

# The effects of voting franchise extension on education policy<sup>1</sup>

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## Abstract

This paper studies the effects of female voting on public education policy in terms of spending and teacher-student ratio. To estimate causal effects, we exploit the introduction of a national voting reform in 1910 in Norwegian local elections that removed socioeconomic restrictions on female voting rights and effectively included poor females in the voting franchise. The identification strategy utilizes heterogeneous changes in the share of females in the voting franchise from the pre-reform (1907) to the post-reform election (1910) across local governments as a source of exogenous variation. In contrast to studies on franchise extensions in the US, we find no systematic effects on education policy, despite a significant increase in female turnout as measured by the share of total votes cast by females.

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## 1. Introduction

The removal of economic and social constraints on voting rights and inclusion of females in the voting franchise represent key events in the development of democracy in Western countries. However, an important question is to what extent these changes in the composition of the electorate really changed actual public policies. This paper studies the effect of introduction of universal female suffrage in local elections in the early 1900's on public school expenditure and resource use in local governments in Norway. Schooling is both historically and today one of the main services provided by the public sector. A common view is that females have particular interest and competence in family and child related tasks as schooling and social care. Some political leaders actually used this as an argument when introducing restricted female suffrage in local elections in 1901 in Norway<sup>2</sup>. The level of school resources is an important issue in the public debate on educational policy both historically and today, although the impact of resource based policies are controversial (Hanushek, 2006).

While private income and number of students are traditionally regarded as key determinants of public school spending, the institutional environment facing decisionmakers in school districts can also be important. First, fiscal decentralization is generally believed to be beneficial for society as suggested by the decentralization theorem formulated by Oates (1972). Second, the literature emphasize the role of voters and the political environment in which policy-makers take decisions. Lindert (2004), Engermann and Sokoloff (2005) and Goldin (2016), all argue that many small and fiscally independent school districts combined with a broad voting franchise were key determinants of the expansion of public schooling for the masses in the US<sup>3</sup>. This in turn made US the leading country in human capital accumulation and fostered subsequent economic growth. It is an interesting and still open question to what extent the broadening of the voting franchise found to be important for the expansion of public schooling in the US represents a general pattern, or if it is specific to the US. In this paper, we ask whether

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<sup>2</sup> This is illustrated by the following statement given by the leader of the conservative party ("Høyre"), Professor Hagerup, in the debate in the parliament ("Stortinget") in May 1901 which resulted in constrained suffrage for females in local elections the following fall: "There are a number of tasks to be solved in the local governments where females have special advantages. First of all this is the case for the school system, then poverty relief and health issues and to some extent church affairs". ("Stortingsforhandling 1900-1901", 8 p. 389-390,

<sup>3</sup> The following statement in Engermann and Sokoloff (2005) p. 908-909 is illustrative: "*The movement for the establishment of public schools supported by local property taxes closely and successfully followed the expansion of the suffrage, which strongly suggests that the latter did indeed make a difference for policy*". Empirical evidence in Go and Lindert (2010) from the pre-1850 period lend support to this view and suggest that northern US states supplied more school resources to the county level relative to southern states because of a wider voting franchise.

extension of the voting franchise to include all adult females increased school expenditure and resource use in a country (Norway) with a decentralized fiscal system and homogenous population in terms of ethnicity, language and religion.

The analysis in this paper is also relevant for the general understanding of the link between democracy, public policy and size of government. Dating back to Tocqueville (1835), a common view has been that democratization in terms of expansion of the voting franchise will increase government size and redistribution. The more recent theoretical literature suggests that the effect is less clear-cut. On the one hand, extended voting franchise shifts the position of the decisive voter downwards in the income distribution and increases the demand for redistribution, as put forward by Meltzer and Richard (1981). On the other hand, when the government provide public services, extended voting franchise has price and income effects that work in opposite directions as argued in Kenny (1978) and Husted and Kenny (1998). Taking this into consideration, the spending effect of a franchise extension is an empirical question.

The empirical evidence is mixed, and results vary substantially across countries and studies. Papers exploiting intertemporal and cross-state changes in voting rules in the US in late 19<sup>th</sup> and 20<sup>th</sup> century consistently find that removing restrictions on the right to vote substantially increased public spending. Lott and Kenny (1999) find that introduction of female suffrage immediately increased total state government spending and revenue and changed state's representatives voting patterns in the House and Senate in a more liberal direction. Carruther and Wannamaker (2015) find that including females in the electorate had large positive effects on local education spending in counties in the southern US states in the 1920's while Miller (2008) finds large positive effects on local health spending. Husted and Kenny (1998) find that franchise extensions originating from removal of poll taxes and literacy test required for voting, increased US states total spending, driven by increased spending on welfare items.

On the other hand, results from European studies varies a lot across studies and typically find much smaller effects from extensions of the voting franchise, if any effects at all. Results in Aidt et al. (2006) using data from 12 European countries indicates that lifting socioeconomic restrictions on voting increased central government spending slightly, while extending voting rights to females had small and statistically insignificant effects. Using a smaller data set for 6 European countries, Aidt and Dallal (2008) find a small positive immediate effect and larger

long-run effects of female suffrage on social expenditure as share of GDP. Bertocchi (2011) finds positive effects of female enfranchisement on central government spending only in non-catholic European countries<sup>4</sup>. Cappelli (2016) studies educational spending in Italian local governments in the late 19<sup>th</sup> century, and finds only a weak association between spending and the size of the electoral franchise. On the other hand, Vernby (2013) finds that giving immigrants the right to vote in local elections in Sweden in 1975 increased local spending on education and social and family services. The different results across studies and in particular across the Atlantic are puzzling and partly motivates our empirical study. We investigate the effect of removing socioeconomic restrictions on female voting on public spending on education and teacher-student ratios in Norwegian local governments. The paper makes three main contributions to the literature.

First, our paper study the effect of franchise extension on *local* government spending within a European country and so represents an improvement relative to many influential European studies using cross-country data and central government spending. Local governments provide a substantial part of public services, and clearly more so hundred years ago than today. Thus, cross-country studies using only central government spending might possibly misrepresent the overall impact of franchise extension on policy outcomes. Local governments within a single homogenous country in terms of language, religion, ethnicity and culture are more comparable units than different countries in Europe. Our study of Norwegian local government school spending in the early 20<sup>th</sup> century investigates the spending response of decentralized and largely fiscally independent providers of the main public services before the introduction of the welfare state.

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<sup>4</sup> Stutzer and Kienast (2005) exploit intertemporal and cross-section variation in the female voting rights across Swiss cantons and find negative association between government spending and female suffrage. Two other papers use similar Swiss data. Funk and Gathman (2006) find a *negative* immediate effect on total spending although positive effects on welfare and health spending appear after 20 years. Krogstrup and Wälti (2011) find that female suffrage led to reduced budget deficits. Hofer (2016) uses outcomes in Swiss referendum ballots concerning federal competency to levy taxes as proxy for political support for government spending. Comparing outcomes in two similar referendums held shortly before and after the extension of suffrage in federal elections in 1971, she finds that support for public spending is *higher* among males than females, contrary to expectations. Aidt et al (2010) find that voting franchise extension in local governments (Boroughs) in the second part of 19<sup>th</sup> century England and Wales increased spending only when franchise exceeded a treshold. A related recent literature studies the effect of shifts in the direct costs of voting or abstention on voter turnout and government spending. Hodler et al. (2015) and Hoffman and Leon (2017) use credible identification strategies and data from Switzerland and Austria, respectively, and find that reduced voting costs increases voter turnout but does not increase government spending.

