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Women's Suffrage and Men's Voting Patterns

Autores:
Jeanne Lafortune
Francisco Pino

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sdt@econ.uchile.cl
econ.uchile.cl/publicaciones

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Jeanne Lafortune† and Francisco Pino‡

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Previous studies of female suffrage have interpreted the change in voting patterns as reflecting a change in voter composition, in part because only aggregate voting data was available. We exploit the existence of separate counts for women and men votes in Chile before and after female suffrage. We show that inference based on aggregates is inaccurate because men also change their voting behavior. Two potential explanations are provided: men responded to female suffrage through strategic voting and men previously represented in part women's vote due to negotiation within the household. We show evidence consistent with both hypotheses.

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†Pontificia Universidad Catolica de Chile, jlafortune@uc.cl

‡Universidad de Chile, fjpino@fen.uchile.cl

1 Introduction

The expansion of the suffrage in the last 200 years has been a crucial element of the transformation of democracy. As new voters join the polling booths, the aggregate preferences now include the views of these previously excluded groups. However, given the secretness of voting, inference about the political preferences of these newly enfranchised voters relies on the analysis of aggregate voting patterns. The implicit assumption is that the group of previous voters does not change their voting preferences in response to the expansion of suffrage.

In this paper we take advantage of a feature of the electoral system in Chile which recorded the votes of women and men separately until the 2010s. Because of this, we are able to follow the voting patterns of men and women distinctively before and after women were granted the right to vote. Our findings show not only that women had different political preferences than men, but that men also responded to female suffrage by voting more in the opposite direction of women once the latter obtained the right to vote. We then explore reasons that could explain this pattern.

We start our analysis by conducting the typical "ecological regression" (Morgan-Collins, 2015), where changes in the aggregate voting pattern are assumed to respond to changes in composition of voters. We show that this does not properly estimate the political preferences of women. In particular, this procedure would underestimate the preference of Chilean women for right-wing parties, because it assumes that men would not respond to the change in the voters' composition. We document that men switch their vote more to the left of the political spectrum once women obtain the right to vote. Thus, political preferences are not orthogonal to the expansion of suffrage, in contrast to the assumption typically made in models of the median voter theorem (Black, 1948; Meltzer and Richard, 1981; Bassetto and Benhabib, 2006).

We then propose two reasons why men may modify their voting in response to female suffrage. The first would be a model of strategic voting where men may strategically vote for a party that is not their preferred one but it is now a contender given the way political forces have been altered by the arrival of women to the booths. Our model suggests that this should be observed when elections are more competitive and when men had preferences for the party that are furthest from the political preferences of women. We test for this in the data and find evidence supporting this channel.

The other reason why men may respond to female suffrage is that there were previously voting to represent female household members. Once these women obtain their own right to vote, the household negotiation for a given vote becomes irrelevant and men prefer to vote for their own political preference. We show that this would be most likely to happen when voting can somehow be observed by other household members. We therefore exploit the change in the secrecy of the ballot, after the expansion of suffrage, and show that men and women move even more to different political preferences once the vote is more secret. However, the results also show that the response of men is not larger in contexts where they would have been more likely to represent their spouse's preferences before, maybe because those proxies are too correlated with conservatism.

This paper contributes to the literature on gender differences in voting. In the developed world, studies have argued that women's right to vote is correlated with a larger size of government (Lott Jr and Kenny, 1999; Aidt et al., 2006; Aidt and Dallal, 2007), more public education (Carruthers and Wanamaker, 2015), better outcomes for children in terms of survival Miller (2008) and education (Kose et al., 2021). In this

context, women's political preferences are typically assumed to be towards more government involvement, linked to left-leaning political parties. In Chile and in most of the Hispanic world, historical evidence suggests that women expressed more support for the right, something our data will demonstrate. In Spain, when women were granted the right to vote in 1931, "left republicans, radicals and radical socialists were against giving women the vote because they feared women were not yet independent enough from the church and that their votes would go to right-wing candidates, thereby endangering the existence of the Republic." During a debate in 1931, radical-socialist Victoria Kent opposed the expansion of suffrage because it was not "convenient" for the left. Maza Valenzuela (1995) argues that resistance to female suffrage in Chile was led by anti-clerical parties afraid that women's preferences were too aligned with the Catholic Church. In France, a similar pattern was observed (Mossuz-Lavau, 1992). Edlund and Pande (2002) argue that women have moved more to the left in the United States because of the decline in marriage observed in the last 40 years of the previous century.

The paper also relates to the large literature on the theory of voting behavior. One of the main theories, that of the median voter, argues that politicians orient their policy to the voter that with the median preferences (Black, 1948). When women gain political voice, the median voter becomes an individual with different policy preferences than previously, thus reorienting public policies in a way that is more aligned with "what women want" Miller (2008). In this world, voters vote according to their true preferences and there is no strategic voting. Our results suggest that voting may be strategic, in accordance to models proposed by Myatt (2007), Kawai and Watanabe (2013) and Bouton (2013).

Finally, our results also address issues related to bargaining within the household (Browning and Chiappori, 1998). While most of the literature has looked at economic outcomes, it is possible for voting to also be part of the intra-household negotiation. A large literature in political science has shown that spouses tend to vote similarly (Lampard, 1997; Zuckerman et al., 2005, 2007; Kan and Heath, 2006; Coffé and Need, 2010). Strøm (2014) presents evidence that suggests that voting patterns may depend on the relative economic situation of both spouses but not in a way that is related to bargaining power. While we are the first ones to demonstrate that there may have been negotiation within the household on how to vote before women's suffrage, this was a commonly used argument against the extension of the vote to women (Duverger, 1955; Eltit, 1994, p.82). While we do not wish in any way to state that women's suffrage did not increase the capacity of women to influence political decisions, our results are concordant with women influencing in part men's vote before suffrage, albeit in a context where votes were not fully secret.

The rest of the paper is organized as followed. The next section describes voting procedures in Chile and women's suffrage. Section 3 then demonstrates that inference based on aggregate votes may be misleading. This would be due to the fact that men themselves respond to women obtaining the right to vote by altering their decisions, which is what we show in Section 4. We then explore the possible reasons for this pattern in Section 5 while Section 6 concludes.

