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Bias at the Ballot Box? Testing Whether Candidates' Gender Affects Their Vote

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Abstract

Using data from all elections to the Australian House of Representatives between 1903 and 2004, we examine the relationship between candidates' gender and their share of the vote. We find that the vote share of female candidates is 0.6 percentage points smaller than that of male candidates (for major parties, the gap widens to 1½ percentage points), but find little evidence that the party preselection system is responsible for the voting bias against women. Over time, the gap between male and female candidates has shrunk considerably as a result of changes in social norms (as proxied by the gender pay gap and attitudinal data) and the share of female candidates running nationwide. We find little evidence that party-based affirmative action policies have reduced the gender penalty against female candidates.

JEL Codes: D72, J16

Keywords: economics of gender, elections, voting behaviour

In 1902, Australia became the first country to allow women both the right to vote in and stand for national elections.[1] Although there have been a number of significant electoral milestones since that time, Australian women are still significantly underrepresented in national parliament in the first decade of the twenty-first century. After the 2004 election, the share of women in the Australian House of Representatives was 25%.[2] According to a recent ranking by the Inter-Parliamentary Union, this placed Australia 36th highest out of 189 countries in terms of its representation of women in national lower houses (IPU 2007).

Given the apparent paucity of women elected to the Australian Parliament over the past century, it is important to determine precisely how women have fared in Australian elections to the federal House of Representatives since Federation. These elections are based upon single-member electorates, which are effectively two-party contests between Australia's major parties in most cases.[3] The Australian test-case is also an interesting one, as voting has been compulsory since 1924 and around 95% of its citizens vote in each federal election.[4] We ask two main questions in this paper. First, have women's electoral fortunes improved in line with other gender equality milestones such as equal pay and anti-discrimination laws over the past century? Second, do female candidates face discrimination by the voting public, or is gender voting bias merely a function of the way in which the parties' preselection process operates?

[1] Although New Zealand was the first country to grant women voting rights in 1893, New Zealand did not permit women to stand for election until 1919. In Australia, (non-Indigenous) women's suffrage was granted through the *Commonwealth Franchise Act 1902*. However, women in South Australia and Western Australia voted in the 1901 Federal election. For a detailed history of the representation of women in Australian politics, see Sawer (2001).

[2] Including Senators, the proportion of women in the Australian parliament after the 2004 election was only slightly higher, at 28% (Parliament of Australia 2007a,2007b).

[3] There are three major political parties in Australian politics. The main left-wing party is the Australian Labor Party, and the two right-wing parties are the city-based Liberal Party of Australia, and the rural National Party. The two right-wing parties operate in coalition with one another, meaning that each agrees not to run candidates against a sitting member of the other party.

[4] Australia levies a fine on any citizens who do not vote. In the 2004 and 2007 elections, the fine was A$20, approximately the average hourly wage (Australian Electoral Commission 2008).

To answer these questions, we examine the relationship between a candidate's gender and their electoral success, using data from federal elections to the Australian House of Representatives between 1903 and 2004. We find that female candidates *do* fare worse than their male counterparts in Australian elections, although the penalty against female candidates has shrunk over time. One possible interpretation of our results is that they are merely driven by preselector bias. However, we conclude that this is not the case (this is not to say that preselector bias is non-existent; but simply that it does not affect our estimates of voter bias). In contrast to other Australian and international research, we employ various strategies that allow us to look only at the effect of voter bias. First, we examine how female incumbents and independent candidates (those who do not face the party preselection process) fare at the ballot box in comparison to women running as non-incumbents or for either of the major parties in Australia. Second, we examine how the Australian Labor Party's (ALP's) affirmative action ruling has affected the electoral outcomes of female ALP candidates in Australia. In 1994, the ALP adopted a quota to pre-select women in 35% of winnable seats (Whip 2003). In 2001, when the quota came into force, the ALP National Conference increased this quota to 40%. The adoption of this quota provides us with a natural experiment allowing us to test whether bias against female candidates is driven by voters or preselectors, and how female candidates have fared since 2001.

Furthermore, we find that over the past century, changes in voter bias against women seem to be partly explained by social norms (as proxied by the gender pay gap) and by the share of candidates who are female. Surprisingly, we also find that across electorates, women tend to perform better when there are fewer other women on the ballot paper, and do not benefit from running in electorates with more female voters.

The remainder of this paper is organized as follows. The next section presents a review of the key literature. We then turn to electoral data, analyzing election results from all Australian federal elections. The following section addresses 'the preselection problem', by attempting to separate voter bias from preselector bias. Next, we analyze several factors that might explain trends in voter bias against women over time and across electorates. The final section concludes.

Existing Research on Candidate Gender and Voting

While little analysis on the relationship between gender and electoral outcomes has taken place in Australia, several US studies have sought to explain the lack of female elected representatives in terms of either discriminatory voting behavior by the public, or discriminatory preselection practices by political parties themselves.

The first body of literature related to this study examines the possibility that voters display discriminatory voting behavior based on candidate gender. A range of US studies (Darcy and Schramm 1977; Ekstrand and Eckert 1981; Huddy and Terkildsen 1993a; Berch 2004) have experimented with 'changing' the gender of a particular candidate in order to determine the effect on voters' choice of candidate. Each found that voters display no systematic bias for or against female candidates. However, while Fox and Smith's (1998) experimental study also found that voters in California—a relatively liberal state—did not display evidence of gender bias, a simultaneous experiment in Wyoming—a relatively conservative US state—found that voters gave an additional 10% of the vote to the male candidate.

In seeking to explain some of the bias against female candidates in real-world elections, both Kenworthy and Malami (1999) and Kittilson (2006) suggested that society's attitudes

towards women have a pervasive effect on their numbers in Parliament or Congress. Both studies showed that in Western industrialized nations, more egalitarian attitudes towards women, high levels of women in professional occupations, and an early history of women's suffrage are each associated with a higher percentage of women in elected political positions. Key studies by Inglehart and Norris (2003) and Paxton and Hughes (2007) have also demonstrated a strong and significant relationship between a country's societal cultural attitudes towards women's leadership and the number of female parliamentarians. In a series of regression models estimating the relative impact of cultural, structural and institutional factors on women's representation in parliaments worldwide, Inglehart and Norris (2003:140-1) found that cultural attitudes towards gender equality (as measured by the *Gender Equality Scale*[5]) was the strongest and most consistently significant variable to explain a country's proportion of female parliamentarians.

A second body of literature finds that voters discriminate on the grounds of gender as they tend to view men and women as better suited to particular elected roles. That is, male candidates are more successful in elections to national or executive offices and those that require decision-making around the economy or defense, while female candidates fare better when running for 'nurturing' roles in local government or in 'feminine' policy areas such as education and child care (Huddy and Terkildsen 1993b; Fox and Oxley 2003; King and Matland 2003). Similarly, Herrnson, Lay and Stokes (2003) found that when female candidates appeal to traditional gender stereotypes, focus on 'women's issues' or target female voters in their campaigns, they were 11% more likely to be elected than when they ran a 'gender-free' campaign. Yet regardless of voters' views about the relationship between gender and political suitability, McAllister and Studlar (1992) showed that in Australia, a

[5] See Inglehart and Norris (2003:33).

candidate's political party explains a far greater proportion of his or her political attitudes and behavior than does the candidate's gender. The only exception is that female candidates across all Australian political parties tended to demonstrate a more progressive attitude towards women's equality than do male candidates.

However in contrast to the first two literatures, many studies blame political parties themselves for an internal bias against women in the candidate-selection process (Darcy and Schramm 1977; Bean and McAllister 1990; Caul 2001; Conway 2001; Kittilson 2006). Kelley and McAllister (1984) found that in Australia, female candidates received 10% fewer votes, of which 6% was due to the failure of political parties to nominate women as candidates in the first place. In their study of candidate gender, Bean and McAllister (1990) found that female candidates received 5% fewer votes in the 1990 federal election to the Australian House of Representatives. However, the authors further show that once factors such as the party preselection process, incumbency and ballot position are taken into account, female candidates performed no worse than male candidates in the 1990 election. Two studies (Darcy and Schramm 1977; Caul 2001) showed that in both the United States and Europe, left-wing parties are far more likely to preselect women as candidates or use gender quotas to increase the participation of women in the political process. In Australia, the left-wing minor parties have been far more likely to nominate women than the major parties; in 1990, 44% of the Greens' candidates and 30% of the Democrats' candidates were women, compared with just 15% of candidates nominated by the ALP or Liberal Party (Bean and McAllister 1990). Furthermore, the major parties have tended to nominate their female candidates for the most unwinnable seats (Mackerras 1977). Bean and McAllister (1990) showed that in the 1990 federal election, 56% of female Liberal Party candidates were

nominated for safe (i.e. 'unwinnable') Labor seats, while 21% of female ALP candidates ran for safe Liberal-National Party seats.

