

Sex and Politics: Do Female Legislators Affect State Spending?*

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Abstract

Between 1970 and 2000 women more than quintupled their presence in US state legislatures. It is widely believed that women's presence in public office affects policy outcomes. However, economic theory does not provide clear predictions about the effects of the gender of democratically elected politicians on policy outcomes, nor is there empirical evidence on the causal effect of elected officials' genders on policy outcomes in the United States. In the spirit of recent regression discontinuity work, I exploit the quasi-random variation in the number of female state legislators created by the outcomes of extremely close elections. I find that the dramatic movement of women into US state legislatures over the past quarter century was responsible for a modest but robustly significant 15% share of the rise in state health spending and slowed the growth of corrections institution spending. There is no indication of an effect on other spending areas widely associated with women, such as education. These results are confirmed by an analysis of roll-call voting on over 20,000 bills: closely-elected women deviate from their parties on health and prison related legislation more than closely-elected men or other legislators, but their votes on other issues are similar. Women elected in close races have a larger effect on spending priorities than the average female office holder, a finding in conflict with the predictions of classic median voter theory, but broadly consistent with the Citizen Candidate Model. These findings are also supported by survey data.

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1 Introduction

Between 1970 and 2000 women more than quintupled their presence in US state legislatures, increasing from 4 percent of legislators in 1969 to over 22 percent in 2000 (Figure 1). Despite this tremendous increase, there are still wide disparities in the presence of women across state legislatures. Currently, nearly 40 percent of Vermont's state legislators are female, but women comprise less than 10 percent of the legislators in South Carolina. Whether increases in women's presence in state legislatures has affected policy outcomes, and whether the remaining disparities across states in female legislators affect government choices remain open questions. It is widely believed that having women in public office affect policy outcomes. In 2007 alone, the Center for American Women and Politics identified 41 political action committees and donor networks dedicated to supporting female candidates.¹ In the most recent election cycle, 2006, Emily's List's 100,000 members contributed more than \$11 million to pro-choice *female* Democrats in the belief that having women, not just pro-choice Democrats, in office matters.² Women Under Forty PAC (WUFPAC) supports female candidates of either party in the belief that:

“There is a direct correlation between the number of women in a legislative body and the passage of bills benefiting women and children.”³

“Women need to be in policy-making positions so that their perspectives are heard... When women first became a significant presence in Congress in 1992, issues such as Family and Medical Leave and breast cancer research and funding made their way to the top of the political agenda for the first time.” (WUFPAC, 2007)

The belief that politician gender matters is shared by voters (Paolino (1995)) and echoed throughout the literature on politician identity and descriptive representation. Differences in the behavior and priorities of male and female elected officials have been well documented (see, for example, Thomas (1991); Berkman and O'Connor (1993); Thomas and Welch (2001)). The correlations between women's presence in the electorate and elected office and changes in fiscal

¹Center for American Women and Politics, “Women's PACs and Donor Networks: A Contact List.” Available at: <http://www.cawp.rutgers.edu/Facts/pacs.pdf>

²<http://www.emilyslist.org/about/what-we-do.html>

³<http://www.wufpac.org/overforty.html>

policy have also been noted (Kenny and Lott, (1999); and Besley and Case, (2003)). However, electorates that elect women likely differ from those that do not and economic theories of representative democracy provide differing predictions as to whether (and how) the gender of democratically elected politicians will affect policy.

To date there is no empirical evidence on the causal effect of democratically elected officials' genders on policy outcomes in the United States. Recent work on India by Chattopadhyay and Duflo (2004) finds that the reservation of village council seats for women affects policy outcomes, shifting investments towards public goods favored by women. Although the effect of a mandated inclusion of a group does not directly correspond to the effect of female politicians freely chosen by the electorate, it is part of a growing body of evidence that the identity and preferences of politicians do indeed shape the policies they support (Levitt (1996); Pande (2001); Lee, Moretti, and Butler (2004); Washington (2006)).⁴ In concert with these empirical findings researchers have shown that policy divergence can persist in equilibrium if candidates cannot make binding commitments about the policies they will enact once in office (see, for example, Besley and Coate (1997); Alesina (1988)). These models predict the existence of policy divergence (away from the median voter) in general, but also have testable implications for the nature of divergence in the policies enacted by male and female politicians and for the interaction of gender political party.

Appropriating funds is one of the primary functions of state legislatures in the United States. If women's movement into legislatures affected government priorities and policies, such effects might be reflected in changes in the composition of state expenditures. In the spirit of recent work on regression discontinuity in political settings,⁵ I exploit the quasi-random variation in the number of female state legislators created by the success rates of female candidates in extremely

⁴The political science and political economy literature on the effect of political parties and politician and voter preferences on policy is too vast to summarize here. A few notable examples that theoretically or empirically document at least partial divergence from the Median Voter's preferred policy in equilibrium include: Calvert (1985), Kanthak (2002), Snyder and Groseclose (2000), Poole and Rosenthal (1984), Roemer (1997), and Wittman (1977, 1983).

⁵See, for example, Lee (2001) and Lee, Moretti and Butler (2004).

close elections over the last quarter century to test whether women's presence in state legislatures affects the growth rate and distribution of state spending. This approach tests whether the presence of female politicians affects policy outcomes independent of the voters who elect them. It also demonstrates how variation created by discontinuities can be employed in a setting where the outcome of interest is the result of multiple discontinuities.

I find that the dramatic movement of women into U.S. state legislatures over the past quarter century increased state health spending, but had no measurable effect on priorities more commonly associated with women, such as education spending. Women's movement into state legislatures in the last quarter of the twentieth century was responsible for as much as 15 percent of the total increase in state health spending during that period. To put this estimate in perspective, that's almost a fifth of the gap between Connecticut and Mississippi's per capita health spending in 2002. Female legislators also slowed the growth of state prison spending during this period. I then verify these results by examining the pattern of male and female legislators' voting behavior in a separate data set of over 20,000 roll call votes. Employing a two-dimensional variant of traditional regression discontinuity, I show that a consistent pattern of results is present when comparing the roll call voting behavior of women who defeat male opponents in extremely close elections to that of men who barely defeat their female opponents. Such findings are inconsistent with the classic median voter model. However, they are consistent with recent variants that relax the policy commitment assumption and allow for political party and politician preferences, such as Alesina's model of party divergence and those in the citizen candidate family.

