What Determines Voting for Women Candidates?
An Analysis of Taiwan Council Elections[*]

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Abstract

While several factors have been posited as driving voting behavior, there is little understanding of why votes go to certain types of candidates, such as women candidates. This study attempts to explore specific questions regarding the formation of voting behavior by analyzing electoral outcomes for women candidates in the context of Taiwan. Using a dataset of the electoral results of 83 local council elections at the district level in Taiwan from 2005 to 2018, analysis using social calculus shows that demographic factors are essential in explaining votes going to women candidates. The results also reveal habit persistence in voting for candidates based on gender. Moreover, there is evidence that the presence of women representatives helps shape voters' decisions on candidates at the gender level.

Key words

Voting behavior, electoral outcomes, women candidates, exposure effect

Introduction

Factors determining voting behavior have been of interest to researchers for several decades because they help them understand voters' decision-making processes, with political benefits for potential participants. For a long time, women have been a disadvantaged group having been granted the right to stand for election later than men in most countries. Despite the improvement in the representation of women politicians worldwide, the Inter-Parliamentary Union (IPU) reports that the global average seat share of women parliamentarians remained at 26.5% as

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of February 2023, indicating that most parliaments are still male-dominated. However, it is suggested that integrating women's concerns in decision-making would improve social welfare. Therefore, it is essential to understand the determinants of voting for women candidates.

For young adults, the high initial costs of comprehensively searching for political information force them to rely on the resources available either through their families or through their own observed and unobserved individual characteristics (Brady, Verba, & Schlozman, 1995). For example, parents' political beliefs may provide young adults with their first insight into political affairs, which may develop into young voters' long-standing attitudes that they express at each election. Other events that take place later in life may also impact an individual's political choices, such as marriage and relocation (Plutzer, 2002). This also holds for older adults.

While most studies on voting behavior regard voting choices as the result of personal calculus, Beck, Dalton, Greene, and Huckfeldt (2002) supplement the literature by showing voting choices to be the joint product of different social contexts and well-established personal traits. According to various studies, voters are likely to reward incumbent parties when the economy is doing well and punish them when the economy is performing poorly (Powell & Whitten, 1993). They may respond to an incumbent party's macroeconomic policy (Rogoff & Sibert, 1988), follow party line voting regardless of their individual policy positions (Miller, 1991), or be induced to vote in the future based on others' previous voting experiences (DellaVigna & Kaplan, 2007; Gerber, Green, & Larimer, 2008; Nickerson, 2008; Bond et al., 2012; DellaVigna, List, Malmendier, & Rao, 2017). They may also evaluate candidates' previous performance or future plans when making choices (Lockerbie, 1992; Healy & Malhotra, 2013), be mobilized by intermediary messages from the parties, candidates, and campaigns in their social environment (Huckfeldt & Sprague, 1992; Lake & Huckfeldt, 1998; Bennett & Entman, 2001), shape politics in their own favor if they are wealthy (Slot, 2008), or react to social pressure messages (Davenport et al., 2010; Green & Gerber, 2010). Appendix A provides a summary of studies on voting behavior.

It has been found that people with given social characteristics tend to prefer candidates who share those characteristics (Campbell & Cowley, 2014). Even though the evidence is mixed, women voters are likely to vote for women candidates under certain conditions, known as the "gender affinity effect" (e.g., Dolan, 1998; Stambough & O'Regan, 2003; Goodyear-Grant & Croskill, 2011; Bird, Jackson, McGregor, Moore, & Stephenson, 2016; Campbell & Heath, 2017;

Becerra-Chávez & Navia, 2022). Sociodemographic cues may provide a cognitive explanation for voting behavior (Conover & Feldman, 1989). For example, in a constituency with more educated women participating in the labor market, the demand for government policies that improve women's social status will increase, resulting in more votes being received by women candidates (Chen, 2019). Sociodemographic factors can also offer identity-based explanations (Plutzer & Zipp, 1996). Women, in comparison to men, are more likely to see themselves as representatives of their gender and to prioritize legislation about women (Chen, 2013), which may encourage women voters to stand with women candidates.