Second, we exploit a national voting reform combined with data on pre-reform differences in the voting franchise across local governments as a source of exogenous variation in a difference-in-differences approach to identify causal effects. Since all local governments had to follow the national voting rules, this approach circumvents the potential problem of endogenous decisions of incumbent politicians, which is a concern in earlier studies using combined temporal and cross-section variation in national or state level voting rules to estimate spending effects. Such evidence is difficult to interpret causally if incumbent politicians use voting rules as instruments to gain support for their policies or to reduce the probability of losing power as argued by Acemoglu and Robinson (2001), Lizzeri and Persico (2004), and Ticchi and Vindigni (2008)<sup>6</sup>.

Third, we investigate whether policy effects depends on characteristics of the local councils and the political process. Recent evidence in political economy show that ideological differences between parties and representatives are important and that the relationship between voter preferences and policy are more complicated than predicted by the median voter model<sup>7</sup>. Data limitations and the fact that the party system was in its infancy in the period analyzed, preclude testing of precise hypothesis on the role of ideology and alternative political economy models. Instead, we investigate to what extent the franchise extension increased the actual female share of cast votes, and how the public policy effects depends on initial female representation in local councils and variation in the election system across local governments.

Universal suffrage for adult Norwegian males were introduced in the local elections in 1901 together with limited suffrage for females. Females could vote if they satisfied certain requirements in terms of property ownership and taxable income. In spring 1910, the parliament (“Stortinget”) decided to extend universal suffrage to also include adult females in the Norwegian local elections held in the following fall 1910. This election reform combined with the substantial pre-reform variation in female voting franchise across local governments forms the basis of our identification strategy. The change in franchise implied by the inclusion of poor

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<sup>6</sup> Braun and Kvasnicka (2013) provide evidence that the timing of suffrage extensions to females in the US states are inversely related to the share of females in the population, while Aidt and Jensen (2014) find that perceived revolutionary threat and war triggered suffrage extension.

<sup>7</sup> The basic question is whether voters affect or elect policy. Lee et al.(2004) provide quasi-experimental evidence from representatives voting in the US House consistent with the view that exogenous changes in the relative popularity of the candidates has no impact on the candidates’ positions. Similarly, Petterson-Lidbom (2008) finds a strong causal positive effect of leftwing Swedish local governments on expenditures and taxes and strongly rejects the simple median voter model. Using Norwegian data, and a quasiexperimental strategy, Fiva et al. (2016) find that small exogeneous shifts in representation can affect policy in proportional election systems.

female voters through the 1910 national reform gives the variation we use for identification of causal effects.

The paper is organized as follows: Section 2 considers the theoretical background. Section 3 describes the institutional setting and voting reforms in Norway in the relevant period, while Section 4 presents the data and the empirical strategy. Section 5 presents empirical results, and Section 6 offers some concluding remarks.

## **2. Theoretical background**

The median voter model as formulated in Downs (1957) is a natural point of departure for understanding the role of the voting franchise for policy decisions in the public sector. Extending the franchise usually implies a median voter located further down the income distribution. As poorer people have stronger preferences for redistribution, the Meltzer and Richard (1981) pure redistributive government model predicts higher government spending. However, in a model where the government produces public services like education, police and infrastructure, extending the franchise have income and tax price effects with opposite signs. If public services are normal goods, the income effect partially leads to lower spending on public services. If service production is financed by proportional income tax, poorer people face a lower tax price of public services than rich people which works in the opposite direction and partially leads to increased spending. This is formally shown in Kenny (1978) and discussed in Husted and Kenny (1998). Thus, for public services, the net spending effect of extending the franchise is positive only if the tax price effect exceeds the income effect. Thus, according to these models, the net effect on spending on public services such as education is theoretically ambiguous and is ultimately an empirical question.

Recent papers have extended the early theoretical models by explicitly modeling the behavior of politicians based on ideas with long traditions in political science, see Przeworski (2009) for an overview. Voting rules and the size and composition of the voting franchise is seen as policy tools of the incumbent political leadership rather than being exogenous. Acemoglu and Robinson (2001) argue that increasing franchise is a way to credibly commit to redistribution in order to prevent revolution in situations with a transient revolutionary threat. Aidt and Jensen (2014) find support for this prediction using data from European countries 1820-1938.

Lizzeri and Persico (2004) assume that the ruling party represents conflicting interest groups within the existing political elite, i.e., landowners and industrialists, and show that it may be optimal to extend the franchise in order to turn policies away from redistribution within the elite towards policies targeted towards provision of public goods. In particular, they argue that an exogenous increase in the demand for public goods such as sanitation and infrastructure, may lead the incumbent party to rationally increase the voting franchise. Spending does not increase because of increased franchise, but because of increased demand for public goods in the population. A similar argument is provided by Ticchi and Vindigni (2008) who formalize an argument originating from Weber (1927/1961). Extension of the voting franchise is a mechanism whereby the incumbents can increase the people's willingness to participate as soldiers and exert effort in mass armies, which implies that voting franchise increases in war periods.

Female participation in elections may also affect policy. Economic constraints may differ between males and females. For instance, if females are systematically poorer than males, female suffrage will lead to changes in government expenditures similar to that generated by universal suffrage for males. In addition, preferences for public goods and redistribution might differ systematically between males and females.

Few studies combine empirical studies of the extension of the voting franchise to females with formal theoretical models. Bertocchi (2011) is an exception and considers a political-economic model where female suffrage emerges as a rational choice for incumbent males under certain conditions. She considers a situation with females initially have stronger preferences for public goods than males and have lower wages, while individual's preferred tax rate is decreasing in income. As the female relative wage increases, the exogenous societal cost of disenfranchisement at some point exceed the cost of the higher taxes resulting from female suffrage. Thus, the model predicts that the lower the male-female wage gap and the higher the societal cost of disenfranchisement, the sooner the incumbents will introduce female suffrage. She finds empirical support for this prediction using data from 22 countries for the period 1870-1930.

### 3. Institutions and voting reforms

#### *Governance system*<sup>8</sup>

Norway was one of the first countries with an elected parliament (“*Stortinget*”). The constitution from 1814 is the oldest single-document constitution in Europe today. In 1837 the parliament approved a Local Government Act (“*Formannskapsloven*”) dividing the country into a large number of multipurpose local governments governed by elected assemblies with discretion to decide local taxes and expenditures on different items as primary education, poverty relief, roads and other infrastructure.

Initially, the local funding were divided between different purposes, i.e., one fund for education expenditures (“*skolekasse*”) and another fund for poverty relief expenditures (“*fattigkasse*”). These funds were administered by separate boards (“*skolekommisjon*” and “*fattigkommisjon*”), and financed by separate taxes with property as the tax base. The Tax Act of 1882 represented a major change in the fiscal institutions. It instructed all local governments to have an overall local government budget and to have one single account system covering all activities. The act made income taxation compulsory for the local governments and introduced property tax rate caps. As a result, the multipurpose local governments became the main economic and political unit at the local level, which they still are today.

According to Borge (2010), by 1900, the income tax was the most important local tax (about 60% of tax revenues) and the tax rate varied substantially across local governments. At the same time, central government grants constituted only 10% of local government income. The Tax act of 1911 represented a further change in the tax system. It introduced the duty to file tax returns, and it introduced a restriction that the income tax rate should not exceed 10%. Taken literally, the latter restriction suggests that the local governments lost some of the discretion in fiscal policy, just at the same time as the extension of the voting franchise in local elections. There is a concern that this change in fiscal rules could make it less likely to observe increased educational spending following the extension of the voting franchise. Several arguments suggest that this is not likely to be the case. First, spending on compulsory education in Norway was (and still is) decided by multipurpose local governments and binding tax rate limits would only restrict total local spending. Local governments would still have full discretion to allocate more of a given budget towards education at the sacrifice of other spending items. This is very

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<sup>8</sup> The description in this section is to a large extent based on Seip (1949), NOU (1997) and Borge (2010).



different from the situation in the US, where education services is the sole activity of the school districts funded by property taxes and in that system a tax rate limit would obviously put a limit on educational expenditure. Second, it is not clear that the tax rate limit was actually binding. According to the Tax Act of 1911, the local governments could decide a tax rate that exceeded the tax rate limit under certain conditions<sup>9</sup>. The limit imposed was potentially most important in the cities as the tax rates in rural areas was initially far below the limit. Data for tax rates from the city (urban) governments indicates that the 10 percent limit was frequently exceeded after 1911. In the first (1912) and second year (1913) after the introduction of the tax limit, respectively, 91 and 67 per cent of the income tax rates in city governments exceeded the limit<sup>11</sup>. Fourth, the local governments were free to choose between different schemes for tax-free allowances (“reduksjonstabeller”), and could potentially use this discretion to increase tax revenues if the tax rate limit was actually binding. Finally, the duty to file tax returns introduced by the Tax Act broadened the tax base significantly. According to Gerdrup (1998) this implied that local governments could experience a considerable increase in tax revenue without a corresponding increase in the tax rate. According to NOU (1997, p.19), the Tax Act did not restrict tax revenues, and it might be argued that the increase in the tax base following the Tax Act actually increased the fiscal leeway of the local governments.