Women elected in close races also appear to have a larger effect on spending priorities than the average female office holder. This result is echoed in the roll call voting analysis where closely-elected female legislators' voting patterns differ more than the average female legislator. Even more striking, female legislators in uncontested districts appear to vote in a less partisan manner than those in competitive districts. Finally, analysis of data from a survey of male and female state legislators shows that women and those in close races believe they are further

(ideologically) from their opponents than those in less competitive races. Thus, the same pattern of results is present in three independent data sources. These findings match the predictions of the Citizen Candidate Model under the assumption that those in competitive districts are faced with tougher (more costly) contests.⁶ However, they are difficult to reconcile with models whose policy divergence does not at least partially arise from politician preferences.

The remainder of the paper will proceed as follows. Section 2 contains a brief sketch of the relevant theoretical and empirical literature on candidate preferences in general and on female legislators in particular. In section 3, I analyze the effects of legislator gender on state spending. Section 4 contains the analysis of gender-based patterns in roll call voting behavior as well as a description of the data and empirical approach used in that analysis. I conclude with a discussion of the implications of these estimates for the competing theoretical channels which produce policy divergence (away from the median voter) in equilibrium. The Data Appendix provides a detailed description of the data amassed for this inquiry.

2 Politician Gender

2.1 Theory

For the purposes of economic theory, politician gender is not a unique variable; it is simply an observable characteristic or noisy signal that may be correlated with preferences. The channels through which politician gender potentially enters into policy outcomes can be thought of more broadly as politician preferences, or information. In the classic Median Voter Model (Downs (1957); Hotelling (1929)) politicians are able to credibly commit to all the policies they will implement once in office. Competition then bids the politicians in to the median voter's preferred policy. Voter preferences alone, specifically the preferences of the median voter, determine public

⁶In the Citizen Candidate Model more costly races require a larger payoff to induce candidates to enter. If some of the payoff occurs in the policy space and if close races are more costly (see Table 6), then one should see greater divergence in more competitive races. In the case of uncontested elections, the Citizen Candidate Model collapses to the classic median voter policy convergence result.

policy. The gender of an elected official, like other demographic characteristics and personal preferences, is irrelevant. However, lack of policy commitment, perfect foresight and the finite set of candidates from which voters must choose a representative for all the issues that will arise in the forthcoming years are just a few of the myriad ways in which the real world fails to fulfill the classic Median Voter Model's conditions. As Besley and Coate (2000) note, "In a representative democracy, the bundling of issues together with the fact that citizens have only one vote, means that policy outcomes on specific issues may diverge far from what the majority of citizens want" (p2).⁷ While there are numerous scenarios in which policy can diverge from the median voter's bliss point, those that work through politician preferences are the most relevant for thinking about candidate gender. Therefore the remainder of this paper will focus on those models in which candidates (or parties) have policy preferences and cannot make binding policy commitments prior to the election.

Alesina's (1988) model of policy divergence is in this class and was tested empirically in Lee, Moretti and Butler (2004). They show that successful Democrats in closely-divided districts vote similarly to Democrats who win by large margins. Using data on U.S. Congressmen, they find that Democrats and Republicans who win by extremely narrow margins are as dissimilar in their voting patterns as those who win by large margins, findings consistent with Alesina's model.⁸ However, based on these findings alone one cannot tell whether closely-elected politicians diverge towards their parties due to strategy and party discipline or because they personally prefer their parties' policies. Relatedly, Poole and Rosenthal (1984) document divergent voting behavior among Republican and Democratic U.S. Senators who represent the same state. Yet, differing roll call voting by itself does not necessarily translate into divergent policy outcomes. Using a similar approach to Lee, Moretti and Butler (2004), Ferreira and Gyourko fail to find

⁷The myriad of neoDownsian models, that among other things, allow for strategically chosen party platforms, jockeying for position within the party once elected (Kanthak (2002)), electorates that value candidate character (Kartik and McAfee (2007)), politician preferences (Calvert (1985); Wittman (1977, 1983)) and uncertainty about the exact location of the median voter (Roemer (1997)) produce divergence from or only partial convergence to the median voters' preferred policies. Grofman (2004) provides an overview of these models and their predictions.

⁸Ferreira and Gyourko (2007) provide an excellent summary of the Alesina model in the context of government spending.

that the political party affiliation of closely elected mayors affects total city spending. They attribute this lack of divergence to Tiebout sorting. They argue such sorting leads to relatively homogenous resident preferences for government spending within cities and thus political parties whose preferred policies are relatively close to each other. City budgets are primarily funded by taxes on one's voters (as opposed to legislatures where the entire state's voters contribute to the budget). This could lead voters to impose more spending discipline on mayors than legislators. In a similar vein, changing total spending (and thus taxes) may be far more politically costly than shifting existing spending towards one's preferred areas.

Gender, like political party, is generally readily observable on the ballot, providing voters with an additional costless dimension on which to speculate about candidates' behavior in office. If one were to replace political parties with gender in Alesina's (1988) framework or assume it is an added dimension from which voters infer politician preferences, then the model would predict divergence by gender just as it does by political party, at least on a subset of issues.⁹ Alesina's framework has been extended to include the supply of politicians and explicitly model heterogeneity in candidates standing for election across districts in a class of models often referred to as "Citizen Candidate Models." These models are the most natural for this exercise as adding politician gender is inherently adding a potential dimension of heterogeneity in the potential candidates within a party.

The Citizen Candidate Model (Besley and Coate (1997); Osborne and Slivinski (1996)), like Alesina's model, assumes politicians cannot credibly commit to enact policies that go against their preferences. In the Citizen Candidate Model, policy and any divergence in it arises from this lack of credible commitment coupled with candidates' preferences, and the assumption that running for office is not without cost. It presumes politicians have preferred policies and that voters have

⁹Alesina and Cukierman's (1990) dynamic extension with career concerns and noisy signals could be similarly interpreted from the perspective of gender. However, in adapting their model and others which rely on voters' uncertainty about politicians' "true" preferences and actions in office it is more appealing to allow gender to interact with political party. Unlike the personal beliefs or prior acts of politicians, voters can readily observe gender in the ballot box without incurring any additional cost. Thus, if there are gendered politician preferences and voters are aware of them, they would be harder to obfuscate than other dimensions of politician preference.

perfect information about those preferences. The only credible commitment in this setting is to implement those preferred policies once in office. Any statements to the contrary are correctly viewed as cheap talk by the voters. Individuals choose to run for office if the expected payoff from being elected (in the form of personal gain and the gap between one’s preferred policy and the alternative) is large enough to offset the cost of running.¹⁰ In Besley and Coate’s phrasing, this creates a “seesaw” around the median in which candidates are equidistant from the median, as opposed to the Downsian complete convergence to the median, but similar to the outcome in a partial convergence model with strategically chosen party platforms. The preferences of the winning candidate determine the direction of the divergence of policy outcomes from the median voters’ preferred policy. However, even in this class of models, the median voter is aware of the policies that will be implemented by each candidate if elected and ultimately determines policy by choosing which of the two candidates to select.

