**The Effect of Female Labor Supply on Vote Choice**

**Li-Ju Chen[[1]](#footnote-1)**

**Version: June 5, 2017**

**Abstract**

It has been argued that female voters are likely to be biased against female candidates due to gender stereotypes about traits, beliefs, and issue competency. Women may seek politicians to deal with their concerns in the family given that an increase in non-marriage in recent decades has added to women’s burden in providing for the family. Since female politicians are shown to represent the interests of women to a greater extent than their male counterparts, this paper attempts to investigate the influence of rising female labor force participation on female candidates’ vote share in elections in Taiwan from 1992 to 2014. Moreover, foreign domestic workers are taken as an instrument for the female labor force participation rate to address the endogeneity problem. Throughout this study, whether or not women are biased against female candidates and to what extent voter behavior affects election results are also examined.

JEL-codes: J61, J21, J16.

Keywords: female labor supply, foreign domestic worker, gender preference, vote choice.

1. **Introduction**

There is evidence showing that female voters are biased against female candidates (e.g., Alexander and Andersen, 1993; Kahn, 1994; Matland, 1994; Koch, 2000). As the obligation of providing for the family has ceased to rest solely on the husband in recent decades, more women are becoming able to participate in the labor market by outsourcing a significant portion of their domestic responsibility to the market since household production and market work are substitutes for a woman who is confronted with the time allocation problem. Female voters are therefore likely to cast their votes for candidates of the same gender given that female politicians are shown to represent the interests of women to a greater extent than male politicians. Thus, this paper aims to investigate the influence of a rising female labor force participation rate on the vote share of female candidates in elections in Taiwan, while taking female domestic workers into account.

The opportunity cost of market work is the value of the reduced time available for household work. Domestic duties need not be performed by the woman herself, since there are substitutes, such as low-skilled foreign domestic workers. Migrant women who enter domestic service fill sectors of the economy not favored by locals, such as by performing household work, looking after children, and taking care of elderly persons, at lower prices than would be charged by native workers or companies. As these temporary domestic helpers act as a substitute for time spent in household production, they potentially influence the labor supply.

There is a rich line of the literature investigating the correlation between foreign domestic workers and female labor supply, based on within country data. For example, Suen (1994) suggests that there is a higher probability of women who participate in the labor force having domestic workers than women who are not in the labor force in the context of Hong Kong. Barone and Mocetti (2011) identify an increase in the intensive margin of Italian women as a result of low-skilled immigration, while Cortésand Tessada (2011) find that low-skilled immigration increases the probability of women in the top quartile of the wage distribution in the US working long hours. Farré et al. (2011) find that female immigration can account for one third of the increase in the employment rate of college-educated women due to their providing childcare or elderly care in Spanish-speaking regions. Peri et al. (2013) show that the presence of low-skilled immigrants has allowed Italian women to retire later, and Cortésand Pan (2013) show that foreign domestic workers increase the labor force participation of mothers with young relative to older children in Hong Kong.

Even though foreign sources of labor allow highly-skilled native workers to contribute to the economy (Yeoh, Huang, and Gonzalez, 1999), Taiwan is relatively conservative when it comes to tackling the issues of foreign workers. The official foreign worker scheme in Taiwan began in 1992 when the Council of Labor Affairs announced the Employment Services Act. Nevertheless, foreign workers are restricted to certain occupations for which there are quotas, as a safeguard against the possibility of jeopardizing the employment opportunities of nationals. The foreign domestic helper scheme was introduced in the same year, with the government’s policy being presented as a solution to the growing demands for housekeeping and caring services following the expansion in the number of nuclear households and an aging society in contemporary Taiwan (Lan, 2003). According to the program, foreign domestic workers could initially only be employed to take care of the severely ill or disabled, but were subsequently allowed to care for children under the age of 12 or for elderly family members over the age of 70 with a limited number of quotas. In recent years, the program has been scaled down even further and only permits special applications for foreign investors and families requiring specialized child or elderly care (Cortésand Pan, 2013). In 2016, more than 230,000 foreigners were legally employed as domestic helpers or caretakers in Taiwan, with 99.3% of them being female immigrants.

Female domestic workers provide native women with the opportunity to participate in the labor market and to devote their spare time to the public sphere. Since time is constrained and leisure is a normal good, it is therefore reasonable to predict that women have a preferred position in regard to public affairs, and consequently make choices based on these preferences. Lewis and Bierly (1990) demonstrate that female voters have different voting rules from males, in that they are more likely to exhibit pro-female sentiment in evaluating female candidates. One possible reason is that they understand women as a group and represent the interests of women (Thomas, 1994; Davis, 1997; Wängnerud, 2005).

Other scholars argue that many voters have a predisposition to support female as opposed to male candidates, or vice versa. This baseline gender preference can be explained by the voter’s gender and by gender stereotypes about traits, beliefs, and issue competency, which can affect the vote decision (Inglehart and Norris, 2000; Sanbonmatsu, 2002). For example, voters perceive male candidates as being better at handling economic and foreign affairs, and female candidates as being better at helping disadvantaged minorities and protecting women’s rights. There is empirical evidence of a gender gap in policy preferences among politicians (e.g., Pande, 2003; Chattopadhyay and Duflo, 2004; Edlund et al., 2005; Svaleryd, 2009; Chen, 2010; Beaman et al., 2012; Clots-Figueras, 2012; Chen, 2013; Bhalotra and Clots-Figueras, 2014; Brollo and Troiano, 2016).