2 Description of the historical context

Chile was a parliamentary republic from 1891 to the military coup in 1973. Elections separately select presidents and members of Congress. Men's suffrage had been expanded in 1888 when the right of to vote

was no longer linked to ownership and the voting age was lowered to 21 for all. Literacy was required until 1970.

By law 5357 of 1934, women obtained the right to vote but only in municipal elections. For that reason, the electoral authorities created two separate registries, one for men and one for electors that could only vote in municipal elections (women and foreigners). This was common practice in many countries, including the U.S. (Corder and Wolbrecht, 2016). The law 9292 of January 14, 1949, gave women the right to vote in all elections. A separate registry continued to be held, and thus women and men votes were registered separately. Votes in Chile are publicly reported by voting booth, typically summing around 200-300 votes. Since women first obtained the right to vote in municipal elections but not in national elections, voting booths were segregated by gender, adding a letter "V" for men (*varón*) and "M" for women (*mujer*) at the end of the booth number. This practice continued well after women began voting in national elections. When votes were reported at the geographical level, official reports tabulated the votes from "V" and "M" tables separately. This is the data that allows us to pursue our analysis. We use both presidential and congressional elections to document our conclusions.

Finally, law 12891 of 1958 implemented the secret (i.e. Australian) ballot for both genders. According to Gamboa Valenzuela (2011), this change eliminated two corrupt practices: *sobre brujo*, where party operators would give the vote already in an envelope to voters and *votos doblados*, where the voter would fold their vote in a particular way to signal which vote was theirs and then be eligible for a payment. Baland and Robinson (2008) show that after this reform, the vote for right-wing parties declined more pronouncedly in areas with stronger patron-client relationships. We show that our results are robust to controlling for the share of *inquilinos* living in a municipality. Appendix Figure A.1 summarizes the timing of the elections over our period of study and how they line up with the electoral reforms considered.

For each of the above elections mentioned, we digitalized printed reports detailing the votes of men and women (once they were able to vote) by municipality for presidential and lower house elections between 1940 and 1970. While the official registries were lost during dictatorship, we obtained copies made by the Electoral Service. Because the borders of some municipalities change over the period, we join municipalities into the minimum geographical unit that does not suffer boundary change over the period (as in Lafortune et al., 2019). This grants us 252 macro-municipalities where we initially drop Codpa for the first two periods since no votes were registered in that unit in those years. For presidential elections, we are able to keep more distinct geographic zones and our sample includes 269 municipalities.

We then classify the votes according to left, right and center as in Baland and Robinson (2008). We first classify parties according to the "pacts" in which they entered as our benchmark. We present this classification in Appendix Table B.1. Note that in two cases, different parties with distinct political orientation shared the same name. We classify them differentially in each year where they were competing in the elections. Most parties stick to one orientation during the period but some do change from one election to another. As a robustness check, we use Cruz-Coke (1984) who classifies parties according to their self-declared orientation, as shown in Appendix Table B.2. For presidents, we classify them by the identity of the parties that supported their candidacy, see Appendix Table B.3. One presidential candidate (Carlos Ibáñez del Campo) is problematic as he ran with the support of left-wing, centrist and right-wing parties in different occasions over this period. We classify him in different parties in different years depending on the coalition that was supporting him in that particular election.

We then add to this database, variables that could explain some of the voting patterns. We thus obtain from Censuses information regarding total population, its gender composition, the fraction considered "rural". Censuses were conducted in 1930, 1940, 1952, 1960 and 1970. For any inter-censal voting year, we use a linear interpolation between the two years where data is available. To measure the fraction of individuals married in the population, we were unable to obtain consistent annual measures of marital status but were able to obtain the fraction of all births declared as "illegitimate" from the annual reports of the Civil Registry (see Díaz et al., 2016, for a description of this variable). This information is available yearly so we use the exact year of the report and match it to the voting year.

Finally, we also replicated the information regarding the number of "inquilinos" from Baland and Robinson (2008). This measures the number of agricultural workers that were involved in a serf-type of contracts since the authors hypothesize that previous to the secret ballot, landowners were buying the votes of their workers. We measure this, like the authors, in 1935.

3 Ecological regressions

When constrained to using only aggregate voting records, determining the political preference of a given group is challenging. The typical way in which inference has been made is by correlating aggregate voting results with population shares. In short, one can try to derive the voting pattern of women by comparing conscriptions where the fraction of women is higher or lower and assume that in locations that have more women, aggregate voting patterns are more likely to represent the preferences of women. Given that there may be geographical political preferences, we propose to use municipal fixed effects and thus our identification stems from comparing the change in voting preferences over two years and correlate those with the change in the fraction of women in a geographical area.

We restrict our attention to the congressional elections of 1953 and 1957 which are the two elections with female vote but before secret voting was implemented. We use two measures of "femaleness" of the electorate. To replicate ecological regressions that rarely have at hand voting shares by gender, we first use the fraction of the population of the municipality that is female. We then employ directly the fraction of voters that were female in each election.

The first four columns of Table 1 present the result of these approximations. The odd columns include only the fixed effects for municipality and year while the even columns add controls for the total population, the fraction of the population that is considered rural and the fraction of births being illegitimate. Taking first the share of votes going to left-leaning coalitions (Panel A), the first two columns of the table suggest that as a municipality had one additional percent of women voting in an election, the fraction of left-wing votes was larger by 0.4 to 0.5 percentage points. However, the coefficient is not statistically significantly different from 0. When using the data that is most often available, namely the share of women in the population, we would conclude that an increase of one additional percent of women in the population is correlated with an increase in the left-wing vote share of about 2.5 percentage points. This would thus lead us to believe that women were more likely to vote for the left although the difference would not be significant.

