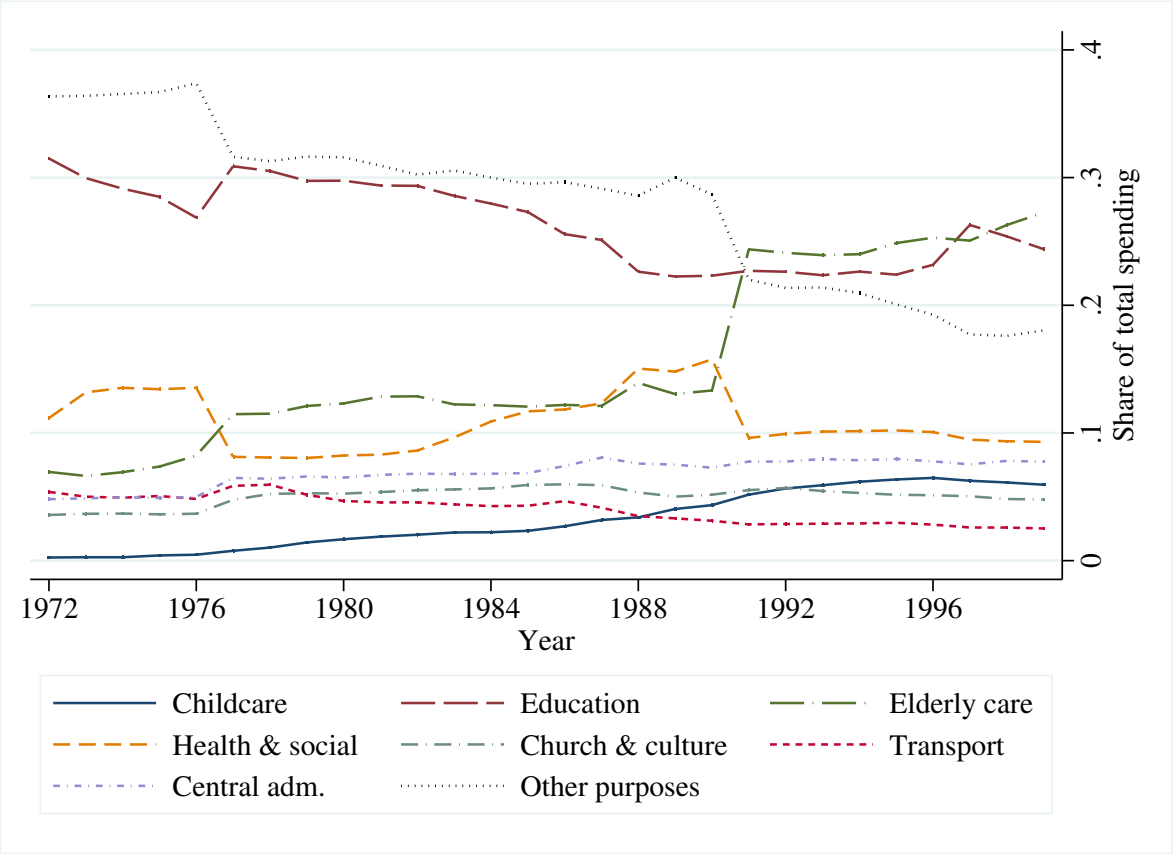
The dependent variables employed are total spending in each sector as shares of total spending on all sectors. Total spending consist of current expenditures as well as investment and spending on maintenance. Figure 2 shows how these shares have changed over time for the eight sectors employed in my analysis. Table 9 in the appendix contains summary statistics.

The sectors are childcare, elderly care, education, health and social services, cultural services, transport and infrastructure[18], central administration and "other purposes". The latter is on average the largest and includes among other things housing services, which was found to be difficult to construct as a separate category. 'Elderly care' does to some extent also include care for the disabled, at least for the years following 1991.

In official statistics, the division into main categories used for the accounting data have changed somewhat over time, especially between 1990 and 1991. High effort has been made in reorganizing the data in order to make the main spending categories more consistent over time than they are in the official statistics. The jump in elderly

[18]Note that this includes both spending on roads and public transport, which might be favoured very differently by different politicians.

Figure 2: Spending in each sector as shares of total spending



(The shares given here are the averages among the municipalities which existed each year. Note that they are unweighted means of the the shares in all municipalities, not shares of total municipal spending in Norway as a whole.)

care spending and the fall in spending on health care and social services seen on figure 2 partly reflects that this consistency is not perfect, but the former could also partly be explained by a government reform of care for the disabled ("HVPU-reformen") which was implemented at that time.

The data on female politicians and party representation is described on table 10 in the appendix. This includes the number of female representatives in the local council, but unfortunately no other personal characteristics like the age or occupation the representatives. This is a drawback, since gender is likely to be correlated with for instance age or experience.[19]

[19]For the 2005 and 2007 elections, more data on this is available. In both these elections, the shares of elected representatives aged less than 30 years, 30-39 years and 40-49 years were all higher among female representatives than among representatives overall.

I also include other variables related to the electoral outcome. The electoral data gives information on the number of votes and representatives for each party and on which party holds the positions of mayor and deputy mayor, but not on which parties actually form the ruling coalition. However, even if we had this information, it would not give the whole picture because the degree to which these parties operate alone or with support from the rest is likely to vary a lot.

The political parties and election lists are classified as either left-wing, right-wing or unclassified, the latter mainly consisting of local or 'non-political' election lists. The center parties are included in the right-wing block. According to Strøm and Leipart (1993) the left-right cleavage is the main division in Norwegian party politics. Several studies, e.g. (Fiva and Rattsø, 2007), find that the share of left-wing representation is correlated with policy outcomes.

Demographical data (total population, fractions for each age group and fraction women in the population) is also included for each year. In addition, I employ other socio-economic variables. Mean income is constructed from the tax statistics and is available for the period 1979-1999. Another more gender-specific variable is female labour participation, which is unfortunately only available for the period 1986-1999. The shares of adult women who are divorced and unmarried are available for all years except 1972, and and the share of the population with higher education is available for 1985-1999). Descriptive statistics for these variables are given on table 11 in the appendix.

4 Estimation

In section 2.2, I showed how external conditions leading to more female politicians could affect the policy outcome. I will now empirically examine whether this is the case. For this I use the data described above and estimate the effects of the share of women in the local council on the relative sizes of eight categories of local public spending.

Due to the aforementioned relative low discretion Norwegian municipalities enjoy in deciding on the budget size, I will focus on the *composition* rather than the *size*

of total spending. One nice feature with using budget shares as dependent variables is that when we study each regressors's influence on all spending shares, these effects sum to zero.

Previous studies give only weak predictions of what the estimated effects will be in this one. Svaleryd uses spending in each sector relative to *each of the two others* and not as share of the total budget. Her regression results both from the survey and spending data indicate that female politicians prioritize both childcare and education over elderly care, with no significant ranking of the former two. Using my specification, this is likely to imply a negative effect on the budget share spent on elderly care[20], while the effects on spending for the two other purposes could potentially be of both signs. The results of Rehavi (2007) associate female politicians with health care services .

4.1 Empirical strategy

The estimated equation is the fixed effects regression model

$$\frac{totexp_{ist}}{\sum_i totexp_{ist}} = \gamma_{is} + \xi_{it} + \beta_i womanshare_{st} + \lambda_i controls_{st} + \epsilon_{ist} \qquad (1)$$

where i denotes the purpose of spending, s denotes municipality and t denotes time. $Womanshare_{st}$ is the share of women in the local council and β_i is its effect on spending in sector i. λ_i is a vector of coefficients and $controls_{st}$ is a vector of control variables. ϵ_{ist} is the error term. The assumptions made about the latter is that

$$\text{(I)} E(\epsilon_{ist}|womanshare_{st}, controls_{st}, \gamma_{is}, \xi_{it}) = 0$$

$$\text{(II)} E(\epsilon_{ist}\epsilon_{iru}) = \begin{cases} \sigma^2_{itu} \text{ for } s = r, \\ 0 \text{ otherwise} \end{cases}$$

The first is the standard OLS assumption, implying that the error terms are uncorrelated with the regressors. The second states that the error terms are allowed

[20]This does however not necessarily need to be the case. It could be that female politicians put even lower priority on the other five spending purposes.

to be correlated within but not across municipalities. Allowing for arbitrary within-correlation in fixed effects regression is advocated by Wooldridge (2003).[21]

γ_{is} represents the municipality fixed effect in state s. Fixed effects are used because municipalities are likely to have some local characteristics which are hard to observe and hence control for. In addition, I control for time fixed effects ξ_{it}. These are likely to be important because there have been some government reforms during the period which have led to higher spending in some sectors and lower spending in others, recall figure 2.

The fixed effects allow each municipality to have a different intercept term, which also varies depending on the year we are in. (However, the year effect's contribution to the intercept is the same for all municipalities.) The slopes are assumed to be the same. The advantage of this is that there is less concern about omitted variables. However, by assigning so much of the variation to the fixed effects, one also has left less variation in the data. The FE estimator is also called the 'within' estimator because it only utilizes variation within each municipality. All variation across municipalities (cross-sectional) is assigned to the municipality-specific dummies.

Control variables are added in order to control for factors which could be related to both spending and the number of women in the council. If these are important, omitting them would lead to the β_i's picking up other effects that those in which I am interested. In the framework of section 2.2, this mainly concerns voter preferences. However, I also take into account that the electoral outcome could matter in itself (Pettersson-Lidbom, 2008) and also control for the political colour of the current regime. The point is to examine whether female representatives enjoy sufficient discretion to pursue their own interests beyond the impact of other policy-determining factors.

The baseline model I present includes $Womanshare$ as the only explanatory variable:

$$\frac{totexp_{ist}}{\sum_i totexp_{ist}} = \gamma_{is} + \xi_{it} + \beta_i womanshare_{st} + \epsilon_{ist} \tag{2}$$

A specification without fixed effects would not be very informative, since the share of

[21] This is handled by the regression option *cluster* in Stata.

women has increased over time in almost all municipality councils since 1972[22] while the composition of local public spending has changed a lot during the same period.

Next I add variables controlling for the colour of the political regime. Whether this is innocent or not is not quite clear, and is discussed in section 5. However, leaving these variables out would be problematic. According to the discussion in section 2.2, it does not only matter how many women are elected but also which men are. For instance, left-wing parties are known to favour kindergarten spending more than right-wing parties (Sørensen, 1995, Svaleryd, 2009). If they are also more likely to have female representatives, the coefficient $\beta_{Childcare}$ could be picking up what is truly an effect of party, not of gender.[23] Furthermore, Svaleryd (2009) argues that the share of socialist votes is also likely to reflect some of the voters' preferences for spending.

The first political control variable is hence the left-wing share of votes. This might not say everything, but I am not interested in the effects of parties as such. What I want is to isolate the effect of women in the council. The other is the degree of party fragmentation in the local council. This is measured by the Herfindahl index, which is calculated by the sum of the squared shares of seats each party holds in the council (see Fiva and Rattsø, 2007). This could potentially be of importance, if for instance the fact that each party holds few seats makes it harder for women to get elected. (Since men often are top candidates on the party lists.)

In the 'standard specification' of this section I also control for demographical variables. For instance, we expect that when the population within a municipality grows older, the preferences of voters will put more weight on elderly care and less on kindergartens.[24] If the likeliness of electing more women as politicians is somehow related to this, the estimated effects of female representation above would be biased. However, demographical variables also have the not so attractive feature (Fiva and Natvik, 2008) that they might to some extent be results of the political decisions, if for instance fam-

[22] A few had high shares already in 1971 due to female activists encouraging voters to give female politicians 'extra votes'. This caused female majorities is Oslo, Trondheim and Asker municipalities.

[23] In 1975, women made up 16.2 percent of all elected left-wing representatives and 15.3 percent of all all elected right-wing representatives. In the 1995 election, the shares were 37.6 and 30.4 percent, respectively.

[24] If the politicians to some extent behave as good social planners it should effect their priorities as well, regardless of electoral incentives.

ilies with children move to municipalities with high kindergarten coverage. This may cause simultaneity bias in all coefficients. However, we cannot know in advance if this problem is more or less severe than the omitted variable problem occuring if they are not included.

In yet another specification I introduce some additional control variables. Some of these are potentially important, but they are unfortunately not available for the whole time period.

Newly elected representatives ($Newreps$) measures the share of the local council made up by representatives who were not members of the council in the previous election period. This variable is included because as mentioned, gender is likely to be related to other characteristics like for instance age and experience. Since I do not have data on these characteristics, the share of newly elected representatives is regarded a second-best solution since it is likely to be correlated with one or both of them. Of course the estimated coefficient for this variable mat also pick up some effects related to a less stable political climate and of parties themselves changing candidates more often.

Edlund and Pande (2002) argue that women's higher preference for government spending in the US is a result of increased divorce risk, making it in the interest of women to have a large public sector. How this would effect the composition of public spending considered here is not clear, but it could for instance lead to women who previously were housewives starting to do paid work and hence higher demand for public childcare. To make interpretation of the coefficient easier I use divorced women as share of *the sum of married and divorced women*. Because inhabitants move (and some die) this is of course not the same as the share of marriages which end in divorce, but it is a proxy for the risk of divorce for those married.

The share of single parents would also have been a natural control variable, especially for effects on kindergarten spending, but the data on this is very scarce. Instead I include the share of adult women who are unmarried, since this is likely be correlated with the occurrence of single parenthood.[25] Moreover, nonmarriage or postponed

[25]Recall that the data goes back some years, so parents living together without being married was not as common as it it today.

marriage is likely to be correlated with liberal attitudes which could imply voting for female politicians.