Given the evidence that female politicians represent the interests of women to a greater extent than male politicians, and that there may be gender preferences in voting decisions, this paper attempts to investigate the effect of female labor force participation on the shares of the vote of female candidates. Besides, foreign domestic workers are regarded in this study as having an instrumental role to play in the female labor force participation rate in order to address the endogeneity problem because immigration policies are seldom discussed during elections and hence are unlikely to have a direct effect on the female candidates’ shares of the vote.

I contribute to this research by using data covering 15 county-level elections, including 7 elections for the National Assembly and 8 elections for county magistrates, for the period from 1992 to 2014, in order to address two questions regarding voting behavior in Taiwan. First, are women biased against female candidates? Second, to what extent does voter behavior affect election results?

The remainder of the paper is organized as follows. Section 2 summarizes the context of the participation of women in politics and female labor force participation in Taiwan. Section 3 provides our model’s empirical specification and describes the data. Section 4 reports the empirical results. Section 5 provides a discussion. Finally, Section 6 concludes.

1. **Background**

The situation whereby women are the persons in charge of taking care of the family remains the same even as non-marriage has become a tendency and the social status of women has made great progress in recent decades. According to the Survey on Social Development conducted by National Statistics in Taiwan, women spend twice the amount of time each day on domestic affairs than do men, especially in the cases of married and cohabiting women (see Table 1).[[2]](#footnote-2) In addition, longer working hours are required if there is a need for family care. On average, one more hour of housework is needed for those families with disabled members, elderly persons and children. Even though there has been an increase in men’s share of the housework as well, most of the burden has continued to fall on the women.

<Table 1 is inserted about here>

Nevertheless, stagnating monthly salaries accompanied by a rising price level since the mid-1990s has also served to encourage more women to go out and work in Taiwan. The 2013 Women’s Marriage, Fertility and Employment Survey conducted by the Directorate-General of Budget, Accounting and Statistics (DGBAS) shows that 55.9% of married women in the labor force are currently employed. This ratio is 8.07 percentage points higher than that in 1990. Participation in the labor market has turned out to be an inevitable tendency for women as they compare the costs and benefits of being a full-time housewife. However, this raises the following question: Who will replace the traditional role of women in the family?

Cortésand Tessada (2011) build a model describing the relationship between the labor force participation and the provision of household services. The model asserts that a larger burden of household services decreases not only leisure and/or labor supply, but also lowers the marginal productivity of time devoted to household work since the cost of time increases as women spend more time doing household work. Therefore, women might start to purchase services when there is a sufficiently large amount of household work. One possible way for them to outsource a significant portion of their domestic responsibility to the market is thus to join the labor market to cover part of the cost of the additional market services.

Even if there is an increasing demand for domestic helpers and caretakers, which are known as domestic workers, in Taiwan, to hire a native person is expensive since the salary is around 1,600-2,000 USD (or 50,000-60,000 NTD) per month for 12 working hours per day. On the contrary, employing a foreigner as a domestic worker only costs 566 USD (or 17,000 NTD) per month for 15 working hours per day. The relatively low cost of foreign domestic workers may therefore be preferred, and may also explain the positive correlation between the female labor force participation rate and the number of female domestic workers in Taiwan, as shown in Figure 1. Of course, more rigorous specifications are required before making such a claim since there are many factors driving the pattern of the two variables.

<Figure 1 is inserted about here>

In Taiwan, the trend toward an increasingly elderly population has accelerated given that the number of people above the age of 80 increased from 0.54 million in 2012 to 0.74 million in 2016. Even though the demands to relax the regulations to allow people above the age of 80 to hire foreign domestic workers have made their presence felt over a period of several years, the Taiwanese government is relatively passive when it comes to raising the import quotas for foreign domestic workers out of concern that this may jeopardize the employment opportunities of Taiwan’s citizens. In fact, such market demands found their way to the campaign platform of the Taiwan National Congress (TNC), a small political party inclined to the right, in the 2012 legislative elections. However, the TNC did not win any seats in the parliament in the end. This may reflect the fact that the electorate usually pays attention to major political issues or the candidate’s personal morals during the campaign, instead of considering policies such as bringing in foreign domestic workers. Thus, it has been suggested that such policies are not determined by the electorate *ex ante*, but are formulated after the election takes place.

Ideally, women are likely to search for public support with regard to their responsibility in the family. One line of the literature argues that the identity of the legislator matters in policy determination if the candidates have a commitment problem (see, e.g., Osborne and Slivinski, 1996; Besley and Coate, 1997). Given the evidence that female legislators consider that the duty of promoting the interests/views of women is much more important than do their male colleagues and have more contacts with women’s organizations than male members (Wängnerud, 2005), voters who are in need of household services may therefore cast their ballots for female candidates since they, to a greater extent than their male competitors, represent the interests of women. In addition, women’s representation can also result in realigning men’s attitudes to the agenda of issues because the influence from female legislators on policy decisions is believed to be relevant with a significant presence of women in the legislature (Kanter, 1977; Inglehart and Norris, 2000).

In sum, for more women to enter the labor market it may be necessary to first solve the demand-side problem regarding housework services, and acquiring public support through elections seems to be a good way of resolving this issue in a democratic economy. Therefore, it would be interesting to examine whether an increase in female labor supply influences vote choice by taking the importation of female domestic workers into account.