### *Voting reforms*

While the elected local councils made decisions on local budgetary issues, the national parliament decided voting rules, and local government borders were formally determined by the central government. Up to 1884 the right to vote was restricted to males over 25 years of age owning property or having a civil servant position (“*embetsmann*”). In 1884 males paying taxes from income above a given threshold were included in the voting franchise. Within the 30-years period from 1884 to 1915, the parliament made further substantial changes in the voting rules. Among the two largest political parties at the time, representatives from the liberal party (“*Venstre*”) were much more supportive of increasing the voting franchise than representatives from the conservative party (“*Høyre*”). In 1891, the liberal party included voting rights for all males in the party program. This was also the most important policy request

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<sup>9</sup> The local governments could apply to the Ministry of Finance for exemption from the tax limit if more than  $\frac{3}{4}$  of the members in the local government council voted for the application. Moreover, according to the 1911 Tax Act, local governments was allowed to decide a tax rate such that tax revenues from the previous year was maintained as long as that rate did not exceed 12%.

<sup>11</sup> Data from «Norges Officielle statistik v.80», «Norges kommunale finanser 1912» and «Norges Officielle Statistic v.100», «Norges kommunale finanser 1913-14».

for the initially small social democratic party (“*Det Norske Arbeiderparti*”) established in 1887. Including females in the voting franchise was still a controversial question and several years with heated debates went before it was implemented.

Table 1 gives an overview of the voting rights in the local and parliamentary elections, respectively, for the period 1884 to 1920. Prior to the parliament election in 1900 and the local election in 1901, voting rights were restricted to males owning property or having taxable income above a given threshold. The income threshold varied between urban and rural local governments. In 1898, the parliament changed the voting rules in both the national and local elections. All males above 25 years of age got the right to vote.<sup>12</sup>

Table 1. Voting rights in local and parliamentary elections, Norway 1884-1920.

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<u>Local elections</u>	
<b>1886 – 1895</b>	Males age 25+, owning property or paying taxes on income minimum NOK 800 (cities) or NOK 500 (rural areas)
<b>1898</b>	Males age 25+, owning property or paying taxes on income minimum NOK 400 (cities) or NOK 300 (rural areas)
<b>1901, 1904 and 1907</b>	All males age 25+. Females 25+ and either (i) owning property, (ii) paying taxes on income minimum NOK 400 (cities) or NOK 300 (rural areas), or (iii) married to a man with such income or property
<b>1910 and afterwards</b>	All males and females age 25+
<u>National elections</u>	
<b>1884 – 1897</b>	Males age 25+, owning property or paying taxes on income minimum NOK 800 (cities) or NOK 500 (rural areas)
<b>1900, 1903 and 1906</b>	All males age 25+
<b>1909 and 1912</b>	All males age 25+. For females, voting criteria equal to the local elections in 1901 – 1907.
<b>1915 and afterwards</b>	All males and females age 25+

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The parliament decided to give some females the right to vote in the local election in 1901. The right was restricted to females who were above 25 years of age and either owned property, paid taxes of an income above the previous thresholds relevant for men, or were married to a man

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<sup>12</sup> Until 1919, people receiving poverty relief (“*fattigunderstøttelse*”) and people convicted for certain crimes were suspended from voting.

fulfilling the same criteria. The systematic collection of voting data from all local governments from 1898 and 1901 was initiated by the parliament to get some experience before eventually extending the voting franchise to parliamentary elections (Lindstøl, 1903).

The same voting rules applied in the local elections in 1904 and 1907. In May 1910, the national parliament debated a proposal to extend the voting franchise to all adult females. In the debate, prominent politicians from the conservative party as well as the liberal party warned against the effects of giving voting rights to all females. For instance, the minister of trade Sofus Arctander from the liberal party argued against universal suffrage for females because “*among those many thousand females, the majority.....will vote for the social democrats and give them the majority which will be dearly bought for the other citizens in the town*”<sup>13</sup>. Representative Alfred P. Wright from the conservative party argued that “*is it safe for the society that also those not paying taxes, those not paying the burdens of the society’s expenditures should decide the society’s expenditures which is solely paid by others? I say no!*”<sup>14</sup>. Despite these arguments, and opposition from some prominent politicians, in May 1910 the parliament passed a law giving all women above 25 years of age the right to vote in local elections to be held the following fall. As a direct protest against this decision, Sofus Arctander resigned as minister of trade the same year.

Females were included in the voting franchise in parliamentary elections some years after the introduction of universal suffrage in local elections as shown in Table 1. Females could vote conditional on wealth and income requirements in parliamentary elections 1909 and 1912. In 1913 the parliament finally decided unanimously and without debate to include all females above 25 years old in the voting franchise for parliamentary elections and the 1915 election was the first parliament election with universal suffrage for both males and females.

The central government gave detailed instructions on how the local elections should be conducted, and is described in Ihlen (1910). In rural (urban) areas, the local elections was to be held in October (December) every third year. Secret ballots were introduced in the local elections in 1898. The registration procedure for voters changed before the election in 1901.

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<sup>13</sup> Minutes from the debate in “Odelstinget”, May 13, 1910, in *Stortingsforhandlinger 1910*, vol 8. *Forhandlinger i Odelstinget 1910*, p.180.

<sup>14</sup>Minutes from the debate in “ *Lagtinget*” , May 27, 1910, refered in “*Stortingsforhandlinger 1910*, vol 8, *Forhandlinger i Lagtinget*, p. 29. . “*Lagtinget*” and “*Odelstinget*” was the smaller (larger) of the two houses in the Norwegian parliament (“*Stortinget*”). Authors’ translation.

While voting in pre-1901 elections required voters to actively register themselves as voters as is currently the case in the US, from 1901 on the Norwegian local governments were required to make publicly available lists containing all persons eligible for voting. Local elections have always been direct elections of representatives in the local council. The role of political parties and other organized groups played a role in some, mostly urban, local governments where a *proportional election* system applied. In most of the rural local governments, the representatives in the local council was elected directly through a *majority election* system described more detailed in section 5.3. In that section we study whether the effect of franchise extension depended on election system.

Parliamentary elections was organized as direct elections of representatives from 1906 on, with majority election in single-member election districts. In 1921, the proportional election system used today replaced the majority-single member election system.

### *Education system*

As was also the case in many other countries, the Norwegian central government introduced minimum standards for educational services across school districts. For example, according to the School Act of 1889 the local governments were obliged to provide compulsory education (“folkeskole”) to all children 7-14 years of age, free of charge and financed by the local government through local taxation. The local governments hired and payed teachers and provided school buildings and school material. The law distinguished between cities and rural areas and the minimum number of school days and the number of compulsory subjects was higher in cities than in rural areas<sup>15</sup>. Moreover, there was a minimum annual teacher wage that varied between cities and rural areas. The teachers were organized in a national union, which covered almost all teachers. According to Falch (2001) the minimum wage level in both cities and rural areas increased in 1910 and 1920 due to pressure from the teacher union, although the union had no formal bargaining rights before WW2. While some national regulations and minimum standards existed, the level of education spending was clearly a local decision, given the minimum requirements,

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<sup>15</sup> As an example, foreign language (English) was taught only in city schools. Due to dispersed settlement, schools in rural local governments were also much smaller than schools in cities, and a single teacher was typically responsible for teaching at two or more schools in densely populated areas.