Given this distinction in the literature between the effect of voter bias and party-based preselection bias on female electoral outcomes, this paper seeks to separate these two effects in the Australian context. As far as we are aware, ours is the first paper to study the effects of gender on electoral outcomes in all elections to the Australian House of Representatives over the past century.

How do Female Candidates Fare in Australian Elections?

We now turn to the first question in our study – an analysis using data from all 40 federal elections to the Australian House of Representatives conducted between 1903 and 2004 (as we explain below, we use the 1901 election to calculate an expected vote share measure, so observations from 1901 appear in Figures 1 and 2, but not the regression analysis and subsequent graphs). So far as we are aware, our paper is the first to use data on every individual electoral race since Federation. This is most likely because the data has not previously been available in a comparable electronic form. In our case, we have benefited from electronic spreadsheets provided to us by Robert Pugh of the Australian Electoral Commission (AEC). Although these saved us the burden of manually entering the data, we nonetheless spent a considerable amount of time reformatting the data in a consistent manner. Additionally, since the AEC spreadsheets did not always include information on the incumbent candidate, we merged in data on incumbency using records available at Adam Carr's election website.[6]

[6] In the 1901 election, two states, South Australia and Tasmania, elected their MPs on a statewide basis. We opt to code none of the winning members as an incumbent in the 1903 election, though our results are essentially unaffected if we code all the 1901 winners in those states as incumbents in 1903.

Since the AEC data do not contain information on the gender of the candidate, we coded candidates' gender using their first names. Across the period 1901-2004, 65 candidates did not spell out their first name on the ballot paper; providing only their initials. We exclude these individuals, since we were unable to determine their gender. In all other cases, we coded candidates' names as male or female. Where we were unsure of the gender of a particular candidate, we attempted to consult official sources. This was not always possible, so it is conceivable that we have mis-coded candidates' gender in some instances. However, given that there is empirically very little overlap between men's and women's names, this is unlikely to be a significant problem in practice.[7] To the extent that this measurement error is uncorrelated with candidates' vote share, this should not bias our results.

Figure 1 shows the share of candidates in each election who were female. This figure first exceeded 5% in 1943, and only exceeded 10% in 1980. During the 1980s and 1990s, the share of female candidates steadily rose. In the 2004 election, 28% of candidates were female, a slightly higher share than in federal parliament.

(Figure 1 about here)

Figure 2 graphs the share of incumbent candidates who are female (we graph incumbents rather than winners, since it directly pertains to the regression analysis that follows). We also note on the graph some important milestones for women in Australian politics.

[7] To check this, we contacted the Registry of Births Deaths & Marriages in New South Wales (Australia's largest state) and were supplied with a file containing the most popular names in that state (annual birth counts for approximately 400 names per gender for 1952-2008). Within this group, 96 percent of women have names that are extremely feminine (ie. more than 99 percent of those with the name are female), and 99 percent of women have names that are highly feminine (ie. more than 90 percent of those with the name are female). The statistics for male names are very similar. This suggests that over this period, names provided an extremely clear signal of an Australian's gender.

A surprising aspect of these data is that prior to 1970, only three women were elected to federal parliament: Enid Lyons, Doris Blackburn, and Kay Brownbill. Perhaps more striking is the fact that despite social changes that took place during the 1970s, only one woman (Joan Child) was elected to parliament in this decade. This is consistent with data from the upper echelons of the federal public service (the Senior Executive Service), where the share of women rose more rapidly in the 1980s than in the 1970s (ABS 1997). But it is not consistent with the pattern in state and territory parliaments, where female representation increased at about the same rate in the 1970s as it did in the 1980s (Sawer 2001). However, this pattern may simply reflect that barriers to electoral success in state and territory parliaments are lower than at the federal level.

(Figure 2 about here)

Our formal analysis involves estimating regressions that take the form:

$$Voteshare_{ijkt} = \beta FemaleCandidate_i + \gamma' Z_{ijkt} + \varepsilon_{ijkt} \qquad (1)$$

In this regression, the dependent variable is the share of the first-preference vote received by candidate i, representing party j, in electorate k, and election t. This variable, which we term *Voteshare*, ranges from 0 to 1. Throughout this paper, our dependent variable is a candidate's share of the primary vote.[8] The variable *FemaleCandidate* is an indicator variable, taking the value 0 for male candidates, and 1 for female candidates.

[8] Australian elections use a preferential voting system (also termed "instant runoff"). Although we have data on the full preference distribution for most electorates, we focus on the primary vote, since using the two-party preferred vote shares would by definition involve excluding all but the top two candidates in each race. Using the primary vote share as the dependent variable allows us to include minor party candidates in our sample, and significantly increases our sample size.

Z is a vector of candidate-specific, party-specific and election-specific characteristics, which we include because they may be correlated with both *Voteshare* and *FemaleCandidate*. The more candidates that run in a given race, the fewer votes each will be likely to garner. To account for this effect, all our regressions control for the reciprocal of the number of candidates standing in that particular electorate in a given year. Because incumbency may confer electoral benefits, all regressions also control for whether the candidate was the incumbent (i.e. whether he or she won that seat at the previous election, or in a by-election). In some instances, politicians win election in one electorate and run in a different electorate at the next election. We code these as non-incumbents.

As noted above, a number of studies of women in politics have referred to the 'sacrificial lamb hypothesis'; the notion that political parties choose women to run for unwinnable seats, but put forth men as candidates when the party has a reasonable chance of winning the seat (see e.g. Berch 2004). To account for the possibility that women may stand in electorates where the ex ante probability of their party winning is lower (or higher), we include a control that we term the 'expected vote share'. Ideally, this variable should capture a candidate's probability of winning given his or her political party. However, we do not want the expected vote share measure to capture anything about the particular candidate, or we run the risk that it will attenuate the *FemaleCandidate* coefficient. We therefore create the expected vote share measure as follows:

a) The expected vote share takes the value of the vote share received by a different candidate of the same party running in the most recent election. For example, suppose that candidate A received 10% and 15% in elections 1 and 2, and was then replaced by successor B from the same party. For each election in which B stands, the expected

vote share measure would be set to 15%. Only elections that are within five elections of one another are coded in this manner.

b) If the previous technique is infeasible, we assign the average major or minor party vote share for that electorate in the previous election.
c) If the previous techniques are infeasible, we assign the average vote share received by all candidates standing for the same party in the previous election.
d) If the previous techniques are infeasible, we assign the average major or minor party vote received by all candidates in the previous election.

We were able to use method (a) in 98 percent of cases, and method (b) for virtually all of the remaining cases. Note that since these methods entail looking at the previous election, we drop the 1901 federal election from our regression analysis. There were no female candidates who ran in that election.

Our preferred specification includes a party×election fixed effect. This effectively allows us to control for party-specific swings in each election. In this specification, the coefficient on *FemaleCandidate* is effectively the difference in the electoral performance of male and female candidates running for the same party in the same election (accounting for incumbency and expected vote share). For completeness, we also show results without party×election fixed effects, or with separate party and election fixed effects. All specifications are estimated using ordinary least squares, with standard errors clustered at the election×electorate level, to account for the fact that, within a given race, vote shares must sum to 100%.

Our sample covers 40 elections held between 1903 and 2004. It includes 4,213 separate contests, 10,528 candidates, and 16,767 candidate-election observations. Summary statistics and further details on our data are provided in Appendix I. Female candidates comprise 14% of the sample.

Table 1 presents the results of these specifications. In the absence of election and party fixed effects, the *FemaleCandidate* coefficient is very small (0.001) and statistically insignificant. However, once we add election and party fixed effects (column 2) or election×party fixed effects (column 3), the coefficient rises to around two-thirds of a percentage point, and is significant at the 1% level. The fact that the results without fixed effects are insignificant is itself curious, and suggests election-specific and party-specific factors that are correlated with the success of female candidates (indeed, the results in column 2 are largely unchanged if we include only election fixed effects, or only party fixed effects).