The last two columns of Table 1 present instead the actual difference between the fraction of women's and men's votes for left-wing parties in congressional elections over the same period. We include exactly the

Table 1: Estimating women's voting preferences from "ecological regressions" versus actual data

	Ecological regressions				Actual data	
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Share of left-wing vote			
Share of women voting	0.464	0.362				
	(0.311)	(0.327)				
Share of women in population			2.558	2.369		
			(1.630)	(1.530)		
Dummy women					-0.036***	-0.036***
					(0.005)	(0.005)
			Panel B: Share of right-wing vote			
Share of women voting	-0.051	0.084				
	(0.256)	(0.245)				
Share of women in population			0.330	0.549		
			(2.037)	(1.708)		
Dummy women					0.025***	0.025***
					(0.004)	(0.004)
Controls		X		X		X
N	502	502	502	502	1,004	1,004

Notes: The sample includes the congressional elections of 1953 and 1957. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

same controls as for previous regressions but now double the sample size as we have an observation for the votes of women and another one for the votes of men. The table this time allows us to reach a completely different conclusion than the one we would have drawn with an "ecological model". Instead of concluding that women were mildly more aligned on the left than men, we now see a statistically significant difference indicating that men were 3 to 4 percentage points more likely to vote for a left-wing party than women. Given that the average left-wing vote in this period was a bit more than 40 percent, this corresponds to a 10 percent difference, which is substantial.

We repeat the exercise with the share of right-wing votes in panel B of the same table. Ecological regressions would indicate no difference in the voting patterns of women for right-wing parties but with the real data, we are able to observe that women were significantly more likely to vote for a right-wing party.

In Appendix Table B.4, we show that the results would be almost identical when using a different way of classifying left- and right-wing parties. In Appendix Table B.5, we also show that a similar conclusion would have been reached when employing presidential elections.

Thus, we conclude from this exercise that inference made using the ecological approach could be very misleading. One reason for this would be because the share of women voters capture other elements that are correlated with voting preferences. We have tried to include those by using fixed effects and time-varying controls but we cannot exclude this as a possibility. We will however focus on another reason, which is that the ecological approach assumes that as more women vote in an election, men do not alter their own voting

behavior. We will argue in the next section that this appears to be an inaccurate assumption.

4 Testing for the response of men's voting to women's suffrage

We now test directly whether female voting influenced the voting pattern of men. Our main regression of interest will be

$$y_{ct} = \beta X_{ct} + \mu_c + \delta \text{Vote Women}_t + \varepsilon_{ct} \tag{1}$$

where we use data by municipality c and time t. y_{ct} represents a voting outcome for men such as the fraction of votes for the "right". Since our variation is at the national level, we are unable to control for time fixed effects but we include municipality fixed effects μ_c. We also include in some specifications decade by province fixed effects to soak up any geographical specific change over time as well as controls at the municipality/time level. Standard errors are clustered at the municipality level to allow for auto-correlation over time within a voting district.

Our main coefficient of interest is δ, which measures how the voting tendencies of men changed in years where women could vote. We present those results in Table 2.

Table 2: Estimating men's voting response to female voting

	Fraction of votes from men voting booths			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	0.079***	0.372***	0.130***	0.371***
	(0.008)	(0.018)	(0.011)	(0.020)
	Panel B: Share of right-wing vote			
Female Vote	-0.172***	-0.202***	-0.181***	-0.188***
	(0.009)	(0.024)	(0.012)	(0.026)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

The results indicate that men appear to have modified their voting pattern once women obtained the right to vote. In Panel A, we observe a strong shift towards left-wing parties ranging from 8 to 13 percent without province trends and up to around 37 percent when we include them. Mirroring this shift, in Panel B we observe that men appear to have reduce their probability of voting for a right-wing party by 17 percent without province trends and up to 20 percent when including them. This seems to seriously question that men simply voted according to their political preferences before and after the introduction of female suffrage.

Our results are not simply being driven by the patterns documented by Baland and Robinson (2008) which are linked to the arrival of secret voting: appendix Table B.6 shows that extending our period to the

period when voting became secret and adding a dummy for the secret vote does not change our conclusion. Appendix Table B.7 shows that the results are similar when using a different measure of political affiliation: men appear to have oriented their votes more to the left but also less precise evidence on what happens to the vote for the right-wing parties. In Appendix Table B.8, we show that men responded to the arrival of women to the voting booths by altering their votes in presidential elections as well, although in that case, the move seems to be towards the center instead of the left.

5 Mechanisms

Overall, these results seem to suggest that men altered their voting decision when women obtained the right to vote. We now propose two types of reasons for this.

5.1 Household model

The first reason why men could alter their voting decision when women obtain the right to vote is due to the fact that they could have been voting using the aggregate preference of their household instead of their own. This is particularly possible in the case of Chile where votes were not fully secret until *after* women obtained the right to vote. In a certain way, men were "selling" their vote at home.

We focus on households where a wife w and a husband h share total resources given by m. Each of them has a different political ideology, a_w and a_h, drawn from a distribution A between $[0, 1]$. A number of political candidates run for election by offering a set of policies aligned with a given political ideology drawn from $[0, 1]$.

The utility of agents in this framework depends on the distance of their ideology to their (and potentially their spouse's) voting behavior (p_i and p_j) and on their level of consumption. Define each of their consumption level as c_w and c_h for wife and husband, respectively. Their budget constraint is thus $c_w + c_h = m$. The utility of household member i is given by

$$-\alpha(p_i - a_i)^2 - \beta(p_j - a_i)^2 + c_i$$

where voting for a party that is more distant to one's preference reduces one's utility and where $\alpha > \beta$, meaning that the cost of one's vote being more distant from one's ideology is worse than that of the spouse.

Each partner has a reservation utility of X. For simplicity, we will assume that men can push their wife to their reservation value although any form of bargaining within the household would generate the same overall results. We now explicitly state what would happen in different types of voting.

Proposition 1: If only men can vote but they can credibly commit to a decision, their vote will represent the aggregate political views of the household. If he cannot credibly commit to a decision, his voting will only represent his own political preferences.

Proof: See Appendix A.1.