## 4. Data and empirical strategy.

### 4.1. Data

#### *Voting franchise*

Data for the local elections held in 1907 and 1910 were collected by Statistics Norway, published in NOS (1908) and NOS (1911) and digitalized in the Regional data base (“*Kommunedatabasen*”) provided by the Norwegian Centre for Research Data (NSD). During the period of study the number of local governments varied due to mergers or splitting of existing units. To construct a sample with comparable local governments over time, we exclude from the analyses all governments that merged with others or were splitted during the empirical period, 1907-1913. In addition, units with missing values of the dependent variables were excluded. This leaves us with a balanced panel data set of 524 local governments.<sup>16</sup> By way of comparison, the number of local governments in 1908 was 644.

Since voluntary registration for voting was removed in Norway in 1898, the electorate is simply defined as the number of eligible persons living in the local government the two last years before the local election. Voting statistics provided by the reports from Statistics Norway in NOS (1908) and NOS (1911) contain gender specific numbers of eligible voters as well as cast votes in each local government for the local elections 1907 and 1910, respectively. The share of females in the voting franchise as well as the share of female votes of total cast votes can fairly accurately be computed based on this information.

Figure 1 presents kernel densities for the share of females in the franchise for the elections in 1907 and 1910. Females made up on average 35% and 51% of the franchise in the elections in 1907 and 1910, respectively. Before the reform in 1910, there were two sources of variation in the female franchise size; the gender distribution in the population and to what extent females fulfilled the socio-economic requirements for voting. The long left tail of the density curve for the 1907 election illustrates that in some local governments, very few females were eligible for voting. As expected, in the 1910-election the distribution of female franchise moves to the right, and the variation across local governments is considerably lower.

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<sup>16</sup> The information on the changes in the local government structure is based on the detailed historical list of local governments provided by Juvkam (1999).

Figure 1. Density of female voting franchise in the elections in 1907 and 1910.

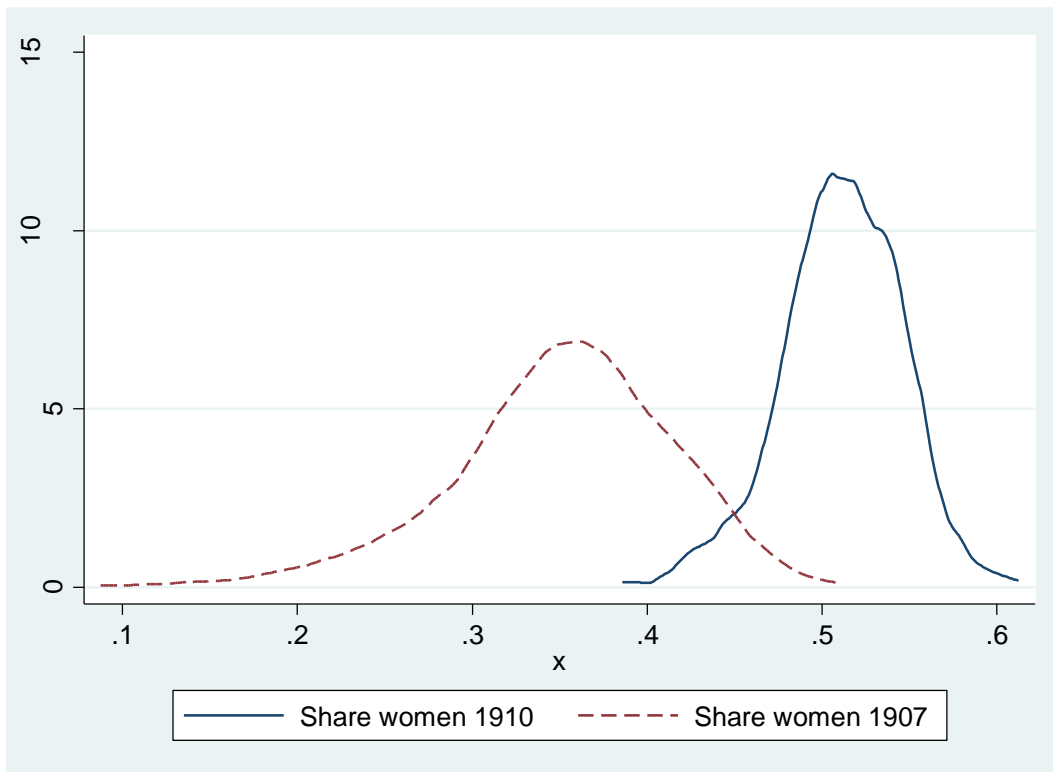
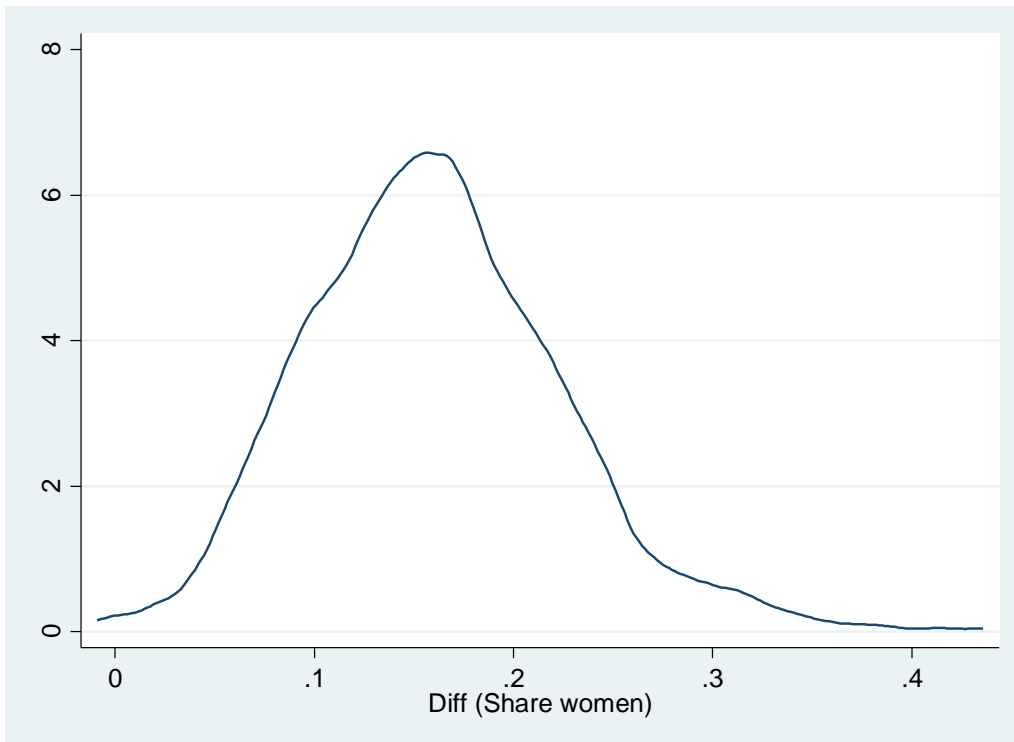


Figure 1 implies that there are substantial heterogeneity in the bite of the 1910 reform. The variation in the change in female share of franchise across local governments is presented in Figure 2 and shows substantial variation. The maximum increase is around 40 percentage points. As displayed in Table 2 below, the average growth is 16 percentage points with a standard deviation of 6 percentage points. The low share of females in the franchise in some local governments in the 1907-election shows up as a long right tail of the density curve in Figure 2.