In our preferred specification (column 3), we estimate that being female reduces a candidate's primary vote share by 0.6 percentage points. One can glean some sense of the magnitude of this effect from the fact that the benefit of being male is about two-thirds as large as the benefit of drawing the top spot on the ballot paper (King and Leigh 2009). Another potentially useful comparison is to note that in recent Australian elections, around 4% of seats have been decided by a margin of 0.6% or less.[9]

Our other covariates have the expected sign and magnitude, with the incumbency coefficient around 0.13, the expected vote share coefficient ranging from 0.74 (without party and

[9] This comparison uses two-party preferred data from the 1996-2004 elections, in which 24 out of 595 races were decided by a margin of 0.6% or less.

election fixed effects) to 0.4 (with fixed effects), and the coefficient on the reciprocal of the number of candidates ranging between 0.3 and 0.4.[10]

(Table 1 about here)

The Preselection Problem

Although we find evidence of a bias against female candidates in Australia, it is possible that part (or all) of this bias could be due to preselectors, rather than voters. As Kelley and McAllister (1983) have suggested, the preselection process used by the major political parties in Australia may be a source of disadvantage for female candidates. Indeed, in Appendix II, we explore the issue using the 1987 and 1990 Australian Candidate Studies, and find some suggestive evidence of preselector bias in those elections (though it is quite possible that this estimate does not generalize to the other elections in our sample).

Our concern here is not with estimating the relative size of preselector bias and voter bias, but rather with a more subtle question: to what extent are our estimates of voter bias merely a reflection of preselector bias? Here, we adopt two strategies that help us to determine whether or not party-based discrimination is driving our results. First, we restrict the sample to incumbents, and compare female incumbents with male incumbents. Incumbents, unlike their challengers, do not typically face a hotly contested preselection process in order to become a party's candidate. In effect, we hypothesize that if the voter bias differs between incumbents and challengers, then party bias is likely to affect estimates of the gender voting bias. This strategy follows Milyo and Schosberg (2000), who found that when the sample was restricted

[10] Some might wonder why the coefficient on *1/TotalCandidates* is not 1. The answer is that in a bivariate regression of *VoteShare* on *1/TotalCandidates*, the coefficient is precisely 1, but adding other controls (incumbency, expected vote share, election effects, and party effects) attenuates the coefficient.

to US incumbents, female incumbents outperformed male incumbents, controlling for challenger quality (see also Berch 2004).

Second, we restrict the sample to independent candidates, and compare female and male candidates who run as independents. By definition, independent candidates do not have to face preselection, so this strategy provides an alternative way of estimating voter bias in a way that is uncontaminated by preselector behavior.

Table 2 shows the results from these two approaches. In both cases, we use our preferred specification (Table 1, Column 3), which includes election×party fixed effects. In the case of incumbents, we find that female incumbents are penalized by a loss of 1.8 percentage points at the ballot box (column 1), while non-incumbent females receive 1.1 percentage point fewer votes (column 2).[11] These effects are both larger than those shown in Table 1, since the sample in columns 1 and 2 is restricted to major-party candidates. A formal test cannot reject the hypothesis that the two *FemaleCandidate* coefficients are the same.

The results in columns 3 and 4 bear out this conclusion. Separating the sample into independent candidates and those who ran with the support of a political party, we again find no difference between the two. Since independents do not have to face a preselection, this suggests that our estimates of voter bias are not affected to any large extent by preselector behavior.

(Table 2 about here)

[11] By contrast, Milyo and Schosberg (2000) found that female incumbents in US House Elections over the period 1984-92 received a 6 percentage point higher vote share than male incumbents.

Unfortunately, both of the strategies employed in Table 2 have their limitations. While incumbents are often re-selected without a contested preselection, their initial selection is often hotly contested. As a result, it is plausible that male and female major party incumbents may differ on some important dimension. And in the case of independent candidates, it is plausible that the typical voter with a propensity to vote independent has a different gender bias than other voters in the electorate. Nonetheless, our results would be unlikely to look as they do in Table 2 if gender differences for candidates were driven solely by preselector bias.

One natural experiment that may serve to shed light on this question is the 1994 decision by the Australian Labor Party to enact an affirmative action policy. This rule required that in the first election following the year 2001, 35% of Labor's candidates in winnable seats must be women.[12] The change required was quite substantial, given that in 1994, only 10 of Labor's 80 House of Representatives members were women. If we regard this as an exogenous shock to the preselection system, it can help to shed light on the extent to which preselector bias affects our estimates of voter bias.

To test the effect of the rule change, we compare the performance of female candidates standing for the Labor Party before and after the 35% rule took effect. In order that our results are identified only from the rule change, we include three sets of fixed effects:

- election×party fixed effects, which absorb party-specific swings from election to election;
- female×party fixed effects, which allow voters to provide a differential level of support to female and male candidates from each party; and

[12] Since 2001, the ruling holds that at least 40% of preselected ALP candidates must be women so that, by 2012, at least 40% of the seats held by Labor will be filled by women (Australian Labor Party 2004:7-8).

- female×election fixed effects, which allow the average degree of support for female candidates to change from one election to the next.

Our results are therefore identified from the triple-difference interaction *FemaleCandidate×ALP×Post,* which denotes female candidates who ran for the Labor Party after the rule took effect. We present two specifications: one in which the post-period denotes the elections after 1994 (when the rule change began to affect preselections), and one in which the post-period denotes the election after 2001 (when the 35% rule change was operative).

Table 3 presents results from these specifications. In both cases, the coefficient on the triple-difference term is close to zero and statistically insignificant. This suggests that the new policy – which substantially increased the share of female candidates – did not affect the bias against women for ALP candidates. This provides further support for the notion that the preselection process is not driving our estimates of voter bias. (Again, it is important to stress that we are not measuring preselector bias; instead we are checking whether preselector bias affects our estimates of voter bias.)

(Table 3 about here)

What Explains Gender Voting Bias?

In the previous section we found evidence of a persistent bias against female candidates in Australia over the past century that is not a reflection of discrimination within the party preselection process. Given that the bias appears to lie with the voters themselves, in this section we therefore analyze the factors that might explain differences in voter bias against women between electorates and over time, seeking to tease apart the effect of several

different theories. These include changing social norms about the role of women, the share of women sitting in parliament, the share of women standing for office in a given election, and the share of women competing in a given constituency.

To give some sense of the patterns that we are trying to account for, we estimated gender voting bias separately for each election by interacting it with a dummy for that election. Note that such an interaction can either be done by including the main effect (*FemaleCandidate*) and omitting one of the election interactions, or by omitting the main effect, and including all election interactions. Here, we opt for the latter. Since our specification includes election×party fixed effects, it is unnecessary to include election fixed effects as well.

$$Voteshare_{ijkt} = \beta_{1901} FemaleCandidate_i \times I_t^{1901} + \beta_{1903} FemaleCandidate_i \times I_t^{1903} + \ldots + \beta_{2004} FemaleCandidate_i \times I_t^{2004} + \gamma' Z_{ijkt} + \varepsilon_{ijkt} \quad (2)$$

Figure 3 plots the beta coefficients from regression (2), along with their associated standard errors. As can be seen, the degree of gender bias against female candidates has fallen substantially since the early part of the twentieth century. We estimate the gender bias against female candidates (of the same party, running in the same election, and controlling for incumbency and expected vote share) to be over 10% until the 1920s, and between 5 and 10% until the 1940s. In the postwar decades, the penalty fell below 5%, where it has remained since.

(Figure 3 about here)

As the bars in Figure 3 show, most female candidates stood in elections since 1980. Figure 4 therefore plots the ten elections that took place between 1980 and 2004. On average, the

penalty against female candidates was 1/3rd of a percentage point, but there were some difference across elections. In five of these elections (1980, 1983, 1987, 2001, 2004), the penalty against female candidates was between ½ and 1 percentage point. In three elections (1984, 1990, 1993), the penalty against female candidates was less than 1/5th of a percentage point. And in two of these elections, female candidates outperformed male candidates (by 1/3rd of a percentage point in 1996, and 1/10th of a percentage point in 1998).