Once voting behavior is established, the high transaction costs of voting are very likely to result in persistent voting behavior. Therefore, it has been argued that if two individuals have precisely identical features, with the exception of the decision to vote, then the impact of these decisions remains in later elections (Green & Shachar, 2000; Gerber, Green, & Shachar, 2003). Moreover, the enduring voting behavior is likely to arise from the acquisition of inner benefits from casting a vote, since it can self-reinforce the act of voting (Ajzen, 1989; Kanazawa, 1998). A rich strand of the literature addresses the issue of habit formation in voting (e.g., Cutts, Fieldhouse, & John, 2009; Meredith, 2009; Górecki, 2013a; Górecki, 2013b; Coppock & Green, 2016; Bechtel, Hangartner, & Schmid, 2018; Pons, 2018; Gerber, Hoffman, Morgan, & Raymond, 2020).

Among the findings corroborating the hypothesis of the habitual nature of voting decisions, the policy distance between the voter and each candidate may help understand voters' ongoing support for certain types of candidates (Markus & Converse, 1979). Let us consider women politicians as an example. Voters formulate their initial impressions regarding women politicians based on the fact that "soft issues" that used to concern women, such as education, health, and welfare issues, have become public debates in recent decades and that women politicians tend to manage these policies with a greater degree of effectiveness.[1] Once women are elected, societal opinions about the women's capabilities as politicians will improve (Matland, 1994; Dasgupta & Asgari, 2004; Beaman, Chattopadhyay, Duflo, Panda, & Topalova, 2009), which may help strengthen voters' attitudes toward women politicians and encourage voting for them in the next election (Bligh,

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[1] Thomas (1994) states, "For most women, their public sphere role was only half of their job; they continued to bear the major responsibility for home and health. Given this dual role, it is not surprising that women have used their latitude to participate in the legislative arena to make private sphere issues legitimate governmental concerns." in *How Women Legislate*, p. 81.

Schlehofer, Casad, & Gaffney, 2012).

Taken as a whole, the literature has led this study to investigate the voting decisions made in support of women candidates in the context of Taiwan. The social status of women in Taiwan has been steadily improving. The Gender Equality Committee in Taiwan (2023), using the Gender Gap Index calculation method of the World Economic Forum, announced that Taiwan ranked 36th globally and first in Asia in 2022. The average percentage of women representatives in councils has steadily increased, and is higher than in other Asian countries. These factors make Taiwan a valuable target for studying voting patterns in support of women candidates.

Many factors have been discussed in the literature as important determinants of voting decisions. This study specifically focuses on the influence of social context by using a dataset of the electoral results in 83 local council elections at the district level in Taiwan from 2005 to 2018. According to Gerber and Lewis (2004), district heterogeneity not only allows legislators some deliberation in terms of how they position themselves, but also forces them to be more responsive to their vote-maximizing median position. Taiwan has various constituency sizes, and different candidate compositions among those constituencies, providing a social context to shape voters' choices. Additionally, this study aims to explore the factors that determine votes for women candidates, whether there is a lasting effect on electoral outcomes for women candidates, and whether the exposure of women representatives helps shape voting decisions.

The remainder of the paper is organized as follows. The next section introduces the context of Taiwan and presents the hypotheses, followed by the empirical specifications and a description of the data. The results are then presented, and the final section discusses the findings and presents concluding remarks.

Background and Research Questions

Women in Politics in Taiwan

Taiwan is at the top of the list among Asian countries in terms of the number of women representatives elected in both national and local elections. In 2023, women in Taiwan held 41.59% of seats in the national parliament, which is higher than in Singapore (29.13%), Korea (19.06%), or Japan (9.96%), based on IPU statistics. A similar pattern can be found in local elections; data from Taiwan's Central Election Commission (CEC) in Taiwan show that the proportion of council-

women in all cities and counties was below 25% before 1998. However, this rose to an average of 37.58% following the 2022 election.

In Taiwan, council elections are part of local elections and are held every four years. Each city has several constituencies with varying numbers of councilors, depending on constituency size. For example, Taipei has 61 seats on the council, whereas Penghu County, an island in western Taiwan, has 19 seats. As shown in Figure 1, the average percentage of women candidates and the average rate of women elected have both steadily increased.