Furthermore, I control for mean income and the female labour participation rate. The former is quite standard in political economics (see Besley and Case, 2003), while the latter is likely to affect the demand for public child care and possibly also women's participation in politics. Including it is however not totally unproblematic since the causality could also go the other way: higher female labour supply due to better kindergarten coverage.

Finally I include the share of population with higher education, which Svaleryd argues to be relevant. A priori, this could also be expected to affect female participation in politics and certain types of spending. The drawback with the extra variables is that due to their lesser availability in earlier periods, the number of observations drop from 12251 to 6044 if all are to be included. The appendix shows a specification where only those variables which are available since 1980 are included.

In order to compare my results with hers, I also include a specification very similar to the one used by Svaleryd. This is

$$\frac{totexp_{ist}}{totexp_{jst}} = \psi_{sij} + \mu_{tij} + \theta_{ij} womanshare_{st} + \delta_{ij} controls_{st} + \eta_{ijst} \tag{3}$$

where i and j denote two of the sectors child care (CC), education (ED) and elderly care (EC) and $controls_{st}$ is a vector of political, demographical and socio-economic control variables. Two of these not employed in other specifications are the dummy variables for left-wing and right-wing council majority, respectively. The reason why I have not used these is that according to Martinussen (2004), simple majority should not be of much importance prior to 1992. The control variables used in this specification are constructed to be as similar as possible to those used by Svaleryd.[26] To utilize more observations I also include a specification like (3) with relative shares but fewer control variables for comparison.

[26]One difference is that I only have data on all inhabitants with higher education, while Svaleryd restricts her variable to those with three years or more.

4.2 Results

Table 1 shows a highly significant positive effect of female council representation on kindergarten spending when no control variables are included. The estimated coefficient is however only 0.007. The table shows two other significant effects, a negative effect of -0.031 on education spending and a positive effect of 0.010 on spending on church and cultural services. The negative effect of 0.009 on central administration spending is also close to significant.

Table 1: Female representation and spending composition, no control variables

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007**	-0.031**	-0.012	0.015	0.010**	-0.001	-0.009	0.022
	(2.22)	(-2.56)	(-1.05)	(1.42)	(2.15)	(-0.26)	(-1.64)	(1.44)
Observations	12251	12251	12251	12251	12251	12251	12251	12251
R^2	0.800	0.319	0.681	0.227	0.104	0.182	0.135	0.506

t statistics in parentheses. Standard errors are clustered on municipalities.
Time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: The effect of female representation on shares of total spending (1972-1999)

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.006*	-0.025**	-0.016	0.016	0.010**	0.000	-0.009	0.017
	(1.90)	(-2.05)	(-1.35)	(1.48)	(2.08)	(0.01)	(-1.59)	(1.11)
Voteshare left	0.013***	-0.095***	0.050***	-0.004	0.000	-0.020**	0.001	0.056**
	(3.39)	(-4.90)	(3.03)	(-0.31)	(0.03)	(-2.10)	(0.06)	(2.14)
Fragmentation	-0.001	0.050***	-0.022	-0.034***	0.004	0.001	-0.009	0.010
	(-0.26)	(3.51)	(-1.58)	(-2.81)	(0.69)	(0.17)	(-1.12)	(0.51)
Observations	12251	12251	12251	12251	12251	12251	12251	12251
R^2	0.801	0.331	0.683	0.228	0.104	0.184	0.136	0.507

t statistics in parentheses. Standard errors are clustered on municipalities.
Time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Moving on to table 2, we see that the values of the estimated $\hat{\beta}_i$'s are very similar. The estimated kindergarten effect is however less significant than in the previous estimation, and also slightly smaller in magnitude, 0.006. When the demographical control variables are included (table 3, it increases to 0.007 again and also gains in level of significance. In this regression, also the estimated effect on administrative spending is

significant. $\hat{\beta}_{culture}$ has a slightly lower level of significance in this specification, but its estimated magnitude is exactly the same.

Table 3: The effect of female representation on shares of total spending (1972-1999)

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007**	-0.009	-0.017	0.018	0.010*	-0.000	-0.009*	0.002
	(2.58)	(-0.88)	(-1.54)	(1.58)	(1.96)	(-0.04)	(-1.67)	(0.11)
Voteshare left	0.013***	-0.086***	0.047***	-0.003	0.000	-0.020**	0.000	0.049**
	(3.49)	(-5.30)	(2.75)	(-0.23)	(0.07)	(-2.18)	(0.03)	(2.03)
Fragmentation	-0.000	0.043***	-0.019	-0.034***	0.003	0.002	-0.008	0.013
	(-0.01)	(3.68)	(-1.37)	(-2.82)	(0.56)	(0.22)	(-1.02)	(0.71)
Population	0.010***	0.133***	-0.012	0.002	-0.006	0.002	-0.002	-0.127***
	(2.64)	(7.88)	(-1.30)	(0.33)	(-1.30)	(0.34)	(-0.51)	(-7.18)
Pop. squared	-0.000**	-0.002***	0.000	-0.000	0.000	0.000	0.000**	0.001***
	(-2.45)	(-3.56)	(1.61)	(-0.02)	(1.38)	(0.04)	(2.11)	(3.59)
Age 0-6	0.054**	0.031	-0.062	0.059	-0.025	-0.034	0.034	-0.055
	(2.12)	(0.27)	(-0.58)	(0.55)	(-0.68)	(-0.64)	(0.59)	(-0.35)
Age 7-15	-0.078***	1.072***	-0.113	-0.108	0.008	-0.108*	0.025	-0.699***
	(-2.89)	(10.15)	(-1.09)	(-1.12)	(0.14)	(-1.82)	(0.50)	(-3.97)
Age 66+	0.019	-0.053	0.464***	-0.201**	-0.077*	0.031	0.018	-0.201
	(0.75)	(-0.52)	(4.22)	(-2.32)	(-1.84)	(0.55)	(0.44)	(-1.35)
Women in pop.	-0.027	-0.237	-0.302	0.013	-0.008	0.085	0.127	0.348
	(-0.47)	(-1.22)	(-1.33)	(0.08)	(-0.10)	(0.75)	(1.33)	(1.22)
Observations	12251	12251	12251	12251	12251	12251	12251	12251
R^2	0.803	0.406	0.688	0.231	0.106	0.187	0.137	0.528

t statistics in parentheses. Standard errors are clustered on municipalities.
Time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The estimated negative effect of women in the council on education spending however disappears when demographical control variables are included. The other coefficients are not very sensitive to the inclusion of controls, except for the 'other purposes' effect, which was not significant in the first place.

Unsurprisingly, things change a bit more when the controls which do not exist for the whole data period are included, as shown on table 4. However, while the childcare effect now has a lower level of significance its estimated magnitude is exactly the same as in tables 1 and 3. This is rather striking. The changes in the other coefficients

are somewhat larger. We see that the effect on administration spending is no longer significant, while the culture effect still is. [27]

To sum up, the most robust result from the estimations is the estimated effect of female council representation on child care expenditures. Its estimated order of magnitude only varies between 0.007 and 0.006, and it is significantly different from zero in all specifications.

0.007 seems little, and indeed it is a modest effect. According to this, a one standard deviation (11 percentage points) increase in the share of women in the council gives a 0.08 percentage point increase (0.03 standard deviations) in the share of the budget spent on child care. However, in the average municipality spending on child care only amounts to 3.1 percent of total spending, so the effect is not totally negligible.

Across all specifications the estimated female effect on spending on church and cultural services is positive and significant.[28] Its estimated value varies between 0.010 and 0.009. This implies that the strength of this effect is similar to that of the childcare effect, because cultural services account for 4 percent of municipal budgets on average. There is also some (but weaker) evidence that more women in the council leads to slightly lower spending on central administration.

The negative effect on elderly care spending, which we a priori could expect to be of importance, is a bit unstable across specifications and never statistically significant at the 10 percent level. It is however 'close to' significant when using the standard model (table 3).

Table 5 shows the results from estimating specification 3, where the three last columns show the model most similar to the one estimated by Svaleryd (2009). Comparing my results to hers, we see that the estimated effects of having more female politicians are much smaller in my results. Take the effect on the weight put on childcare relative to elderly care: I find this to be about 0.11[29] when using the whole sample and 0.08 (not significant) when using the richer set of control variables. She finds it to be 0.995 and 1.012 in those specifications which technically match the most, which

[27] When I do not include quite as many controls and do the regression on the period 1980-1999, table 12 in the appendix shows that it is the other way around.

[28] Except for in the intermediate specification shown in the appendix, where the t-value is 1.25.

[29] A 95 percent confidence interval is (0.006, 0.206).

Table 4: The effect of female representation on shares of total spending (1986-1999)

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007*	-0.000	-0.012	0.012	0.009*	-0.006	-0.005	-0.005
	(1.92)	(-0.03)	(-0.78)	(0.88)	(1.66)	(-0.99)	(-0.83)	(-0.31)
Newreps	0.000	0.015**	-0.017	0.013	-0.001	0.003	-0.002	-0.012
	(0.03)	(2.00)	(-1.47)	(1.18)	(-0.19)	(0.77)	(-0.41)	(-0.93)
Voteshare left	0.006	-0.015	0.027	-0.019	0.007	-0.004	0.013	-0.016
	(1.00)	(-0.95)	(1.06)	(-0.84)	(0.86)	(-0.41)	(1.43)	(-0.52)
Fragmentation	0.005	-0.001	-0.033	-0.001	0.006	0.006	-0.017	0.036
	(0.73)	(-0.04)	(-0.99)	(-0.04)	(0.52)	(0.45)	(-1.57)	(0.88)
Population	-0.001	0.175***	0.009	0.019	0.007	0.010	0.005	-0.224***
	(-0.09)	(7.01)	(0.47)	(0.92)	(0.57)	(1.33)	(0.36)	(-4.42)
Pop. squared	0.000	-0.004***	0.000	-0.000	-0.000	-0.000	-0.000	0.004***
	(0.45)	(-4.96)	(0.81)	(-0.15)	(-0.58)	(-1.60)	(-0.18)	(2.84)
Age 0-6	0.261***	0.031	-0.217	0.096	-0.122	-0.028	-0.016	-0.005
	(5.38)	(0.18)	(-1.08)	(0.52)	(-1.19)	(-0.35)	(-0.11)	(-0.02)
Age 7-15	0.046	0.837***	-0.186	0.001	-0.033	-0.248***	0.038	-0.455*
	(0.99)	(6.66)	(-0.98)	(0.00)	(-0.32)	(-3.37)	(0.39)	(-1.88)
Age 66+	0.030	0.007	0.485**	-0.250*	-0.095	0.123*	0.129*	-0.429**
	(0.81)	(0.06)	(2.53)	(-1.72)	(-1.41)	(1.68)	(1.92)	(-2.01)
Women in pop.	-0.039	-0.262	-0.203	0.211	-0.023	0.007	-0.046	0.355
	(-0.54)	(-1.20)	(-0.70)	(0.89)	(-0.16)	(0.06)	(-0.33)	(0.75)
Mean income	-0.000	-0.000	0.001	0.000	0.000	0.001	-0.001	-0.001
	(-0.39)	(-0.29)	(1.10)	(0.05)	(0.34)	(1.45)	(-1.31)	(-0.53)
Divorce risk	-0.012	0.106	0.313**	-0.020	-0.044	0.045	-0.091	-0.297
	(-0.36)	(1.13)	(2.24)	(-0.16)	(-0.74)	(0.87)	(-1.55)	(-1.65)
Unmarried wom.	0.054**	0.070	-0.250**	0.210**	0.037	-0.083**	0.024	-0.062
	(2.02)	(0.87)	(-2.13)	(2.01)	(0.81)	(-2.07)	(0.44)	(-0.43)
Women working	0.040***	-0.042	-0.089**	-0.072**	0.039***	0.001	-0.062***	0.185***
	(3.54)	(-1.29)	(-2.06)	(-2.07)	(2.73)	(0.07)	(-2.99)	(3.36)
Higher ed.	0.093*	0.046	-0.037	0.018	0.046	0.030	0.123	-0.319
	(1.83)	(0.25)	(-0.17)	(0.10)	(0.49)	(0.36)	(0.94)	(-0.83)
Observations	6044	6044	6044	6044	6044	6044	6044	6044
R^2	0.588	0.232	0.571	0.274	0.041	0.115	0.023	0.483

t statistics in parentheses. Standard errors are clustered on municipalities.

Time and local government fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

is about ten times as big of an effect. This could reflect the fact that Swedish local authorities in general enjoy more discretion in determining the level of spending. When the budget does not need to balance, it is easier to raise more money for those purposes the council finds important. It could however also reflect differences in the system of local governance, for instance that the voice of the women in the council is less heard in a consensus-based democracy like the Norwegian.

Also the other estimated effects are smaller in magnitude in my results. Comparing these make however less sense because those which are statistically significant in Svaleryd's result are not in mine, and vice versa. I find no evidence at all that female politicians prioritize education over elderly care, which her results clearly indicate. On the other hand, I find a weakly significant effect on the weight put on *childcare over education*, which she does not. According to Kröger (1997), day care services in Sweden are to a larger extent than in Norway regulated by the state, while the coverage was also broader at an earlier stage. This might imply that Norwegian female local politicians had to fight harder for better child care, also at the expense of spending education. However, other institutional differences could also be of importance.