1. **Empirical strategy and data**

**3.1 Empirical strategy**

To describe the vote choice, this paper models the female candidates’ vote share as a function of the female labor force participation rate and a county’s conditions. The following empirical specification for the elections from 1992 to 2014 is considered:

$$Voteshare\_{it}=α+δ\_{i}+π\_{t}+β\_{1}FLP\_{it}+β\_{2}County\_{it}+ε\_{it} (1)$$

where $i$ denotes the county and $t$ denotes the time indices. $Voteshare\_{it}$ is the total vote share of female candidates for a specific election in county $i$ in year $t$. $FLP\_{it}$ refers to the female labor force participation rate in county $i$ in year $t$. $County$ is a set of control variables that capture a county’s characteristics, including demographic and economic factors. The demographic factor refers to the proportion of population under 15 and above 65 years old, which reflects women’s family responsibilities and consequently affects their time allocation. The economic factor refers to disposable income per capita since there is likely to be an income effect in relation to gender equality.[[3]](#footnote-3) Regression analysis also controls for the attainment rate of women above a secondary education and the type of election. The former variable is used to capture the effect of the transition in women’s social status, and the latter to address the influence of the competitive extent and the related involvement of voters in electoral outcomes. Finally, year fixed effects are included to account for systematic variation across years and the trend is under control as well. In addition,  is assumed to be a random error term. The spatial correlation among the error terms is accounted for by clustering results at the county-level.

 The estimation of equation (1) gives a general picture of the relationship between the female candidates’ vote share and female labor supply. However, there is an endogeneity problem since when more women participate in the public sphere they may encourage more women to enter the labor market as well. Therefore, it cannot be concluded that such a relationship reflects a gender bias in vote choice before conducting further investigations.

According to the median voter theorem, trade policies, including remedying the shortage of domestic workers, are less likely to be included in the agenda in an electoral competition, but are based on decisions reached through lobbying after the election. Therefore, the female domestic worker is regarded as an instrument for female labor force participation since this is less likely to have a direct effect on the female candidates’ vote share, but is very likely to help solve the time allocation problem encountered by native women. Hence, the following empirical specification is considered:

$$FLP\_{it}=a+d\_{i}+p\_{t}+b\_{1}FDW\_{it}+b\_{2}County\_{it}+ϵ\_{it} (2)$$

where $FDW\_{it}$ refers to the number of foreign domestic workers in county $i$ in year $t$. Equation (1) is re-estimated using the predicted female labor force participation rate obtained from equation (2).

**3.2 Data description**

The dataset contains 14 electoral competitions in 19 Taiwanese counties and cities over the period 1994-2014.[[4]](#footnote-4) The counties and cities include Changhua County, Chiayi City, Chiayi County, Hsinchu City, Hsinchu County, Hualien County, Kaohsiung City, Kaohsiung County, Keelung City, Miaoli County, Nantou County, Pingtung County, Taichung City, Taichung County, Tainan City, Tainan County, Taipei City, Taipei County, Taitung County, Taoyuan County, Yilan County, and Yunlin County. Table 2 provides the information on the elections. I augment this dataset with information about foreign domestic workers and county characteristics.

<Table 2 is inserted about here>

Foreign domestic workers consist of the sum of foreign domestic helpers and foreign caretakers, the figures for which are obtained from the Ministry of Labor. A county’s characteristics, including the proportion of population under 15 and above 65 years old, disposable income per capita, and the attainment rate of women with more than a secondary education, are collected from the *Statistical Yearbook*.

1. **Results**

Does an increase in women’s participation in the labor market lead to a rising demand for public support dealing with women’s concerns? Figures 2 and 3 provide evidence showing that a higher female labor force participation rate is associated with more votes going to female candidates and a higher female vote share when no other factors are controlled for. Since female labor supply is also positively correlated with total votes in Figure 4, the previous findings may reveal the progress of democratization, but not the increasing demand for public policies concerning women. Therefore, a more sophisticated investigation, taking the endogeneity problem into account, is required.

<Figures 2-4 are inserted about here>

Given that foreign domestic workers provide women with an opportunity to replace their traditional role in the family at a lower cost, and their availability is less likely to be determined by the electorate *ex ante*, they appear to serve as a good candidate for an instrument for female labor supply. The estimation of equation (2), which examines the validity of female domestic workers, is reported in Table 3. Columns (1)-(3) report the results using all observations, columns (4)-(6) the observations of national elections for legislators, and columns (7)-(9) the observations of local elections for councilors. Female domestic workers significantly explain female labor supply in that a one percentage point increase in the number of female domestic workers leads to a 1.826 percentage point rise in the female labor force participation rate, which is shown in column (3). The effect is larger in local elections, as shown in column (9), which may reflect the fact that local governments address soft policies related to individuals with a more comprehensive and practical attitude than the central government. Even though it is argued that women are likely to leave their jobs temporarily to take care of young children, they are also likely to go back to the job market when living costs are high and there are supporters for their household chores. This argument appears to be reasonable since an increase in population under 15 years old is positively correlated with the female labor force participation rate.

<Table 3 is inserted about here>

The estimation of equation (1), using female domestic workers as an instrument for female labor supply, is reported in Table 4. This study uses three different measures to represent electoral outcomes: the female vote share, votes for female candidates, and total votes. The results show that a higher female labor force participation rate is relevant for female candidates’ votes and total votes when both types of elections are considered, which are shown in columns (3) and (4), respectively. Moreover, the effect is larger on votes for female candidates than on total votes, which may indicate the female electorate’s higher demand for women-related policies. Nevertheless, the increase in the votes for female candidates does not result in changes in the female candidates’ share of the vote, except for the outcomes in local elections, as shown in column (10).