(Figure 4 about here)

The shrinking gender penalty in Australia is consistent with trends in other post-industrialist societies around the globe (Paxton and Hughes 2007). But why has the gender penalty narrowed? Here we test three possible explanations. The first might be termed the 'trailblazing effect', in which women perform better in elections when more women stand for election or hold office.[13] This would suggest that at a national level, the gender penalty has been driven by the trends shown in Figures 1 and 2. At a local level, it would also suggest that women candidates benefit if a larger number of their opponents are women.

A second plausible explanation is that the gender penalty is driven by changing social norms (Inglehart and Norris 2003). As noted above, a series of studies in Western Europe and the United States have found that women are more likely to be elected to political positions in countries or states that hold more egalitarian attitudes towards gender equality. One way of gauging social norms over the entire past century is by looking at labor market differences between men and women. Although earlier studies (Inglehart and Norris 2003; Paxton and Hughes 2007) would characterize labor market differences as a structural factor rather than a social or cultural one, we suggest that the gender pay gap can be used as an effective proxy

[13] Perhaps the best examples of this theory are the 1996 and 1998 federal elections, each of which saw 15 women newly elected to the House of Representatives.

for social attitudes towards gender equality.[14] To test this, we obtain annual data on the gender pay gap from the Australian Bureau of Statistics' average weekly earnings survey (covering the period since 1970), and splice this to data from Snooks (1994) (covering 1901-69). Note that both series relate to full-time non-managerial employees, but that the gender gap is not adjusted to account for age, experience, education, or industry. Over the last two decades of our sample, we also have comparable data on attitudes to gender equality, and we find that this closely tracks the gender pay gap.[15] Moreover, when we use our attitudinal variable in place of the gender pay gap in the regression analysis, we obtain similar results.

In Figure 5, we chart the gender pay gap against our estimate of the ballot box penalty against women. In 1903, the gender pay gap was 67% (meaning that the typical woman earned 33% as much as the typical man). By 1960, the gap had narrowed to around 40%. Following the equal pay decisions of 1969, 1972, and 1974, the gap shrunk to around 30%, and was 18% in 2004. In general, the shrinking of the gender pay gap appears to track the ballot box penalty against women quite well, with both gaps shrinking markedly in the first part of the twentieth century, and (at a much slower rate) during the 1980s and 1990s. The only stage at which the two series do not seem to track closely is the late-1960s and early-1970s. This may reflect the fact that the substantial reduction in the gender pay penalty in this period was driven by legislative changes (the equal pay decisions) rather than social attitudes. Since we are using the gender pay gap as a proxy for social attitudes towards women, it may be a less accurate proxy of attitudes in these years.

[14] Although we regard the gender pay gap as a proxy for social norms, one could imagine channels through which women's pay directly affected the electability of female candidates. For example, higher pay for women should raise the opportunity cost of entering politics, thereby reducing the number of talented women running for office. Conversely, if voters regard holding a highly-paid job as a signal of competence, a reduction in the gender pay gap should help female candidates at the ballot box. Other factors might also have affected the 'quality' of female candidates standing for election in Australia. However, we are not aware of any empirical evidence on this point.

[15] This variable is the share of people in the Australian Election Study who agree with the statement 'equal opportunity for women has gone too far'. The figure fell steadily from 26% in 1987 to 9% in 2004.

(Figure 5 about here)

A third theory about the gender penalty is that it is explained by differential voting patterns of male and female voters. For example, in her study of Indian politics, Clots-Figueras (2005) finds that scheduled caste women tend to favor "women-friendly" laws. In the case of Australia, the evidence on policy differentials is ambiguous. Surveys of female politicians report that a majority see their role as representing women (Sawer 1986; Whip 1991; Tremblay 2003). Yet our analysis of the attitudes of male and female candidates in the 1996-2004 elections finds quite small differences: although women candidates are generally more left-wing than male candidates, the gender gap is only one-third to one-tenth as large as the partisan gap (see Appendix III for details). *A priori*, it is not clear whether we should expect to see any interaction between the gender of the voter and the gender of the candidate, and if so, what sign that interaction should take. However, if this effect were large, then a shift in the political salience of "women's issues" could conceivably change the extent of voter bias against women over time.

One way of directly exploring this question would be via exit polls, which asked male and female voters which candidate they voted for. Unfortunately, large-scale exit polling data are not available in Australia. Instead, the closest information we have is from the Australian Election Study. Although the AES asks about voting behavior, voters are asked which party they voted for, rather than which candidate. While the AES is therefore very useful for analyzing partisan voting patterns, it is likely that any candidate-specific factors are poorly measured in the AES.

To look at the behavior of male and female voters, we therefore adopt a different approach, exploiting the fact that for elections between 1903 and 1966, the Australian Electoral

Commission recorded the number of men and women who voted in each electorate. Across electorates, the share of voters who were female ranged between 17 and 60% for all elections, and between 36 and 59% for elections in which at least one female candidate was on the ballot. In Figure 6, we plot the relationship between the share of voters who were female and the share of the vote received by the female candidate. Somewhat to our surprise, we observe no strong pattern between the two. Indeed, to the extent that there is a relationship, it appears to be negative, as indicated by the fitted line.[16]

(Figure 6 about here)

We now turn to a more formal analysis of these three gender voting hypotheses (the 'trailblazing effect', the social norms theory, and the proportion of female voters), in which we augment equation (1) by adding an interaction between the possible explanator and an indicator variable denoting whether the candidate is female. We begin by focusing on the three variables that change over time: the share of incumbents who are female, the share of candidates who are female, and the gender earnings penalty.[17] Since the specifications already include election×party fixed effects, these capture the main effects of the three variables, so we need only include the interactions.

Table 4 shows the results from this specification. When the explanators are interacted individually (columns 1-3), the coefficients accord with expectations. In line with the shifting social norms theory (Inglehart and Norris 2003), female candidates tend to do better if more women are in parliament, if more women are running in that election, and if the gender pay gap is smaller. However, when we include these three factors together (column 4), the female

[16] Care must be taken in interpreting this finding, however, as we can only observe the aggregate share, and the relationship potentially suffers from the ecological fallacy problem.

[17] Since these variables are measured at the national level, we do not exclude the individual from the calculation. Doing so makes no substantive difference to the results, but does slightly complicate the presentation of results, since we need to show the main effects as well.

incumbent interaction flips sign. This suggests that – controlling for the gender pay gap and the share of candidates who are female – having more women in parliament has a negative effect on the electoral performance of other women.

Care should be taken in interpreting this last finding, since it relies on holding constant the gender pay gap (a proxy for social norms) and the share of candidates who are female. Without either of these controls, an increase in the number of women in parliament improves the chances of women getting elected. But with these controls, female candidates are harmed by having more women in parliament. One way of interpreting this result is that the electorate has some target share of women in parliament, which is driven primarily by prevailing social norms (proxied by the pay gap, and reflected in the share of women standing for office). Holding this target constant, voters would be less likely to elect women the more women were already in parliament.

The interactions are not only statistically significant, but quantitatively large. The results in column 4 suggest that a 10 percentage point increase in the share of female incumbents would increase the gender penalty by 0.5 percentage points, while a 10 percentage point increase in the share of candidates who are female would shrink the gender penalty by 0.9 percentage points. (Thus a 10 percentage point increase in both the share of incumbents and candidates would shrink the gender penalty by 0.4 percentage points.) Controlling for these factors, a 10 percentage point reduction in the gender pay gap would shrink the gender penalty by about two-thirds of a percentage point.

(Table 4 about here)

While the three variables in Table 4 only vary from election to election, it is also possible to exploit variation across electorates *in the same election*. Two of our explanatory factors - the

share of candidates in a particular electorate who are female (excluding the individual), and the share of voters in an electorate who are female - vary within elections. This allows us to estimate models in which we include both election×party fixed effects, and election×female fixed effects. We can then ask the question: controlling for the average gender penalty in a particular election, why are some electorates more favorable towards women than others?

Table 5 shows the results from this specification. When we interact the female coefficient with the share of other candidates in the same race who are female, the coefficient is -0.018, which is significant at the 1% level. Since the typical race has four candidates, and the share variables exclude the individual, this suggests that a woman running against three men receives 0.6% more of the vote (0.018×0.33) than a woman running against two men and another woman.