The intuition for this result is that if a man can credibly commit to his vote, voting according to his wife's preference increases her utility and this allows him to obtain more consumption. As long as consumption is

more valued than political alignment, it will be optimal for the husband to include his wife's preference in the decision. On the contrary, if the wife cannot know how the husband votes, she will not obtain utility from it and thus the division of resources within the household will not depend on the voting which will imply that the husband will simply vote according to his own preference.

Proposition 2: If women obtain the right to vote but both can credibly commit to a decision, men's voting will still in part represent their wive's political views but less than when only men could vote. If men cannot credibly commit to a decision, their voting will only represent their own political preferences.

Proof: See Appendix A.2.

With commitment, men can still extract household resources by voting in a way that is aligned with their wife, since this increases her utility and reduces the amount of resources needed to be given to her in terms of consumption. However, since the impact of one's own voting on one's utility is more than that of their spouse, the benefit that the man can obtain by voting according to his wife's preferences is smaller than before. The incentives will thus decrease, compared to the case where the wife was unable to vote. If one cannot commit to a certain vote, then both genders will vote according to their own preference.

Form these results, we obtain the following comparative statics. Starting from a scenario where voting was public but reserved to men to one where the vote continues to be public but given to both genders, we should observe that men would vote more according to their own preference than previously. Once secret ballot is conferred, then we should observe that voting would be even more aligned with preferences of each gender. This should be independent of factors that influence X, the outside option of women, but it should be most visible where men were most able to commit to their vote and where women's political preferences were most dissimilar to that of men.

5.2 Strategic Voting

The second reason why men may alter their voting once women receive the right to vote is if voting does not only depend of one's political preferences but it is cast strategically. We derive a model in the lines of Myerson and Weber (1993) to illustrate this.

Assume that individuals who are eligible to vote have preferences over political views that are drawn from a distribution A that is bounded between $[0, 1]$. Political parties offer policies that are aligned with a certain orientation along the same range. We assume that parties ideologies are fixed, as opposed to Alesina (1988). Voters must decide their vote based on the utility function $-(y-a)^2$ where their utility now derives from the policies that will be implemented and not from their own vote. A general conclusion from models of strategic voting is that a person will strategically (instead of truthfully) vote when they think that their vote may influence the outcome of the election, which is likely to occur when they expect the election is going to be close.

To match our empirical setting, let us assume that there are 3 parties in contention: L, C and R. Before the arrival of women to the polls, we could have been in situations where there are tight elections between 2 of the 3 parties. We will study each case separately.

Let us assume that there were tight elections between L and C before female suffrage. Given that women are more likely to vote for R based on our previous results, this could change the political balance and imply

that most votes will now be casted between L and R. In that case, men who previously voted C could now prefer to vote L to counteract the impact of female voting. A similar story would happen in cases where L and R were previously in a tight election. With the arrival of more R votes by women, men who previously had voted truthfully for C but who prefer L to R could now strategize their vote towards L to counteract the flow of new voters. Thus, the arrival of women voters who preferred party R could lead men to more strongly strategize towards the left than before.

If there was a tight election between C and R before women's suffrage, then we would more anticipate that men who previously voted truthfully for L may now prefer to vote strategically for C to counter the new votes for R.

Summarizing this, we get to the following proposition.

Proposition 3: Assume that women favor party R. If there were previously tight elections involving L, men could strategize their vote towards L in response to female suffrage. In tight elections not involving L, we would instead see strategization towards the center party, C.

Note that a big (untestable) difference between the two models is that in the case of household bargaining, men would be more and more orienting their vote towards their own preferences while in the case of strategic voting, they would be voting for the option that has the most chance to win against women's preferences.

5.3 Testing for strategic voting

We next verify if strategic voting could explain in part the patterns documented. For this, we constructed a measure that, according to the model, would predict a strategic response on the part of men. We classify whether the municipalities had tight elections in the election previous to the arrival of women (1945). We created a dummy variable equal to 1 if the voteshare difference in a municipality between the leading and the follower coalitions was less than 15 percentage points.[1] While our model would predict that this should be only relevant when the party that is least preferred by women would be involved, we find very few instances of tight elections where the left is not part of the two main contenders, leaving us unable to do further separation. We then interact the impact of the timing of female vote on men's voting pattern with this indicator. Results are presented in Table 3.

We observe that while the response of men to female suffrage was to move away from the right and towards the left in all cases, it was even stronger in the situations predicted by our model. While men's average share of left-wing vote increased by between 7 and 36 points in non-tight elections, it increased by 3 to 4 percentage points more in municipalities that had experienced tight elections in 1945. The shift away from the right is even more marked in municipalities that had experienced tight elections before the arrival of women, with a fall of about 5 additional percentage points in the share of male votes for right-wing parties.

Overall, these results are consistent with the presence of strategic voting in a multiparty system where the introduction of female suffrage could have led men to change their vote in response to the arrival of these new voters. We show that the interactions are similar in panel B when using the alternative party classification in Appendix Table B.9 although results are noisier for panel A.

[1] Even though the assignment of seats in congress followed a D'Hondt (proportional) system, we are capturing whether the leadership in a municipality was contested.

Table 3: Testing if men's voting response to female voting was strategic

	Fraction of votes from men voting booths			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	0.070***	0.362***	0.122***	0.361***
	(0.009)	(0.018)	(0.011)	(0.020)
Female Vote*Close Election 1945	0.032	0.037*	0.030	0.038**
	(0.021)	(0.020)	(0.021)	(0.019)
	Panel B: Share of right-wing vote			
Female Vote	-0.161***	-0.189***	-0.171***	-0.175***
	(0.011)	(0.025)	(0.014)	(0.027)
Female Vote*Close Election 1945	-0.046**	-0.051***	-0.041**	-0.051***
	(0.018)	(0.017)	(0.018)	(0.017)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

5.4 Testing for household bargaining

We next test for whether some of the response of men's voting to the arrival of women could be due to the fact that they were previously "selling" their vote at home.