<Table 4 is inserted about here>

 In sum, more women entering the labor market is very likely to result in more votes being gained by female candidates when household chores worry the female electorate.

1. **Discussion**

**5.1 Is the number of foreign domestic workers meaningful?**

Even though there is evidence to show that the likelihood of female candidates gaining more votes when there is an increase in the female labor force participation rate may be attributable to the importation of foreign domestic workers, there are still doubts regarding the relationship between female labor supply and domestic workers. Could such a correlation occur anyway, and not because having more foreign domestic workers allows women to participate in the labor market? If this is true, foreign workers employed in industry would also explain female labor supply since there is a similar trend with foreign domestic workers under strictly restricted policies for the importation of foreign workers in Taiwan.

Table 5 reports the estimation of equation (2) with the number of industrial foreign workers as the independent variable. Even though the number of industrial foreign workers is positively correlated with the female labor force participation rate in column (1), it becomes irrelevant when other variables are controlled for. In other words, the reason why the number of foreign domestic workers is correlated with the female labor supply is very likely to be that foreign domestic workers act as a substitute for the role of domestic women by serving as caretakers in the family, while industrial foreign workers are replacing other types of workers in Taiwan.

<Table 5 is inserted about here>

* 1. **Do demographic factors matter?**

To prevent the crowding-out effect of hiring foreign domestic workers on domestic employment opportunities, the Taiwanese government regulates the qualifications for applying for foreign domestic workers. It states that an individual can hire a foreign domestic worker if his/her family has multiple births exceeding triplets under the age of 3 or the number of qualifying points accumulated exceeds 16, where points are given based on children below the age of 6 and/or lineal relatives above the age of 75. Therefore, the effect of foreign domestic workers on the female labor supply may become stronger if there are more preschool children and an aging population. To investigate the impact of demographic factors, the estimation of equation (2) while controlling for population under the age of 5 and over the age of 80 is presented in Table 6.

<Table 6 is inserted about here>

 Compared to the results in column (3) of Table 3, the effect of foreign domestic workers on female labor supply continues to be relevant when the population under the age of 5 and over the age of 80 is controlled for, even though the scale is getting smaller, which is shown in column (1). This may reflect the societal background in Taiwan. Two-income families are growing as the cost of living is increasing, but it is relatively difficult to meet the qualifications and hire a foreign domestic worker to take care of preschool children. Thus it is not surprising to observe a positive correlation between preschool children and the female labor force participation rate. On the contrary, the elderly population requires special care and foreign domestic workers are in strong demand. However, communication may be a problem so that native carers are usually required. Therefore, we find that there exists a negative relationship between the female labor force participation rate and population above the age of 80. As a result, the net effect of foreign domestic workers is smaller in this specification.

The estimation of equation (1) taking into consideration the endogeneity problem is reported in columns (2)-(5). When controlling for demographic factors changes from being based on a broadly defined group to a narrowly defined one, the impact of a rising female labor supply on votes gained by female candidates remains significantly positive.

* 1. **Does male labor supply benefit from foreign domestic workers?**

Female labor supply benefits from the importation of foreign domestic workers because it is assumed that foreign domestic workers act as a substitute for the domestic women’s traditional role in the family. If only certain types of jobs are replaced by foreign workers, male labor supply may appear to be indifferent to the bringing in of foreign domestic workers since most men engage in other types of jobs besides housework in Taiwan. Therefore, the importation of foreign domestic workers is not likely to have an effect on the male labor supply. To investigate this hypothesis, Table 7 presents the results of estimating equation (2) in which the male labor force participation rate is the dependent variable.

<Table 7 is inserted about here>

Foreign domestic workers have no impact on the supply of male labor *per se*, but the relationship does become both relevant and positive after controlling for other factors, as shown in column (1). Specifically, an increase in the number of foreign domestic workers by one percentage point results in an increase in the male labor force participation rate by 1.684 percentage points, but the extent of this is smaller than the correlation between foreign domestic workers and the female labor force participation rate, as shown in column (3) of Table 3. This finding may reveal the cost-side factors loaded on the male electorate in that men are required to go out and work in order to meet the additional expenditures needed for caring.

Nevertheless, will female candidates also gain votes from an increase in male labor supply? Columns (2) and (3) replicate the results with the female labor force participation rate as the independent variable using all observations in Table 4, and columns (4) and (5) show the results with the male labor force participation rate as the independent variable. Evidently, an increase in the male labor supply also results in more votes being gained by female candidates. This is very likely to be in line with the statement in Kanter (1977) that men’s behavior is influenced when there is a significant involvement of women in public life, i.e., a critical mass is reached. Yet, more specifications are required to confirm this point of view.

1. **Conclusion**

This study attempts to investigate the effect of a rising female labor force participation rate on female candidates’ vote share, while taking female domestic workers into account since foreign domestic workers are likely to serve as a substitute for the women’s traditional role in the family as a caretaker or domestic helper. The results show that more women entering the labor market results in more votes being gained by female candidates, which is likely to be caused by the supply of foreign domestic workers, but not by other types of workers, such as industrial foreign workers. The effect is robust when the control for demographic factors changes from a broadly defined group to a narrowly-defined one.

Moreover, foreign domestic workers not only increase the female labor supply, but also the male labor supply, which may be a reflection of the additional costs encountered by the family due to the hiring of caretakers. Consequently, the male electorate’s behavior seems to also be biased in favor of female candidates partly because of the “critical mass” argument by Kanter (1977) and partly because of the male electorate’s concern with family affairs as a whole. Nevertheless, seeking to understand the reasons why male voters change their behavior, which is known as “habit formation”, is beyond the scope of this paper, but would be an interesting issue to study in the future.