In column 2, we explore whether female candidates do better in electorates with a larger share of female voters (restricting the sample to 1903-1966). Since we can only observe the aggregate share, this specification potentially suffers from the ecological fallacy problem. If the gender composition of an electorate has an independent effect on voting patterns, or if it is correlated with something else about the electorate, then the relationship between the female share of voters and the performance of female candidates may not reflect how female voters cast their ballots.

With this caveat in mind, we find only a weak relationship between the share of voters who are female and the performance of female candidates. The coefficient in column 2 is substantively large (suggesting that a 10% increase in the share of female voters leads to a 3

percentage point drop in the vote share of female candidates), but is significant only at the 10% level.

In column 4, we include both the candidate composition interaction and the voter composition interaction. Including both has little effect on the point estimates (for voter composition, compare columns 3 and 4, which both use data from 1903-66), but neither is statistically significant. We therefore conclude that the gender composition of other candidates matters (using the full sample), but that the gender composition of voters does not have a significant effect.

(Table 5 about here)

Conclusion

Despite Australia's history as the first country to grant women the right to vote in and stand for national elections, and the fact that women make up a majority of the Australian population (50.3%), women are still substantially underrepresented in the Australian parliament. Using data on elections since 1903, we show that, in contrast to previous US studies, this is partly due to a systematic penalty against female candidates at the ballot box. Our regression analysis takes account of party affiliation, incumbency, expected vote share and the number of candidates running in that election. We find that in Australia, female candidates faced a penalty at the ballot box of at least 5 percentage points until World War II, a couple of percentage points in the immediate postwar decades, and less than 1 percentage point in the 1990s and early-2000s. On average, female candidates received 0.6 percentage points fewer votes than male candidates. The effect was larger for female candidates representing major parties, who received 1-2 percentage points less, but is still smaller than

previous Australian estimates (Kelley and McAllister 1983; Bean and McAllister 1990). We find no evidence of any consistent benefit to female candidates at the Australian ballot box.

In theory, differences in the electoral performance of male and female candidates could be explained solely by biases in the preselection system. However, unlike previous studies (Darcy and Shramm 1977; Kelley and McAllister 1984), we do not find evidence that the preselection system has had much of an effect on the ballot box penalty against female candidates. Three pieces of evidence support this. First, the gender penalty against women from major parties is similar among incumbents and challengers. Second, independents (who do not face preselection), receive a similar gender penalty as non-independents. And third, a substantial increase in the share of women preselected by the Australian Labor Party did not appear to affect the electoral performance of female Labor candidates. The implications of this finding are important. While policies such as the ALP's gender quotas are a meaningful way of improving female candidates' chances within certain political parties, some have argued that affirmative action policies inevitably lead to a backlash against female candidates by voters. Empirically, we find no evidence of such a backlash.

Given that much of the bias against women candidates lies with the voters themselves, what explains changes in the gender penalty over time? Of the three explanations tested here, we find evidence to support arguments by Inglehart and Norris (2003) and Paxton and Hughes (2007) that changing social norms (as proxied by the gender pay gap) have an effect on the electoral gender penalty. Australia can expect to see more women in Parliament as the gender pay gap narrows. We also find that a higher share of female candidates running nationwide in a given election boosts the chances of a given female candidate winning. Conversely, however, we find that female candidates are harmed, not helped, by having more women on

the *same ballot paper in the same election*. Female candidates fare worse when they have to compete against other female candidates. Finally, we show that the share of voters who are women does not appear to have a positive impact on the performance of female candidates. Although our data are at an aggregate level, they are consistent with the theory that female voters are not more likely to support female candidates.

While one should always be cautious about generalizing results across countries, there are several reasons to think that our findings may have relevance to researchers and policymakers in other settings. In terms of gender equality, the gender pay gap in Australia is on par with the gap in other industrialized nations (Blau and Kahn 1996, 2003). From a political perspective, Australian elections have some unusual features (e.g. compulsory voting and instant runoff vote counting), but its House of Representatives elections (based upon single-member electorates, which are effectively two-party contests in most cases) have much in common with elections in other parts of the world. Nonetheless, it would be interesting to see the extent to which our findings on the voting bias against female candidates across the twentieth century are common to other countries.

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Figure 1: Share of candidates who were women

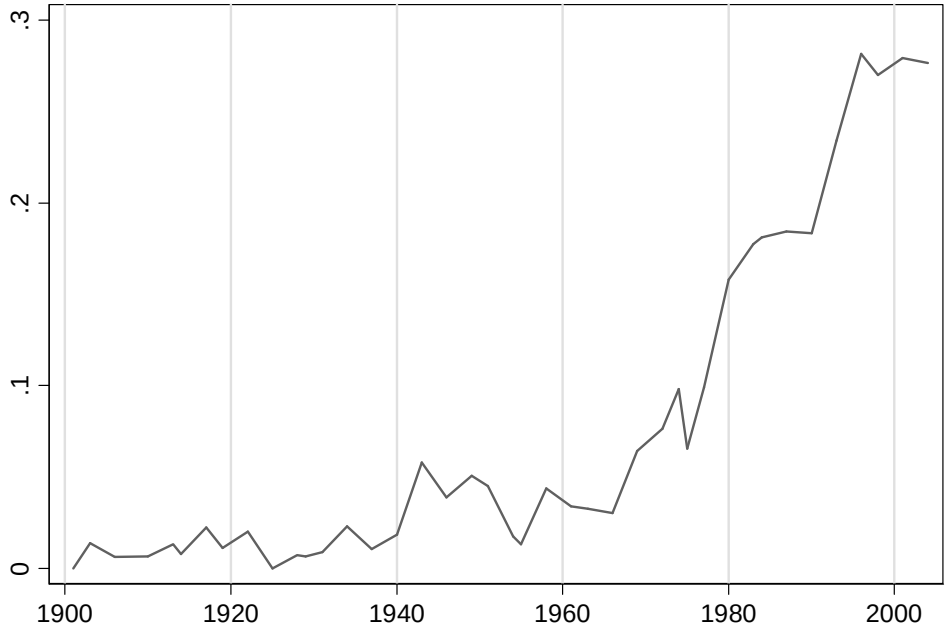

Figure 2: Share of incumbents who were women

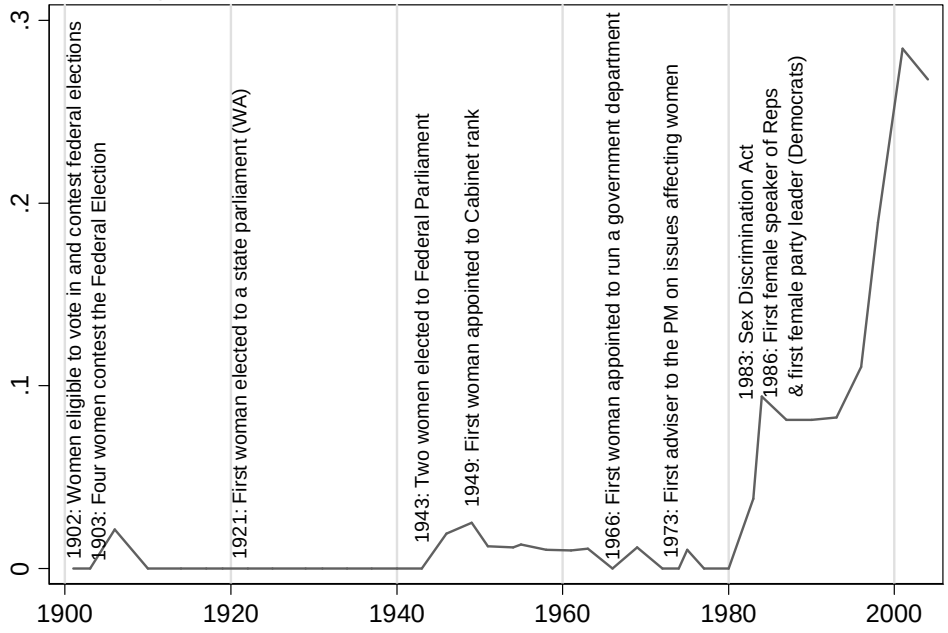

Figure 3: Ballot box penalty against women (1903-2004)

Solid line denotes penalty, dashed lines denote 90% confidence interval.
Bars denote share of candidates who were women.