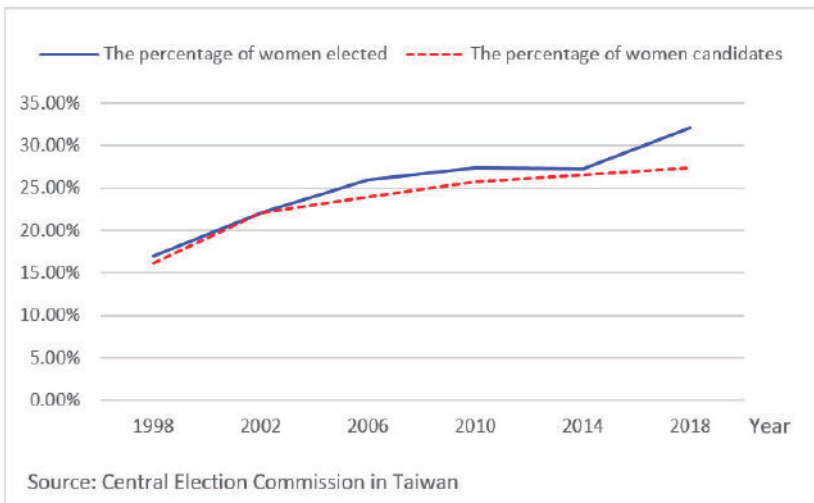Source: Central Election Commission in Taiwan

Figure 1. Women candidates in council elections in Taiwan

In Taiwan, women's right to suffrage was first stated in the 1947 Constitution, but women's representation in politics did not increase significantly until 1998. The policy that guaranteed one-fourth of nominated candidates would be women, approved by the Democratic Progressive Party (DPP), the largest left-wing party in Taiwan in 1997, likely explains the increasing number of women in politics. It not only forced its largest right-wing competitor, the Kuomintang (KMT), to promote the representation of women but also influenced legislation. Since 1999, the Local Government Act has required that at least one woman be elected for every four seats in a council election constituency.

Although the quota system is believed to have benefited women, its enduring effect once the proportion of councilwomen exceeds 25%—the lower limit in the

reserved-seat system—is disputed. According to statistics provided by the CEC, 162 women were elected to local councils, but less than 10% of them entered parliament under the shelter of gender-guaranteed places in 2009. In 2018, only 0.44% of council women were elected due to the women's guarantee quota. This reflects the problems of the system's design, as the quota can only be applied to larger constituencies where the number of councilors is greater than four. As a result, most elected women tend to be elected on their own merits without the help of the reserved-seat system.

In addition to legislative elections, the number of women running for mayor has increased. Most women candidates participate in mayoral elections in the central and southern parts of Taiwan, which reflects the local political environment. Take Chiayi as an example. From 1968 onward, members of the Hsu Family held the position of mayor of Chiayi City for 32 years beginning in 1968. At that time, Taiwan was controlled by the KMT as a one-party dictatorship, and the Hsu Family were not members of the KMT. The citizens of Chiayi elected women from the Hsu Family as mayor, a significant signal of progress in the Taiwanese women's movement (Chen, 2013). The representation of women mayors encourages more women to participate in elections, regardless of whether the current mayor is female. In 2022, 24 women candidates participated in mayoral elections, compared to 19 in 2018. The proportion of women mayors also increased from 31.82% to 41.45% according CEC data. Thus, nominating a woman in the election may not only reveal the strategy of political parties but also expose the electorate's preferences in Taiwan.

Congresswomen have been found to speak more frequently on healthcare and welfare policies in Taiwan (Chiang, 2008). Similarly, women are the majority on the education committee of the current Taipei City Council. In other words, women politicians in Taiwan are more likely to respond to their gender perspectives in the legislative process and provide information about their policy preferences for voters to make informed decisions.