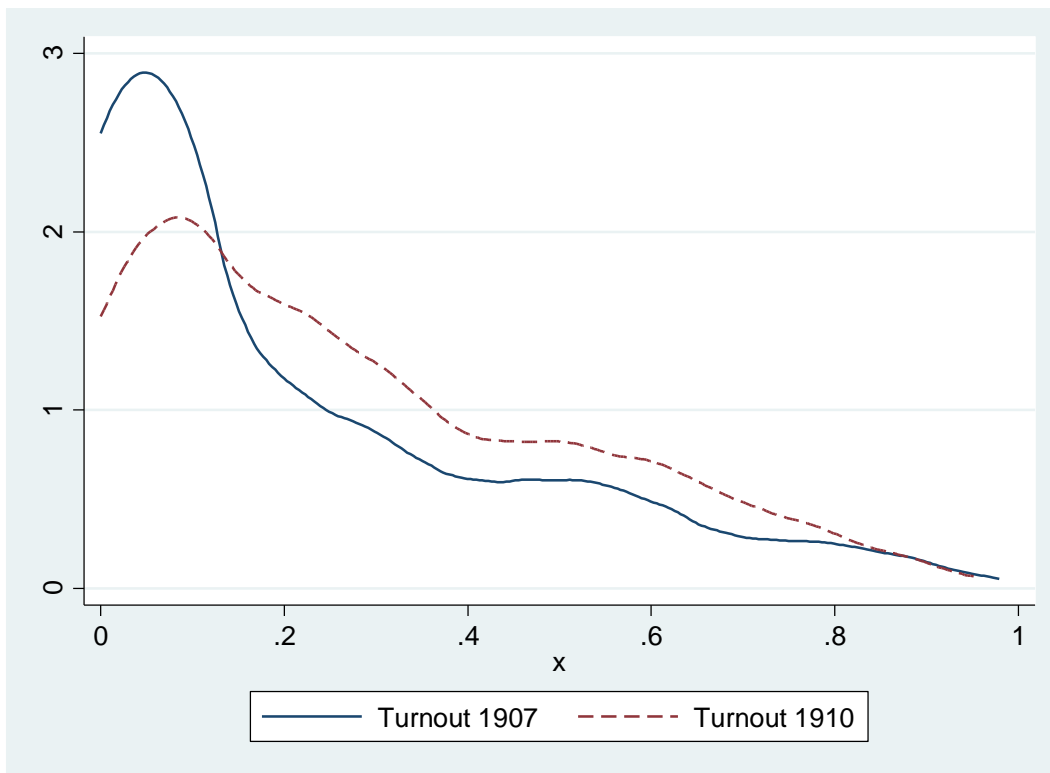
Figure 2. Density in the change in the share of female franchise from 1907 to 1910



Did the newly enfranchised females actually vote? The extension of the voting franchise is arguably more likely to affect fiscal outcomes if the females actually voted. There is no information available about the turnout among the newly enfranchised females, but Figure 3 presents the kernel densities of the total turnout of females in the elections. In both elections, the majority of local governments have low female turnout, measured as the share of eligible females actually voting, but the variation is large. Fewer local governments had female voter turnout below 15% in 1910 than in 1907,<sup>17</sup> while more governments had turnout above 15%. The average female turnout was 21% and 28% in the elections in 1907 and 1910, respectively. Although this is low compared to the corresponding male turnouts of 51% and 57%, the combination of growth in both enfranchised females and turnout led to nearly doubling of the females' share of cast votes. We return to this question and present a more detailed empirical study of the relationship between the change in female share of cast votes and the change in female share in voting franchise in section 5.

<sup>17</sup> The number of local governments with zero female turnout decreased from 11% to 2.4%.

Figure 3. Density of female turnout in the elections in 1907 and 1910



### *Outcome variables*

Data for variables describing the private income, fiscal situation and spending on different items in the local governments are collected from various editions of official publications (NOS) from Statistics Norway described in the Appendix. These data are digitalized and matched with election data by the authors. We use two measures of resources allocated to compulsory education. The first measure is total expenditures per student. Expenditures include teachers' salaries, books and other teaching material as well as maintenance and construction of school buildings. It is not possible to separate out investments in the accounts, which might give some spurious fluctuations across election periods. The second measure is the number of teachers per student. This is a measure close to the concept of "real" school resources. The correlation between teachers per student and expenditures per student is 0.24.

Table 2 presents descriptive statistics. Since we use a difference-in-differences approach, the table contains information on changes in the variables between election periods in addition to level information for each period.



Table 2. Descriptive statistics

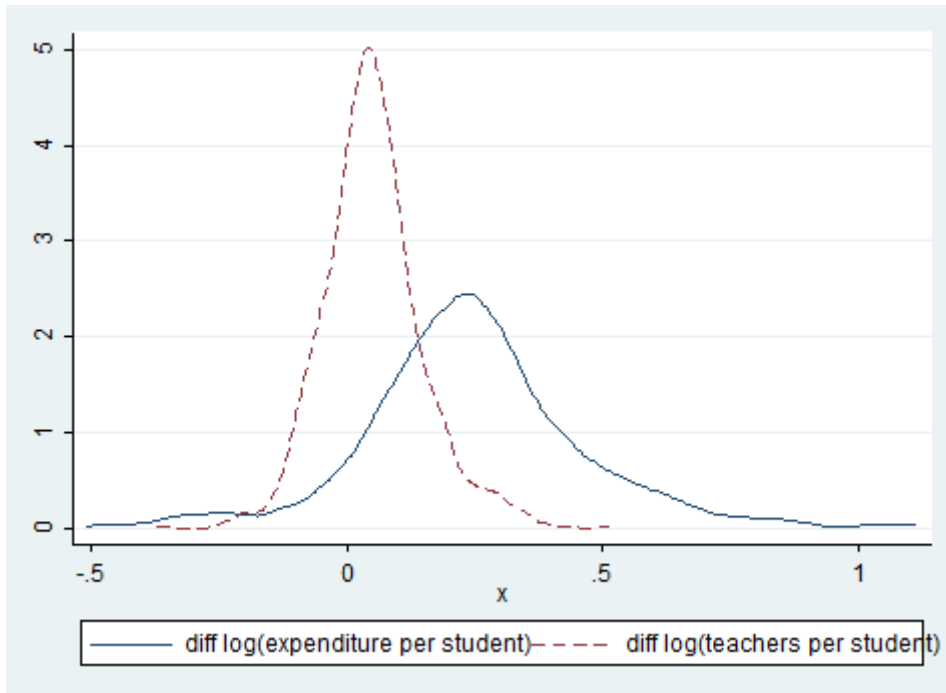
	Average	Standard deviation	1 <sup>st</sup> decile	9 <sup>th</sup> decile
<b>The franchise</b>				
Share of females in the franchise, 1907	0.35	0.06	0.27	0.43
Share of females in the franchise, 1910	0.51	0.03	0.47	0.55
Change in share of females in the franchise	0.16	0.06	0.08	0.24
<b>Average values educational outcomes, 1908-1910</b>				
Nominal expenditures per student (NOK)	25.72	14.75	13.76	47.16
Number of teachers per 100 student	2.29	0.70	1.59	3.05
<b>Average values educational outcomes, 1911-1913</b>				
Nominal expenditures per student (NOK)	33.94	23.52	16.93	62.30
Number of teachers per 100 student	2.41	0.72	1.65	3.28
<b>Change in log values of educational outcomes</b>				
$\Delta \log(\text{Expenditures per student})$	0.25	0.22	0.01	0.51
$\Delta \log(\text{Teachers per 100 student})$	0.05	0.10	-0.07	0.17
<b>Average values control variables, 1908-1910</b>				
Nominal before tax private income per capita (NOK)*	174	73	106	273
Number of students	530	1,422	147	881
<b>Average values control variables, 1911-1913</b>				
Nominal before tax private income per capita (NOK)*	208	100	118	327
Number of student	537	1,423	147	884
<b>Change in log values of control variables</b>				
Log of before tax private income, nominal NOK	0.16	0.15	0.04	0.30
Log of Number of students	0.004	0.09	-0.08	0.10

\*Computed by dividing total before tax income with population size in 1910.