**References**

Alexander, D., and Andersen, K., 1993. “Gender as a factor in the attribution of leadership traits,” *Political Research Quarterly*, 46, 527-545.

Barone, G. and Mocetti, S., 2011. “With a little help from abroad: The effect of low-skilled immigration on the female labour supply,” *Labour Economics*, 18, 5, 664-675.

Beaman, L., Duflo, E., Pande, R., and Topalova, P., 2012. “Female leadership raises aspirations and educational attainment for girls: A policy experiment in India,” *Science*, 335, 6068, 582-586.

Besley, Timothy and Coate, S., 1997. “An economic model of representative democracy,” *Quarterly Journal of Economics*, 112, 1, 85-114.

Bhalotra, S. and Clots-Figueras, I., 2014. “Health and the political agency of women,” *American Economic Journal: Economic Policy*, 6, 2, 164-197.

Brollo, G. and Troiano, U., 2016. “What happens when a woman wins an election? Evidence from close races in Brazil,” *Journal of Development Economics*, 122, 28-45.

Chattopadhyay, R. and Duflo, E., 2004. “Women as policy makers: Evidence from a randomized policy experiment in India,” *Econometrica*, 72, 5, 1409-1443.

Chen, L.-J., 2010. “Do gender quotas influence women’s representation and policies?” *European Journal of Comparative Economics,* 7, 1, 13-60.

Chen, L.-J., 2013. “Do female politicians influence public spending? Evidence from Taiwan," *International Journal of Applied Economics,* 10, 2, 32-51.

Clots-Figueras, I., 2012. “Are female leaders good for education?” *American Economic Journal: Applied Economics*, 4, 1, 212-244.

Cortés, P.and Pan, J., 2013. “Outsourcing household production: Foreign domestic workers and native labor supply in Hong Kong,” *Journal of Labor Economics*, 31, 2, 327-371.

Cortés, P.and Tessada, J., 2011. “Low-skilled immigration and the labor supply of highly skilled women,” *American Economic Journal: Applied Economics*, 3, 3, 88-123.

Davis, R. H., 1997. *Women and Power in Parliamentary Democracies: Cabinet Appointments in Western Europe, 1968-1992 Women and Politics*, University of Nebraska Press.

Edlund, L., Haider, L., and Pande, R., 2005. “Unmarried parenthood and redistributive politics,” *Journal of the European Economic Association*, 3, 1, 95-119.

Farré, L., Gonz*á*lez, L., and Ortega, F., 2011. “Immigration, family responsibilities and the labor supply of skilled native women,” The B.E. Journal of Economic Analysis & Policy, 11, 1, 1-46.

Inglehart, R. and Norris, P., 2000. “The developmental theory of the gender gap: Women’s and men’s voting behavior in global perspective,” *International Political Science Review*, 21, 4, 441-463.

Kahn, K. F., 1994. “Does gender make a difference? An experimental examination of sex stereotypes and press patterns in statewide campaigns,” *American Journal of Political Science*, 38, 162-195.

Kanter, R. M., 1977, “Some effects of proportion on group life: Skewed sex ratios and response to token women,” *American Journal of Sociology*, 82, 5, 965-990.

Koch, J. W., 2000. “Do citizens apply gender stereotypes to infer candidates’ ideological orientations?” *Journal of Politics*, 62, 414-429.

Lan, P.-C., 2003. “Maid or madam? Filipina migrant workers and the continuity of domestic labor,” *Gender & Society*, 17, 2, 187-208.

Lewis, K. E. and Bierly, M., 1990. “Toward a profile of the female voter: Sex differences in perceived physical attractiveness and competence of political candidates,” *Sex Roles*, 22, 1-2, 1-12.

Matland, R. E., 1994. “Putting Scandinavian equality to the test: An experimental evaluation of gender stereotyping of political candidates in a sample of Norwegian voters,” *British Journal of Political Science*, 24, 273-292.

Osborne, M. J. and Slivinski, A., 1996. “A model of political competition with citizen-candidates,” *Quarterly Journal of Economics*, 111, 1, 65-96.

Pande, R., 2003. “Can mandated political representation increase policy influence for disadvantaged minorities? Theory and evidence from India,” *American Economic Review*, 93, 4, 1132-1151.

Peri, G., Romiti, A., and Rossi, M., 2013. “Immigrants, household production and women’s retirement,” IZA Discussion Papers 7549, Institute for the Study of Labor (IZA).

Sanbonmatsu, K., 2002. “Gender stereotypes and vote choice,” *American Journal of Political Science*, 46, 1, 20-34.

Suen, W., 1994. “Market-produced housework: The demand for domestic servants and female labor supply,” *Labor Economics*, 1, 289-302.

Svaleryd, H., 2009. “Women’s representation and public spending,” *European Journal of Political Economy*, 25, 2, 186-198.

Thomas, S., 1994. *How Women Legislate*, Oxford University Press.

Yeoh, B. S. A., Huang, S., and Gonzalez III, J., 1999. “Migrant female domestic workers: Debating the economic, social and political impacts in Singapore,” *International Migration Review*, 33, 1, 114-136.

Wängnerud, L., 2005. “Testing the politics of presence empirically: Women’s representation in the Swedish Riksdag”, *Scandinavian Political Studies*, 23, 1, 67-91.