We perform two different tests. In the first instance, we interact our main regressor with indicators of municipality characteristics where we think that the reversal to true preferences would be more pronounced once women obtain the right to vote. We first interact our dummy for elections where women were participating with an indicator of the fraction of married men in the municipality in 1940. Our conjecture is that the higher the fraction of married men, the larger the share of them who would have been reflecting the preferences of their spouse in their vote before the election. Thus, we should observe a higher switch in electoral decisions post female voting.

We present these results in columns 1-2 of Table 4. We observe limited indication that in municipalities where a higher fraction of men were married before female suffrage, the response of men was more towards the left and less towards the right. If anything, there seems to be some weak indication that men were less likely to move away from the right when there were more married men initially. This may be simply because in municipalities with more marriages, the values are more traditional and men are thus less likely to be strong left-wing supporters.

Next, we use the fractions of births that were illegitimate before the right to vote was granted to women. We may think that in geographical areas with more out-of-wedlock births, men have more bargaining power since they are not coerced into marriage when a pregnancy occurs. However, our results are not consistent with this hypothesis. We see in columns 3-4 that, if anything, men switched more away from the right when

Table 4: Testing if men's voting response to female voting was due to household negotiations

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	0.137	0.515***	0.144***	0.326***
	(0.094)	(0.105)	(0.038)	(0.047)
Female Vote*Share Married Men	-0.014	-0.270		
	(0.174)	(0.191)		
Female Vote*Illegitimate 1945			-0.053	0.173
			(0.142)	(0.171)
	Panel B: Share of right-wing vote			
Female Vote	-0.319***	-0.496***	-0.093***	-0.025
	(0.097)	(0.138)	(0.035)	(0.045)
Female Vote*Share Married Men	0.257	0.578**		
	(0.181)	(0.245)		
Female Vote*Illegitimate 1945			-0.329***	-0.623***
			(0.118)	(0.152)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

there were more illegitimate births in the past. Once more, this may be because our measure of bargaining power is more linked to a measure of conservatism and thus, in places with less conservatism, men were less likely to be right-wing supporters.

In Appendix Table B.10, we show similar absence of correlations between men's voting response to female suffrage and proxies of bargaining when using our alternative way of classifying parties.

However, this may be more a reflection of the low-quality measures of bargaining power we were able to measure in the data of the period than an absence of the mechanism at play. Our model suggests something more important that we can exploit which is whether the vote was secret or not. It specifies that women and men's voting should diverge as secret voting is implemented if there was some household negotiation in voting.

To test this, we restrict our sample to years where women had the right of vote and estimate the following equation:

$$y_{gct} = \beta X_{ct} + \mu_c + \delta_g + \gamma \text{Secret ballot}_t + \eta(g = \text{Female}) * \text{Secret ballot}_t + \varepsilon_{gct} \quad (2)$$

where g represents gender. Secret ballot$_t$ is a dummy variable taking the value of 1 after 1958, when the Australian secret ballot was implemented (Baland and Robinson, 2008). In this case, we control, in addition to the same variables as in the previous context, for a dummy for the gender of the voters for which votes are counted, and for its interaction with the secret ballot dummy. Once more, we will also include in

some specifications decade-by-province fixed effects to soak up any geographical specific change over time as well as controls at the district/time level. Standard errors will also be clustered at the district level in this specification.

The results of this estimation are presented in Table 5. They show that the secret ballot made men more likely to vote for left-wing parties but this was much less the case for women. Thus, secret voting opened a wedge between the share of women and men voting for left-wing parties, as predicted by our model of household bargaining. For right-wing vote shares, our results are noisier and do not indicate that secret voting consistently impacted men and women's voting decisions.

Table 5: Impact of secret vote by gender

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Secret Vote	0.025***	0.144***	0.040***	0.150***
	(0.008)	(0.010)	(0.010)	(0.010)
Women	-0.036***	-0.036***	-0.036***	-0.036***
	(0.005)	(0.005)	(0.005)	(0.005)
Secret Vote*Women	-0.023***	-0.023***	-0.023***	-0.023***
	(0.004)	(0.004)	(0.004)	(0.004)
	Panel B: Share of right-wing vote			
Secret Vote	-0.080***	0.016*	-0.075***	0.001
	(0.008)	(0.009)	(0.010)	(0.010)
Women	0.025***	0.025***	0.025***	0.025***
	(0.004)	(0.004)	(0.004)	(0.004)
Secret Vote*Women	-0.003	-0.003	-0.003	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Province trends		X		X
Controls			X	X
N	2,520	2,520	2,520	2,520

Notes: The sample includes the congressional elections between 1953 and 1969. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Very similar conclusions would be drawn when using the alternative party classification, as shown in Appendix Table B.11. Finally, we also show that our results are robust to the inclusion of the interactions employed by Baland and Robinson (2008) in Appendix Table B.12.[2] The polarization of men's and women's voting after the introduction of the secret ballot is not because men were located in municipalities that were more rural or had more tenants, which were, according to the authors, indicators of vote-buying power.

[2]We only include regressions for the left-wing vote as we had found no divergence in voting patterns for the right-wing parties after the secret vote.

6 Conclusions

This paper exploits a peculiarity in the way voting results were cast and reported in Chile in the twentieth century to evaluate the impact of female suffrage on male voting behavior. First, inference drawn from ecological-type regressions is likely to be biased. Second, men responded to female suffrage by orienting their vote more towards left-wing parties, while women were more likely to vote for right-wing coalitions. We suggest that this is likely to be due both to the fact that men voted strategically to counter the support that women were granting right-wing parties, and also because men may have "sold their vote at home" before the arrival of the secret ballot.

These results are relevant to understand how the expansion of the suffrage may have shaped political decisions historically. While we focus on the impact of granting women the right to vote given our data, it is highly possible to think that the expansion of suffrage to lower-income or illiterate men or to racially excluded minorities, as has occurred in the history of many countries, would generate similar responses, at least when considering strategic voting.

Secondly, it may also be relevant to understand how the arrival of immigrants (who have the right to vote in some countries) may influence the voting behavior of natives even today. Our results suggest that natives could strategically modify their voting behavior to counter the resulting change in aggregate preferences generated by the new voters.