More formally Besley and Coate (1997) structure the game as follows.¹¹ Any citizen may choose to run for office. In the first stage, each individual decides whether to run for office and incurs cost, δ , if he runs. In the second stage voters choose from among the candidates who chose to stand for election in the first stage with full knowledge of each candidate’s policy preferences. In the final period, the candidate who wins chooses to implement policy her preferred policy, x_i^* where $x_i^* = \arg \max_x \{V^i(x, i) | x \in A^i\}$, the candidate’s preferred policy from the feasible set of policies, A^i . Following the strategic entry and voting process described in Besley and Coate (1997), the two candidate equilibrium is defined by the indifference of the median voter between the two candidates and a participation constraint for the candidates: Candidate i participates if

¹⁰One could also imagine a similar cost benefit analysis taking place when candidates seek to raise funds for their campaigns. The lack of policy commitment rules out donors changing politician’s policy decisions. However donors will still aid those who already agree with them in their campaigns in order to increase the probability that those with favorable views prevail. Individuals or lobbies will be willing to fund the campaign only if the benefits (the change in policy in their favor if the candidate is victorious over his opponent) are greater than or equal to the cost. Candidates unable to raise the necessary funds choose not to run, just like those for whom the personal costs are greater than the benefits.

¹¹Besley and Coate (1997) also works through the model for equilibria with more than 2 candidates and strategic voting and entry decisions. These are omitted for brevity as the necessary intuition for the purposes of this paper is gained from the single and 2 candidate cases.

and only if $\frac{1}{2} [V^i(x_i^*, i) - V^i(x_j^*, j)] \geq \delta$, with a symmetric participation constraint for candidate j . This leads to the following predictions:

1. If $x_{female}^* \neq x_{male}^*$, male and female politicians will attempt to implement different policies.¹²
2. $[V^i(x_i^*, i) - V^i(x_j^*, j)]$ is increasing in δ .
3. Unopposed candidates implement policies closer to those preferred by the median voter than those in contested races.¹³

The Citizen Candidate Model is highly stylized. Recent work has extended it to include some of the salient features of the U.S. political system. For example, Cardigan and Janeba (2002) include party primaries. Their model has sequential elections with the first election taking place among a subset of the electorate (the candidate's political party). In the case of sincere voting, the primary process reinforces the divergence in the general model (and generally increases it) and the comparative statics of interest are unchanged. If primary voters behave strategically, then the existence of divergence in equilibrium depends on the degree of divergence between the parties. A particularly appealing feature of this model is its analysis of districts in which the electorate is not evenly divided between the two parties and its realistic prediction that some candidates in contested races will win by sizable margins. When the parties' most moderate members are asymmetrically located about the median, the party whose most moderate member is closest to the median wins with certainty. Yet, members of the more extreme party may still choose to stand for election in order to affect the outcome of the opposing party's primary and thus the policy ultimately implemented.¹⁴ Still, as in the classic Citizen Candidate

¹²One would expect to observe no change in policy with an exogenous change in politician gender in 3 circumstances: 1) if male and female politicians have the same policy bliss points; 2) if male and female politicians have different bliss points, but politician preferences do not affect policy; 3) if male and female politicians have different preferences and politician preferences shape policy choices, but female politicians are not numerous or strong enough to measurably affect the ultimate policy outcome.

¹³In the single candidate equilibrium, the median voter chooses to run iff: $V^m(x_m^*, i) - V^m(x_0^*, -i) \geq \delta$. Where, x_0^* is the "status-quo" or default policy. No one chooses to oppose a median voter candidate.

¹⁴If the surely victorious party faces no opposition, it will select a candidate near its party median to run. Even though the more extreme party cannot win, it can force the opposing party to select a more moderate candidate by running its most moderate member. The gain from running a candidate who will certainly lose is equal to the distance he forces the other party to move towards the center. Since the extreme party's candidate only ran

Model, candidates whose bliss points diverge from the median voter's can win in equilibrium.

If politician preferences shape the policies they support, then even after controlling for the voters who elect them, there should be divergence by politician gender. This, coupled with the fact that politician gender, like party, is readily and costlessly observable on the ballot, makes female politicians a particularly good vehicle to test for evidence of politician preferences shaping policy. Furthermore, since each politician has both a gender and a party, the addition of gender to the analysis provides an opportunity to identify preference-based divergence separately from party. The recent incursion of women into state legislatures coupled with the high degree of cross-state variance in women's presence in state legislatures provides a particularly appealing setting to test the predictions of the competing models of the role of politician preferences in policy formation. Over the last 30 years the majority of voters in each state-year was almost universally female and the female share of the electorate in each state varied only slightly throughout this period¹⁵ While it is possible to gerrymander a district with respect to political party, it would be extremely difficult to do so with respect to gender, a key advantage when considering dynamic models with forward-looking politicians. Voters and politicians can change or obfuscate their political party affiliations, but doing so with gender is more costly. Finally, many public programs are essentially transfers to women and children providing a natural standard of measure.

2.2 Female Preferences

The above presupposes that female politicians' policy preferences differ from their male counterparts'. If that were not the case, one would expect a differential effect on policy only if it were driven by some other related force (e.g., the preferences of electorates that choose to elect women or the committees women are assigned to in the legislature). While women are a socioeconomic

to affect the outcome of the other party's primary and has no hope of winning, he need not spend a great deal of resources on the general election.

¹⁵In 1964, the Bureau of the Census began asking survey respondents about voting. While female voter turnout rates have fluctuated, the share of ballots cast by women appears to have been generally stable over that period. In 1964, approximately 51% of voters were female; in 1994, 52.5% of voters were female (Seltzer, Newman, and Leighton 1997, p. 65). The Data Appendix contains the author's calculation of the gender mix of voters in each state from the Current Population Survey's November Supplement.

ically and politically diverse group, there is a growing body of evidence that the distribution of women's preferences differs from that of men (at least on a subset of issues). Historically, women's political involvement has been focused on issues related to children. Even before women won suffrage, their political activism was often intertwined with issues related to children and social welfare. Many of the leading suffragettes and their organizations also worked for other progressive causes such as poor relief, protective labor regulation and public health (see, for example, Chafe (1972) Evans (1989); Keetley and Pettegrew (2002); Thygeson (1972)) This trend continued after suffrage. "Of the 304 legislative items on the agendas of state leagues [of women voters] in 1931, over half had to do with child welfare and only 25 dealt with women" (Chafe (1972), p.115). Kenny and Lott (1999) found that "[female] suffrage coincided with immediate increases in state government expenditures and revenue. . . these effects continued growing over time as more women took advantage of the franchise" (p.1163). Effects that they argued could be driven by women's tastes for government provided insurance and wealth transfers.