Moving on to the political control variables, we see that the share of votes cast for the left-wing block shows positive effects on the spending on childcare and elderly care and a negative effect on education spending in both tables 2 and 3. These three effects are roughly in line with what is predicted by the survey data study by Sørensen (1995) and the survey and spending data study by Svaleryd (2009).[30] Fiva and Natvik (2008) finds that when the left-wing has the mayor and experiences a positive shock in the re-election probability, investment in childcare increases. Sørensen (1995) also finds that Labour Party politicians have higher demand for spending on construction, something which could explain the estimated positive effect for the 'other'-sector in my results. Concerning the negative effect on spending on transport and infrastructure, the literature to my knowledge says little about whether this is as expected.

Looking at table 3 and the last three columns of 5, my estimated left-wing effect seems to go more in the direction of favouring elderly care on the cost of education,

[30]Only the latter study considers elderly care a separate sector (from health care and social services in general).

Table 5: The effect of female representation on relative priorities

	CC/EC	CC/ED	ED/EC	CC/EC	CC/ED	ED/EC
Womanshare	0.106**	0.025*	1.124	0.080	0.037*	-0.092
	(2.08)	(1.78)	(0.57)	(1.33)	(1.82)	(-0.26)
Voteshare left	-0.009	0.023	-16.152***	-0.137	0.050	-0.947**
	(-0.08)	(1.08)	(-3.51)	(-1.51)	(1.44)	(-2.10)
Leftwing maj.	0.007	-0.001	0.452	0.003	-0.003	0.000
	(0.34)	(-0.11)	(0.42)	(0.13)	(-0.42)	(0.00)
Rightwing maj.	-0.003	-0.008*	0.133	0.003	-0.015*	0.072
	(-0.22)	(-1.69)	(0.21)	(0.13)	(-1.69)	(0.49)
Age 0-6	0.878	0.678***	75.196*	-0.122	1.564***	
	(1.07)	(4.39)	(1.96)	(-0.15)	(5.12)	
Age 7-15	0.231	-0.525***	108.475***		-0.566**	9.901**
	(0.47)	(-3.37)	(4.74)		(-2.47)	(2.34)
Age 66+	-1.395***	0.186	6.284	-3.211***		-12.889***
	(-3.02)	(1.24)	(0.28)	(-4.94)		(-3.73)
Women working				0.844***	0.233***	1.546*
				(5.18)	(3.57)	(1.83)
Mean income				-0.493***	-0.047	-1.827***
				(-3.19)	(-0.97)	(-2.77)
Women in pop.	1.072	-0.266	-86.985	1.039	-0.472	1.494
	(1.53)	(-1.05)	(-1.47)	(0.95)	(-1.08)	(0.24)
Population	0.005	-0.093***	14.890***	-0.646***	-0.258***	-3.182***
	(0.06)	(-4.02)	(3.10)	(-3.73)	(-5.25)	(-3.30)
Higher ed.				-1.053	0.348	-1.780
				(-1.22)	(1.27)	(-0.34)
Observations	12294	12312	12300	6073	6077	6079
R^2	0.173	0.768	0.075	0.166	0.491	0.416

t statistics in parentheses. Standard errors are clustered on municipalities.

Time and local government fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

while Svaleryd finds that more left-wing votes implies more weight on *childcare* over education. Could our differing results on female politician effects have something to do with this? It could be that in Sweden, female politicians and the left-wing parties agree more on the desired level of spending on kindergartens than do their Norwegian counterparts.

The estimated effects of left-wing and right-wing majority on table 5 are mostly insignificant and also small in magnitude, something which is in line with the claim by Martinussen (2004) that the majority did not decide much on its own in the local government system up until 1992. They do however yield some (but weak) evidence that increased right-wing influence implies more spending on education at the expense of childcare, which is in accordance with the literature mentioned above. The estimated effects of party fragmentation are highly unstable across specifications. (Note that the effects here are the effects of *less* fragmentation, since the Herfindahl index take lower values the more fragmented the council is.)

There is some evidence that more newly elected representatives lead to more spending on education. Although this does not need to be the case, this could reflect different preferences among these politicians due to lower age. It is therefore reassuring that the estimated effect of women in the council on kindergarten expenditures is so little affected by the inclusion of this control variable.

Concerning the demographical control variables, we see from tables 3 and 4 that all estimated coefficients have signs which comply well with our intuition. An increase in the population share of one of the age groups children aged 0-6 years, children aged 7-15 years and elderly aged 65 or higher has a significant and positive effect on the welfare service which is targeted at that group: childcare, education and elderly care, respectively. The same holds for the results from the specification using relative shares.

These estimated effects are much larger in magnitude than the impact of women in the local council: According to table 3, a one standard deviation (2.2 percentage points) increase in the share of children aged 7-15 years in the population gives a 2.4 percentage point increase in the budget share spent on schooling. That the demographical effects are large makes sense because they represent not only ideological differences but also actual needs for specific public services. If there is a baby boom, local politicians

cannot ignore the impact of this on the demand for child care (and later education) services.[31] Through central government regulation, they are also required to offer a certain level of these services.

The estimated effects of the share of women in the population are not statistically significant in any of the specifications included. Population growth shows a relatively large positive association with education spending and a is negatively associated with spending on 'other purposes' across all specifications. This could be interpreted as population leading local politician to invest in schools even though school children's share of the population has not increased, because they expect the new inhabitants to have children in school age soon. The small but significant negative effect of population squared on education's budget share could imply some economies of scale: If for instance the number of pupils in each class is initially very low, population growth can have cost-saving effects.

Income, at least the way it is measured here, seems to be of no importance. Divorce risk shows some effects, indicating that more marriage disruptions lead to more spending on elderly care at the expense of other sectors. An explanation somewhat in line with what Edlund and Pande (2002) postulate could be that women who are divorced expect to be more dependent on public elderly care when they grow older, and therefore favour higher spending in this sector. For the share of unmarried women, I got positive estimated effects on spending on childcare and health care and social services (H/S) and a negative for elderly care. The two former effects make sense if for instance some of the unmarried women are single moms with low income, demanding both childcare and social transfers.

Finally, as shown on table 4 the estimated effects of the female labour participation rate are highly significant for most sectors. The estimated effect is as expected positive for the budget share spent on childcare and also for church and cultural services and 'other' purposes. For most other sectors it is negative. The estimated effects of the populations' education level in general shows very low t-values, but the effect on

[31] Note that these results say nothing about what happens to spending on kindergarten *per child* or on elderly care per elderly inhabitant when the population shares change. For more on this, see Borge and Rattsø (1995).

childcare spending is positive and weakly significant. This seems reasonable or at least not totally contrary to intuition. For instance, inhabitants with higher education could have more positive attitudes towards public childcare.

To sum up, most of the estimated effects of the control variables are as expected or make at least some sense. One should also note that in some cases, negative effects in one sector might simply reflect 'crowding out'. Because the budget shares have to sum to one, a positive effect on the spending in one sector inevitably implies negative effects for one or several other sectors.

In general, the demographical and socio-economic variables show much larger effects than the share women in the council and other variables related to the election result do. This could reflect the large degree of consensus rule in Norwegian local politics.

4.3 Sensitivity analysis

Are there other variables potentially related to the share of women in the council which should have been included? As mentioned previously, the election data also contains information of the gender of the *mayor*. If female representation in the council is correlated with the occurrence of a woman in the mayor's chair and the mayor has considerable influence, the effects of women in the council could be partly picking up what are in fact the effects of the mayor's personal gender-related preferences. However, estimating the standard model with a dummy for female mayor as an extra control variable gives coefficients and significance levels for the influence of for $Womanshare_{st}$ which are to a very large degree the same as those in section 4.2. This indicates that the gender of the mayor has little to do with gender representation in the council.

Moreover, as shown in the appendix, the effects of a female mayor seem to go in a different direction, giving more weight on spending on elderly care (and less on other health and social care). A main reason for why I do not focus more on this is that according to (Gravdahl, 1998), it was common prior to 1992 that the mayor and the deputy mayor swapped position in the middle of the election period, meaning that in many (probably most) cases where the election data says that the mayor was female, the mayor would be a man during the last two years of the period. And even to the extent that these estimates do pick up an effect of gender, I believe that the empirical

problems related to investigating these effects are more severe than they are for female council representatives. The gender of the mayor candidates is very likely to be known before the election, and hence the election of a female mayor could be picking up effects of voter preferences to a larger extent than the female share of the council does.

If, on the other hand, the 'mayor effects' do reflect differences in the politicians' personal preferences, this indicates that female mayors differ from male mayors in another way than do female councilmen from male councilmen. It could for example be that in some municipalities, in order for a women to be elected mayor she must be considered a 'moderate' candidate.

Another concern could be that my political control variables fail to capture some relevant aspects of the electoral outcome. Although the left-right cleavage as argued above seems to be the most central distinction in Norwegian politics, there might be other important party differences. For instance, Sørensen (1995) finds that politicians from the Socialist Left Party have an even stronger preference for public child care than Labour party representatives. The representatives from the right-wing Progress Party also seems to differ from the rest of the right-wing politicians.[32]

As shown in the appendix, including the vote shares of six parties in addition to the left-wing share of votes changes very the results little. The effect of female politicians decreases from 0.007 to 0.006 compared to the result in table 3. There is also some evidence that more support for the Socialist Left Party is related to higher spending on childcare than left-wing support in general, which is not surprising. The Progress Party is omitted because it did not exist during the first election period, but I also did a check with this party's votes included and got virtually the same results as those shown in table 14.[33]

I also estimated the standard model with the unemployment rate as an extra control variable (results not shown), something which left the effects of female council

[32]Sorensen uses representatives from the centrist parties as a reference group, and fins no significant evidence that representatives from the Conservative party differ in their preferences from this group. The Progress Party representatives on the other hand prefer less spending on child care and culture and more on education and elderly care than do centrist representatives.

[33]I did however get highly significant estimated effects of Progress Party support on the spending on education (positive) and culture (negative).

representation completely unchanged. This is good, because including this variable in the other specifications would be a bit problematic since the unemployment rate is also an economic *outcome* of local politics (Pettersson-Lidbom, 2008).

Next I consider reasons for leaving some observations out. Firstly, some municipalities had their borders changed during the period 1972-1999. If this only affected spending through changing population, this would already be accounted for. However, it is also likely to influence some other local characteristics of the municipality, making it perhaps inaccurate to consider them as being the same units (with the same fixed effects) as before.[34] Hence a natural robustness check is to estimate the standard model excluding these municipalities for the whole period.

Other municipalities merged or split up and hence ceased to exist in the same form as before. Others exist for the whole period but have missing values for some variables. Restricting the data to a balanced panel is quite standard in panel data studies, so as the next robustness check I ran a regression on the standard model excluding all municipalities which have missing values for some included variable some year.

Another concern is errors in the data. In some (not many) municipalities, spending on kindergartens falls dramatically one year and then returns to about its old level the next. If spending on childcare is substantial, this should normally not occur. I therefore estimate (3) excluding municipalities for those years when their spending on child care dropped by more than 90 percent compared to the year before. Of course some of these could be municipalities where the level was very low initially, but it is hard to know where to draw the line and it is not a matter of many observations anyway.

This last specification yields much the same same estimated coefficients as seen on table 3, but with slightly higher t-values for the effects on childcare and administration expenditures. Excluding municipalities which change borders slightly alters magnitudes and t-values of the β_i's for elderly care, health and social services and culture but leaves the estimated childcare effect unchanged. The results of the balanced panel regression (table 16) are a bit more different. The estimated coefficient for the effect of women in the local council on childcare spending is lowered to 0.005, and is

[34] Observations for the years in which the border change actually took place are already excluded.

no longer statistically different from zero with a 10 percent level of significance. The positive estimated effect on culture expenditures is also rendered insignificant, while the negative estimated effect on spending on elderly care actually becomes significant.

Note however that imposing a balanced panel restriction alters some characteristics of the data sample. When municipalities merge or split up it is likely to have something to do with public spending. More specifically, they often merge in order to save costs in some sectors. Nevertheless, it is reassuring that the results are not completely different from those of the unbalanced regression. Although the estimated child care effect is no longer statistically significant, it is in the same order of magnitude as before and 'close to' significant.

Finally, I regressed the standard model excluding those municipalities with less than 2500 inhabitants. A motivation for doing this is that when spending is measured in budget shares, year-to-year changes appear bigger in those municipalities where the total budget is small. In addition, small municipalities might have somewhat peculiar spending patterns, and we do not want these to be driving the results.

As shown on table 18 in the appendix, this actually gives an effect of female representation on the budget share devoted to childcare which is higher (0.011) than when all municipalities are studied. It is also slightly more significant, perhaps reflecting that the small municipalities have peculiar spending patterns causing some 'noise' in the data. The negative effect on administration also increases somewhat both in magnitude and t-value, and the culture effect is still significant at a 10 percent level.

5 Discussion

Several of the explanations given in the previous section concerning the estimated effects of the control variables are quite ad-hoc and perhaps even speculative. It is also likely that some of them are just reflecting the effects of some other unobserved variable to which they are related. However, the fact that most variables (especially the demographical ones) seem to have sensible effects strengthens my overall faith in the analysis. But more importantly, the main motivation for including the controls variables was not to study their effects, but to help answer the main question of this

thesis: Is there an effect of politician's gender on policy outcomes?

The reason to include the controls is (1) they are potentially important factors determining the composition of local public spending and (2) that they might be correlated with the occurrence of women as council representatives. Although there are not always obvious reasons for why (2) should be the case, we want to make sure that we do not leave out something which could be the driving factor behind the results.