Finally, while we document that household bargaining may have played a role, this seems to be specific to a context where voting was not fully secret. It is unlikely that the argument that was used historically –that women did not need the right to vote because their husbands were already voting for them– would hold in a setting where voting could not be observed by one's spouse.

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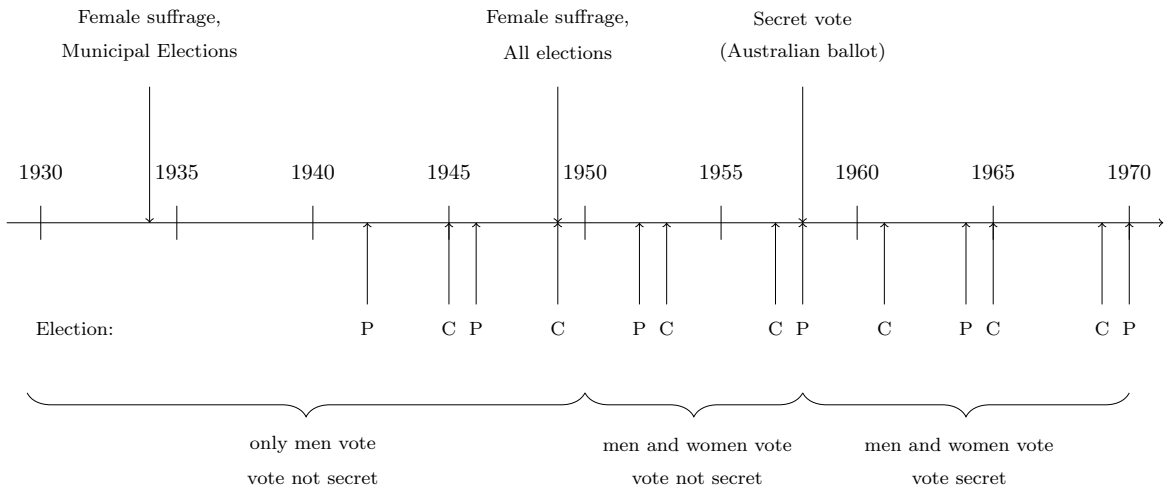
Appendix

A Additional figures

Figure A.1: Female suffrage, secret vote and timing of elections, 1930–1970



Notes: P and C indicate Presidential and Congressional elections, respectively. Even though the female suffrage bill was approved in 1949, women were not allowed to vote in the congressional elections held that year.

B Additional tables

Table B.1: Classification of parties, Congress, by alliance

Left	Center	Right
Agrario Laborista (1949, 1953)	Acción Renovadora (1949, 1953)	Acción Nacional (1965)
Alianza Popular Libertadora (1945)	Agrario (1953)	Agrario (1945)
Comunista (1961, 1965, 1969)	Conservador (1949, 1953, 1957)	Comandos Populares (1961, 1965)
Del Trabajo (1957)	Demócrata (1945, 1949, 1965)	Conservador (1945, 1965)
Democracia Agrario Laborista (1965)	Demócrata Cristiano (1961, 1965, 1969)	Conservador Tradicional (1949, 1953)
Demócrata (1961)	Demócrata Nacional (1945, 1965, 1969)	Conservador Unido (1957, 1961)
Demócrata Nacional (1961)	Democrático (1962-1965)	Liberal (1945, 1949, 1953, 1957, 1961, 1965)
Democrático (1945, 1949, 1957)	Falange Nacional (1945, 1953)	Liberal Progresista (1945)
Democático de Chile (1953)	Laborista (1949, 1953, 1957)	Nacional (1969)
Democrático del pueblo (1949, 1953)	Liberal Progresista (1949)	Nacional Cristiano (1957)
Democrático Doctrinario (1957)	Movimiento Nacional Ibañista (1953)	Radical (1949)
Falange Nacional (1949)	Movimiento Nacional del Pueblo (1953, 1957)	
Progresista Nacional (1945)	Movimiento Republicano (1957)	
Radical (1945, 1953, 1957, 1961, 1965, 1969)	Nacional (1957)	
Radical Democrático (1949)	Nacional Cristiano (1953)	
Radical Doctrinario (1949, 1953, 1957)	Unión Nacional de Independientes (1953)	
Social Demócrata (1969)		
Socialista Auténtico (1945, 1949)		
Socialista (1945, 1957, 1961, 1965, 1969)		
Socialista de Chile (1949, 1953)		
Socialista Popular (1949, 1953, 1957)		
Unidad Popular (1953)		
Unión Nacional Laborista (1961)		
Unión Socialista Popular (1969)		
Vanguardia Nacional del Pueblo (1965)		

Table B.2: Classification of parties, Congress, by party ideology

Left	Center	Right
Alianza Popular Libertadora	Acción Renovadora	Acción Nacional
Comunista	Agrario	Comandos Populares
Del Trabajo	Agrario Laborista	Conservador
Democracia Agrario Laborista	Conservador Social Cristiano	Conservador Tradicional
Democrático (1932-1960)	Demócrata	Conservador Unido
Democático de Chile	Demócrata Cristiano	Liberal
Democrático del pueblo	Demócrata Nacional	Nacional (1966-1994)
Democrático Doctrinario	Democrático (1962-1965)	Nacional Cristiano
Progresista Nacional	Falange Nacional	
Radical	Laborista	
Radical Democrático	Liberal Progresista	
Radical Doctrinario	Movimiento Nacional Ibañista	
Social Demócrata	Movimiento Nacional del Pueblo	
Socialista Auténtico	Movimiento Republicano	
Socialista	Nacional (1956-1958)	
Socialista Popular		
Socialista de Chile		
Unidad Popular		
Unión Nacional de Independientes		
Unión Nacional Laborista		
Unión Socialista Popular		
Vanguardia Nacional del Pueblo		