Even contemporary surveys consistently find that women are more likely (than men) to prioritize issues related to children, poverty and social welfare (see, for example, Carpini and Fuchs (1993); Thomas and Welch (2001)¹⁶) Surveys in the mid-1980s found women were "8 to 17 percent more likely than men to support government involvement in health care, in the reduction of income differences between rich and poor, in the provision of jobs, and in the maintenance of social programs" (Carpini and Fuchs (1993), p.33). Alesina and La Ferrara (2001) analyze General Social Survey data and find that even after controlling for income, expected future wealth and demographic characteristics, women report being more favorable towards redistribution. Edlund and Pande (2002) document the leftward shift of women's political preferences in recent decades and argue that it is at least partially a result of divorce (and single motherhood) creating a divergence in men's and women's socioeconomic status and interests.

¹⁶Female politicians' self-reported emphasis on issues traditionally associated with women is consistent with there being differences between male and female politicians. However, it is not evidence that the gender of elected officials matters in and of itself. If there is any correlation between voters' concern about "women's issues" and the electability of female candidates, then even the strictest Downsian model would predict that successful female candidates emphasize those issues.

This is not to say that women are or have been a monolithic group within the electorate. Neither the preferences of the median female voter, nor the distance of those preferences from the median male voter have been constant over the past eighty years (or even the last twenty-five). While women are considerably more likely than men to vote for Democrats at present (Edlund and Pande (2002)), in the 1950s and early 1960s women were more likely to vote for Republican Congressional and Presidential candidates (Seltzer, Newman and Leighton (1997), pp.33-7). Strikingly, in 1927, 70% of female legislators were Republicans (Moncure (1929), p.640). By 2000, the ratio had reversed and approximately 60% of female legislators were Democrats. Edlund and Pande (2002) find that the size of the gender gap fluctuated throughout the 1980s and 1990s and was generally not measurable in the 1970s.

Even absent differences in male and female politicians' preferences, there are still channels through which politician gender could affect policy outcomes. Politicians often rely on noisy signals of voter preferences. If politicians interpret a change in the presence of women in elected office as a signal of a shift in the priorities of the electorate toward issues traditionally associated with women and revise their actions accordingly, then a change in the gender mix could affect policy. Alternately, if female politicians have a better understanding of female preferences, simply pay more heed to the views of their female constituents, or are more indebted to women's groups¹⁷, the gender mix of legislatures could affect policy even in the absence of differing male and female politician preferences. "When speaking of new legislation passed in a large part due to the bipartisan Congressional Women's Caucus, Senator Kay Bailey Hutchison (R-TX) said 'It wasn't that men were against these changes. They just hadn't considered the issue before because they hadn't experienced the problem in their own lives. As women have become a part of the system, that's changing.'" (WUFPAC, 2007).

¹⁷In the absence of gender-specific preferences there would be no reason women's groups should not also be able to gain similar leverage over male politicians and thus no empirical effect of female politicians.

3 Policy Outcomes

3.1 Empirical Strategy

This section presents the first stage of my empirical analysis, focusing on the effect of increases in the presence of women in the lower houses of state legislatures on various dimensions of state spending as measured by OLS and IV approaches. Following the discussion of the empirical strategy, data and results for state spending, I will then analyze the roll call voting behavior of closely elected male and female legislators using a regression discontinuity approach. I present all of the state spending results before presenting the data, empirical strategy and results from the analysis of the roll call voting data.

Though fiscal policy is only part of the decisions that state legislators make, it has the advantage of being regularly observed and directly comparable across states. Moreover, spending can be classified into broad categories (health, education, criminal justice, etc.) that are salient to constituents. However, legislators do not individually enact policies. One cannot observe the policies an individual legislator would enact on his own. Rather, one observes the policies enacted by a legislature as a whole. In Chattopadhyay and Duflo’s (2004) adaptation of the Citizen Candidate Model realized policy is a compromise between the politician’s preferred policy and that preferred by the “political elite.” Similarly, policy in this setting results from a negotiation (or compromise) between the legislator and his colleagues. Let Y_{st} be the spending enacted by a legislature in state s and year t . Y_{ist}^* is each legislator’s preferred level of spending and each legislature has L_{st} members. Enacted policies and budgets are some function of the preferred policies of all the members of a state’s legislature.

$$Y_{st} = F(Y_{1st}^*, Y_{2st}^*, \dots, Y_{Lst}^*)$$

Using a first order Taylor expansion one can express Y_{st} as:¹⁸

$$^{18}Y_{st} = f(a) + \sum_{i=1}^{i=L} (Y_{ist}^* - a_{ist}) \frac{\partial f}{\partial Y_{ist}^*} \Big|_{Y_{ist}^* = v_{ist}}$$

Let $\varpi_{ist} = \frac{\partial f}{\partial Y_{ist}^*} \Big|_{Y_{ist}^* = v_{ist}}$

$$Y_{st} = \alpha_{st} + \sum_{i=1}^L Y_{ist}^* \varpi_{ist}$$

Y_{st} is the weighted average of all the legislators' preferred policies. ϖ_{ist} , the weight each legislator's preferences receive in the policy process, is unknown. There is a large theoretical and empirical political economy literature on legislative bargaining games and the determinants of legislator and coalition power (Baron and Ferejohn (1989), for example). For the sake of simplicity, since each legislator potentially contributes 1 vote on each bill, consider the case where each legislator has an equal weight, $\frac{1}{L_{st}}$, in the policy process.¹⁹ This is a gross simplification of the policy process, but provides a tractable empirical model and a framework for interpreting the OLS and IV coefficients. Then the policy enacted by the legislature in state s in year t will be:

$$Y_{st} = \alpha_{st} + \sum_{i=1}^L Y_{ist}^* \frac{1}{L_{st}} \quad (1)$$

If, on average, male and female politicians have different preferences for policies, then women's presence in legislatures will change enacted policies. For example, let $Y_{ist}^* = h_{st} + \phi_{dst} + \kappa\phi_i$, where h_{st} is the average policy preference of legislators in state s and year t , ϕ_{dst} is the deviations from this mean for the average politician who could win an election in district d and ϕ_i is the idiosyncratic individual policy preferences of legislator i . The ϕ_{dst} term captures the influence of the preferences of the electorate on the politician's preferred policy reflecting that even in models without commitment, such as the Citizen Candidate Model, the politicians selected are centered about the median voter's preferred policy. κ accounts for the fact that legislators' personal preferences may not play a role determining the policies they advocate for as legislators. The Median Voter Model implies $\kappa = 0$ while the Citizen Candidate Model implies $\kappa > 0$. I define $\bar{\phi}_{st} = E[\phi_i|female, s, t] - E[\phi_i|male, s, t]$, the mean difference between male and female politicians' individual policy preferences in state s in year t . Substituting into equation 1 yields

$$Y_{st} = f(a) - \sum_{i=1}^{i=L} a_{ist} \varpi_{ist} + \sum_{i=1}^{i=L} Y_{ist}^* \varpi_{ist}$$

¹⁹This is similar to assuming that the power of the "female coalition" is proportional to its size which is proportional to the number of women in the legislature.

the following expected policy outcome for each state in each year:

$$E(Y_{st}) = \frac{1}{L} \left[\sum_1^L h_{st} + \phi_{dst} \right] + \kappa \left[\frac{L_{st}^{female}}{L_{st}} E(\phi_{ist}|female, s, t) + \frac{L_{st} - L_{st}^{female}}{L_{st}} E(\phi_{ist}|male, s, t) \right]$$

$$E(Y_{st}) = \alpha_{st}^* + \frac{L_{st}^{female}}{L_{st}} \kappa \bar{\phi}_{st}$$

If κ is greater than 0, policy is a function of $\frac{L_{st}^{female}}{L_{st}}$, the fraction of the legislature that is female, and $\bar{\phi}_{st}$, the average gap between female legislators' preferences and those of the average man who would represent her district in her place.²⁰ If there is no gap in the policy preferences of male and female legislators, then the fraction of the legislature that is female is irrelevant for policy in this setting. The fraction female will also be irrelevant if legislators' personal preferences do not affect policy outcomes ($\kappa = 0$) or if female legislators' preferences have 0 weight in the policy formation process.

The basic empirical model is an equation linking the spending of state s in year t to the fraction of legislators who are female, W , in the session that determined year t 's budget, Y_{st} .²¹

$$Y_{st} = \alpha_{st-2}^* + W_{st-2}\beta + \varepsilon_{st} \quad (2)$$

As discussed above, the key empirical challenge in estimating equation 2 is that even with

²⁰This is easily generalized to the case where legislators have differential weights in the policy process. If the weights are uncorrelated with Y_{ist}^* and all legislators' preferences are given positive weights, then the effect of fraction female is simply scaled by the relative weights of male and female legislators in the policy process. If female legislators' weights in the policy process are increasing in their share of the legislature, then their effect on policy will be non-linear. If women's weights in the policy process systematically differ from their male counterparts then it would be theoretically possible for differences in influence to offset differences in policy preferences.

²¹State fiscal years end on June 30th with the exception of New York (March 31st), Alabama and Michigan (September 30th) and Texas (August 31). Legislators elected in November of year τ take office in January of year $\tau + 1$, which is already the middle of Fiscal Year $\tau + 1$. They then vote on the budgets for fiscal years $\tau + 2$ and $\tau + 3$. Therefore, the legislators elected in year τ are matched to the fiscal year $\tau + 2$ and $\tau + 3$ budget data. These pairings do not account for the possibility that these legislators may also have voted on supplemental appropriations in the second half of year $\tau + 1$ and would have been unable to vote on such appropriations for the second half of fiscal year $\tau + 3$. These estimates may therefore slightly underestimate female legislators' effects on spending. Table 4a reproduces the main results with legislators matched to the cumulative spending in fiscal years $\tau + 1$ through $\tau + 3$.

state and year fixed effects, the $cov(\alpha^*, W|X)$ is unlikely to be 0. Specifically, both voter and opposing politicians' tastes are omitted covariates since legislators' policy preferences and the gap in preferences between female legislators and their male counterparts are not directly observable. The OLS estimate of the average effect of the fraction of legislators who are female can be written as:

$$\text{plim}\beta_{ols} = \frac{cov(\alpha_{st-2}^*, W_{st-2})}{var(W_{st-2})} + \kappa \left[\frac{cov\left(\left(\bar{\phi}_{st-2} - \bar{\bar{\phi}}\right) W_{st-2}, W_{st-2}\right)}{var(W_{st-2})} \right] \quad (3)$$

The first term in equation 3 captures the omitted variables bias while the while the second term in brackets (discussed further in section 3.1.1 below) reflects heterogeneity in the gap in preferences between female legislators and their male counterparts to the extent that it covaries with female legislators' presence in state legislatures.

The bias term results from the fact that the number of women in a state's legislature in a given year is neither random nor the result of voter tastes that are entirely unrelated to fiscal policy preferences (see, for example, Rule (1990)). Gender is a readily observable politician characteristic. Research by Paolino (1995) suggests that electorates expect female elected officials' behavior to differ from their male counterparts' behavior. This expectation, together with women's traditional association with certain issues, could lead voters to elect female candidates in greater numbers in states and years in which those issues are particularly salient. If female candidates are more appealing to voters in years when issues associated with women are *en vogue* or if political office is more attractive to potential female candidates in elections in states and years in which the state legislature will play a large role in the policies they prioritize, then $cov(\alpha^*, W) > 0$. While political economy models differ in their predictions of the degree of convergence, even those that predict divergence predict that opposing candidates and parties will be centered around the median voter's preferences. This will lead OLS to overstate the true effect of female legislators on state spending priorities.²²

²²Due to the well-documented incumbency advantage (Ansolabehere and Snyder, 2001) there is a great deal of positive serial correlation in the fraction of state house members who are female. State budgets are also positively correlated over time. This could also lead OLS to overstate the true average effect of female legislators on state spending. Negative bias could arise in the OLS if voters are more receptive to female candidates in years in which