Figure 1. The correlation between female domestic workers and the female labor supply



Figure 2. The correlation between the female labor supply and the votes for female candidates



Figure 3. The correlation between the female labor supply and the vote share of female candidates



Figure 4. The correlation between the female labor supply and total votes

Table 1. Time allocation for domestic affairs in Taiwan

|  |  |  |
| --- | --- | --- |
|  | Male | Female |
| Total spell | 1 hour 39 mins | 3 hour 09 mins |
| Spell based on marriage status |  |  |
| Unmarried | 1 hour 19 mins | 1 hour 30 mins |
| Married & Cohabiting | 1 hour 42 mins | 3 hour 31 mins |
| Divorced & Separated & Widowed | 1 hour 39 mins | 2 hour 47 mins |

Source: Survey of Social Development in 2004 by National Statistics in Taiwan.

Table 2. Information on elections

|  |  |  |
| --- | --- | --- |
| **Year** | **Type of election** | **Notes** |
| 1994 | Councilors for municipalities | Municipalities: Taipei and Kaohsiung  |
| 1995 | Members of parliament |  |
| 1998 | Councilors for municipalities & counties | Municipalities: Taipei and Kaohsiung |
| 1998 | Members of parliament |  |
| 2001 | Members of parliament |  |
| 2002 | Councilors for municipalities & counties | Municipalities: Taipei and Kaohsiung |
| 2004 | Members of parliament |  |
| 2005 | Councilors for counties |  |
| 2006 | Councilors for municipality | Municipalities: Taipei and Kaohsiung |
| 2008 | Members of parliament |  |
| 2009 | Councilors for counties | New Taipei City, Taichung, and Tainan elevated in status from county to municipality in 2009. |
| 2010 | Councilors for municipalities | Municipalities: Taipei, Kaohsiung, New Taipei City, Taichung, and Tainan |
| 2012 | Members of parliament |  |
| 2014 | Councilors for municipalities & counties | Taoyuan elevated in status from county to municipality in 2014, with municipalities now including Taipei, Kaohsiung, New Taipei City, Taichung, Tainan, and Taoyuan. |
| 2016 | Members of parliament |  |

Table 3. The relationship between the female labor force participation rate and foreign domestic workers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | All observations |  | National elections |  | Local elections |
|  | (1) | (2) | (3) |  | (4) | (5) | (6) |  | (7) | (8) | (9) |
| FDW | 2.158\*\*\* | 1.826\*\*\* | 1.826\*\*\* |  | 2.109\*\*\* | 1.587\*\*\* | 1.587\*\*\* |  | 2.247\*\*\* | 1.934\*\*\* | 1.934\*\*\* |
|  | (0.599) | (0.572) | (0.572) |  | (0.583) | (0.599) | (0.599) |  | (0.568) | (0.597) | (0.597) |
| Population under 15 |  | 0.925\*\* | 0.925\*\* |  |  | 0.934\*\* | 0.934\*\* |  |  | 0.959\*\*\* | 0.959\*\*\* |
|  |  | (0.323) | (0.323) |  |  | (0.340) | (0.340) |  |  | (0.322) | (0.322) |
| Population over 65 |  | -0.057 | -0.057 |  |  | -0.115 | -0.115 |  |  | -0.016 | -0.016 |
|  |  | (0.197) | (0.197) |  |  | (0.212) | (0.212) |  |  | (0.176) | (0.176) |
| Income |  | 3.758 | 3.758 |  |  | 5.384 | 5.384 |  |  | 6.562 | 6.562 |
|  |  | (4.784) | (4.784) |  |  | (5.059) | (5.059) |  |  | (5.170) | (5.170) |
| Female education |  | -0.158 | -0.158 |  |  | -0.176 | -0.176 |  |  | -0.249 | -0.249 |
|  |  | (0.120) | (0.120) |  |  | (0.124) | (0.124) |  |  | (0.149) | (0.149) |
| Election type |  | 10.003\*\*\* | 0.640\* |  |  |  |  |  |  |  |  |
|  |  | (2.141) | (0.326) |  |  |  |  |  |  |  |  |
| Trend |  |  | 0.936\*\*\* |  |  |  | 0.988\*\*\* |  |  |  | 0.996\*\*\* |
|  |  |  | (0.194) |  |  |  | (0.221) |  |  |  | (0.219) |
|  |  |  |  |  |  |  |  |  |  |  |  |
| R-squared | 0.4339 | 0.6748 | 0.6748 |  | 0.4197 | 0.6739 | 0.6739 |  | 0.4654 | 0.7148 | 0.7148 |
| Observations | 200 | 200 | 200 |  | 80 | 80 | 80 |  | 80 | 80 | 80 |

Notes: 1. Standard errors are in parentheses. One, two and three \* denote significance at the 10, 5 and 1% levels, respectively. 2. All the regressions include dummies to control for years. 3. Standard errors are corrected for clustering at the county level. 4. FDW refers to foreign domestic workers.