In Taiwan, local council elections use a single non-transferable vote multi-member district system (SNTV-MMD), and voters directly vote for candidates. Constituency size varies, and the number of candidates of different genders fluctuates among constituencies, making it suitable for understanding voting behavior. Additionally, as mentioned earlier, Taiwan has maintained the leading position in terms of the proportion of women representatives in Asia, which reflects the relatively high level of women's social status. Therefore, this study attempts to examine the determinants of votes for women candidates in the context of Taiwan.

Hypotheses

Based on the information presented in the previous subsection on Taiwanese women's political participation, this study proposes three hypotheses:

H1: *The district composition explains women candidates' share of the vote.*

H2: *Habit persistence occurs in votes for women candidates.*

H3: *Women politicians in Taiwan create an exposure effect.*

To test the first hypothesis, this study applied social calculus to comprehend the factors describing voting decisions toward councilwomen. Socioeconomic variables of particular interest included population heterogeneity and workforce composition, which are likely to capture the gender affinity effect.

The statistics provided by the CEC show that the average percentage of women candidates in Taiwan surpassed 22.07% in 2002 and continues to grow, reaching 27.42% in 2022. This suggests the persistence of votes for women candidates. Therefore, this study tests the second hypothesis by analyzing the relationship between council women's votes in the previous election and their performance in the current election.

In the literature, gender stereotypes have been suggested as inferring a candidate's ideological orientation and issue positions, and women may thus suffer from ratings in relation to experience and competence (Rosenwasser, Rogers, Fling, Silvers-Pickens, & Butemeyer, 1987; Huddy & Terkildsen, 1993; Eagly & Karau, 2002). Nevertheless, exposure to women politicians may change the voters' information sets and thereby generate advantages for current women candidates (Dolan, 2008; Broockman, 2014; Baskaran & Hessami, 2018; Ladam, Harden, & Windett, 2018). The increasing number of women mayors and the steadily growing percentage of councilwomen in Taiwan suggest that voters are increasingly recognizing women's capabilities as politicians. This study tests the third hypothesis by investigating whether the presence of women politicians explains electoral outcomes for women candidates.

Method

To test the first hypothesis, this study explores social calculus with a dataset covering elections for local councilors. The specifications are as follows:

$$Femvote_{ijt} = \alpha_j + \beta_t + \gamma_1 Pop_{jt} + \gamma_2 Educ_{jt} + \gamma_3 Income_{jt}$$
$$+ \sum_{l=1}^{2} \gamma_{4l} \times Labor_{ljt} + \gamma_5 Gender_{ijt} + +\gamma_6 Wcand_{jt} + \varepsilon_{ijt}, \tag{1}$$

where i denotes district indices, j denotes city indices, t denotes time indices, α_j reflects city fixed effects, and β_t reflects the election year fixed effects. *Femvote* denotes the votes gained by women candidates at the district level. *Pop* denotes the fraction of the population aged below 15 and above 65, which is also known as the dependency ratio, at the city level. *Educ* denotes the fraction of the female population holding a tertiary-level degree at the city level. *Income* denotes disposable income at the city level. *Labor* denotes the labor force participation rate, with $l=1$ referring to the female labor force and $l=2$ to the male labor force at the city level. *Gender* denotes the male–female population ratio at the district level. Generally speaking, a district with more dependency, more women with a tertiary-level degree, a higher female labor force participation rate, and a lower ratio of men to women may be associated with more votes for women candidates if the electoral environment is congenial to women politicians with respect to the demand for better social welfare policies. An area with higher disposable income may reveal a more generous attitude toward gender equality in politics and cast more votes for women candidates. To control for supply-side influences and ensure consistency across elections, Equation (1) includes the percentage of women candidates at the city level (denoted as *Wcand*) as a control variable. The error terms are accounted for by clustering results at the district level because unrecorded district differences may impact women candidates' votes and result in spatial correlation.

To test the second hypothesis regarding the vote-persistence effect, the following autoregressive model is introduced:

$$Femvote_{i,t} = \rho Femvote_{i,t-1} + v_{i,t}. \tag{2}$$

The time subscript t -1 corresponds to the previous election. The lagged dependent variable on the right-hand side captures the impact of the previous social context.