I use a regression discontinuity-inspired instrument to overcome these omitted variables concerns and obtain consistent estimates of the causal effect of women’s presence in legislative office on state spending priorities.²³ Lee (2006) and DiNardo and Lee (2004) note that extremely close elections “generate ‘as good as randomized’ variation” as long as there is an element of chance in the outcome (DiNardo and Lee (2002), p.4). While there may be an ex-ante expectation of the vote shares and outcome of any given election, the final outcome is unknown ex ante and is a function of idiosyncrasies which affect who ultimately votes on election day. *Conditional* on having a male and female candidate in an extremely close race, whether a female candidate is elected is random. Furthermore, electorates in which women barely defeat (or lose to) their male opponents demonstrated indifference between being represented by the female candidate and her male opponent. This suggests using the number of women in legislatures that result from the outcome of very close elections involving one male and one female candidate as an instrument for the overall number of women in the legislature in any particular year.²⁴ In order to have a close election involving a female candidate, one must have female candidates in competitive races. Even if the outcomes of extremely close elections are random, neither the number of female candidates nor the number in close elections is exogenous. However, the success rate of women involved in close races depends only on the outcome of close elections between men and women, not the number of such elections that occur. Therefore the proportion of close elections involving a male and female candidate that are won by women ($S_{st} = \frac{N_{st}^{female\ win\ close}}{N_{ist}^{female\ win\ close} + N_{st}^{female\ los\ close}}$) is used as an instrument for the fraction of the legislature that is female.²⁵ Using this instrument the

spending on issues prioritized by women is well below average. Even if women increased spending in those areas during their tenure, it is possible that the spending would still remain below average and bias the OLS estimates towards 0. In the election years (and year prior) in which states elected higher numbers of women to their legislatures their health and education spending were not below average. However, their correctional institution spending was above average in those years. This positive correlation, like the positive OLS coefficient in Table 2, is likely the result of the positive overall trend in both corrections spending and fraction female. Still, it is also possible that the simultaneity bias described above is biasing the OLS coefficient for correctional institution spending away from the IV.

²³Clots-Figueras (Dec 2006) adopts the instrumental approach from an earlier version of this paper to explore the effects of female legislators on education in India.

²⁴Unlike the settings studied by Lee and others, where one election determines the outcome of interest, the gender balance of a state legislature results from the outcomes of a hundred or more races of varying degrees of closeness, dozens of which may involve women running against men.

²⁵If, conditional on being in a close election, the outcome of each such contest is random, then the average of

estimates are:

$$\text{plim}\beta_{iv} = \kappa \left[\bar{\bar{\phi}} + \frac{\text{cov} \left(\left(\bar{\phi}_{st-2} - \bar{\bar{\phi}} \right) W_{st-2}, S_{st-2} \right)}{\text{cov} \left(W_{st-2}, S_{st-2} \right)} \right]$$

If the $\text{cov} \left(\alpha_{st-2}^*, S_{st-2} \right) = 0$, then results derived using this method free of the aforementioned endogeneity concerns.

3.1.1 Average and Closely-Elected Female Legislators

As with all instrumental variable approaches, they are “local average treatment effects” (LATE) estimated off a very particular sub-set of the variance in fraction female. Specifically, these estimates measure the effect of closely-elected female legislators in states and years with women in close elections. This likely differs from the effect of the average women’s presence in legislatures. If there is no heterogeneity and all female legislators are the same distance from their male alternatives regardless of the divisiveness and electoral support in the district ($\text{cov} \left(\left(\bar{\phi}_{st-2} - \bar{\bar{\phi}} \right) W_{st-2}, S_{st-2} \right) = 0$), then the local average and average will be the same. Furthermore, if it is also true that the $\text{cov} \left(\alpha^*, W \right) > 0$, then the IV estimates will be smaller than the OLS. The expected relationship between the local average identified off of close races and the average effect depends on the underlying theoretical model.

In the classic Median Voter Model, politicians implement the median voter’s preferred policy and the politician’s preferences and identity are irrelevant ($\kappa = 0$). Any correlation between the presence of female legislators and policy is due to unobserved differences in the electorates male and female politicians represent ($\beta_{ols} = \frac{\text{cov}(\alpha_{st-2}^*, W_{st-2})}{\text{var}(W_{st-2})}$). The true effect of the closely-elected and average female legislator (beyond her constituents’ preferences) will be 0. Thus the classic Median Voter Model predicts the IV coefficient on fraction female will both be 0. This is not to say that closely-elected and average female legislators will implement the same policies. Rather, in this framework any differences in the policies implemented by the closely-elected and average female legislator will be a result of the electorates that produce closely-elected or average female

those outcomes will also be random.

legislators. After those differences are controlled for, there will be no difference in the *causal* effect of closely-elected and average female legislators’ genders, and both effects will be 0. In the less extreme case, if electoral competition pulls candidates towards the median (and each other), but preferences still play a role then $E[\bar{\phi}_{st}|\text{close election}] < E[\bar{\phi}_{st}]$ and $\beta_{iv} < \beta_{ols}$ if the omitted variables bias in the OLS is positive.²⁶ Similarly, if spending outcomes change in the presence of female legislators because their colleagues view the strength of female candidates’ electoral support as a signal of voter preferences, then policy should change less (or not at all) due to the election of women in close races.

In contrast, models without policy commitment (e.g. Alesina (1988) and those in the Citizen Candidate family (Besley and Coate (1997); Osborne and Slivinski (1996)) generally predict that politicians locate symmetrically about the median, but not necessarily at it. The relative distance from the median voter (and the opposing candidate) of those in close and lopsided races depends on the model’s source of the divergence. The Citizen Candidate Model provides clear predictions for the distance of close and average (or uncontested) candidates from the median voter (and their opponent). In the Citizen Candidate Model candidates need an incentive to undertake the cost of a race. Thus, the gap between the policies the resulting candidates prefer is increasing in the cost of the election.²⁷ If potential candidates have some expectation about whether the race they are considering entering is going to be competitive and it takes more effort (in the form of campaigning and resources) to win a competitive race, then one would also need a higher payoff to induce potential candidates to enter competitive races.²⁸ Therefore, only candidates whose policy preferences are relatively far apart are willing to stand for election in

²⁶The median voter in such evenly divided districts is indifferent between the female representative and her male opponent. Therefore one would expect the policies implemented by these close winners to be closer to those implemented by male politicians, than are those implemented by female candidate elected in districts whose voters had a clear preference for female candidates.

²⁷This assumes that at least some of the “gain” from winning comes from implementing one’s preferred policy (i.e., all of the “gain” from winning does not come from personal status).

²⁸In Duflo’s variant of the policy process in the Citizen Candidate Model one would still expect larger variation of policy in the presence of women elected in close races (than those elected in low-cost races). In the extreme, if one assumes that the political elites are all men and the median voter is female, then the greater divergence would move the resulting policy even closer to the median voter’s preferred policy.

more difficult races. At the other extreme, uncontested races (which are presumably the least costly) exist in equilibrium when candidates are located at the median voter’s bliss point. This implies ϕ is increasing in the cost of the race and $E[\bar{\phi}_{st}|\text{close}] > E[\bar{\phi}_{st}]$.