|  |  |  |  |
| --- | --- | --- | --- |
|  | All observations | National elections | Local elections |
|  | 1st stage | 2nd stage | 1st stage | 2nd stage | 1st stage | 2nd stage |
|  |  | Female vote share | Female votes | Total votes |  | Female vote share | Female votes | Total votes |  | Female vote share | Female votes | Total votes |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| FLP |  | 1.289 | 0.732\*\* | 0.533\*\*\* |  | 1.146 | 1.118\*\* | 0.593\*\* |  | 1.431\*\* | 0.543\*\*\* | 0.479\*\*\* |
|  |  | (1.432) | (0.285) | (0.188) |  | (3.067) | (0.558) | (0.235) |  | (0.672) | (0.169) | (0.156) |
| FDW | 1.649\*\* |  |  |  | 1.268\*\* |  |  |  | 1.934\*\* |  |  |  |
|  | (0.539) |  |  |  | (0.489) |  |  |  | (0.597) |  |  |  |
| Population under 15 | 0.898\*\* | -0.838 | -0.775\*\*\* | -0.607\*\*\* | 0.835\*\* | 0.007 | -1.026\*\* | -0.677\*\*\* | 0.959\*\* | -1.796\*\* | -0.626\*\*\* | -0.558\*\*\* |
|  | (0.327) | (1.359) | (0.218) | (0.160) | (0.342) | (2.851) | (0.403) | (0.192) | (0.322) | (0.890) | (0.172) | (0.144) |
| Population over 65 | -0.057 | 0.752 | 0.021 | 0.001 | -0.112 | 0.750 | 0.098 | 0.012 | -0.016 | 0.787 | 0.008 | -0.024 |
|  | (0.183) | (0.852) | (0.169) | (0.105) | (0.207) | (1.461) | (0.329) | (0.140) | (0.176) | (0.782) | (0.108) | (0.084) |
| Income | 6.772 | -23.684\* | -7.526\* | -4.798 | 7.520 | -21.821 | -11.590 | -4.924 | 6.562 | -25.985\*\*\* | -5.925\* | -4.650 |
|  | (4.570) | (13.966) | (4.428) | (3.123) | (4.846) | (23.881) | (7.046) | (3.590) | (5.170) | (9.926) | (3.183) | (2.939) |
| Female education | -0.218 | 0.768\* | 0.195\* | 0.127 | -0.196 | 0.631 | 0.256 | 0.120 | -0.249 | 0.986\*\*\* | 0.171\*\* | 0.128 |
|  | (0.121) | (0.442) | (0.110) | (0.082) | (0.122) | (0.670) | (0.169) | (0.088) | (0.149) | (0.270) | (0.087) | (0.081) |
| Election type | -1.162 | -8.683\*\*\* | 0.669 | 0.816 |  |  |  |  |  |  |  |  |
|  | (1.020) | (2.936) | (0.863) | (0.605) |  |  |  |  |  |  |  |  |
| Trend | 1.021\*\*\* | -1.335 | -0.870\*\*\* | -0.633\*\*\* | 0.986\*\*\* | -0.642 | -1.219\*\* | -0.687\*\*\* | 0.996\*\*\* | -1.831\*\*\* | -0.613\*\*\* | -0.542\*\*\* |
|  | (0.224) | (1.289) | (0.276) | (0.189) | (0.217) | (2.831) | (0.498) | (0.233) | (0.219) | (0.621) | (0.156) | (0.144) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| F-statistic | 9.36 |  |  | 9.21 | 6.72 |  |  | 7.02 | 10.50 |  |  | 10.50 |
|  | [0.028] |  |  | [0.029] | [0.025] |  |  | [0.023] | [0.010] |  |  | [0.010] |
| Centered R-squared |  | 0.1817 | -0.2555 | -0.3157 |  | 0.0628 | -0.8479 | -0.6134 |  | 0.4297 | 0.1108 | -0.0467 |
| Observations | 148 | 148 | 148 | 161 | 67 | 67 | 67 | 80 | 80 | 80 | 80 | 80 |

Table 4. The relationship between the vote shares of female candidates and the female labor force participation rate

Notes: 1. Standard errors are in parentheses. One, two and three \* denote significance at the 10, 5 and 1% levels, respectively. 2. P-values are in brackets. 3. All the regressions include dummies to control for years. 4. Standard errors are corrected for clustering at the county level. 5. FLP refers to female labor force participation rate, and FDW refers to foreign domestic workers.

Table 5. The relationship between the female labor force participation rate and industrial foreign workers: all observations

|  |  |  |  |
| --- | --- | --- | --- |
|  | (1) | (2) | (3) |
| Industrial foreign workers | 1.031\*\* | 0.434 | 0.434 |
|  | (0.479) | (0.427) | (0.427) |
| Population under 15 |  | 0.508\*\* | 0.508\*\* |
|  |  | (0.191) | (0.191) |
| Population over 65 |  | -0.363 | -0.363 |
|  |  | (0.267) | (0.267) |
| Income |  | 2.399 | 2.399 |
|  |  | (6.194) | (6.194) |
| Female education |  | 0.039 | 0.039 |
|  |  | (0.171) | (0.171) |
| Election type |  | 0.693\*\*\* | 0.492\* |
|  |  | (2.109) | (0.281) |
| Trend |  |  | 0.644\*\*\* |
|  |  |  | (0.213) |
|  |  |  |  |
| R-squared | 0.2157 | 0.5907 | 0.5907 |
| Observations | 200 | 200 | 200 |

Notes: 1. Standard errors are in parentheses. One, two and three \* denote significance at the 10, 5 and 1% levels, respectively. 2. All the regressions include dummies to control for years. 3. Standard errors are corrected for clustering at the county level.

Table 6. The relationship between the female labor force participation rate and foreign domestic workers: do demographic factors matter?