This study conducts the following specification to test the third hypothesis about the exposure effect of women politicians:

$$Femvote_{it} = \alpha_j + \beta_t + \delta Fempolitician_{i,t-1} + \epsilon_{it}, \tag{3}$$

Fempolitician the participation of women in politics after the most recent election. Here, I consider two types of women politicians. One involves the presence of a woman city mayor, and the other involves sharing seats with councilwomen. In the literature, a city with a woman leader or more councilwomen is more likely to emphasize policies related to those areas of particular concern to women. Hence, this is likely to demonstrate the ability of women politicians without the need for special efforts, while at the same time attracting the attention of voters.

The dataset contains information on 83 local council elections in 358 districts in 20 cities in Taiwan over the period 2005−2018. This dataset was augmented with district characteristics. Electoral data, including *Femvote*, *Wcand*, and *Fempolitician*, were obtained from the Central Election Commission in Taiwan; the data for demographic factors, including *Pop* and *Educ*, were accessed from Ministry of the Interior statistics; the data for *Income* and *Labor* from National Statistics; and the data for *Gender* from the statistical office in each local government.[2]

Table 1 presents the correlation matrix for the variables of interest. It shows that votes going to women candidates are positively related to female labor force participation, the education level of women, and income, which reflects the improvement in women's social status in general. The positive correlation between *Pop* and *Femvote* highlights women's traditional role as caretakers in the family, so that women candidates tend to benefit from a higher dependency ratio. Moreover, an economy with a higher ratio of men to women appears to be unfavorable for women who are eager to run for office. The votes gained by women candidates are positively correlated with the percentage of women candidates, highlighting the significance of the supply factor when estimating the influence of social context. Based on this information, the next section conducts regression analyses to obtain a more precise understanding of this relationship.

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[2] The election data in the CEC can be accessed at https://db.cec.gov.tw/ElecTable/Election?type =CouncilMember, the statistics in the Ministry of the Interior at https://statis.moi.gov.tw/micst/ stmain.jsp?sys=100, the National Statistics at https://winsta.dgbas.gov.tw/DgbasWeb/ZWeb/ StateFile_ZWeb.aspx, and the statistics on local government at https://www.stat.gov.tw/ cp.aspx?n=3677.

Table 1
Correlation Matrix

	Votes gained by women candidates (Femvote)	Female labor force participation rate (Flabor)	Male labor force participation rate (Mlabor)	Gender ratio (Gender)	Dependency ratio (Pop)	Fraction of female population with a tertiary-level degree (Educ)	Personal income (Income)
Flabor	0.25						
Mlabor	-0.03	0.21					
Gender	-0.61	-0.28	0.12				
Pop	0.08	0.02	-0.09	-0.06			
Educ	0.38	0.66	-0.25	-0.51	0.12		
Income	0.35	0.53	-0.31	-0.46	0.14	0.90	
Wcand	0.16	0.32	-0.05	-0.23	0.07	0.51	0.26

Results

The Factors Determining Voting Behavior

Table 2 presents the test results for the first hypothesis. In columns (1) to (3), where city dummies are not included, demographic and economic factors are influential in determining the electoral outcomes. An area with more women who have obtained a tertiary-level degree, more elderly and younger cohorts, higher female and male labor force participation, and a higher proportion of women in the population are associated with more votes going to women candidates. This not only reflects citizens' demands for public support in social welfare programs but also reveals the development of gender equality from a socioeconomic point of view.

When city dummies are included, only female labor force participation and the gender ratio remain robust under the control of the percentage of women candidates, as shown in column (5). Given that the gender ratio data is collected at the district level, it provides a detailed description of how demographic factors impact electoral outcomes within the same administrative division. Smaller electoral districts tend to have a higher degree of homogeneity in terms of the electorate's attitude toward politics, so the effect of gender identification may thus be more relevant, while the influence of other city-level factors vanishes as the city fixed effects are taken into consideration. The results correspond with what are termed "gender

affinity effects" in the literature, that women voters are more likely to support women candidates in Taiwan. However, to verify this conclusion, additional specifications, such as individual voting records, must be utilized.