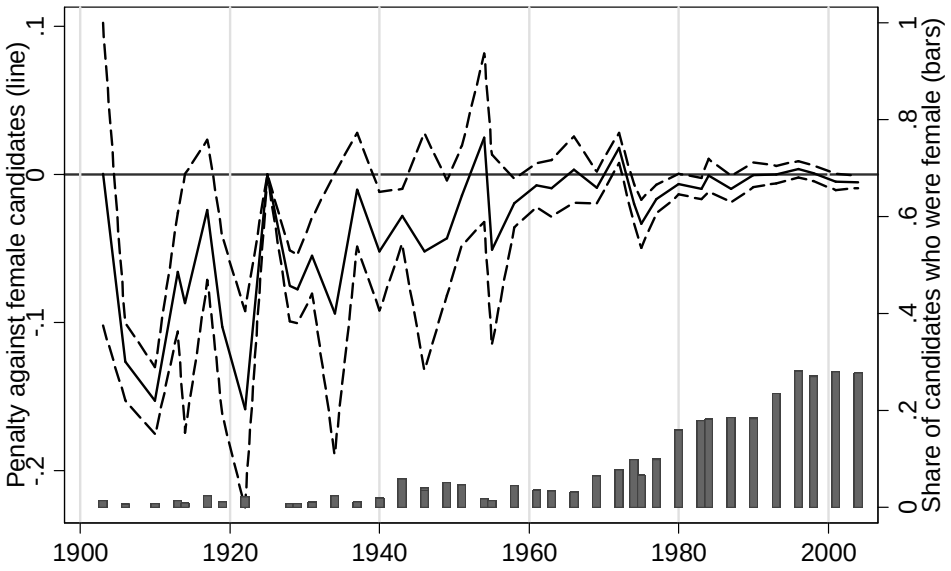

Figure 4: Ballot box penalty against women (1980-2004)

Solid line denotes penalty, dashed lines denote 90% confidence interval.
Bars denote share of candidates who were women.

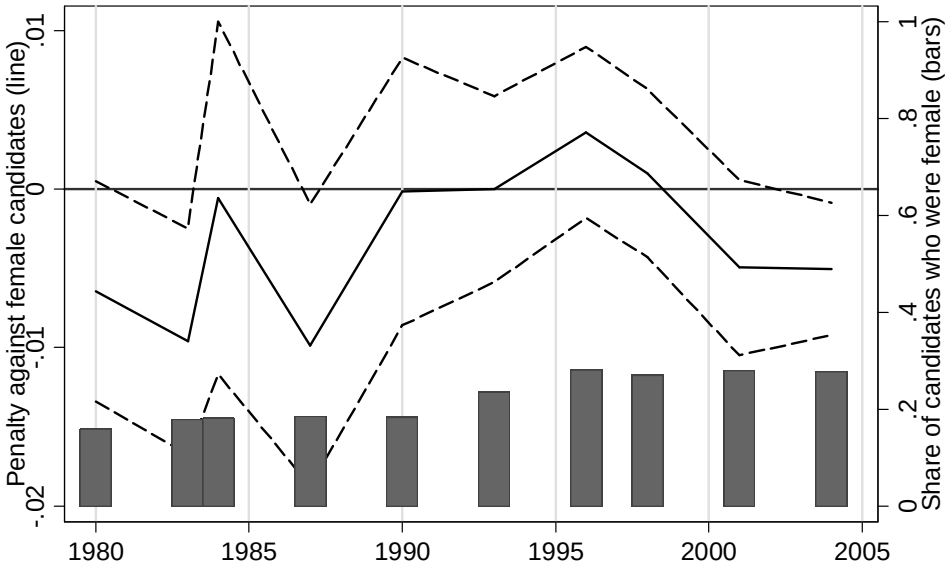

Figure 5: The ballot box and labor market penalty against women

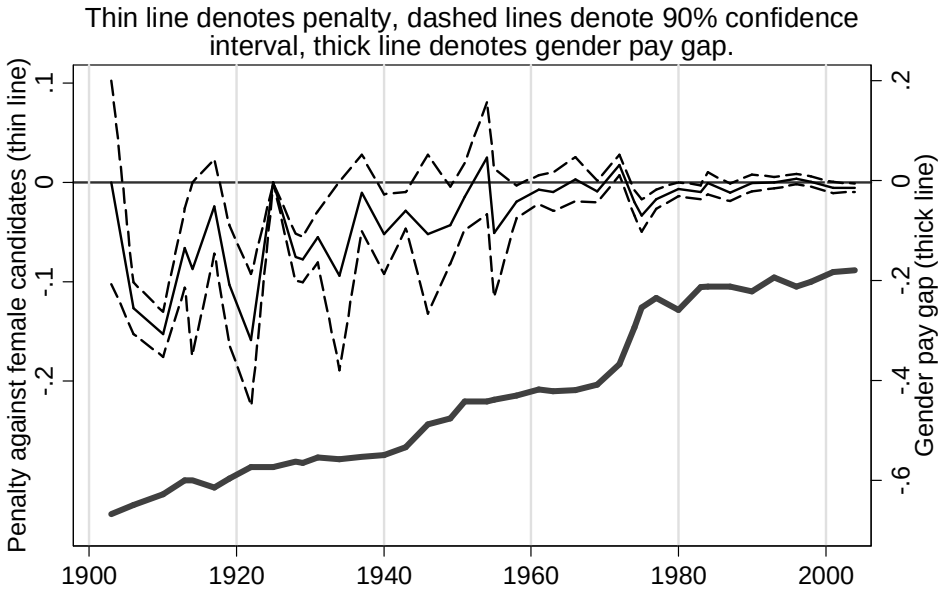

Figure 6: Female candidates and female voters (1903-66)

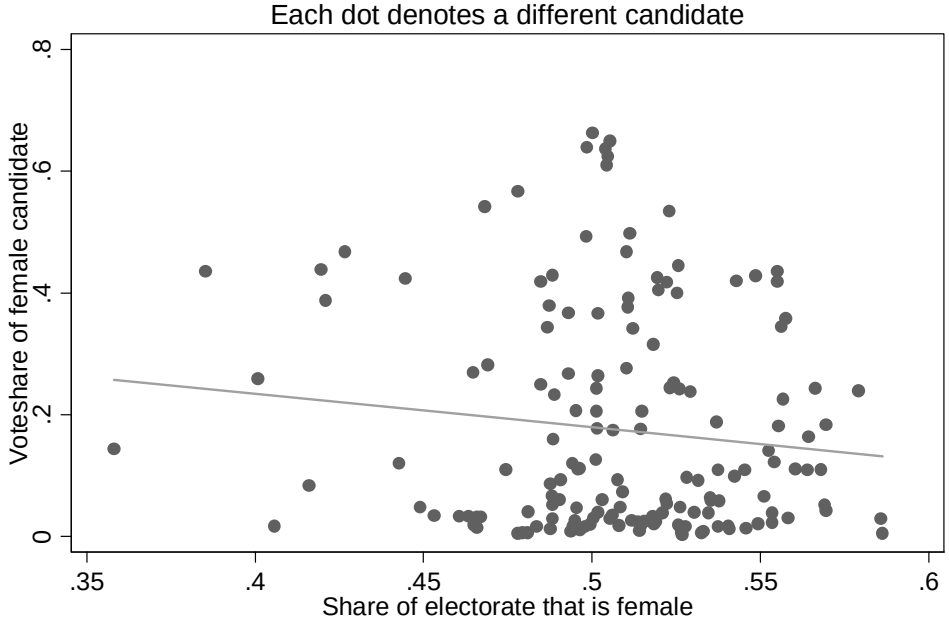

Table 1: Basic Gender Effects

	[1]	[2]	[3] *Preferred specification*
Female Candidate	0.001	-0.006***	-0.006***
	[0.002]	[0.001]	[0.001]
Incumbent	0.128***	0.132***	0.131***
	[0.003]	[0.003]	[0.003]
Expected Vote Share	0.741***	0.401***	0.405***
	[0.008]	[0.012]	[0.012]
1/Total Candidates	0.309***	0.380***	0.363***
	[0.009]	[0.012]	[0.012]
Observations	16767	16767	16767
R-squared	0.81	0.86	0.89
Election and Party FE	No	Yes	No
Election×Party FE	No	No	Yes

Note: Standard errors in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Table 2: Two Strategies for Addressing the Preselection Problem

	[1] Non-incumbent major party	[2] Incumbent major party	[3] Non-Independents	[4] Independent Candidates
Female Candidate	-0.018***	-0.011**	-0.006***	-0.006***
	[0.004]	[0.005]	[0.001]	[0.002]
Incumbent			0.129***	0.241***
			[0.003]	[0.023]
Expected Vote Share	0.513***	0.237***	0.419***	0.137***
	[0.017]	[0.014]	[0.012]	[0.039]
1/Total Candidates	0.415***	0.342***	0.357***	0.471***
	[0.021]	[0.022]	[0.013]	[0.040]
Election×Party FE	Yes	Yes	Yes	Yes
Observations	5905	3099	14853	1914
R-squared	0.5	0.43	0.88	0.5
P-value on test of equality of female coefficients	0.27		0.99	

Note: Standard errors in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Table 3: Does an Exogenous Change in Preselection Affect the Electability of Female Candidates?