The fourth panel of table 2 displays the increase in spending on education between the election periods. On average, nominal expenditures per students increased by 25% between the election periods. Consumer prices grew by around 10% during the same period, suggesting a significant growth in real spending.<sup>18</sup> The average growth in the number of teachers per student was 5% during the same period. Thus, it seems to have been a real growth in educational resources, including a growth in real teacher wages, teaching materials and investments. This is in accordance with the aggregate numbers presented in Falch (2001). The variation across local governments is substantial for both spending measures. As expected, the variation is larger for expenditures since this measure also includes capital outlays. This variation is further illustrated in Figure 4, which shows Kernel densities for the growth in spending. The figure use the logarithm of the average values for the pre-reform election period (1908-1910) and the post-reform period (1911-1913).

<sup>18</sup> Based on average values of the CPI for the two election periods. Source: Statistics Norway, <http://www.ssb.no/a/histstat/tabeller/12-3.html>

Figure 4. Growth in the log of expenditures and teachers per student from 1908-1910 to 1911-1913.



## 4.2 Empirical strategy

In order to analyze the impact of the voting reform on fiscal outcomes, we formulate a two-period regression model similar in spirit to Vernby (2013). This framework is essentially a difference-in-differences strategy with different treatment intensities. We exploit that the change in the voting franchise due to the 1910-reform varied substantially across the local governments. For the outcome variables, we use election period averages. For instance, we compute and compare for each local government the average of expenditure per student in the post-reform election period 1911-1913 with average expenditure per student in the pre-reform election period 1908-1910. Bertrand et al. (2004) show that such an averaging procedure improves the reliability of difference-in-differences-type models in the case with serially correlated dependent variables.

We estimate the following model:

$$(1) \Delta \ln(y_{ijt}) = \alpha + \beta \Delta f_{ije} + \gamma \Delta x_{ijt} + \delta c_i + \varphi_j + \varepsilon_{ijt}$$

where  $y_{it}$  is the outcome variable in local government  $i$  in county  $j$  in election period  $t$ .  $f_{ije}$  is the share of females in the voting franchise in the local elections in year  $e$ , determining the local council in election period  $t$ .  $x$  represents control variables,  $c$  is a dummy variable for city governments and  $\varphi$  is county specific effects.

The control variables  $x$  are to some degree restricted by the availability of data. The model can be interpreted as a traditional demand equation augmented by the voting franchise term. Thus, we include change in private income in the local government as an explanatory variable. This is potentially important for the interpretation of the model since the extent of the franchise extension was partly related to taxable income in the pre-reform period. We expect a positive income effect on fiscal outcomes, but that the *change* in private income is not strongly related to the *change* in the female franchise  $f$ . Private taxable income is available in publications from Statistics Norway and is our measure of private income, see Appendix for definitions and sources. Clearly, some types of income was incompletely registered, in particular income from farming and fishing. On the other hand, taxable income partly determined voting rights prior to the introduction of universal suffrage for females. Data on population size is only available from the censuses each tenth year (1900, 1910, 1920). For illustration purposes, the descriptive statistics in Table 2 reports income per capita, using population size in 1910. However, we do not use a per capita income measure in the regression models, as the first differenced model will account for constant differences in population between local governments.

In addition, we include the change in the number of students as a separate explanatory variable. Previous studies have typically found that education expenditures is positively associated with the number of students, but the relationship may be highly nonlinear as suggested by evidence in Poterba (1997), Borge and Rattsø (1995, 2008) and Harris et al. (2003). In our case, the change in the number of students may also serve as a proxy for population growth.

The model also includes an indicator for city and county fixed effects. Thus, we allow the change in outcomes to differ along these dimensions, which essentially represents county specific trends and a city trend. The indicator for city is included because cities and rural local governments faced different legal frameworks. County dummies will control for distinct cultural differences across Norwegian regions. For example, religious activity and the share of inhabitants connected to Christian organizations, which embraces traditional gender norm

differences, has traditionally been strongest in the south and the along the west-coast of Norway<sup>23</sup>. Further, according to the law, the number of representatives in the local government councils (“*herredsstyret*”) located in rural areas (“*herredskommuner*”) in a county were decided by the county council (“*amtstinget*”), subject to a minimum of 12 and maximum of 48 representatives, see Ihlen (1910, p. 78).<sup>24</sup> Evidence from Sweden and Finland in Petterson-Lidbom (2012) suggests that local spending is increasing in the council size. Thus, inclusion of fixed county effects also accounts for possible different trends across counties due to systematic variation in local government council size.

## 5. Empirical results

### 5.1 Main results

Table 3 presents the results for expenditures per student. Column I is without control variables and simply represents the correlation between the change in expenditures and the change in franchise. Contrary to expected, the correlation is significantly negative. Taken at face value, increasing the share of females in the voting franchise by 16 percentage points (the average growth), decreases expenditures per student by about 5%.

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<sup>23</sup> The spatial distribution of gender norms in Norway is discussed in Haaland et al. (2013). They use the regional distribution of support for the Christian Democratic Party (“*Kristelig Folkeparti*”) in elections as a proxy for traditional gender norms. This is not a possible strategy in our study, since we use data from a period long before this party was established.

<sup>24</sup> In the city local governments (“*bykommuner*”), the size of the city council (“*bystyret*”) was determined by a rule directly related to the number of inhabitants in the city as given by the last available census as described in Ihlen (1910, p. 109). This is similar to the current system in Finland as described in Petterson-Lidbom (2012).

Table 3. Estimated effects on expenditures per student, election period averages

	I	II	III	IV	V
Dependent variable	$\Delta \text{Log (Expenditures per student)}$				
$\Delta$ Share of females in the franchise	-0.329** (2.14)	-0.249 (1.57)	-0.055 (0.32)	-0.107 (0.61)	-0.132 (0.77)
$\Delta \ln(\text{Number of student})$	-	-	-	-0.239* (1.95)	-0.323*** (2.65)
$\Delta \ln(\text{Private income})$	-	-	-	-	0.245*** (3.31)
Indicator for city	No	Yes	Yes	Yes	Yes
County fixed effects	No	No	Yes	Yes	Yes
R <sup>2</sup>	0.01	0.02	0.09	0.10	0.12
Observations	524	524	524	524	524

Note. Dependent variable is the change in the logarithm of total expenditures per student from the period 1908-1910 to 1911-1913. Estimated t-values in parenthesis based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

Columns II-III include indicators for cities and counties. Controlling for county fixed effects and a city indicator (column III), reduces the numerical value of the estimated coefficient. The estimated coefficient is close to zero and clearly insignificant.

The last columns in Table 3 include the number of students and private income as explanatory variables. The effects of these variables are as expected, but the qualitative effect of enfranchisement does not change. The elasticity of spending per student with respect to the number of students is -0.32. More students imply less expenditures per student, which is in line with the international evidence. Using state level data for the US, Poterba (1997) finds an elasticity of per student spending with respect to the share of the population 5-17 years old close to -1, which implies that spending is unresponsive to cohort size. Harris et al. (2003), using data for US school districts, find less extreme results with elasticities of per student spending with respect to the share of 0-19 years old in the interval -0.3 to -0.9, while Ladd and Murray (2001) reports elasticities around -0.4. Using post-WW2 data from Norway and Denmark, respectively, Borge and Rattsø (1995) and Borge and Rattsø (2008) find fairly similar results.