Table 2
Social Calculus of Votes Gained by Women Candidates

	(1)	(2)	(3)	(4)	(5)
Educ	0.052***	0.052***	0.052**	0.021	0.021
	(0.014)	(0.020)	(0.021)	(0.035)	(0.035)
Pop	0.000***	0.000***	0.000***	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flabor	0.023	0.023	0.023	0.047***	0.047***
	(0.025)	(0.031)	(0.031)	(0.017)	(0.017)
Mlabor	0.082***	0.082*	0.082*	-0.021	-0.021
	(0.029)	(0.042)	(0.042)	(0.022)	(0.022)
Gender	-0.113***	-0.113***	-0.113***	-0.114***	-0.114***
	(0.005)	(0.009)	(0.009)	(0.009)	(0.009)
Income	-0.189	-0.189	-0.189	0.844	0.844
	(0.528)	(0.689)	(0.689)	(0.613)	(0.613)
Wcand	0.003	0.003	0.003	0.015***	0.015***
	(0.005)	(0.007)	(0.007)	(0.004)	(0.004)
Trend			-0.293***		-0.320**
			(0.053)		(0.152)
Constant	14.77**	14.63	14.93	8.20	8.52
	(7.251)	(9.290)	(9.279)	(7.852)	(7.842)
Year Dummies	Y	Y	Y	Y	Y
City Dummies	N	N	N	Y	Y
Standard error	Robust	Cluster	Cluster	Cluster	Cluster
Observations	1235	1235	1235	1235	1235
R-squared	0.406	0.406	0.406	0.494	0.494
Adj. R-squared	0.401	0.401	0.401	0.482	0.482

Note. 1. Standard errors are in parentheses. 2. ***, ** and * indicate significance levels of 1, 5, and 10, respectively. 3. Standard errors are corrected for clustering at the district level.

Is There Vote Persistence?

To test the second hypothesis about whether habit persistence exists in electoral outcomes at the gender level, the estimate of Equation (2) is presented in Table 3. Columns (1)−(3), which list the results of the estimation using OLS, support the claim of habit persistence in voting for candidates at the gender level.

Columns (4) and (5) report the unbiased estimates using the GMM estimator..
In column (4), the lagged dependent variable is instrumented by trend and year
dummies, and in column (5) it is instrumented by the entire set of independent
variables in Equation (1). Evidently, voting loyalty appears to exist based on candi-
dates' gender.

Table 3
Effect of Lagged Women Candidates' Votes, Various Specifications

	(1)	(2)	(3)	(4)	(5)
Lag Femvote	0.935***	0.884***	0.870***	0.271**	0.218*
	(0.015)	(0.026)	(0.029)	(0.118)	(0.120)
Educ		0.017***	0.040		
		(0.007)	(0.068)		
Pop		0.000	-0.000		
		(0.000)	(0.000)		
Flabor		-0.041***	-0.047		
		(0.016)	(0.034)		
Mlabor		0.030*	0.012		
		(0.016)	(0.030)		
Gender		-0.016***	-0.020***		
		(0.004)	(0.004)		
Income		-0.391	1.112		
		(0.281)	(0.804)		
Wcand		0.003	0.011*		
		(0.003)	(0.006)		
Trend	-0.053*	-0.073**	-0.371		
	(0.027)	(0.030)	(0.288)		
Constant	0.834***	7.181**	-9.998		
	(0.156)	(3.647)	(9.700)		
Year Dummies	Y	Y	Y		
City Dummies	N	N	Y		
Estimation	OLS	OLS	OLS	GMM	GMM
Observations	880	880	880	569	569
R-squared	0.857	0.863	0.869		
p-value				0.000	0.001

Note. 1. Standard errors are in parentheses. 2. ***, ** and * indicate significance levels of 1, 5, and
10, respectively. 3. Standard errors are corrected for clustering at the district level. 4. p-value reports
the Arellano-Bond test for AR(1) under system GMM. 5. Trend and year dummies are taken as
instruments for lagged dependent variables in column (4), and all independent variables in Equation
(1) are taken as instruments in column (5).