	[1]	[2]
Female×ALP×Post1994	-0.004	
	[0.008]	
Female×ALP×Post2001		0.000
		[0.011]
Incumbent	0.131***	0.131***
	[0.003]	[0.003]
Expected Vote Share	0.404***	0.404***
	[0.012]	[0.012]
1/Total Candidates	0.362***	0.362***
	[0.012]	[0.012]
Observations	16767	16767
R-squared	0.89	0.89
Election×Party FE	Yes	Yes
Female×Party FE	Yes	Yes
Female×Election FE	Yes	Yes

Note: Standard errors in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively

Table 4: What Affects the Gender Penalty Over Time?

	[1]	[2]	[3]	[4]
Female Candidate	-0.011***	-0.025***	0.017***	-0.002
	[0.002]	[0.004]	[0.005]	[0.014]
Female Candidate × Share of All	0.037***			-0.052***
Incumbents Who are Female	[0.012]			[0.019]
Female Candidate × Share of All		0.092***		0.087**
Candidates Who are Female		[0.018]		[0.038]
Female Candidate × Gender			0.096***	0.064*
Pay Gap			[0.021]	[0.036]
Incumbent	0.131***	0.131***	0.131***	0.131***
	[0.003]	[0.003]	[0.003]	[0.003]
Expected Vote Share	0.405***	0.404***	0.404***	0.404***
	[0.012]	[0.012]	[0.012]	[0.012]
1/Total Candidates	0.363***	0.363***	0.362***	0.362***
	[0.012]	[0.012]	[0.012]	[0.012]
Observations	16767	16767	16767	16767
R-squared	0.89	0.89	0.89	0.89
Election×Party FE	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at the election×electorate level, in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Note that the share of incumbents who are female, the share of candidates who are female, and the gender pay gap only vary at the election level, so the main effects of these variables are captured by the election×party fixed effects.

Table 5: What Affects the Gender Penalty Across Electorates?

	[1]	[2]	[3]	[4]
Female Candidate	-0.087	0.098	-0.064***	0.095
	[0.054]	[0.103]	[0.024]	[0.103]
Female Candidate × Share of Local Candidates Who are Female	-0.018***		-0.074	-0.065
	[0.006]		[0.067]	[0.061]
Female Candidate × Share of Voters Who are Female		-0.315*		-0.308
		[0.190]		[0.191]
Incumbent	0.131***	0.139***	0.138***	0.138***
	[0.003]	[0.004]	[0.004]	[0.004]
Expected Vote Share	0.404***	0.302***	0.302***	0.302***
	[0.012]	[0.017]	[0.017]	[0.017]
1/Total Candidates	0.365***	0.473***	0.478***	0.479***
	[0.012]	[0.017]	[0.017]	[0.017]
Share of Local Candidates Who are Female	0.021***		0.053***	
	[0.003]		[0.010]	
Share of Voters Who are Female		0.047		0.04
		[0.032]		[0.032]
Observations	16767	6163	6163	6163
R-squared	0.89	0.8	0.8	0.8
Election×Female FE	Yes	Yes	Yes	Yes
Election×Party FE	Yes	Yes	Yes	Yes

Note: Standard errors, clustered at the election×electorate level, in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Share of local candidates who are female excludes the individual. Columns 2-4 are for 1903-1966 only.

Appendix I: Data Description and Summary Statistics

Summary statistics used in our paper appear below. These fall into three groups – individual-level variables, electorate×election level variables, and election level variables. Note that:

1. The variable 'Share of candidates in electorate who are female' is constructed so as to exclude the individual.
2. The gender pay gap is derived from the ABS August survey over the period 1970-2004 (figures for most of this period are tabulated in Probert et al. 2002), and from Snooks (1994) prior to 1970. The two series do not precisely match up, so we scale down the Snooks series, using the ratio of the two series in the years 1970-72.

Appendix Table 1: Summary Statistics

Variable	Obs	Mean	SD	Min	Max
Individual variables					
Vote Share	16767	0.251	0.221	0.001	0.940
Female	16767	0.135	0.342	0.000	1.000
Expected Vote Share	16767	0.249	0.202	0.001	0.940
Incumbent	16767	0.188	0.391	0.000	1.000
Electorate variables					
1/ Total Candidates	16767	0.251	0.117	0.077	0.500
Share of voters in electorate who are female	6163	0.488	0.053	0.166	0.596
Share of candidates in electorate who are female	16767	0.135	0.190	0.000	1.000
Election variables					
Share of candidates in election who are female	16767	0.135	0.104	0.000	0.281
Share of incumbents in election who are female	16767	0.072	0.094	0.000	0.287
Gender pay gap	16767	-0.332	0.149	-0.668	-0.180

Appendix II: Suggestive Evidence of Preselector Bias in the 1987 and 1990 elections

The restricted-use versions of the 1987 and 1990 Australian Candidate Studies asked candidates their gender and the gender composition of candidates who ran in the preselection for that seat. We therefore use these data to further explore the issue of preselector bias. Restricting the sample to contested preselections, in which both variables are non-missing, we estimate the share of female candidates and the share of female preselection applicants for the three major parties, and minor party or independent candidates. These results are shown in Appendix Table 2. In the Liberal Party, a typical female preselection candidate is significantly less likely to be successful than the typical male candidate for preselection. The effects are not statistically significant for the other parties, although the same pattern can be seen for the Labor Party. Pooling the data for all major parties, women are significantly less likely to be preselected than men. In 1987-90, the typical man standing for preselection in a major party had a 17% chance of being chosen (0.92/0.87×219/1349), while the typical women had a 10% chance (0.08/0.13×219/1349).

This analysis is limited in two respects. First, our data only permit us to look at two elections (the Australian Candidate Survey was first carried out in 1987, and the questions about the gender composition of preselectors were only asked in these two years). Second, even this analysis is limited by the fact that the gender composition of preselection applicants is endogenous with respect to the gender bias in the preselection process. Notwithstanding these limitations, we believe that the data in Appendix Table 2 provide suggestive evidence that it is important to account for preselection bias in estimating voter bias.

Appendix Table 2: Some Suggestive Evidence of Preselector Bias

Party	Share female among candidates	Share female among preselection applicants	Prob. that difference significant	N (candidates)	N (applicants)
Labor	0.10	0.14	0.15	84	306
Liberal	0.08	0.13	0.06	99	745
National	0.06	0.07	0.71	36	298
Minor Parties	0.30	0.25	0.43	33	95
Total (major parties)	0.08	0.13	0.02	219	1349
Total (all parties)	0.11	0.14	0.09	252	1444

Source: Authors' tabulations from the restricted-use versions of the 1987 and 1990 Australian Candidate Studies. Sample restricted to contested preselections for the House of Representatives, where the gender of the successful candidate and the preselectors is known. Note that the gender breakdown in this table does not necessarily correspond to the gender breakdown for the full sample of candidates, since not all candidates filled out the ACS survey.

Appendix III: How Much Do Male and Female Candidates Differ on Policy Issues?