It turns out, however, that the control variables affect the estimated effects of $Womanshare_{st}$ on the budget priorities very little. The estimated effects of the 'naive' regression without controls shown on table 1 actually persist to a large extent through tables 2 and 3. (A notable exception is the effect on education expenditures, for which R-squared also increases substantially when controls are included.) The results of the regressions with more control variables are a bit more different, but this seems to be more due to the exclusion of the earlier years of the period than a feature of the controls themselves.[35]

When arguing for the importance of exogenous or quasi-random variation in politicians' identities, Chattopadhyay and Duflo (2004) and Rehavi (2007) point at the difficulty of separating between the effects of the politicians' personal preferences and the preferences of the voters who elect them. In my analysis, I have controlled for a number of factors which do not state voters' preferences explicitly but which are likely to be correlated with them. When this does not affect my estimated $\hat{\beta}_i$'s, this could imply that that nomination and election of female politicians is related to some other unobserved voter preferences which show very little correlation with the control variables. But is that likely? Or is it more probable that the factors behind $Womanshare_{st}$ are not so much linked to voter preferences at all, but perhaps to processes within the party system?

A rationale for why endogeneity in candidate's identities should be at least of smaller concern in the Scandinavian type of representative democracy is as Svaleryd (2009) points out that voters vote for parties and that each party has several candidates. However, if party lists differ a lot in how their degree of gender mix, voters who have

[35]When estimating the standard model using data from the periods 1980-1999 and 1986-1999 without adding the new controls, I get an estimated childcare effect of 0.008 instead of 0.007 for 1980-1999 but otherwise very similar results.

strong preferences for male or female candidates could use their votes to influence the gender composition in the council.

Moreover, in Norway voters also are allowed to cast extra votes for individual candidates. These rules have changed several times, and in some elections voters have also had the opportunity to remove names from the voting bills and to insert names from other party lists. These personal votes could be expected to have an effect on female representation (Hellevik and Bjørklund, 1995), and possibly also to be correlated with voter preferences for spending. Unfortunately, the election statistics do not contain information on which or how many candidates receive 'extra votes', only the number of corrected voting bills.[36]

But again, if voter's gender preferences had an effect, we would expect to see the coefficients change somewhat when including preference-related control variables. Altonji et al. (2005) demonstrate a formal method for using the effects of the observed control variables to measure how large the omitted variable bias due to unobserved factors is likely to be. They examine whether the better results of pupils in catholic schools in the US are due to selection bias and argue that since the effects of the included observables are small, it is unlikely that this could explain the whole effect. The authors give a word of caution against misuse of this idea, especially "if the observables are small in number and explanatory power, or if they are unlikely to be representative of the full range of factors that determine an outcome" (Altonji et al., 2005, p182). However, I would argue that a similar (informal) line of reasoning can be made in support of my results: If unobserved variables lie behind the estimated effects of women in the local council, these have to be almost totally unrelated to the observables included.

Another concern than omitted variables is simultaneity. In its purest form, this means that the causality between the regressor and the regressand could potentially go both ways. I have already mentioned that there could be such links between spending priorities and migration of different groups, something which determines the demo-

[36]Using micro-level data from the 2007 election, Christensen et al. (2008) finds no significant effect and Christensen et al. (2003) only a very small effect of gender on the personal votes a candidate receives. This is however after controlling for other explanatory variables including party size, placement on the election list, former representation and age. Since I do not control for other characteristics of the representatives, the effects of extra votes could potentially be more severe.

graphical variables. Reverse causality between childcare spending and female labour participation is also possible. The main point here is not in which order events occur in real-time: A spending decision could have been announced in advance and there could also be forward-looking behaviour by both politicians and inhabitants. Simultaneity bias in one estimator might cause also other coefficients to be biased if the regressors in question are correlated. Then it is again reassuring that those effects which I have found to be significant change so little when these controls are included.

Considering the political control variables, it is a bit harder to see how the links of causality should be described. In the setup of section 2.2, election results depend on voter preferences and the 'rules of the game'. Changes in the latter can be thought of as exogenous. Changes in the former could be endogenous to current policy as described above, but this can only affect future election results and not the one currently in effect. If on the other hand there is some commitment to policy platforms (as in the median voter model), then political parties can attract more voters by promising to spend money on some specific purpose, thereby affecting both the election result and the policy outcome. In that case, the election result and the spending variables for the same period are determined simultaneously. The latter also concerns the number of women elected.

Since the control variables as mentioned seem to have little influence on the estimated β's, the main concern is endogeneity in the variable $Womanshare$ itself. Though this endogenetity could be argued to be of several types, I find it easiest to grasp when thinking of it as an omitted variable problem. To see this problem more clearly, consider the model

$$\frac{totexp_{ist}}{\sum_i totexp_{ist}} = \gamma_{is} + \xi_{it} + \beta_i womanshare_{st} + \lambda_i Controls_{st} + \kappa_i Unobs_{st} + \epsilon_{ist} \qquad (4)$$

where $Controls_{st}$ as before is a vector of observed control variables, and $Unobs_{st}$ is some unobserved variable of voter preferences. Let us for now assume that the control variables are exogenous. The OLS assumption is

$E(\epsilon_{st}|Womanshare_{st}, Obs_{st}, Unobs_{st}) = 0$

and in addition, $cov(Womanshare_{st}, Unobs_{st}) \neq 0$, that is, the share of women in the

council is related to the unobserved voter preferences. Since we cannot observe Q_{st}, in section 4 I instead estimate

$$\frac{totexp_{ist}}{\sum_i totexp_{ist}} = \gamma_{is} + \xi_{it} + \beta_i womanshare_{st} + \lambda_i Controls_{st} + u_{ist} \tag{5}$$

This implies $E(u_{ist}|Womanshare_{st}) \neq 0$ in general. If the observed variables are also correlated with the unobserved one we also have $E(u_{ist}|Obs_{st}) \neq 0$. The OLS assumption is violated, and the FE estimator will hence be biased. In which direction depends on the direction of correlation and the parameters. If the unobserved preferences are positively correlated with $Womanshare_{st}$ and $\kappa > 0$, $\hat{\beta}_i$ is likely to overstate the true effect.

6 Isolating exogenous variation

One strategy for dealing with endogeneity which has increased in popularity in recent years is the so-called 'regressions-discontinuity' approach. This utilizes the fact that in close election races, which party or candidate wins can be considered as random. Studies in which this is done include the one by Lee et al. (2004) as well as those by Ferreira and Gyourko (2009), Pettersson-Lidbom (2008) and Rehavi (2007).

For my study of female council representatives this cannot be done or at least it would be extremely time-consuming. If we knew the gender of the candidates who received just enough or almost enough votes to receive a seat in the council, this could in principle be utilized in a similar fashion. However, the electoral data does include the number of female candidates on the party lists for most elections, but no information on their placement on the lists. Moreover, there is no data on the personal votes cast for each candidate, which are likely to be important in some cases.

Another solution would be to use one or more instrumental variables (IVs) for female representation. Considering the model in equation 5, if we have a variable $Instr_{st}$ which is (1) uncorrelated with the political outcome and (2) a determinant of $Womanshare_{st}$, we can use this to solve the endogeneity problem. This is done by

two-stage least squares (2SLS). First we regress

$$Womanshare_{st} = \omega s + \mu_t + \phi Instr_{st} + \theta Controls_{st} + \eta_{st} \tag{6}$$

under the standard assumption $E(\eta st|Instr_{st}, Controls_{st}) = 0$. Then, using the predicted values $\hat{Womanshare_{st}}$, we regress

$$\frac{totexp_{ist}}{\sum_i totexp_{ist}} = \gamma_{is} + \xi_{it} + \beta_i \hat{Womanshare_{st}} + \delta Controls_{st} + u_{ist} \tag{7}$$

Crucial for this to work is that $cov(Instr_{st}, u_{ist}) \forall s, t$, which requires that the instrumental variable is uncorrelated with the omitted variable. Additionally, we require that all of the variables included in $Controls_{st}$ are also uncorrelated with the error term u_{ist}. If some of them were not, we would have to instrument those as well. The condition for identification (Stock and Watson, 2007, p432) states that we need at least as many excluded instruments as we have endogenous regressors. If we have one, the coefficients are exactly identified. If we have more, they are over-identfied.

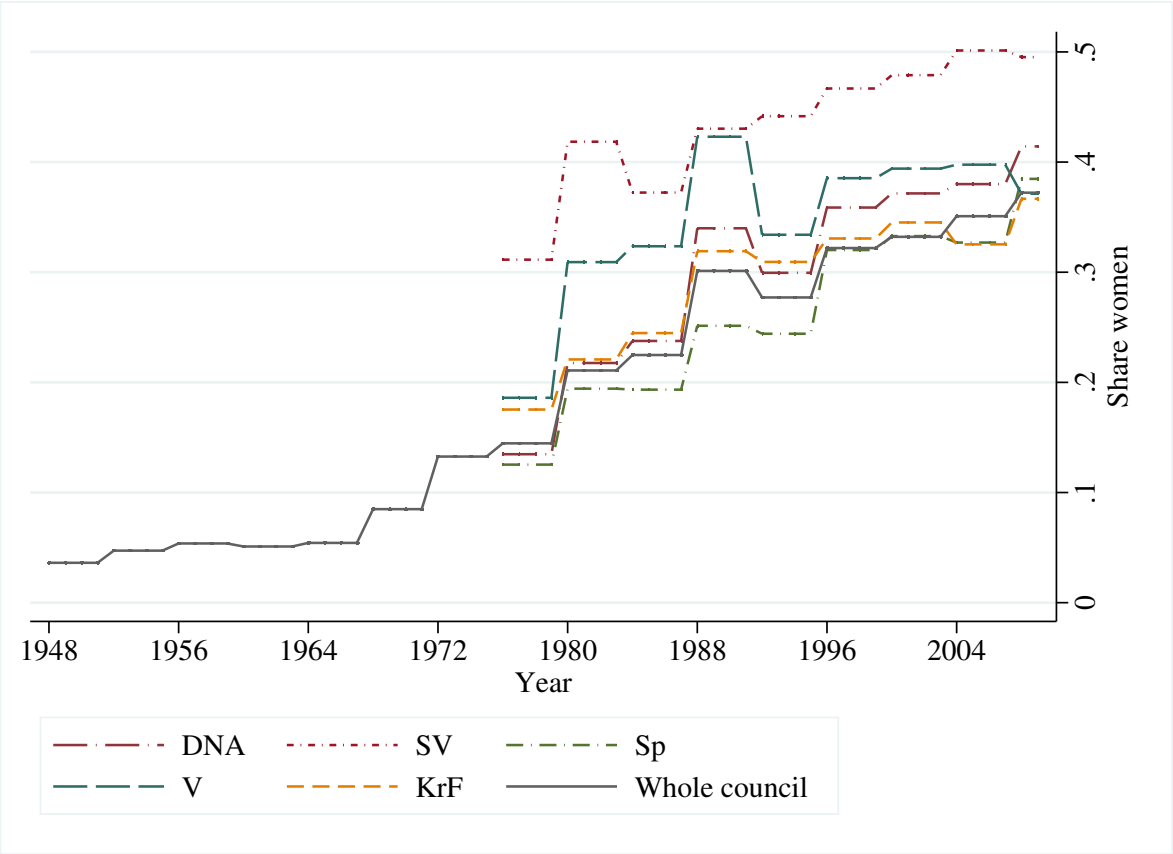
In an earlier version of her article, Svaleryd (2007) uses as an instrument changes in the number of council seats, which is found to be significant but weak. It is also uncertain whether the exclusion restriction is justified: A change in the number of seats could very well affect the policy outcome.

Table 6: Gender quotation rules in Norwegian political parties

Party	Liberals (V)	Socialists (SV)	Labour (DNA)	Centre (Sp)	Christian (KrF)
Introduced	1974	1975	1983	1989	1993
Affected election	1975	1975	1983	1991	1995
Aff. election period	2	2	4	6	7

Instead I utilize internal party rules for gender representation. Five of the bigger Norwegian parties introduced gender quotation in their party organizations during my period of study: The Liberal Party (V) in 1974, the Socialist Left Party (SV) in 1975, the Labour Party (DNA) in 1983, the Center Party (Sp) in 1989 and the Christian Democratic Party (KrF) in 1993 (Christensen, 1999).

Figure 3: The average share of women among the representatives of each party and in the council as as whole



(The average shares are calculated for the municipalities which existed at the beginning of each election period. Note that the female shares are unweighted means of the the shares in each municipalities, not the fraction women among all local council representatives in Norway.)

The average share women among the local council representatives of each of these parties since 1975 is shown on figure 3, together with the average share women in local councils as a whole. At a first glimpse, the picture is not very promising: The main increases in female representation, both within parties and in total, did *not* occur in the elections following the introduction of rules for gender representation in 1975, 1983 and 1991.[37] Instead we see big jumps in the elections in 1979 and 1987, when no parties introduced such rules. In 1991 we see a drop in the female share of representatives in all parties except for the Socialist Left Party.[38] However, this drop looks slightly lower

[37]The picture does not show whether the Liberal Party and the Socialist Left Party increased their female shares in 1975, since there is no data on the gender composition for each party prior to 1975.

[38]According to Raaum (1995), the same thing happened in the Swedish parliamentary election and led to a discussion in both countries about whether things were starting to go the wrong way. As she

for the Centre Party. Concerning 1983, the increase in the share women among the representatives of the Labour Party is also a bit above the overall increase, but not much.