Exposure Effect of Women Representatives

The results of the test for the third hypothesis are provided in Table 4. In the specification in column (1), the presence of a woman mayor is considered because a mayor attracts public attention more frequently and is influential as a positive example. However, the result is not statistically significant, although positive. This may be explained by the relatively small number of women mayors within the short sample period.

The second specification considers the shares of seats held by women. When more women participate in politics and form a critical mass, they will be able to influence the political agenda and rise to prominence, which in turn will benefit women running for office. The results are presented in column (2), which indicates that the share of seats held by councilwomen is associated with more votes being cast for women candidates. Due to concerns about the endogeneity problem related to the lagged female seat share, column (3) reports the results using the female seat share lagged by two elections and all of the lagged socioeconomic factors as the instrument for the lagged seat share of female councilors; this is because councilors can only be re-elected once, which makes it an exogenous factor for councilwomen's votes. The results support the argument that exposure to women politicians explains the electoral outcomes for women candidates.

An increase in the political participation of women raises the possibility of positive exemplars for women politicians, and thus is very likely to enhance voters' preference for women candidates. To illustrate this, column (4) presents the results with lagged female votes as the instrument for lagged councilwomen's seat share. The results indicate that more votes gained by women candidates consolidate women's involvement in politics. To address concerns that this outcome may be due to a supply-side factor—specifically, more women being encouraged to run for office—Column (5) includes an additional control for the proportion of female candidates. While the exposure effect was reduced, it remained significant.

Table 4

Effect of Female Exposure on Women Candidates' Votes, Various Specifications

	(1)	(2)	(3)	(4)	(5)
Lag female leader	0.181				
	(0.164)				
Lag fem seat share		0.028***	0.022*	0.076***	0.024**
		(0.010)	(0.012)	(0.019)	(0.011)
Educ	0.056**	0.051**	0.008	0.014	0.037
	(0.022)	(0.020)	(0.055)	(0.061)	(0.058)
Pop	0.000***	0.000***	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Flabor	0.024	0.018	-0.021	-0.018	-0.008
	(0.031)	(0.030)	(0.026)	(0.025)	(0.027)
Mlabor	0.084**	0.072	-0.042	-0.101***	-0.033
	(0.042)	(0.044)	(0.030)	(0.030)	(0.024)
Gender	-0.113***	-0.112***	-0.114***	-0.117***	-0.118***
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Income	-0.320	-0.194	0.973	0.966	1.030*
	(0.706)	(0.676)	(0.651)	(0.742)	(0.588)
Wcand	0.002	-0.006			0.009*
	(0.007)	(0.008)			(0.005)
Trend	-0.297***	-0.359***	-0.224	-0.360*	-0.370*
	(0.055)	(0.058)	(0.187)	(0.217)	(0.211)
Constant	16.295*	15.616*	12.114	14.781*	9.167
	(9.438)	(9.228)	(7.643)	(8.364)	(7.043)
Year Dummies	Y	Y	Y	Y	Y
City Dummies	N	N	Y	Y	Y
Estimation	OLS	OLS	2SLS	2SLS	2SLS
IV			Lagged women councilors' seat share	Lagged women candidates' votes	Lagged women candidates' votes
F-statistic (1st stage)			21.37	19.03	197.45
Observations	1235	1235	931	879	879
R-squared	0.408	0.411			
Adj. R-squared	0.402	0.406			

Note. 1. Standard errors are in parentheses. 2. ***, ** and * indicate significance levels of 1, 5, and 10, respectively. 3. Standard errors are corrected for clustering at the district level. 4. All the lagged socioeconomic factors and women candidates' seat share lagged by two periods are taken as the instruments for lagged women candidates' seat share in columns (3) to (5).

Discussion and Conclusion

This study has attempted to understand the factors that determine electoral outcomes for women candidates. The results using social calculus show that an area with more women who have obtained a tertiary-level degree, more elderly and younger cohorts, higher female and male labor force participation, and a higher proportion of women in the population are associated with more votes going to women candidates. This is consistent with the expectation regarding citizens' demand for better social welfare policy and reflects the improvement in women's social status in Taiwan.