In considering the factors that affect the gender voting gap, it is useful to assess the role that policy differences might play. In this appendix, we test whether there are systematic differences in candidates' views by gender, and compare the size of these differences with the partisan difference on the same issues. To the extent that such differences emerge, they may indicate that voters use candidate gender as a proxy for candidates' attitudes to important issues. Were they sufficiently large, differences in attitudes could even potentially explain changes in the gender voting gap over time

To test this, we pool data from the restricted-use versions of the Australian Candidate Studies, conducted in 1996, 2001, and 2004 (there was no 1998 ACS). Here, our focus is on the relationship between candidate gender and 13 attitudinal variables. The first set of questions in the ACS asks candidates to rank the importance of several issues. We choose the eight questions that are asked in all three surveys: taxation, immigration, education, the environment, industrial relations, health and Medicare, defense and national security, and unemployment. The second set of questions ask candidates whether they agree with the statements: "High income tax makes people less willing to work hard", "The trade unions in this country have too much power", "Big business in this country has too much power", "Income and wealth should be redistributed towards ordinary working people", and "There should be stricter laws to regulate the activities of trade unions".

To test for gender effects, we show four specifications: (1) just election fixed effects, (2) party fixed effects and election fixed effects; (3) candidate demographics and election fixed effects; and (4) party fixed effects, candidate demographics and election fixed effects. Election effects take account of potential for some issues to be regarded as more important in a particular election, and of changes in the survey. The party fixed effects are separate indicators for the ALP, Liberal Party, National Party, Democrats, and all other candidates. Demographics are a quadratic in age, indicators for marital status (married, divorced/separated, widowed and unmarried), the age at which the candidate left school, the number of years of tertiary education, birthplace (born in Australia, in another English-speaking country, or in a non-English speaking country). To conserve space, Appendix Table 3 shows only the coefficient on the female candidate variable (about one-third of the sample were female candidates). For the sake of comparison, column 5 shows the mean difference between Labor and Liberal Party candidates.[18]

Several clear patterns emerge from this analysis. With only election fixed effects (column 1), female candidates were more likely to rate education and health as important, and less likely to rate taxation, immigration, defense or unemployment as important. Including party fixed effects shrinks the gender gaps somewhat, but all issues except immigration remain significant. Interestingly, once party fixed effects are included, female candidates rate the environment as less important than do male candidates (this reflects the fact that female candidates are overrepresented as candidates for the Democrats and Greens). Including candidate demographics does not appear to have much impact on the partisan differences.

How big are the gender differences in policy priorities? We focus here on the specification that includes just election and party fixed effects (column 2). The coefficients in this column

[18] Note that column 5 is the partisan attitude gap across all candidates. The partisan gap on most issues is very similar if we restrict the sample to male candidates (thereby ensuring that the results are not affected by the share of women in the two parties).

effectively answer the question: knowing a candidate's party, how much more information does gender provide? On this comparison, female candidates are 5% more likely to rate health as the top priority, and 3% less likely to rate taxation as their top priority. Although the female/male gap generally runs in the same direction as the ALP/Liberal gap, the gender gap tends to be much smaller than the partisan gap. For example, one can compare the within-party difference between male and female candidates with the cross-party gap by comparing columns 2 and 5 in the same row. On average, the coefficients in column 2 are one-third as large as the coefficients in column 5. This suggests that a candidate's gender is a much weaker ideological cue than his or her party affiliation.

Appendix Table 3: Top priorities of female candidates
Note: Each cell in columns 1-4 shows the female coefficient from a separate regression

	[1]	[2]	[3]	[4]	[5]
Issue and share of candidates rating it as their top priority					*ALP minus Liberal Gap*
Taxation (10%)	-0.075***	-0.033**	-0.074***	-0.039**	*-0.127*
	[0.017]	[0.017]	[0.017]	[0.017]	
Immigration (5%)	-0.035***	-0.018	-0.025**	-0.014	*-0.014*
	[0.011]	[0.011]	[0.010]	[0.010]	
Education (20%)	0.052**	0.049*	0.057**	0.054*	*0.124*
	[0.027]	[0.027]	[0.027]	[0.028]	
Environment (28%)	0.037	-0.068**	0.032	-0.069**	*0.075*
	[0.029]	[0.028]	[0.030]	[0.029]	
Industrial relations (14%)	0.000	0.017	0.009	0.020	*0.036*
	[0.020]	[0.020]	[0.020]	[0.020]	
Health (12%)	0.041**	0.050**	0.055**	0.061***	*0.069*
	[0.021]	[0.022]	[0.021]	[0.022]	
Defense (5%)	-0.048***	-0.038***	-0.035***	-0.029***	*-0.022*
	[0.009]	[0.009]	[0.008]	[0.008]	
Unemployment (25%)	-0.108***	-0.064**	-0.111***	-0.073***	*-0.030*
	[0.026]	[0.027]	[0.026]	[0.027]	
Election FE	Yes	Yes	Yes	Yes	
Party FE	No	Yes	No	Yes	
Candidate Demographics	No	No	Yes	Yes	

Note: Authors' tabulations from the restricted-use versions of the 1996, 2001 and 2004 Australian Candidate Studies. Sample restricted to candidates for the House of Representatives. Standard errors in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. Mean probabilities add to 119%, since some candidates nominated more than one issue as their top priority. N=1090.

Appendix Table 4 shows a similar analysis for a set of attitudinal questions. Without party and demographic controls, the gender differences are significant for all five questions. Female candidates are less likely than male candidates to believe that high taxes deter work, that trade unions have too much power, or that unions need to be more strictly regulated, while female candidates are more likely to believe that big business has too much power and that there should be greater redistribution of income and wealth. Including party fixed effects and demographics, these last two effects cease to be statistically significant.

Again, the magnitude of the gender gaps is non-trivial. Controlling for election and party fixed effects (column 2), female candidates are 12% less likely to believe that taxes deter work, 7% less likely to believe that trade unions have too much power, and 8% more likely to believe that big business has too much power. In most of the specifications shown in Appendix Table 4, the female-male difference and the Labor-Liberal differences have the

same sign. But as with the results in Appendix Table 3, the female-male gap is substantially smaller than the Labor-Liberal gap. On average, the coefficients in column 2 are one-tenth the size of the estimate in column 5 of the same row.

Appendix Table 4: Political views of female candidates
Note: Each cell in columns 1-4 shows the female coefficient from a separate regression

	[1]	[2]	[3]	[4]	[5]
Topic and share of candidates agreeing					*ALP minus Liberal Gap*
High taxes deter work (45%)	-0.196***	-0.119***	-0.196***	-0.135***	*-0.549*
	[0.031]	[0.035]	[0.032]	[0.036]	
Trade unions have too much power (28%)	-0.149***	-0.069**	-0.142***	-0.068**	*-0.860*
	[0.027]	[0.031]	[0.028]	[0.031]	
Big business has too much power (78%)	0.131***	0.075***	0.127***	0.072***	*0.399*
	[0.024]	[0.025]	[0.025]	[0.025]	
Favor income redistribution (63%)	0.078**	-0.014	0.064**	-0.022	*0.622*
	[0.031]	[0.036]	[0.032]	[0.037]	
Favor stricter union regulation (25%)	-0.133***	-0.046*	-0.120***	-0.037	*-0.760*
	[0.026]	[0.027]	[0.026]	[0.028]	
Election FE	Yes	Yes	Yes	Yes	
Party FE	No	Yes	No	Yes	
Candidate Demographics	No	No	Yes	Yes	

Notes: Authors' tabulations from the restricted-use versions of the 1996, 2001 and 2004 Australian Candidate Studies. Sample restricted to candidates for the House of Representatives. Standard errors in brackets. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively. See text for precise wording of each question. Responses are reported on a 1-5 scale, and we recode 'Strongly agree' or 'Agree' as 1, and other responses as zero. Sample size is between 1090 and 1098.

Together, the results in Appendix Tables 3 and 4 suggest that candidates' gender provides a signal as to their policy preferences and attitudes, but that this signal is much weaker than the signal provided by a party label. Relative to male candidates of the same party, female candidates are more concerned about education and health, less concerned about taxation, immigration, defense, and unemployment, less worried about union power, and more worried about big business. As a simple rule of thumb for voters, Liberal Party women and Labor Party men are likely to be more centrist, while Liberal Party men and Labor Party women are likely to tend towards more ideologically extreme positions.

To the extent that the results of election surveys in the late-1990s and early-2000s can be extrapolated to earlier periods, these results suggest that the policy and attitudinal differences between male and female candidates are probably too small to have much effect on candidates' electability, nor to have been an important driver of changes in the gender voting gap.