Another noteworthy story shown on this figure is that at least on average, very little happened concerning female representation prior to the 1967 election. This coincides with historical facts about the rise of female issues on the political arena. Although this does not show in the aggregate figures, the number of municipalities with no women in the local council at all did however decrease during the 50s and early 60s (Raaum, 1995).

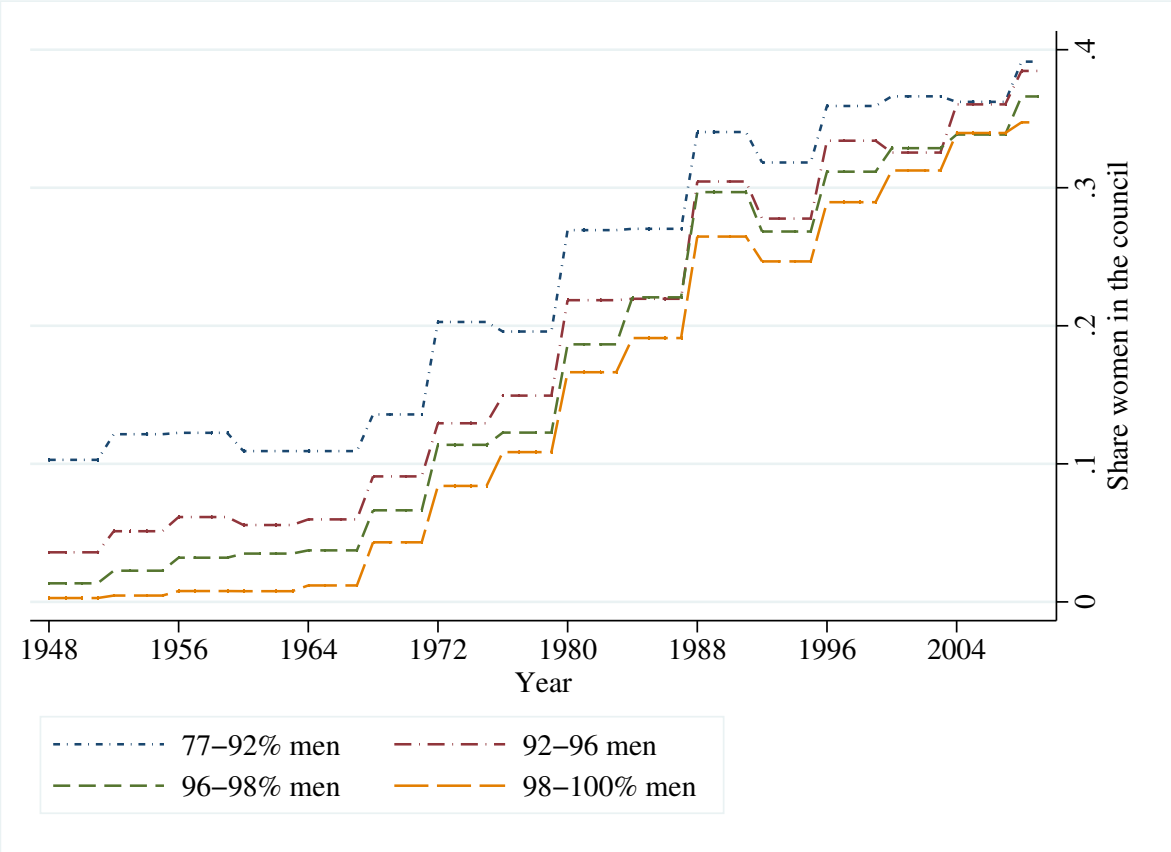
Of course, a lot of other things than quotation rules in the parties affected female political representation during this period. In 1971, women's liberation activists encouraged voters to systematically use the system of personal votes to give women extra votes, something which led to a large increase (Hellevik and Bjørklund, 1995) in the share of women in many municipality councils in this election. In 1993, the new Local Government Act came into force, requiring at least 40 percent of each sex in municipal standing committees and the executive board, but not in the council as a whole (Guldvik, 2008).

Now take a look at figure 4. This uses the the data from the period 1947-1967 to classify the municipalities into four groups, based on how low their share of women in the local council was on average during this period. The line starting out lowest represents those municipalities having two percent women or less on average. The municipalities within each group are likely to share several other characteristics, but I will not go through these here. What is striking is that convergence is far from perfect. After the 1979 election the difference between the top and the bottom group was 10 percentage points. After the last election used in my dataset, 1995, it was still 7.5 percentage points.

The overall pattern is otherwise similar to that in the previous figure, but with some exceptions: In the 1983 election and (less clearly) the 1975 election, the increases in the female share were on average larger among the two groups of municipalities which

points out however, it could be that the 'extreme' event was the big increase in the 1987 election, and that the 1991 election is 'on trend'.

Figure 4: Female council representation, classifying municipalities by male over-representation historically.



(The average shares are calculated for the municipalities which existed at the beginning of each election period and which also existed during the whole period 1947-1963.)

historically had the lowest shares of women in their councils. The question is: Is this due to these municipalities simply catching up with the rest, or is there an effect here going through national parties requiring their local organizations to nominate more women as candidates?

To investigate this, I consider *changes* in female representation in stead of the absolute values. This is because a low share of women in the council originally is likely to lead to larger increases in this share, but obviously not to a larger number of women overall. Hence, the data is total differentiated. In addition, since the impact of an increase in the number of female politicians is likely not to be in full effect in the first year of the election period, I replace all variables by their means across each election period (e.g. 1984-1987).[39] Then I do the total differentiation. This yields data on

[39]Observations for which a variable does not exist during the whole election period are dropped.

differentiated form for the election periods 2-7 (1976-1999).

The idea is that the increase in female representation should be higher in a municipality where there are few women in the council initially, and where the party which implements gender representation rules has a large share of the council seats. The instruments are hence constructed as consisting of three components: A dummy $Quot_{pt}$ for whether gender quotation was implemented in party p prior to the election period t in question, historical strength $HistSupport_{ps}$ of this party in municipality s and local female under-representation historically, $HistMacho_s$. Using historical data for party strength is not optimal since the local popularity of each party might change substantially over time. However, using current or lagged values is highly problematic since these are likely to influence spending directly.

I use historical data from the period 1947-1967. One problem about this is that the data from this period does to a very little extent distinguish between municipalities which merged with other municipalities and those which remained the same. In both cases, they are likely to appear as having existed for the whole period, meaning that they kept the same municipality identifier codes ('kommunenummer'). It is possible to restrict the sample to those municipalities whose borders did not change *at all* during the period, but this leaves very few observations. I therefore include all municipalities whose codes were the same during the period 1947-1973. This should not be too problematic since many of the mergers were between one large and one small municipality[40]

When testing the validity of instruments, we need to control for other related factors: (1) There could be an extra 'catch-up effect' in the election (e.g. 1975 or 1983) when gender representation rules are introduced which is *independent* of party structure. (2) There could be an effect through local party strength in the same election which is independent of previous female under-representation. (3) There could be higher increases in $Womanshare_{st}$ *every* year in municipalities which have few women in the council but where the party in question has a strong position. (4) There could be such a catch-up effect every year in those municipalities with low female represen-

[40]Eri (2004) has made a complete lists of Norwegian municipalities merging and altering their borders.

tation originally. (5) There could be different time trends for female representation in municipalities depending on historical party structure. A priori, I would expect (1) and (4) to be of most importance.

Without other control variables, the first stage regression equation when using only one of the instruments is then

$$\begin{aligned} \Delta Womanshare_{st} = \omega_t + \lambda Instr_{pst} + \gamma_1 X_{1pst} + \gamma_2 X_{2pst} + \gamma_3 X_{3ps} \\ + \gamma_4 HistMacho_s + \gamma_5 HistSupport_{ps} + \eta_{st} \end{aligned} \tag{8}$$

with the assumptions

(I) $E(\eta_{st}|\omega_t, Instr_{pst}, X_{1pst}, X_{2pst}, X_{3ps}, HistMacho_s, HistSupport_{ps}) = 0$

(II) $E(\eta_{st}\eta_{ru}) = \begin{cases} \sigma^2 \text{ for } s = r \text{ and } t = u, \\ = 0 \text{ otherwise} \end{cases}$

p denotes party. The Liberal Party and the Socialist Left Party are considered as one block because their introduction of gender representation requirements affected the same election. Moreover, $X_{1pst} = \Delta Quot_{pt} \cdot HistMacho_s$, $X_{2pst} = \Delta Quot_{pt} \cdot HistSupport_{ps}$ and $X_{3ps} = HistMacho_s \cdot HistSupport_{ps}$. γ_1-γ_5 then capture the effects (1)-(5) above. Note that t now denotes election period and not year. ω_t is a time fixed effect. (Municipality fixed effect are not included in (8) since they are constant over time.)

To proxy for local party strength, I use each parties' average share of votes in the elections from 1951 up until 1967.[41] Of course, this proxy should work better early in the period studied. It is also likely that the control variables have a bit different effects in the 90s, when the growth in female representation had flattened out, than earlier in the period. Nevertheless, to get a starting point I do the regression for the same period of time, 1976-1999, for all instruments.

[41] I include the votes for the Norwegian Communist Party (NKP) in the V/SV share because SV did not exist during the whole period and because many members of NKP joined SV later. Observing the correlation between the historical and current vote share in the 1975 election, this seems to provide a better proxy for party strength than just using the votes for SV.

To construct the proxy $HistMacho_s$ I used the period 1947-1967. The fact that the numbers for of female council representatives changed relatively little during this period indicates that these could reflect something structural. In principle, I could have used the average share men in the council during this period. This is however problematic because most municipalities had very few women in the council back then. Whether the average share was 3 or 4 percent might say very little about how big the under-representation was likely to be later on, at the time when the parties introduced their new gender rules.

Or perhaps more importantly: Two municipalities which both elected no women in, say, three of the elections might differ a lot in how reluctant the local political climate actually was towards female politicians. One of the two might have been much further from electing women in these elections than the other. The measure is 'censored' because it is not allowed to take a higher value than 100.[42] Furthermore, linearity could be inappropriate because the difference between zero and five percent women reflects a more dramatic increase than going from 20 to 25 percent.

Instead, a number of non-linear specifications can be considered. The proxy used here is a dummy variable taking the value one if during the whole period, the municipality always had less than 1/13 women in the council. (170 of 429 municipalities shared this feature.) The value 1/13 is chosen because 13 is a common (and since 1955 the lowest possible) number of council seats.

The results of the first-stage regression are shown on table 7. We see that the V/SV instrument has the 'wrong' sign. According to these results, the jump seen on figure 4 for the two less female-promoting groups of municipalities seem to be a general effect and not an effect going through parties. The instruments using gender requirement rules in the Centre Party and the Christian Democratic Party also has very low t-values

The instrument for the Labour Party performs much better, showing a highly significant positive effect in municipalities with few female politicians which increases in local strength of the party. Moreover, we see that when this effect is accounted for, the

[42]Levitt (1996) discusses censoring for a totally different measure, namely the ADA ideological scores for votes in the senate. There, the value 100 is the maximum score for how liberal a senator can vote.

Table 7: 1st stage regression for *Womanshare*

Party	(1) SV/V	(2) DNA	(3) Sp	(4) KrF
Instr	-0.155	0.311***	0.068	0.159
	(-1.25)	(4.62)	(0.69)	(0.89)
X1	0.019	-0.099***	-0.010	-0.024
	(1.10)	(-3.52)	(-0.63)	(-1.44)
X2	0.058	-0.130***	-0.062	0.064
	(0.73)	(-2.87)	(-0.98)	(0.48)
X3	0.029	-0.042	-0.015	0.005
	(0.56)	(-1.52)	(-0.38)	(0.07)
HistSupport	-0.023	0.015	0.010	-0.043
	(-0.69)	(0.82)	(0.40)	(-0.81)
HistMacho	-0.001	0.015	0.005	0.005
	(-0.15)	(1.30)	(0.74)	(0.69)
Observations	2267	2267	2267	2267
R^2	0.115	0.124	0.115	0.116

t statistics in parentheses
time fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

estimated general 1983 effect for such municipalities ($\hat{\gamma}_1$) is in fact negative.[43] Negative is also the estimated 1983 effect of being a municipality where the Labour Party holds a strong position ($\hat{\gamma}_2$), something which corresponds to the story from figure 3.

Is this estimated coefficient showing the effect of gender quotation, or is it just coincidental? The fact that all the other effects (1)-(5) described above are controlled for implies that there should be something real here: Municipalities in which the Labour party had a strong position and where women traditionally were underrepresented experienced larger increases in the shares of women in their local councils than did other municipalities. A similar effect is also found with other specification with different proxies, although not as highly significant as the one shown on table 7.

A way of further testing the validity is to see if there is a similar effect if we run the regression 'assuming' that the introduction of the quotation rules in the Labour Party was in 1980 or 1988 instead ('placebo effect'). Doing this rendered *negative* estimated

[43]The reason why it appears otherwise on figure 4 could be that the Labour Party accounted for a large share of the council seats in many of the municipalities.

effects in both cases.