The estimated income elasticity is 0.25 and broadly in line with findings in the education finance literature. There exist a number of estimates of the income elasticity of education expenditure, but mostly from the post-WWII-period. The novel paper by Bergström et al. (1982) reports elasticities around 0.4 based on microeconomic survey data from the 1970's, which are fairly similar to those obtained based on actual spending data. Of particular interest

is the results in Hoxby (1998). She estimates elasticities of spending per student with respect to per capita income for several years for school districts in Massachusetts, US, and finds elasticities of 0.35, 0.29 and 0.3 for 1900, 1910 and 1920, respectively. Falch and Tovmo (2003) find an elasticity of 0.5 of private income on total local government spending in Norwegian local governments in the 1930s. It is reassuring that estimated effects of these key determinants of educational spending are in line with previous international and national evidence and suggest that the data we use are in general informative of the development in important education policy outcomes in local governments.

As discussed above, the expenditure data include infrastructure investments. Thus, Table 4 presents results for the teacher-student ratio. The share of females in the electorate is not associated with the teacher-student ratio in the most restrictive models (column I and II). When we condition on city and county effects only (column III) there is a positive, although statistically insignificant, effect. When the model includes the number of students and private income as additional explanatory variables, the effects are negative and very small. The qualitative impact of these two control variables are the same as for the expenditure equation. However, the number of students has a somewhat larger negative effect. This indicates that the local governments to a large degree respond to increased number of students by increasing the average class size. The income elasticity is substantially lower in the teacher per student equation than in the spending per student equation. The result suggests that increased private income to a larger extent increases spending on other categories, notably teacher wages, teaching materials and school buildings and other capital outlays rather than the number of teachers.

Taken together, the results presented so far suggest that neither local spending on compulsory education nor the teacher student ratio are positively associated with the expansion of female franchise. This is very different from US evidence from the early 20<sup>th</sup> century, but more in line with the evidence from European countries. In the next sections we provide further investigations of the robustness of the results as well as possible mechanisms to explain the results.

Table 4. Estimated effects on the change in log number of teachers per (100) student, election period averages.

	I	II	III	IV	V
	$\Delta \text{Log} (\text{Teachers per student})$				
Dependent variable					
$\Delta$ Share of females in the franchise	-0.051 (0.74)	-0.009 (0.13)	0.103 (1.44)	-0.010 (0.15)	-0.017 (0.25)
$\Delta$ log(Number of students)	-	-	-	-0.521*** (9.30)	-0.542*** (9.18)
$\Delta$ log(Private income)	-	-	-	-	0.061** (2.52)
Indicator for city	No	Yes	Yes	Yes	Yes
County fixed effects	No	No	Yes	Yes	Yes
R <sup>2</sup>	0.001	0.02	0.09	0.29	0.30
Observations	524	524	524	524	524

Note: Dependent variable is the change in the logarithm of the number of teachers per 100 students, from the period 1908-1910 to 1911-1913. Estimated t-values in parenthesis based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

## 5.2 Robustness analyses

### *Subsamples*

The results in the previous section indicate that education spending is not systematically related to changes in the share of females eligible to vote. Still, the results reveals that estimated effects are somewhat sensitive to the inclusion of an indicator for cities and county fixed effects. Heterogeneities in the effect of female suffrage or outliers in the data may be one reason for differences across these specifications. We explore this issue further by estimating the model using different sub- samples. The first subsample excludes the observations with the largest increases or reductions in the dependent variable. In the second subsample, the smallest local governments (measured by population size in 1910) are excluded since small local governments are more likely to contribute to extreme observations. The results are presented in Table 5 and to facilitate comparison, the results from the full sample are presented in columns I and IV. The estimated effect of female enfranchisement is stable across the subsamples for expenditures per student. For the number of teachers per student, the coefficient is still negative, but numerically larger than both subsamples compared to the full sample. When the sample is trimmed according to the dependent variables, the coefficient is even statistically significant. Overall,

the results do not give any indication that expansion of the female franchise boosts school spending.

Table 5. Estimation results for Subsamples, election period averages

	I	II	III	IV	V	VI
Dependent variable	$\Delta \text{Log (Expenditures per student)}$			$\Delta \text{Log (Teachers per student)}$		
$\Delta \text{ Share of females in the franchise}$	-0.132 (0.77)	-0.127 (0.85)	-0.104 (0.54)	-0.017 (0.25)	-0.116** (2.27)	-0.060 (0.92)
$\Delta \ln(\text{Number of students})$	-0.323*** (2.65)	-0.383*** (3.89)	-0.444*** (2.77)	-0.542*** (9.18)	-0.547*** (12.81)	-0.610*** (9.60)
$\Delta \ln(\text{Private income})$	0.245*** (3.31)	0.225*** (3.58)	0.309*** (4.10)	0.061** (2.52)	0.060** (2.46)	0.077*** (2.62)
Indicator for city	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.12	0.15	0.13	0.30	0.33	0.30
Sample	Full sample	Upper and lower 2.5% of observations defined by dependent variable excluded	Local governments below 1,000 inhabitants excluded	Full sample	Upper and lower 2.5% of observations defined by dependent variable excluded	Local governments below 1,000 inhabitants excluded
Observations	524	498	464	524	498	464

Note: Estimated t-values in parenthesis, based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

### 5.3 Possible mechanisms

In this section, we first investigate the relationship between the increase in female voting franchise and female turnout. Secondly, we analyze to what extent the public policy effect of the voting franchise extension depends on initial female representation in the local council and the election system.

#### *Turnout*

One potential explanation for the absence of policy effects is simply that the newly enfranchised females did not vote and consequently had no impact on the distribution of cast votes between males and females. To explore this we first investigate the effect of enfranchisement on female voter turnout, defined as the share of the total votes cast by females.



Table 8 presents the results. The first column is without control variables while the two last columns include controls. Independent of model specification, we find an effect of about 0.4 of increased share of females in the franchise. The result implies that when the share of females in the voting franchise increases by 16 percentage points (the average change in the sample), the share of votes cast by females increases by 6 percentage points. Thus, we reject the hypothesis that the lack of influence on political outcomes is due to unchanged composition of actual votes between males and females.

Table 8. Estimated effects on female voter turnout, local elections 1907 and 1910

	I	II	III
Dependent variable	$\Delta$ female turnout	$\Delta$ female turnout	$\Delta$ female turnout
$\Delta$ Share of females in the franchise	0.396*** (5.45)	0.387*** (4.64)	0.394*** (4.68)
$\Delta$ ln(Number of students)	-	-	0.038 (0.79)
$\Delta$ ln(Private income)	-	-	0.052* (1.93)
Indicator for city	No	Yes	Yes
County fixed effects	No	Yes	Yes
R <sup>2</sup>	0.06	0.10	0.11
Sample	All	All	All
Observations	524	524	524

Note: Estimated t-values in parenthesis based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

### *Female representation in politics*

It is possible that female enfranchisement only affects policy if female representatives in the local council mediate the preferences of the newly enfranchised females. One way to investigate this is to include measures of female representation in the local council. We define a dummy variable equal to unity if a female held at least one seat in the local council in the pre-reform election period, and extend the model with an interaction term between this variable and the change in the enfranchised females.

Columns I and IV in Table 9 show estimation results from this model formulation for education policy. The results differ between the spending and teacher per student equations. While the coefficient in front of the interaction term is positive, but not statistically significant in the

spending per student equation, the coefficient turns out negative and statistically significant in the teacher per student equation. It is not easy to explain this difference in results. We nevertheless conclude that low initial female representation in local politics in the pre-reform period does not seem to explain the absence of a systematic positive relationship between educational resources and franchise extension.