Table B.3: Classification of candidates, Presidential Elections

Left	Center	Right
Pedro Aguirre Cerda (PR)	Carlos Ibañez del Campo (1952, Ind., PSP-PAL-MNI-PRDo-PNC-PPF-PDP)	Gustavo Ross Santa María (PL)
Carlos Ibañez del Campo (1938, Ind., APL)	Eduardo Frei Montalva (PDC)	Carlos Ibañez del Campo (1942, Ind., PL-PCon-APL)
Gabriel Gonzalez Videla (PR)	Radomiro Tomic (PDC)	Eduardo Cruz-Coke Lassabe (PCon)
Bernardo Ibañez Águila (PS)		Fernando Alessandri Rodríguez (PL)
Salvador Allende Gossens (PS)		Arturo Matte Larraín (PL)
Pedro Alfonso Barrios (PR)		Jorge Alessandri Rodríguez (Ind., PCon-PL-PN-CP-DR)
Luis Bossay Leiva (PR)		
Antonio Zamorano Herrera (UNL)		
Julio Durán Neumann (PR)		

Table B.4: Estimating women's voting preferences from "ecological regressions" versus actual data (alternative definition)

	Ecological regressions				Actual data	
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Share of left-wing vote			
Share of women voting	0.464	0.362				
	(0.311)	(0.327)				
Share of women in population			2.558	2.369		
			(1.630)	(1.530)		
Dummy women					-0.028***	-0.028***
					(0.004)	(0.004)
			Panel B: Share of right-wing vote			
Share of women voting	-0.051	0.084				
	(0.256)	(0.245)				
Share of women in population			0.330	0.549		
			(2.037)	(1.708)		
Dummy women					0.021***	0.021***
					(0.004)	(0.004)
Controls		X		X		X
N	502	502	502	502	1,004	1,004

Notes: The sample includes the congressional elections of 1953 and 1957. The alternative classification of parties is presented in Table B.2. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.5: Estimating women's voting preferences from "ecological regressions" versus actual data (presidential elections)

	Ecological regressions				Actual data	
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A: Share of left-wing vote			
Share of women voting	-0.276*	-0.188				
	(0.143)	(0.139)				
Share of women in population			-0.223	-0.197		
			(0.218)	(0.348)		
Dummy women					-0.035***	-0.035***
					(0.004)	(0.004)
			Panel B: Share of right-wing vote			
Share of women voting	1.031***	1.065***				
	(0.225)	(0.172)				
Share of women in population			-0.122	0.465		
			(0.475)	(0.588)		
Dummy women					0.019***	0.019***
					(0.004)	(0.004)
Controls		X		X		X
N	530	530	265	530	1,060	1,060

Notes: The sample includes the presidential elections of 1952 and 1958. The classification of candidates is presented in Table B.3. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.6: Estimating men's voting response to female voting (including secret voting)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	0.079***	0.222***	0.092***	0.233***
	(0.008)	(0.011)	(0.009)	(0.013)
Secret Vote	0.025***	0.205***	0.043***	0.209***
	(0.008)	(0.010)	(0.009)	(0.011)
	Panel B: Share of right-wing vote			
Female Vote	-0.172***	-0.097***	-0.185***	-0.102***
	(0.009)	(0.015)	(0.010)	(0.016)
Secret Vote	-0.080***	0.015	-0.083***	0.010
	(0.008)	(0.011)	(0.009)	(0.011)
Province trends		X		X
Controls			X	X
N	1,764	1,764	1,764	1,764

Notes: The sample includes the congressional elections between 1945 and 1969. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.7: Estimating men's voting response to female voting (alternative definition)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	-0.012*	0.099***	0.017*	0.104***
	(0.007)	(0.015)	(0.009)	(0.016)
	Panel B: Share of right-wing vote			
Female Vote	-0.042***	0.098***	-0.029**	0.118***
	(0.008)	(0.020)	(0.011)	(0.022)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. The alternative classification of parties is presented in Table B.2. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.8: Estimating men's voting response to female voting (Presidential Elections)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	-0.084***	-0.257***	-0.089***	-0.241***
	(0.006)	(0.015)	(0.009)	(0.016)
	Panel B: Share of right-wing vote			
Female Vote	-0.187***	-0.295***	-0.197***	-0.305***
	(0.006)	(0.013)	(0.008)	(0.014)
Province trends		X		X
Controls			X	X
N	1,064	1,064	1,064	1,064

Notes: The sample includes the presidential elections between 1942 and 1958. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.9: Testing if men's voting response to female voting was strategic (alternative definition)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	-0.015*	0.096***	0.015	0.101***
	(0.008)	(0.015)	(0.009)	(0.016)
Female Vote*Close Election 1945	0.012	0.011	0.011	0.012
	(0.017)	(0.018)	(0.017)	(0.018)
	Panel B: Share of right-wing vote			
Female Vote	-0.035***	0.109***	-0.024*	0.128***
	(0.009)	(0.021)	(0.012)	(0.023)
Female Vote*Close Election 1945	-0.027	-0.041**	-0.020	-0.039**
	(0.017)	(0.017)	(0.017)	(0.017)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. The alternative classification of parties is presented in Table B.2. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.10: Testing if men's voting response to female voting was due to household negotiations (alternative definition)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Female Vote	-0.064	0.200**	0.036	0.079**
	(0.079)	(0.090)	(0.032)	(0.034)
Female Vote*Share Married Men	0.152	-0.180		
	(0.144)	(0.166)		
Female Vote*Illegitimate 1945			-0.070	0.096
			(0.121)	(0.121)
	Panel B: Share of right-wing vote			
Female Vote	-0.067	-0.061	0.003	0.174***
	(0.074)	(0.127)	(0.030)	(0.040)
Female Vote*Share Married Men	0.072	0.335		
	(0.138)	(0.225)		
Female Vote*Illegitimate 1945			-0.120	-0.213
			(0.102)	(0.130)
Province trends		X		X
Controls			X	X
N	1,008	1,008	1,008	1,008

Notes: The sample includes the congressional elections between 1945 and 1957. The alternative classification of parties is presented in Table B.2. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.11: Impact of secret vote by gender (alternative definition)