That the V/SV-instrument is working so bad even though this is one for which the historical proxies should be relatively accurate, implies that it is little to do about this. For the Sp- and KrF-instruments, using newer historical data is an option. Using proxies based on the 1971 and 1975 elections for party support, I still get no significant effect of the Sp-instrument. For the one using gender quotation in the Christian Democratic Party I on the other hand get a t-value of 2.36, but I am a bit insecure about whether this really reflect the impact of quotation. Other types of specification (e.g. linear) using newer proxies also for $Histmacho_s$ do not render similar results.[44]

I therefore stick to the instrument shown in column (2) of table 7. After all, it is not surprising that this instrument performs the best: The Labour Party is by far the largest of the parties mentioned here. The new gender rules were also introduced in the middle of the period when the number of female politicians increased the most (1968-1991), so the effects of the controls for overall trends X_{3ps}, $HistMacho_s$ and $HistSupport_{ps}$ might behave more nicely in this case. The big drawback from having only this instrument is of course that there is only one period (1984-1987) which is affected.

Table 8 shows the second-stage results of a two stage least squares (2SLS) regression including demographical variables. Note that the control variables from the first stage are included because they are not *excluded* instruments. It could be that for instance traditional female-underrepresentation or party support has something to say for the evolvement of public childcare spending. The other control variables employed in sector 4 are not included, because they could have at least some correlation with the unobserved variable. Table 20 in the appendix show the results of a 2SLS regression with the standard controls, yielding much the same results.

The results are not directly comparable to those in section 4, since the model is now on differentiated form with election periods as time units. On table 19 in the appendix I show the estimates of a differentiated model without instruments. The estimated coefficients are then similar to those in section 4 but slightly lower in magnitude, and

[44] In addition, I find a similar but somewhat less significant effect if I 'assume' that it was the Centre Party which introduced quotation this year.

Table 8: 2SLS regression using gender representation rules in the Labour Party as instrument for changes in the share women in the council (1976-1999)

	(1) Childc.	(2) Educ.	(3) Eld. C.	(4) H/S	(5) Culture	(6) Transp.	(7) Adm.	(8) Other
ΔWomanshare	0.019	0.168*	-0.077	0.016	0.014	-0.047	0.030	-0.124
	(0.87)	(1.78)	(-0.75)	(0.16)	(0.31)	(-1.02)	(0.54)	(-1.05)
X1[DNA]	0.001	-0.006	0.001	0.004	0.005*	0.004	-0.001	-0.007
	(0.92)	(-1.20)	(0.22)	(0.69)	(1.94)	(1.41)	(-0.45)	(-1.05)
X2[DNA]	-0.002	-0.001	0.019	-0.026*	0.015**	-0.018**	-0.000	0.015
	(-0.65)	(-0.09)	(1.18)	(-1.66)	(2.09)	(-2.52)	(-0.05)	(0.80)
X3[DNA]	0.000	-0.011	0.012	0.008	0.001	-0.004	-0.008	0.002
	(0.06)	(-0.98)	(1.01)	(0.67)	(0.11)	(-0.70)	(-1.20)	(0.14)
HistSupport[DNA]	-0.001	0.016*	-0.014*	0.004	-0.005	0.008**	0.004	-0.012
	(-0.30)	(1.94)	(-1.68)	(0.47)	(-1.33)	(2.00)	(0.89)	(-1.15)
HistMacho	-0.001	-0.003	-0.003	-0.004	-0.001	0.001	0.004	0.007
	(-0.61)	(-0.57)	(-0.51)	(-0.85)	(-0.41)	(0.43)	(1.32)	(1.09)
Observations	2267	2267	2267	2267	2267	2267	2267	2267
R^2	0.252	0.096	0.266	0.246	0.090	0.017	0.008	0.070

t statistics in parentheses
time fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

only the childcare effect is significant.[45]

The IV-results are very uninformative, with very high standard errors for those coefficients in which we are interested. This is not surprising, since the instrument only gives us variation in $\Delta Womanshare_{st}$ for one period and the effect in this period is also not very strong. The sad fact is that it implies that the results of the IV regression cannot be used to say anything about the validity of the FE regression results of section 4. While a 95 percent confidence interval for the childcare effect in shown on table 3 says that the effect is likely to be somewhere between 0.0017 and 0.0126[46], the IV estimate in column 1 of table 8 gives the interval [-0.0233,0.0604]. On the basis of this, one can neither reject the previous result nor claim that they now

[45]It is possible to do the IV estimation for undifferentiated yearly data like in section 4, simply by letting the instrument be equal to $HistMacho_s * HistSupport_{DNA,s}$ for all years after 1983 and zero for the other years, and controlling for $HistSupport_{DNA,s}$ after 1983. However, I am not sure how to handle the standard errors in this case.

[46]The differentiated model shown in the appendix yields the interval [0.0003,0.0081].

have additional support. The same holds for the weakly significant effects on cultural and administrative spending found earlier.

There is one curiosity: Column 2 indicates that there could be a relatively large positive effect on spending on education, something for which there is no proof in section 4. Both OLS and 2SLS give confidence intervals containing zero, but the 2SLS-estimate is to a much larger extent located around a positive effect. This persists also when I only regress on election period 4 (1984-1987), although the t-statistic is somewhat lower in this case. (Table 21 in the appendix.)

To sum up, I have found an instrument which is correlated with female political representation. This seems not to be coincidental but a feature of what it utilizes, namely the gender representation rules introduced in the Labour party in 1983. However, as the only instrumental variable this is to weak to get anything out of the second-stage estimates.

Why do the other instruments not work better? Several explanations are possible. Firstly, some of the parties mentioned could be to small to have much of an impact. Additionally, the support for the Liberal Party decreased substantially after the party was split in 1972, something which could have led to fewer female representatives because this party traditionally had relatively many female politicians. Another explanation could be lack of party discipline.

Also, Hellevik and Bjørklund (1995) argues that as a reaction to an election where the number of women elected increased a lot (1971, 1979, 1987), voters could be giving men more personal votes in the following election.[47] Unfortunately, patterns of personal votes cannot be used in the instrumenting process because they are linked to voter preferences. (Additionally, the data on this is scarce).

Yet another explanation is that the problem of censoring in measures applies to the proxies for party support as well. This is actually not unlikely, since the four smaller parties received no votes at all in many municipality elections during the early post-war period. Constructing more appropriate measures for this would however require quite some time spent on trial and failure.

[47] In addition, a new law was introduced prior to the 1975 election restricting the possibilities for giving personal votes, but according to Hellevik the change was minor.

7 Summary and conclusion

In this thesis I have discussed the mechanisms through which more women in political positions might lead to other policy outcomes. I have emphasized the difference between an indirect effect going through voter preferences and a direct (or 'partisan') effect of the preferences of the female politicians themselves.

Models in political economics differ in their predictions on whether there will be such a direct effect. In the traditional median voter model, candidates' policy platforms converge to the platform preferred by the median voter, and their individual preferences hence play no role. Citizen candidate models, on the other hand, can be used to show that personal preferences can matter. I have presented a simple model belonging to this class where I assume that access to political positions differs between men and women. As I have demonstrated, such a model could explain why a decrease in this imbalance between men and women will affect which policies are eventually implemented.

A typical example of a factor changing this imbalance is activism among women in the political parties leading to promotion of more female candidates, something which Norway and many other countries have experienced during the last four decades. I therefore argue that the rapid increase in female representation in Norwegian politics since the 1960s can be thought of as the result of exactly such 'structural changes'. Data from this period should hence be suitable for analyzing whether there is in fact a direct effect of female politicians on policy outcomes. This however requires that one is able to separate this effect from other mechanisms working through voter preferences.

Running fixed effects-regression on Norwegian municipal spending data, I find a small but highly significant positive effect of women in the local councils on the budget share allocated to childcare spending. This effect persists and hardly changes in magnitude when I include in the regression a rich set of variables to control for voter preferences and other factor possibly related to the election of female politicians. It is also highly robust to other changes in the model specification. In addition, I find a significant positive effect on spending on church and cultural services in the same order of magnitude which is also relatively robust and some evidence that female politicians spend less on central administration.

These results are evidence in support of the claim that the personal preferences of

politicians can matter for politics, although the effects found here are very modest. Reasons for the latter could be that Norwegian local politics have traditionally been relatively consensus-based and that the level of spending is determined by the grants from the central government.

The fact that the results are so insensitive to the set of control variables included could imply that omitted variables is not a big problem, but we cannot be certain of this. Estimating the effect using instrumental variables would help us to check this if the instrument explains enough of the variation in the share of women in the local council.

I find that the gender quotation rules implemented in the Labour Party in 1983 had a highly significant estimated effect on female council representation in those municipalities where the Labour Party had a strong position and where women traditionally were highly under-represented. I do to a small extent find similar effects for the other parties which introduced such rules.

Utilizing the Labour Party instrument in an instrumental variable regression, I find that this instrument alone is to weak to give results saying anything about the validity of the results of the standard fixed effects regression. With additional information and more accurate specifications, it could be possible to get something more out of this approach.

Due to the weak instrument, the results from the regression without use of instruments stand as the final results. As mentioned, I find it unlikely that these do not at least to some extent reflect a causal effect. That there is a positive effect on childcare spending is also in accordance with other studies. Concerning the positive effect on cultural expenditures (and the negative on administrative spending), there is to my knowledge no literature saying whether this is reasonable or not.

As gender has been a popular subject in political economics through the recent year, we are likely to see more interesting empirics on this in the year to come. More survey studies on the preferences of male and female politicians in Norway or comparable countries would be welcome in this context. There is also scope for more research on how to isolate the different effects of different policy-determining factors in electoral democracies.

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8 appendix

8.1 Summary statistics

All variables used in this thesis is constructed using data from the municipality database at the Norwegian Social Science Data Service (NSD).[48] A detailed description of most variables will be available at ESOPs webpage (`http://www.esop.uio.no/research/datasets/`).

Table 9: Descriptive statistics, spending variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Exp. share childcare (CC)	0.031	0.027	0	0.175	12304
Exp. share education (ED)	0.264	0.072	0.061	0.672	12304
Exp. share eld. care (EC)	0.155	0.092	0	0.552	12304
Exp. share health/social	0.109	0.056	0.009	0.475	12304
Exp. share church/culture	0.05	0.028	0.009	0.397	12304
Exp. share transport	0.04	0.03	0	0.43	12304
Exp. share central adm.	0.069	0.031	0.016	0.457	12304
Exp. share 'other'	0.281	0.102	0.078	0.814	12304
Total spending (NOK 1000)	233313.781	768456.012	7549.02	22902210	12304
TotexpCC/TotexpEC	0.244	0.302	0	7.689	12347
TotexpCC/TotexpED	0.136	0.126	0	1.265	12365
TotexpED/TotexpEC	3.732	14.902	0.203	934	12353

[48] except from the dummies for gender representation rules, if one considers those as 'data' as well.

Table 10: Descriptive statistics, electoral variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Womanshare	0.23	0.109	0	0.649	12336
Voteshare left	0.409	0.156	0	0.844	12336
Leftwing maj.	0.323	0.468	0	1	12336
Rightwing maj.	0.552	0.497	0	1	12336
Fragmentation	0.302	0.099	0.145	1	12336
Newreps	0.634	0.101	0.111	1	8834
Female mayor	0.062	0.241	0	1	12336
HistMacho	1.958	0.803	1	3	11450
HistSupport V/SV	0.117	0.085	0	0.493	11644
HistSupport DNA	0.396	0.158	0	0.72	11644
HistSupport Sp	0.123	0.116	0	0.537	11644
HistSupport KrF	0.07	0.061	0	0.296	11644

Table 11: Descriptive statistics, demographical and socio-economic variables

Variable	Mean	Std. Dev.	Min.	Max.	N
Population	0.88	2.082	0.021	47.556	12389
Pop. squared	5.109	70.416	0	2261.602	12389
Age 0-6	0.097	0.018	0.052	0.194	12389
Age 7-15	0.136	0.022	0.067	0.211	12389
Age 66+	0.155	0.041	0.046	0.325	12389
Women in pop.	0.494	0.012	0.413	0.552	12389
Mean income (NOK 10000)	12.012	3.71	1.063	23.843	9259
Divorce risk	0.056	0.04	0	0.227	11950
Unmarried wom.	0.179	0.05	0.054	0.452	11950
Women working	0.564	0.067	0.348	0.799	6128
Higher ed.	0.097	0.036	0.032	0.323	6580

8.2 Additional control variables

This specification includes more control variables than in the standard model, but less than in the model shown on table 4.