Models in which divergence (from the median) is driven by legislative jockeying or party discipline (in contrast to preferences) could also predict greater divergence from closely-elected candidates. For example, in Kanthak’s (2002) variant politicians deviate from the median constituent’s preferred policy to the party’s in order to gain influence within the party and ultimately deliver more services to the constituents. In this setup, a politician in a closely-divided district may have to deviate from his district’s median voter more than a politician in the party’s average district.²⁹ However, unlike in the Citizen Candidate Model, they would deviate towards their party and fraction female would only be relevant if female legislators had to deviate more than their male counterparts to reach the party median *and* female legislators elected in close races had to deviate even farther than the average female legislator.

3.2 Data

The primary data used in this analysis are annual state budget data broken out by major spending category for FY1977 through FY2001 from the Annual Survey of Governments.³⁰ Each fiscal year is then matched to the legislature that voted on its budget. Members of states’ lower legislative chambers are generally all up for election in the same year and serve two-year terms.³¹ This chamber is the focus of the analysis. Data on the gender composition of each state legislature’s lower chamber and the political party affiliations of female legislators are from the Center for American Women and Politics’ annual fact sheets.³² Estimates of the average percent of votes

²⁹Although if the party locates at the median of the districts they represent or through some other endogenous process, one would also expect those in the most lopsided districts to have to deviate farther than the average.

³⁰Data for fiscal years 1977 through 2000 are from the *Annual Survey of Governments Finance Data Archive* compiled by Greenstone (2003). Data for fiscal year 2001 was matched to the archive data from the raw Annual Survey of Governments data.

³¹Nebraska has a unicameral legislature and is therefore excluded from this analysis. States with elections in odd numbered years during this period (LA, MS, NJ, VA) were included in the spending regressions with their election and budget cycles appropriately matched. Results are robust to their exclusion.

³²Data on female legislators’ political affiliations are only available for elections beginning in 1980.

cast by women in each state’s election cycle are from the Current Population Survey, while intercessinal state population estimates are from the U.S. Census.

Carsey et al’s (2006) data on the state legislative elections contain vote counts, names and political affiliations of all candidates for state legislative office in the last 40 years.³³ Turnover rates for each state house include voluntary retirements, involuntary retirements (e.g., due to term limits) and election losses by incumbents were calculated from Carsey et al’s data by identifying the number of non-incumbents who won in each election and dividing that by the size of the state’s lower legislative chamber. Both the female share of voters and the turnover rate were matched to the legislature whose election they were a part of and the fiscal years’ budgets on which that legislature voted. Their data set does not contain data on the politicians’ genders. Genders were assigned based on the names candidates ran under on the ballot as follows. First, candidates with obvious gender markers (e.g., “Mrs.” or “Jr.”) and with gender-specific names were assigned the corresponding gender.³⁴ Next, candidates with less traditional spellings of gender-specific names and clearly gendered nicknames were assigned genders.³⁵ Those with gender-ambiguous first names, but gender-specific middle names were then classified. This process resulted in the classification of approximately 90% of the names in the data set. The remaining candidates were classified through the use of lists of female legislators (when available), information from state election officials and long serving legislators who knew the candidates in question, newspaper articles (e.g., obituaries), biographies and gender-specific references in legislative session transcripts.³⁶ A more detailed account of this process is contained in the

³³The following state-years’ general election data are missing in Carsey et al’s data: North Carolina (1986, 1988), Louisiana before 1991, and Vermont before 1984. The instrument is set equal to 0 for these missing state-years and a dummy variable indicator for missing data is included. Excluding these missing state-years or excluding the state entirely does not meaningfully affect the estimates.

³⁴An extremely conservative definition of gender-specific was used for these purposes. Names such as “Jean” which are normally female in English, but male in French were not categorized as gender-specific.

³⁵Candidates may list themselves on the ballot in almost any manner they choose. Many of the listed names are nicknames or variants that do not frequently appear in lists of legal names such as the Social Security Administration’s list.

³⁶A case could be made for excluding candidates with ambiguous names on the grounds that their genders are not as easily observed as those with more clearly gendered names. However, individual voters may have seen candidate pictures and would likely be far less conservative in assuming gender than the method used here. It is not clear where one should draw the line to exclude candidates. Replication of the main results excluding

Data Appendix. At the end of this process, only 3% of major party candidates involved in close elections remained unclassified. Overall 94% of the 120,000 major party candidates in house elections between 1974 and 2000 were classified by gender. These remaining candidates were, by necessity, excluded from the analysis that follows.

The sample was then limited to “single-member districts.”³⁷ The sample is restricted in this manner to simplify the interpretation of the results. The results are however robust to the inclusion of multi-member districts.³⁸ After identifying candidate genders, the number of “close” house races in which a female candidate ran against a male candidate in a single winner election and the number of those races in which the female candidate was successful were calculated for each state.³⁹ The “success-rate” of female candidates in close races (the ratio of the aforementioned figures) is the instrument used unless otherwise noted. This instrument is defined only for state-years in which at least one female candidate is involved in a close race against a male candidate. Unfortunately, in each year there are states that do not have any female candidates involved in close races. As is standard when faced with missing data, the success-rate is set equal to 0 in these cases and an indicator variable for the absence of any female candidates in close races in that year is included in both the first and second stage.⁴⁰ The Data Appendix shows the number of times the instrument was defined for each state and the number of states with at least one female candidate involved in a close race for each year. Female Democrats are more prevalent in close races than female Republicans, although that is

those candidates whose genders were assigned based on research instead of the name appearing on the ballot are available from the author upon request.

³⁷A single member district is one in which the top vote recipient wins. In contrast, a multimember district is one in which voters get to vote for n candidates and the top n vote getters win. During this period almost 90% of contested house races took place in “single-member” districts.

³⁸When multi-member districts are included the margin of victory is calculated based on the difference in vote shares of the last winner (the successful candidate with the lowest vote share) and the first loser (the unsuccessful candidate with the highest voteshare). This margin of victory is then re-scaled to be comparable with the single-member districts. Specifically, the margin of victory is multiplied by the number of winners.

³⁹The handful of candidates whose genders could not be identified were excluded from these calculations entirely. The number and distribution of these excluded candidates are documented in the Data Appendix.