A different version of this model is to assume that preferences of newly enfranchised female voters are mediated by females elected to the post-reform local council. However, it can be argued that elected females in the post-reform period is an outcome variable and thus introduces a “bad control” problem using the language of Angrist and Pischke (2009). We nevertheless define a dummy variable equal to unity if females were elected to the local government council in 1910, and include in the model an interaction term between this variable and the change in enfranchised females. Columns II and V shows the results for this model version for the spending and teacher per student equations, respectively. The interaction term is clearly insignificant in both the spending and teacher per student equations. As a slightly different model specification, we define a dummy variable equal to 1 if the female representation in local council *increased* from 1907 to 1910 and include interaction terms between this dummy and the change in enfranchised females. Columns III and VI reports the he results from this specification. Again, the coefficients for the interaction terms are clearly insignificant. We therefore conclude that including interaction effects between franchise extension and female representation in local council does not change our initial findings of no systematic positive relationship between franchise extension and local education policy.

Table 9. Interaction with female representation in the local council, election period averages

	I	II	III	IV	V	VI
Dependent variable	$\Delta \log$ (Expenditures per student)			$\Delta \log$ (Teachers per student)		
$\Delta$ Share of females in the franchise	-0.146 (0.85)	-0.133 (0.77)	-0.135 (0.78)	-0.009 (0.14)	-0.016 (0.24)	-0.017 (0.26)
$\Delta \ln$ (Number of students)	-0.325*** (2.69)	-0.326*** (2.69)	-0.322** (2.64)	-0.544*** (9.06)	-0.543*** (9.08)	-0.544*** (9.10)
$\Delta \ln$ (Private income)	0.244*** (3.32)	0.244*** (3.30)	0.240*** (3.24)	0.059** (2.42)	0.059** (2.40)	0.059** (2.40)
(Females elected in local council 1907) * ( $\Delta$ Share of females in the franchise)	0.452 (1.19)	-	-	-0.252** (2.02)	-	-
(Females elected to local council 1910) * ( $\Delta$ Share of females in the franchise)	-	0.094 (0.35)	-	-	-0.123 (1.23)	-
(Increase in females elected to local council 1907-1910) * ( $\Delta$ Share of females in the franchise)	-	-	-0.195 (0.70)	-	-	-0.039 (0.36)
Indicator for city	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.12	0.12	0.12	0.30	0.30	0.30
Observations	524	524	524	524	524	524

Note. Estimated t-values in parenthesis, based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

### *Election system*

In the period analyzed in this paper, the party system was in its infancy in Norway, and the role of political parties and other organized groups varied substantially across local governments. Two different election systems were applied. The traditional system (majority elections) implied that each single voter simply wrote his own list of persons he/she wanted as representatives in the local council on the ballot. The persons with the largest number of votes were elected. However, under certain conditions, a local government could apply an alternative system (Proportional election)<sup>25</sup>. In this system (which is used today) prior to the election, political parties or groups of people representing different geographical areas or interest groups within a local government nominated a list of names that appeared on the ballot. The voters could then choose among different ballots and the distribution of seats in the local council was determined by the number of votes for each “party” based on an allocation formula described

<sup>25</sup> In rural governments proportional elections had to be used if required by minimum 1000 voters (or minimum 1/5 of the voters if total number of voters were less than 5000). In city governments proportional elections had to be used if required by 1600 voters (or minimum 1/5 of the voters if total number of voters were less than 8000), see Ihlen (1910), p.34 for details.

in Ihlen (1910 p. 63-66)<sup>26</sup>. The majority election system was common in the rural areas, while the proportional system was applied in the bigger cities. Precise and theoretically based hypothesis for the effect of these different systems on policy outcomes is hard to formulate, but one possibility is that local governments without organized political parties or other organized groups are less likely to respond to the franchise extension. To allow for this possibility, we extend the regression model with the change in the share of females in the franchise interacted with a dummy equal to unity if the local government applied a majority election system<sup>28</sup>. The results displayed in Table 10 are based on the models with the full set of controls and indicates that the election system defined in this way did not affect the fiscal outcomes.

Table 10. Interaction with type of election, election period averages

Dependent variable	$\Delta\log(\text{Expenditures per student})$	$\Delta\log(\text{Teachers per student})$
$\Delta \ln(\text{Number of students})$	-0.319*** (2.65)	-0.543*** (9.20)
$\Delta \ln(\text{Private income})$	0.239*** (3.25)	0.059** (2.44)
(Majority elections) * ( $\Delta$ Share of females in the franchise)	0.150 (0.85)	0.005 (0.08)
Indicator for city	Yes	Yes
County fixed effects	Yes	Yes
R <sup>2</sup>	0.12	0.30
Observations	524	524

Note. Estimated t-values in parenthesis, based on heteroscedasticity robust standard errors. \*\*\*, \*\* and \* denotes significance at 1, 5 and 10 percent level, respectively.

To summarize; this section has shown that removing constraints on females right to vote, did significantly increase the share of total votes cast by females. However, we find no systematic relationship between policy outcomes and the extension of the female voting franchise even when we allow the effect to depend on prior and current female representation in the local council or properties of the local election system.

<sup>26</sup> In the following we use the term “party” to denote political parties or other organized groups participating in the local election and represented by a ballot.

<sup>28</sup> Unfortunately, data for the 1910 election is not available for this variable. As a proxy, we constructed a variable based on data from the elections in 1901 and 1913 elections where the dummy for majority elections takes the value one if there were majority elections both in 1901 and 1913. Based on this method, we find that 24 per cent of the local governments had proportional elections in 1910.

## 6. Concluding remarks

A common argument dating back to Tocqueville (1835) is that extension of the voting franchise increases government size and redistribution. While empirical studies from US, exploiting time variation in voting reforms, consistently find that franchise extension increases public spending, similar cross-country and within country studies from Europe generally find small and even negative effects. However, voting rules can be policy instruments for the ruling governments. The size of the voting franchise thus becomes an endogenous explanatory variable, which makes it hard to obtain causal evidence.

Using a national voting reform in a country (Norway) consisting historically of small and largely fiscally independent local governments with homogenous populations in terms of religion, language and ethnicity, we circumvent the potential endogeneity problems and exploit local variations in the bite of the reform to estimate the effect of franchise extension. We find that removing socio-economic restrictions on female voting rights did not increase local government spending on education or the teacher-student ratio. Rather, in a number of model specifications, the estimated effect on spending is actually negative, although not significantly different from zero. This absence of systematic positive effects of the franchise extension are robust to different sample definitions and model specifications, despite a positive and statistically significant effect on female turnout as measured by the share of total votes cast by females.

It is of interest to see these results in the historical context and the decisions made by the Norwegian parliament on female voting rights. To some extent, national politicians used the gradual process towards universal female suffrage in local elections as a “laboratory” to get experience with the effects from possible similar reforms in subsequent parliamentary elections. While some prominent politicians strongly opposed universal suffrage in 1910, and argued that it would increase expenditures and taxes to unacceptable levels, on June 11, 1913 the parliament *unanimously* and *without any debate* granted full suffrage for women in parliamentary elections. It is possible that the politicians initially against universal suffrage just had experienced, as our evidence suggest, that spending did not raise significantly as a result of the reform, and thus, the expected political cost of universal suffrage in terms of votes for the incumbents was likely to be close to zero.

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## **Appendix**

### **Variable definitions and sources**

*Education:* Current local government expenditures on compulsory education per student. The measure includes wages for teachers, expenditures on books and other teaching material and building and maintenance of schools. The latter means that we have not been able to separate out investments. Source: “*Skolevæsenets tilstand*”, several annual volumes, NOS, Statistics Norway.

*Teachers:* The number of teachers per student. Source: “*Skolevæsenets tilstand*”, Several annual volumes. NOS, Statistics Norway.

*Private income:* Income is measured as before tax income (“Antatt inntekt”) from the tax statistics. Source: “*Meddelelser fra Det Statistiske Centralbyraa*”, several issues 1909-1915, NOS, Statistics Norway.

*Population:* The population size in 1910. Source: “*Folketellingen*” 1910, Statistics