Table 12: The effect of female representation on shares of total spending (1980-1999)

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007**	-0.015	-0.009	0.015	0.007	-0.007	-0.011*	0.013
	(1.98)	(-1.39)	(-0.69)	(1.16)	(1.25)	(-1.39)	(-1.81)	(0.72)
Newreps	-0.001	0.014*	-0.012	0.012	0.001	0.002	-0.003	-0.013
	(-0.48)	(1.84)	(-1.11)	(1.12)	(0.36)	(0.53)	(-0.62)	(-0.93)
Voteshare left	0.015**	-0.035**	0.036	-0.036	0.012	-0.014	0.004	0.018
	(2.45)	(-1.98)	(1.48)	(-1.63)	(1.39)	(-1.65)	(0.42)	(0.51)
Fragmentation	0.006	-0.021	-0.031	-0.013	0.015	0.007	-0.014	0.051
	(0.84)	(-1.13)	(-1.18)	(-0.48)	(1.52)	(0.56)	(-1.05)	(1.41)
Population	-0.002	0.156***	0.007	0.017	-0.008	0.004	0.020***	-0.194***
	(-0.42)	(6.80)	(0.45)	(1.11)	(-1.01)	(0.71)	(3.43)	(-5.31)
Pop. squared	0.000	-0.004***	0.001	-0.000	0.000	-0.000	-0.000***	0.004***
	(0.52)	(-4.72)	(1.31)	(-0.18)	(0.43)	(-1.37)	(-2.64)	(3.01)
Age 0-6	0.251***	0.205	-0.236	0.085	-0.035	-0.112	-0.044	-0.114
	(6.44)	(1.45)	(-1.34)	(0.48)	(-0.43)	(-1.65)	(-0.56)	(-0.43)
Age 7-15	0.047	0.973***	-0.244	-0.072	0.040	-0.207***	0.047	-0.584**
	(1.14)	(7.76)	(-1.52)	(-0.47)	(0.47)	(-3.64)	(0.70)	(-2.37)
Age 66+	0.022	-0.086	0.561***	-0.396***	-0.039	0.140**	0.059	-0.262
	(0.65)	(-0.76)	(3.55)	(-3.08)	(-0.64)	(2.23)	(1.08)	(-1.31)
Women in pop.	-0.122*	-0.277	-0.026	0.142	0.064	0.038	0.044	0.136
	(-1.80)	(-1.44)	(-0.09)	(0.57)	(0.67)	(0.30)	(0.35)	(0.41)
Mean income	0.000	-0.001	0.000	-0.001	0.000	0.001**	-0.000	0.001
	(0.16)	(-1.41)	(0.02)	(-0.66)	(1.01)	(2.30)	(-0.16)	(0.37)
Divorce risk	-0.080***	0.085	0.449***	0.105	-0.145***	0.006	-0.036	-0.384**
	(-2.76)	(0.88)	(3.54)	(0.84)	(-3.18)	(0.12)	(-0.67)	(-2.24)
Unmarried wom.	0.087***	0.089	-0.332***	0.087	0.008	-0.054	0.037	0.078
	(3.77)	(1.15)	(-2.97)	(0.91)	(0.21)	(-1.27)	(0.94)	(0.59)
Observations	8734	8734	8734	8734	8734	8734	8734	8734
R^2	0.721	0.405	0.665	0.234	0.035	0.153	0.046	0.463

t statistics in parentheses. Standard errors are clustered on municipalities.
Time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

8.3 Robustness checks for section 3

The tables shown here give results for slight alterations of the standard model for which results are shown on table 3. All employ data from the whole period 1972-1999. Tables 13 and 14 are specification with more control variables, while the last four employ the same controls as in 2 but with some observations excluded.

Table 13: Robustness check: Controlling for the gender of the mayor

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007***	-0.009	-0.018	0.018	0.010**	0.000	-0.010*	0.001
	(2.61)	(-0.86)	(-1.60)	(1.64)	(1.99)	(0.00)	(-1.68)	(0.06)
Female mayor	-0.001	-0.002	0.006	-0.006*	-0.001	-0.002	0.001	0.006
	(-0.50)	(-0.54)	(1.40)	(-1.70)	(-0.76)	(-1.11)	(0.54)	(1.04)
Voteshare left	0.013***	-0.086***	0.047***	-0.004	0.000	-0.020**	0.000	0.049**
	(3.49)	(-5.30)	(2.77)	(-0.24)	(0.06)	(-2.20)	(0.03)	(2.04)
Fragmentation	-0.000	0.042***	-0.018	-0.034***	0.003	0.002	-0.008	0.014
	(-0.03)	(3.66)	(-1.33)	(-2.87)	(0.54)	(0.20)	(-1.01)	(0.73)
Population	0.010***	0.133***	-0.012	0.003	-0.006	0.002	-0.002	-0.128***
	(2.65)	(7.87)	(-1.32)	(0.36)	(-1.30)	(0.35)	(-0.52)	(-7.18)
Pop. squared	-0.000**	-0.002***	0.000	-0.000	0.000	0.000	0.000**	0.001***
	(-2.46)	(-3.56)	(1.62)	(-0.05)	(1.37)	(0.03)	(2.12)	(3.58)
Age 0-6	0.053**	0.028	-0.055	0.051	-0.027	-0.037	0.035	-0.048
	(2.09)	(0.25)	(-0.52)	(0.47)	(-0.73)	(-0.69)	(0.61)	(-0.30)
Age 7-15	-0.078***	1.072***	-0.112	-0.109	0.008	-0.108*	0.025	-0.698***
	(-2.90)	(10.16)	(-1.08)	(-1.13)	(0.13)	(-1.84)	(0.50)	(-3.97)
Age 66+	0.019	-0.054	0.469***	-0.207**	-0.078*	0.029	0.019	-0.196
	(0.74)	(-0.54)	(4.28)	(-2.37)	(-1.87)	(0.52)	(0.45)	(-1.32)
Women in pop.	-0.026	-0.235	-0.307	0.019	-0.007	0.087	0.126	0.343
	(-0.47)	(-1.21)	(-1.35)	(0.11)	(-0.09)	(0.77)	(1.33)	(1.21)
Observations	12251	12251	12251	12251	12251	12251	12251	12251
R^2	0.803	0.406	0.689	0.231	0.106	0.187	0.137	0.528

t statistics in parentheses. Standard errors are clustered on municipalities.
time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: Robustness check: Controlling for support for each party

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.006**	-0.007	-0.016	0.017	0.010**	0.000	-0.010*	0.000
	(2.18)	(-0.71)	(-1.49)	(1.49)	(1.98)	(0.06)	(-1.70)	(0.02)
Voteshare left	0.021***	-0.150***	0.070*	0.033	-0.014	-0.032*	-0.002	0.075*
	(2.64)	(-4.21)	(1.74)	(0.89)	(-0.87)	(-1.70)	(-0.20)	(1.78)
Fragmentation	0.003	0.027*	-0.035**	-0.028*	0.006	0.002	0.001	0.025
	(0.73)	(1.93)	(-2.03)	(-1.75)	(0.97)	(0.24)	(0.08)	(1.15)
Voteshare SV	0.018*	0.055	-0.048	-0.022	-0.002	0.012	-0.005	-0.009
	(1.95)	(1.38)	(-1.17)	(-0.55)	(-0.12)	(0.59)	(-0.35)	(-0.17)
Voteshare DNA	-0.012	0.071*	-0.017	-0.044	0.017	0.013	0.002	-0.030
	(-1.42)	(1.90)	(-0.39)	(-1.24)	(1.03)	(0.69)	(0.19)	(-0.67)
Voteshare V	0.006	-0.025	-0.016	-0.005	-0.007	0.000	0.001	0.046
	(0.93)	(-0.98)	(-0.63)	(-0.17)	(-0.82)	(0.02)	(0.05)	(1.48)
Voteshare Sp	0.008**	-0.018	-0.004	-0.001	0.006	-0.006	0.006	0.008
	(2.21)	(-1.18)	(-0.25)	(-0.06)	(1.03)	(-0.65)	(0.79)	(0.40)
Voteshare KrF	-0.011	-0.020	-0.036	0.003	0.013	0.013	0.034**	0.004
	(-1.43)	(-0.63)	(-1.04)	(0.08)	(1.16)	(0.86)	(2.07)	(0.09)
Voteshare H	0.006	-0.013	-0.047**	0.034	0.010	-0.003	0.003	0.011
	(1.09)	(-0.68)	(-2.17)	(1.59)	(1.00)	(-0.35)	(0.31)	(0.40)
Population	0.012***	0.130***	-0.016*	0.004	-0.005	0.001	-0.001	-0.125***
	(2.85)	(7.77)	(-1.68)	(0.50)	(-1.10)	(0.27)	(-0.22)	(-7.02)
Pop. squared	-0.000***	-0.002***	0.001*	-0.000	0.000	0.000	0.000*	0.001***
	(-2.61)	(-3.61)	(1.77)	(-0.09)	(1.24)	(0.05)	(1.86)	(3.59)
Age 0-6	0.062**	0.024	-0.072	0.065	-0.029	-0.035	0.033	-0.047
	(2.46)	(0.21)	(-0.68)	(0.60)	(-0.78)	(-0.65)	(0.58)	(-0.30)
Age 7-15	-0.073***	1.080***	-0.111	-0.107	0.001	-0.106*	0.021	-0.706***
	(-2.73)	(10.13)	(-1.07)	(-1.12)	(0.02)	(-1.77)	(0.42)	(-4.02)
Age 66+	0.019	-0.051	0.457***	-0.190**	-0.078*	0.031	0.017	-0.204
	(0.75)	(-0.51)	(4.13)	(-2.11)	(-1.86)	(0.56)	(0.42)	(-1.38)
Women in pop.	-0.039	-0.226	-0.303	0.005	0.001	0.090	0.136	0.336
	(-0.71)	(-1.16)	(-1.34)	(0.03)	(0.01)	(0.78)	(1.44)	(1.20)
Observations	12251	12251	12251	12251	12251	12251	12251	12251
R^2	0.805	0.408	0.689	0.232	0.108	0.187	0.138	0.528

SV = Socialist Left Party, DNA = Labour Party, V = Liberal Party, Sp = Centre Party,
KrF = Christian Democratic Party, H = Conservative Party

t statistics in parentheses. Standard errors are clustered on municipalities.

Time and local government fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Robustness check: Excluding municipalities whose borders have changed during 1972-1999

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007**	-0.010	-0.015	0.016	0.008*	0.001	-0.009	0.002
	(2.54)	(-0.99)	(-1.35)	(1.41)	(1.69)	(0.23)	(-1.54)	(0.10)
Voteshare left	0.013***	-0.092***	0.049***	-0.005	-0.000	-0.019**	0.001	0.053**
	(3.32)	(-5.52)	(2.87)	(-0.36)	(-0.03)	(-2.02)	(0.15)	(2.13)
Fragmentation	-0.000	0.040***	-0.019	-0.036***	0.003	0.002	-0.007	0.016
	(-0.03)	(3.42)	(-1.37)	(-2.93)	(0.62)	(0.31)	(-0.88)	(0.84)
Population	0.011***	0.133***	-0.009	0.002	-0.006	0.003	-0.001	-0.131***
	(2.65)	(7.77)	(-1.01)	(0.31)	(-1.25)	(0.54)	(-0.39)	(-7.16)
Pop. squared	-0.000**	-0.002***	0.000	0.000	0.000	-0.000	0.000*	0.001***
	(-2.50)	(-3.52)	(1.46)	(0.00)	(1.34)	(-0.05)	(1.94)	(3.54)
Age 0-6	0.055**	0.003	-0.096	0.087	-0.018	-0.025	0.049	-0.054
	(2.09)	(0.02)	(-0.89)	(0.80)	(-0.46)	(-0.46)	(0.82)	(-0.33)
Age 7-15	-0.078***	1.087***	-0.058	-0.134	-0.002	-0.108*	0.026	-0.734***
	(-2.77)	(10.11)	(-0.54)	(-1.35)	(-0.03)	(-1.77)	(0.51)	(-4.00)
Age 66+	0.014	-0.044	0.466***	-0.201**	-0.074*	0.049	0.023	-0.233
	(0.53)	(-0.42)	(4.13)	(-2.25)	(-1.70)	(0.85)	(0.55)	(-1.52)
Women in pop.	-0.032	-0.279	-0.325	0.034	-0.014	0.073	0.144	0.399
	(-0.55)	(-1.41)	(-1.39)	(0.20)	(-0.17)	(0.62)	(1.46)	(1.35)
Observations	11656	11656	11656	11656	11656	11656	11656	11656
R^2	0.806	0.406	0.688	0.230	0.105	0.190	0.137	0.531

t statistics in parentheses. Standard errors are clustered on municipalities.

Time and local government fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Balanced panel regression (1972-1999)

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.005	0.001	-0.022*	0.015	0.005	0.001	-0.011*	0.006
	(1.53)	(0.10)	(-1.69)	(1.19)	(0.90)	(0.14)	(-1.71)	(0.33)
Voteshare left	0.014***	-0.100***	0.048**	-0.017	-0.002	-0.019*	0.000	0.076***
	(3.37)	(-6.20)	(2.55)	(-1.07)	(-0.32)	(-1.84)	(0.02)	(3.51)
Fragmentation	-0.001	0.031**	-0.012	-0.036***	0.000	0.003	-0.009	0.024
	(-0.36)	(2.58)	(-0.81)	(-2.68)	(0.10)	(0.36)	(-1.05)	(1.25)
Population	0.013**	0.164***	-0.025**	-0.010	-0.003	0.011*	-0.006	-0.144***
	(2.09)	(7.40)	(-2.04)	(-1.03)	(-0.42)	(1.91)	(-1.13)	(-5.74)
Pop. squared	-0.000	-0.004***	0.001***	0.001**	-0.000	-0.001	0.000	0.002**
	(-1.10)	(-5.21)	(3.70)	(2.41)	(-0.34)	(-1.55)	(1.09)	(2.52)
Age 0-6	0.072**	0.046	-0.176	0.103	-0.037	-0.068	0.039	0.021
	(2.37)	(0.37)	(-1.40)	(0.79)	(-0.88)	(-1.13)	(0.62)	(0.12)
Age 7-15	-0.082***	1.101***	-0.118	-0.185	-0.037	-0.129*	-0.023	-0.527***
	(-2.62)	(9.91)	(-0.98)	(-1.61)	(-0.81)	(-1.90)	(-0.46)	(-3.39)
Age 66+	0.015	-0.025	0.365***	-0.191*	-0.078**	0.078	-0.026	-0.137
	(0.50)	(-0.22)	(2.93)	(-1.79)	(-2.08)	(1.17)	(-0.60)	(-0.90)
Women in pop.	-0.042	-0.232	-0.394	-0.048	0.002	0.146	0.160	0.409
	(-0.64)	(-1.00)	(-1.59)	(-0.26)	(0.02)	(1.04)	(1.34)	(1.19)
Observations	9044	9044	9044	9044	9044	9044	9044	9044
R^2	0.816	0.427	0.693	0.212	0.111	0.196	0.146	0.536

t statistics in parentheses. Standard errors are clustered on municipalities.
time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 17: Robustness check: Excluding observations with more than a 90 percent drop in childcare spending