In addition to socioeconomic factors, this study explores the possibility of an enduring effect on electoral outcomes for women candidates. This is supported by election data in Taiwan. Unlike voter loyalty at the party level, which has been influenced by a voter's family since childhood, loyalty to individual candidates depends on what voters have learnt from the politicians' performance in office. Women in Taiwan were granted suffrage after the promulgation of the Constitution in 1947, but the number and proportion of women candidates at all levels remained relatively low until the late 1990s. Additionally, Taiwan has had an "imperfect" bipartisan system in which the KMT and the DPP shared around 70% of the vote, indicating a relatively high degree of political party loyalty that could restrict voter behavior when choosing whom to support. In other words, voters may require time to become familiar with women representatives.

Exposure to women politicians has been found to benefit women candidates by changing voters' impressions of women representatives based on their experience and competence in Taiwan. In considering different kinds of women's participation in politics, the lagged seat share of councilor women is found to have the most relevant effect on the electoral outcomes of women candidates. This is not only a response to the argument regarding critical mass in terms of how women can make a difference when their political presence is sufficiently strong, but also indicates the importance of information supply in elections where voters must make a significant effort to become aware of each of the candidates. Furthermore, the enduring effect is likely to be enhanced by exposure to positive exemplars of women politicians. Nevertheless, more experimental designs may be required to explain the extent to which voters' decisions give rise to an exposure effect, in addition to the supply-side determinants.

The limitations of the data sources used mean that this study provides only limited insight into the factors driving the electoral outcomes of women candidates.

Since it is predicted that increasing the number of women entering politics will improve society, achieving a significant representation of women in parliament is one of the questions that concerns researchers and policymakers. Based on the findings of this study, it is essential to strengthen the legitimacy of women members of councils because only when voters realize how capable women politicians are will they cast their ballots for those women who are eager to hold office.

Moreover, research has shown that women candidates tend to receive support from women voters, but this support is often tied to political party affiliation (e.g., Stambough & O'Regan, 2003; Becerra-Chávez & Navia, 2022). Taiwan has a well-developed political environment, and its citizens tend to exhibit a high degree of political party loyalty. As a result, the resources available for candidates during campaigns and the degree of party identification among voters can significantly impact electoral outcomes. However, this study does not consider political parties. By using individual-level data, more evidence of the conditional effect of political party affiliation on voter support for women candidates could be found.

Finally, the findings of this study are specific to a small democratic economy, such as Taiwan, and could be extended to cover other minority groups, such as immigrants, who share similar policy preferences and a shared understanding of the group. This would be another interesting area for further study.

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Appendix A

Table A.1 Models of voting behavior

Model	Descriptions	Examples
Economic voting model	Economic voting is a phenomenon in which voters base their voting decisions on the state of the economy.	Powell & Whitten (1993)
Party identification model	Voters are primarily motivated by their loyalty to a particular political party, regardless of their individual policy positions.	Miller (1991)
Rational choice model	Voters weigh the costs and benefits of each candidate's policy proposals and vote for the candidate who they believe will best serve their own interests.	Markus & Converse (1979) Kanazawa (1998)
Psychological model	Voters make decisions based on their personal attitudes and beliefs about the candidates and their policy positions. This model takes into account factors such as cognitive biases, emotional responses, and the influence of campaign messaging and media coverage.	Huckfeldt & Sprague (1992) Lake & Huckfeldt (1998) Bennett & Entman (2001) Davenport et al.,(2010)
Resource model	Voters with more resources are better able to shape the political discourse and promote their ideas and interests.	Slot (2008)
Retrospective model	Voters evaluate a candidate's performance based on their past actions and vote accordingly.	Rogoff & Sibert (1988) Healy & Malhotra (2013)
Prospective model	Voters are more likely to support candidates who offer a vision for the future that aligns with their own values and priorities.	Lockerbie (1992)
Sociological model	Voters are influenced by the values and beliefs of their social groups and are more likely to vote for candidates who align with their group's interests.	Brady, Verba, & Schlozman (1995) Beck, Dalton, Greene, & Huckfeldt (2002) Plutzer (2002) Green & Gerber (2010)

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