	Fraction of votes			
	(1)	(2)	(3)	(4)
	Panel A: Share of left-wing vote			
Secret Vote	0.055***	0.067***	0.057***	0.075***
	(0.008)	(0.011)	(0.010)	(0.012)
Women	-0.028***	-0.028***	-0.028***	-0.028***
	(0.004)	(0.004)	(0.004)	(0.004)
Secret Vote*Women	-0.029***	-0.029***	-0.029***	-0.029***
	(0.004)	(0.004)	(0.004)	(0.004)
	Panel B: Share of right-wing vote			
Secret Vote	-0.093***	0.014	-0.083***	-0.000
	(0.009)	(0.009)	(0.010)	(0.010)
Women	0.021***	0.021***	0.021***	0.021***
	(0.004)	(0.004)	(0.004)	(0.004)
Secret Vote*Women	0.001	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)
Province trends		X		X
Controls			X	X
N	2,520	2,520	2,520	2,520

Notes: The sample includes the congressional elections between 1953 and 1969. The alternative classification of parties is presented in Table B.2. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

Table B.12: Impact of secret vote by gender, interaction with rural and inquilinos

	Share of left-wing votes			
	(1)	(2)	(3)	(4)
	Panel A: Interaction with % Rural in 1945			
Secret Vote	0.027	0.123***	0.063***	0.154***
	(0.016)	(0.016)	(0.019)	(0.019)
Women	-0.036***	-0.036***	-0.036***	-0.036***
	(0.005)	(0.005)	(0.005)	(0.005)
Secret Vote*Women	-0.023***	-0.023***	-0.023***	-0.023***
	(0.004)	(0.004)	(0.004)	(0.004)
Secret Vote*% Rural 1945	-0.002	0.030	-0.034	-0.006
	(0.024)	(0.021)	(0.026)	(0.023)
N	2,520	2,520	2,520	2,520
	Panel B: Interaction with % Inquilinos in 1935			
Secret Vote	0.033***	0.129***	0.050***	0.140***
	(0.012)	(0.014)	(0.014)	(0.015)
Women	-0.036***	-0.036***	-0.036***	-0.036***
	(0.005)	(0.005)	(0.005)	(0.005)
Secret Vote*Women	-0.023***	-0.023***	-0.023***	-0.023***
	(0.004)	(0.004)	(0.004)	(0.004)
Secret Vote*% Inquilinos 1935	-0.202	0.097	-0.243	-0.054
	(0.317)	(0.308)	(0.326)	(0.298)
N	2,230	2,230	2,230	2,230
Province trends		X		X
Controls			X	X

Notes: The sample includes the congressional elections between 1953 and 1969. All regressions include municipality fixed effects. Standard errors, clustered at the municipality level, are presented in parentheses. ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

C Proofs of the models

C.1 Proof of proposition 1

If only men can vote, they will pick whether to vote (p_h) for the party to maximize their utility subject to the restrictions they are facing. The political utility in this case will depend only of the vote of the husband since the wife is unable to vote. The wife's utility will be given by

$$-\alpha(p_h - a_w)^2 - \beta(p_h - a_w)^2 + c_w \geq X$$

Note that we assume that she feels the same disutility from misalignment from her own political view when her husband votes than if she voted herself. We need that there be an additional weight on her husband's vote when she cannot vote herself but it does not have to be as large as α.

while that of their husband will be determined by

$$-\alpha(p_h - a_h)^2 - \beta(p_h - a_h)^2 + c_h$$

Once more, we need his vote to matter more than α to him but not necessarily $\alpha + \beta$.

If a man can credibly commit to a particular vote, the man's consumption will be given by $c_h = m - c_w$. Furthermore, given that the man will be able to push his spouse to her reservation utility the first condition will be satisfied with equality. Combining both elements to replace c_h in the man's utility function, we obtain that his problem can be resumed as picking p_h that maximizes

$$-\alpha(p_h-a_h)^2-\beta(p_h-a_h)^2-\alpha(p_h-a_w)^2-\beta(p_h-a_w)^2+m-X = -(\alpha+\beta)(p_h-a_h)^2-(\alpha+\beta)(p_h-a_w)^2+m-X$$

Thus, he will vote to minimize $(p_h - a_h)^2 + (p_h - a_w)^2$. The political opinion of his wife will be weighted as heavily as his own in this setting. His vote will represent the "aggregated" political views of the family. This is because he internalizes that by voting more aligned to his spouse, the transfer he must make to her to maintain her willing to participate in the relationship becomes smaller.

If a man cannot credibly commit to a particular vote, then he will be unable to extract a lower payment from a more aligned vote, thus leading him to a selfish vote from the get-go.

C.2 Proof of proposition 2

If women obtain the right to vote, then both will be able to express their preferences through ballots, as p_h and p_w. The wife's utility will be given by

$$-\alpha(p_w - a_w)^2 - \beta(p_h - a_w)^2 + c_w \geq X$$

while that of their husband will be determined by

$$-\alpha(p_h - a_h)^2 - \beta(p_w - a_h)^2 + c_h$$

Once more, if both can credibly commit to their vote, given that the man will be able to push his spouse to her reservation utility and that there is a budget constraint to satisfy, the man's problem can be resumed as picking p_h that maximizes

$$-\alpha(p_w - a_w)^2 - \beta(p_h - a_w)^2 - \alpha(p_h - a_h)^2 - \beta(p_w - a_h)^2 + m - X$$

Since he cannot influence his wife's vote, he will pick the political party that minimizes

$$\alpha(p_h - a_h)^2 + \beta(p_h - a_w)^2$$

Compared to the expression obtained when women could not vote, he will give less weight to his wife's political opinion than previously. However, his wife's political opinion will continue to influence his voting decision. Since the impact of one's vote is stronger on one's own utility than that of one's spouse, he will be able to extract less resources by altering his vote (since she can now vote according to her own political ideology) than previously. His vote will thus more strongly aligned to his own ideology than previously. Women will vote according to their own ideology since they are confined to receiving X as reservation value irrespective of their voting decision.

If men's vote cannot be observed and thus cannot credibly commit to their vote, they will not be able to extract any utility from voting according to their wife's preference and will thus simply vote for their own political views, before and after the female vote.