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.007***	-0.010	-0.017	0.018	0.009*	-0.001	-0.010*	0.003
	(2.70)	(-0.94)	(-1.53)	(1.65)	(1.86)	(-0.14)	(-1.77)	(0.18)
Voteshare left	0.013***	-0.084***	0.047***	-0.003	0.001	-0.020**	0.001	0.048**
	(3.40)	(-5.22)	(2.77)	(-0.24)	(0.10)	(-2.21)	(0.10)	(1.98)
Fragmentation	-0.001	0.042***	-0.019	-0.034***	0.003	0.002	-0.008	0.015
	(-0.20)	(3.57)	(-1.38)	(-2.81)	(0.66)	(0.22)	(-1.10)	(0.81)
Population	0.010**	0.133***	-0.013	0.003	-0.006	0.002	-0.001	-0.129***
	(2.47)	(7.72)	(-1.33)	(0.45)	(-1.31)	(0.43)	(-0.35)	(-7.06)
Pop. squared	-0.000*	-0.002***	0.001	-0.000	0.000	-0.000	0.000*	0.001***
	(-1.79)	(-3.36)	(1.56)	(-0.05)	(1.29)	(-0.17)	(1.77)	(3.39)
Age 0-6	0.060**	0.037	-0.073	0.051	-0.028	-0.037	0.035	-0.047
	(2.35)	(0.32)	(-0.67)	(0.48)	(-0.75)	(-0.68)	(0.61)	(-0.29)
Age 7-15	-0.077***	1.073***	-0.125	-0.110	0.012	-0.106*	0.038	-0.704***
	(-2.86)	(10.15)	(-1.21)	(-1.16)	(0.19)	(-1.79)	(0.80)	(-3.97)
Age 66+	0.019	-0.047	0.466***	-0.203**	-0.079*	0.031	0.023	-0.210
	(0.73)	(-0.47)	(4.21)	(-2.33)	(-1.85)	(0.55)	(0.55)	(-1.40)
Women in pop.	-0.030	-0.243	-0.302	0.022	-0.015	0.089	0.140	0.339
	(-0.53)	(-1.24)	(-1.32)	(0.13)	(-0.18)	(0.78)	(1.49)	(1.19)
Observations	12141	12141	12141	12141	12141	12141	12141	12141
R^2	0.805	0.407	0.690	0.230	0.106	0.187	0.139	0.528

t statistics in parentheses. Standard errors are clustered on municipalities.
time and local government fixed effects included but not reported
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Robustness check: Excluding municipalities with less than 2500 inhabitants

	Childc.	Educ.	Eld. C.	H/S	Culture	Transp.	Adm.	Other
Womanshare	0.011***	-0.014	-0.015	0.013	0.012*	0.003	-0.014**	0.004
	(3.48)	(-1.08)	(-1.25)	(1.16)	(1.88)	(0.55)	(-2.49)	(0.22)
Voteshare left	0.008	-0.097***	0.065***	-0.001	-0.003	-0.020**	-0.001	0.050*
	(1.55)	(-4.96)	(2.88)	(-0.08)	(-0.37)	(-2.47)	(-0.18)	(1.84)
Fragmentation	0.002	0.048***	-0.035**	-0.044***	0.004	0.004	0.001	0.019
	(0.57)	(3.28)	(-2.43)	(-2.78)	(0.70)	(0.49)	(0.13)	(0.88)
Population	0.012***	0.113***	-0.026***	0.005	-0.005	-0.005	0.001	-0.095***
	(3.04)	(7.11)	(-2.78)	(0.71)	(-0.98)	(-1.28)	(0.24)	(-5.90)
Pop. squared	-0.000***	-0.002***	0.001**	-0.000	0.000	0.000	0.000	0.001***
	(-2.65)	(-3.17)	(2.09)	(-0.49)	(1.29)	(1.00)	(1.28)	(2.74)
Age 0-6	0.015	0.258*	0.200	0.004	-0.029	-0.084	0.005	-0.370**
	(0.44)	(1.80)	(1.55)	(0.03)	(-0.58)	(-1.57)	(0.10)	(-2.09)
Age 7-15	-0.133***	0.903***	0.091	0.026	-0.030	-0.166***	0.017	-0.709***
	(-3.92)	(7.12)	(0.73)	(0.19)	(-0.57)	(-3.41)	(0.35)	(-4.01)
Age 66+	-0.009	0.125	0.489***	0.056	-0.099**	-0.141***	0.023	-0.445***
	(-0.25)	(1.06)	(4.08)	(0.58)	(-2.06)	(-3.07)	(0.49)	(-2.60)
Women in pop.	-0.042	-0.015	-0.523*	0.016	-0.020	-0.048	-0.039	0.670*
	(-0.59)	(-0.05)	(-1.86)	(0.07)	(-0.20)	(-0.46)	(-0.35)	(1.69)
Observations	9079	9079	9079	9079	9079	9079	9079	9079
R^2	0.825	0.380	0.754	0.288	0.133	0.258	0.157	0.601

t statistics in parentheses. Standard errors are clustered on municipalities.

Time and local government fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

8.4 IV-estimation

Table 19 shows the results of an OLS estimation with differentiated data, analogous to the one on table 3. The variables differentiated are the unweighted means for each election period. Finally, table 20 shows the 2SLS estimates when control variables are included. Results from a 2SLS regression only including election period 4 are shown on table 21. Note that the interaction terms X_{1DNAst}, X_{2DNAst} and X_{3DNAst} are not included in that specification because when the dummy $Quot_t$ is equal to one these are the same as $HistMacho_s$, $Histsupport_s$ and $Instr_{DNAst}$, respectively.

Table 19: Standard model, differentiated using election periods as time units

	(1) Childc.	(2) Educ.	(3) Eld. C.	(4) H/S	(5) Culture	(6) Transp.	(7) Adm.	(8) Other
ΔWomanshare	0.004**	0.004	-0.013	0.015	0.006	-0.004	-0.008	-0.005
	(2.09)	(0.54)	(-1.33)	(1.64)	(1.33)	(-0.88)	(-1.51)	(-0.46)
ΔVoteshare Left	0.005	-0.021*	0.039***	-0.006	-0.004	-0.010	0.000	-0.004
	(1.62)	(-1.67)	(2.60)	(-0.39)	(-0.66)	(-1.42)	(0.06)	(-0.23)
ΔFragmentation	0.001	0.027**	-0.028**	-0.026**	-0.007	0.012**	-0.008	0.029**
	(0.35)	(2.58)	(-2.20)	(-2.08)	(-1.31)	(2.09)	(-1.17)	(2.01)
ΔPopulation	0.013***	0.137***	-0.026	0.009	0.010	0.002	-0.004	-0.139***
	(2.81)	(7.54)	(-1.22)	(0.40)	(1.03)	(0.17)	(-0.33)	(-5.64)
ΔPop. squared	-0.000**	-0.002***	0.000	-0.000	-0.000	0.000	0.000	0.001**
	(-2.04)	(-4.52)	(1.09)	(-0.24)	(-0.16)	(0.80)	(0.55)	(2.41)
ΔAge 0-6	0.069**	0.049	-0.064	0.144	-0.164***	0.032	-0.052	-0.015
	(2.49)	(0.45)	(-0.49)	(1.12)	(-2.83)	(0.54)	(-0.71)	(-0.10)
ΔAge 7-15	-0.007	0.920***	-0.035	-0.131	-0.082	-0.142***	0.022	-0.545***
	(-0.27)	(9.14)	(-0.29)	(-1.11)	(-1.54)	(-2.60)	(0.33)	(-3.97)
ΔElderly	-0.004	-0.158	0.486***	-0.176	-0.156***	0.018	0.063	-0.073
	(-0.15)	(-1.48)	(3.81)	(-1.40)	(-2.76)	(0.31)	(0.89)	(-0.50)
ΔWomen in pop.	0.044	0.204	-0.169	-0.037	-0.028	-0.102	0.252**	-0.164
	(0.91)	(1.06)	(-0.73)	(-0.16)	(-0.28)	(-0.98)	(1.99)	(-0.62)
Observations	2429	2429	2429	2429	2429	2429	2429	2429
R^2	0.281	0.282	0.279	0.252	0.091	0.062	0.032	0.124

t statistics in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

time fixed effects included but not reported

Variables for which there are one or more missing observations during an election period are not included for that period.

Table 20: 2SLS regression (1976-1999) with additional control variables

	(1) Childc.	(2) Educ.	(3) Eld. C.	(4) H/S	(5) Culture	(6) Transp.	(7) Adm.	(8) Other
ΔWomanshare	0.017	0.159*	-0.070	0.013	0.015	-0.046	0.032	-0.119
	(0.78)	(1.73)	(-0.69)	(0.13)	(0.32)	(-0.98)	(0.57)	(-1.01)
ΔVoteshare Left	0.004	-0.029*	0.031	0.000	-0.005	-0.002	-0.003	0.005
	(0.90)	(-1.66)	(1.57)	(0.01)	(-0.62)	(-0.19)	(-0.27)	(0.21)
ΔFragmentation	0.001	0.028**	-0.027**	-0.022*	-0.005	0.014**	-0.007	0.019
	(0.42)	(2.36)	(-1.99)	(-1.69)	(-0.88)	(2.21)	(-0.98)	(1.19)
ΔPopulation	0.014***	0.142***	-0.037	0.006	0.014	0.001	-0.002	-0.138***
	(2.62)	(6.34)	(-1.49)	(0.24)	(1.26)	(0.10)	(-0.12)	(-4.77)
ΔPop. squared	-0.000**	-0.002***	0.001	-0.000	-0.000	0.000	0.000	0.001**
	(-2.10)	(-3.83)	(1.19)	(-0.29)	(-0.29)	(1.06)	(0.19)	(2.17)
ΔAge 0-6	0.062**	0.150	-0.067	0.073	-0.121*	-0.024	-0.018	-0.055
	(2.11)	(1.19)	(-0.48)	(0.52)	(-1.94)	(-0.37)	(-0.23)	(-0.34)
ΔAge 7-15	0.012	0.921***	-0.077	-0.130	-0.087	-0.130**	0.019	-0.529***
	(0.44)	(8.04)	(-0.61)	(-1.03)	(-1.53)	(-2.22)	(0.26)	(-3.57)
ΔElderly	0.006	-0.158	0.438***	-0.166	-0.113*	0.016	0.081	-0.105
	(0.22)	(-1.29)	(3.22)	(-1.23)	(-1.87)	(0.26)	(1.07)	(-0.66)
ΔWomen in pop.	-0.031	0.155	-0.285	-0.094	0.067	0.034	0.060	0.094
	(-0.55)	(0.65)	(-1.07)	(-0.36)	(0.57)	(0.28)	(0.40)	(0.31)
X1[DNA]	0.001	-0.007	0.001	0.004	0.005**	0.003	-0.001	-0.006
	(0.86)	(-1.49)	(0.25)	(0.81)	(1.98)	(1.32)	(-0.44)	(-0.97)
X2[DNA]	-0.002	0.006	0.019	-0.025	0.014**	-0.020***	0.001	0.008
	(-0.65)	(0.44)	(1.20)	(-1.60)	(2.01)	(-2.82)	(0.08)	(0.42)
X3[DNA]	0.000	-0.006	0.010	0.008	0.001	-0.004	-0.008	-0.001
	(0.13)	(-0.58)	(0.88)	(0.67)	(0.12)	(-0.74)	(-1.17)	(-0.10)
HistSupport[DNA]	-0.000	0.014*	-0.014	0.005	-0.005	0.008*	0.003	-0.011
	(-0.08)	(1.75)	(-1.59)	(0.60)	(-1.25)	(1.92)	(0.71)	(-1.09)
HistMacho	-0.000	-0.001	-0.003	-0.004	-0.001	0.001	0.004	0.005
	(-0.42)	(-0.31)	(-0.55)	(-0.85)	(-0.32)	(0.48)	(1.26)	(0.84)
Observations	2267	2267	2267	2267	2267	2267	2267	2267
R^2	0.262	0.170	0.278	0.249	0.094	0.025	0.007	0.093

t statistics in parentheses

time fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 21: 2SLS regression (1984-1987) without additional control variables

	(1) Childc.	(2) Educ.	(3) Eld. C.	(4) H/S	(5) Culture	(6) Transp.	(7) Adm.	(8) Other
ΔWomanshare	0.019	0.128	-0.032	0.046	0.016	-0.061	0.001	-0.117
	(1.03)	(1.51)	(-0.41)	(0.52)	(0.30)	(-1.15)	(0.01)	(-1.01)
HistSupport[DNA]	-0.003	0.010	0.009	-0.018	0.010	-0.012*	0.000	0.004
	(-1.06)	(0.84)	(0.90)	(-1.55)	(1.40)	(-1.68)	(0.05)	(0.26)
HistMacho	0.000	-0.012***	0.002	0.002	0.004	0.003	-0.000	0.000
	(0.51)	(-3.06)	(0.65)	(0.45)	(1.60)	(1.33)	(-0.05)	(0.07)
Observations	395	395	395	395	395	395	395	395
R^2	.	.	.	0.020	0.015	.	.	.

t statistics in parentheses

time fixed effects included but not reported

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$