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | 1st stage | 2nd stage |
|  |  |  | Femalevote share | Female votes | Total votes |
|  | (1) | (2) | (3) | (4) | (5) |
| FLP |  |  | 1.041 | 0.874\*\* | 0.652\*\* |
|  |  | (1.787) | (0.430) | (0.302) |
| FDW | 1.402\*\* | 1.333\* |  |  |  |
|  | (0.601) | (0.593) |  |  |  |
| Population under 5 | 1.211\*\*\* | 1.168\*\* | -1.874 | -1.249\*\* | -0.915\*\* |
|  | (0.355) | (0.338) | (2.366) | (0.623) | (0.428) |
| Population over 80 | -1.192\* | -0.975 | -0.002 | 0.590 | 0.623 |
|  | (0.678) | (0.707) | (3.935) | (0.846) | (0.562) |
| Income | 2.727 | 5.531 | -16.882 | -6.561 | -4.149 |
|  | (4.670) | (4.316) | (15.996) | (6.122) | (4.082) |
| Female education | -0.036 | -0.093 | 0.469 | 0.093 | 0.052 |
|  | (0.106) | (0.103) | (0.530) | (0.118) | (0.085) |
| Election type | 0.841\*\* | -0.799 | -9.306\*\* | 0.517 | 0.629 |
|  | (0.295) | (1.124) | (3.895) | (1.156) | (0.808) |
| Trend | 0.737\*\*\* | 0.817\*\* | -0.777 | -0.777\* | -0.579\*\* |
|  | (0.166) | (0.209) | (1.486) | (0.415) | (0.284) |
|  |  |  |  |  |  |
| F-statistic |  | 5.06 |  |  | 5.27 |
|  |  | [0.074] |  |  | [0.070] |
| R-squared | 0.6235 |  | 0.1811 | -0.9419 | -1.3115 |
| Observations | 200 | 148 | 148 | 148 | 161 |

Notes: 1. Standard errors are in parentheses. One, two and three \* denote significance at the 10, 5 and 1% levels, respectively. 2. P-values are in brackets. 3. All the regressions include dummies to control for years. 4. Standard errors are corrected for clustering at the county level. 5. FLP refers to female labor force participation rate, and FDW refers to foreign domestic workers.

Table 7. The relationship between the vote shares of female candidates and the labor force participation rate: does gender matter?

|  |  |  |
| --- | --- | --- |
|  |  | Female votes as dependent variable at the 2nd stage |
|  |  | IV: Female LFPR | IV: Male LFPR |
|  |  | 1st stage | 2nd stage | 1st stage | 2nd stage |
|  | (1) | (3) | (4) | (3) | (4) |
| LFPR |  |  | 0.732\*\* |  | 0.766\*\* |
|  |  |  | (0.285) |  | (0.331) |
| FDW | 1.684\*\* | 1.649\*\* |  | 1.577\*\* |  |
|  | (0.587) | (0.539) |  | (0.586) |  |
| Population under 15 | 0.396 | 0.898\*\* | -0.775\*\*\* | 0.346 | -0.382 |
|  | (0.288) | (0.327) | (0.218) | (0.263) | (0.269) |
| Population over 65 | -0.018 | -0.057 | 0.021 | -0.011 | -0.012 |
|  | (0.169) | (0.183) | (0.169) | (0.150) | (0.119) |
| Income | -4.761 | 6.772 | -7.526\* | -3.412 | 0.051 |
|  | (3.424) | (4.570) | (4.428) | (3.106) | (3.262) |
| Female education | -0.166\* | -0.218 | 0.195\* | -0.199\* | 0.188\*\* |
|  | (0.088) | (0.121) | (0.110) | (0.087) | (0.078) |
| Election type | -0.458 | -1.162 | 0.669 | 0.752 | -0.759 |
|  | (0.309) | (1.020) | (0.863) | (0.684) | (0.660) |
| Trend | 0.304 | 1.021\*\*\* | -0.870\*\*\* | 0.267 | -0.326\* |
|  | (0.187) | (0.224) | (0.276) | (0.198) | (0.183) |
|  |  |  |  |  |  |
| F-statistic |  | 9.36 |  | 7.25 |  |
|  |  | [0.028] |  | [0.043] |  |
| Centered R-squared | 0.5367 |  | -0.2555 |  | 0.0100 |
| Observations | 200 | 148 | 148 | 148 | 148 |

Notes: 1. Standard errors are in parentheses. One, two and three \* denote significance at the 10, 5 and 1% levels, respectively. 2. P-values are in brackets. 3. All the regressions include dummies to control for years. 4. Standard errors are corrected for clustering at the county level. 5. LFPR refers to labor force participation rate, and FDW refers to foreign domestic workers.

1. Corresponding author. Department of Urban Industrial Management and Marketing, University of Taipei, 11153 Taipei, Taiwan. Tel: +886-2-2871-8288 Ext. 3106/8142, E-mail: chenlj@utaipei.edu.tw. I would like to acknowledge the financial support received from the Ministry of Science and Technology through the grant MOST 104-2410-H-845-022. [↑](#footnote-ref-1)
2. This survey focused on 4 issues, namely, domestic life, social participation, time allocation, and health and safety, and was conducted from 1998 until 2007. [↑](#footnote-ref-2)
3. For example, traditional developed countries are used to having more women elected to parliament (Chen, 2010). [↑](#footnote-ref-3)
4. There were 22 counties in Taiwan, excluding Kinmen County, Matsu, and Penghu County, before the city-county consolidation in 2010. Since then, four new special municipalities have been created, including New Taipei City (which transitted from Taipei County), Taichung City (by consolidating Taichung City and Taichung County), Tainan City (by consolidating Tainan City and Tainan County), and Kaohsiung City (by consolidating Kaohsiung City and Kaohsiung County). [↑](#footnote-ref-4)