⁴⁰Reproductions of the analysis excluding these state-years entirely are available from the author upon request. Their exclusion does not substantively affect the results, although it does make the coefficients on the controls and the fixed effects difficult to interpret.

also true among state legislators in general.

In practice, this identification strategy necessitates defining what constitutes a close election. Between 1974 and 2000 just under 5 percent of elections in single-member districts were decided by 3 or fewer percentage points (i.e., 48.5 percent to 51.5 percent or closer when two candidates receive all of the votes), while 7 and 1.6 percent of elections had candidates with vote shares within 5, and 1 percentage point of each other, respectively. Approximately 30 percent of single-member house races were uncontested in this period. Among contested single-member district house races, the average margin of victory was 31 percentage points. Choosing a definition of close that is more stringent than necessary will reduce the number of elections defined as close and may result in a weaker instrument and less precise estimates. The strength of the instrument can be readily observed from the first stage. Including elections that are not sufficiently close to have “as good as random” outcomes, one will jeopardize the excludability, and thus the validity, of the instrument. Therefore, erring on the side of an excessively stringent definition of close elections is preferable. Defining elections with candidates within 3 percentage points of each other as close provides a sufficiently strong and robust instrument and is the definition of close used throughout this paper unless explicitly defined otherwise. At a 3 percentage point margin of victory, women win 49.7% of the races in which they are involved. Table 3 contains replications of the main results for alternate definitions of close.

3.3 Results: Effect of Female Legislators on Spending

To recap, I estimate the relationship between the fraction of state legislatures’ lower chambers that are female and state spending using the success rate of female candidates in extremely close races as an instrument.

$$\begin{aligned} W_{st-2} &= a_s + d_{t-2} + \gamma_1 S_{st-2} * D_{st-2} + \gamma_2 D_{st-2} + \gamma X + v_{st-2} \\ Y_{st} &= \alpha_s + \delta_t + \beta_1 W_{st-2} + \beta_2 D_{st-2} + \Omega X + \varepsilon_{st} \end{aligned}$$

Where:

$$S_{st} = \frac{N_{st}^{female\ win\ close}}{N_{st}^{female\ win\ close} + N_{st}^{female\ lose\ close}}$$

$$D_{st} = I \left[N_{st}^{female\ win\ close} + N_{st}^{female\ lose\ close} \geq 1 \right]$$

and X is a vector of controls for log population, fraction of the state house that is Democrat, Democrat control of the House, the number of close races in the state overall in that year, the turnover rate in the legislature, and the unemployment rate.⁴¹

Like previous studies, I generally find a positive correlation between the presence of women in state legislatures and state spending on education and health using OLS (Table 2). This relationship persists even after controlling for state fixed effects (something absent from most of the existing studies except Besley and Case (2003)) and serial correlation within each state over time, although the later does substantially weaken the precision of the results. If one replaces the log of total population with population broken out by age category, or uses population and population squared, one obtains statistically significant estimates of the correlation between female legislators and health and education spending.⁴² However, even these estimates are always below 0.8 and are extremely sensitive to time trends. This fragility coupled with all of the aforementioned concerns about simultaneity, endogeneity and spurious correlation between budget and female legislator data, make it difficult to place much faith in the OLS estimates. As previously discussed, the theoretical models generally suggest that the OLS bias will be positive, making the OLS estimates larger than the IV estimates in the absence of differential heterogeneity. However, if there is heterogeneity of the form suggested by the Citizen Candidate Model and it is larger than the omitted variables bias, then the IV estimates will be larger than the OLS.

The IV results are free of the omitted variables bias in the OLS and are extremely robust (Tables 2 and 3A). After using the success-rate of female candidates in close races to instrument

⁴¹The regressions also include a dummy variable equal to 1 if the state has missing elections in the election data.

⁴²Table available from the author upon request.

for women’s presence in the legislature, female legislators do not have measurable effects on education spending⁴³ and total spending.⁴⁴ The only measurable social spending effects are those on health spending. These results are robust to the inclusion of state and year fixed effects, the exclusion of the South, varying definitions of close, and state-specific time trends. There is also a commensurate effect on the budget share devoted to health. This, coupled with the sizable negative effect on correction institution spending, suggests that female legislators’ effect on health spending represents a real shift in the resources devoted to health.⁴⁵

To place the magnitude of these estimates in context, if all of the increase in female house members in this period was the result of close races, a coefficient of 2 on the fraction of the house that is female implies that all else equal the 13 percentage point increase in women in state houses that occurred in this period would lead to a 30 percent increase in real health spending, or approximately a quarter of the actual growth in health spending in this period. A coefficient of 3 corresponds to almost half of the growth in health spending in this period. However, these are likely to be upperbounds on the effect of women’s movement into state legislatures. The IV estimates of the effect of female legislators on health and corrections institution spending are an order of magnitude larger than the OLS estimates. There is no reason to believe the fraction of each state’s legislature that is female is measured with error. As discussed above, the primary omitted variables and simultaneity biases of concern in this case as well as spurious correlations would all cause the OLS estimates to be upwardly biased and overestimate the average effect of female legislators on spending in this period. Given the large difference in magnitude of the IV and OLS coefficients, the OLS would have to be massively attenuated towards 0 through omitted variables bias to not conclude that $E[\bar{\phi}_{st}|competitive] > E[\bar{\phi}_{st}]$. An IV estimate that

⁴³In the absence of the correction for within state serial correlation of unknown form, the effect on education spending is marginally significant. Additionally, there is a small, fragile, marginally significant effect on log direct real higher education spending, but no effect on log real higher education, total education or elementary education spending. There is also a small marginally significant effect on per capita education spending in a few specifications.

⁴⁴The IV estimates are robust to the inclusion of the share of the electorate that is female. It is excluded from the results presented here to maximize the sample size as it is not available for the earliest part of the period.

⁴⁵While not as precisely estimated, the instrumented coefficient on state police spending is also negative.

is dramatically larger than the OLS is highly suggestive that a closely-elected female legislator has a greater effect on health spending than the average female legislator (after controlling for potentially differing voters who elect them). This finding is consistent with the predictions of the Citizen Candidate Model.

However, most of the women elected to state legislatures in this period were not closely-elected. The rate at which the effect of female legislators decays as margins of victory increase is unknown. If, for example, as many as 20% of the increase in female legislators was those who had effects of the magnitude of the closely-elected women and the remaining women had no effect on health spending, then the dramatic increase in female legislators would be responsible for less than 10 percent of the real increase in this period. If one assumes that the remaining 80% had an effect around the OLS estimates (which are likely to be upwardly biased), then one would still attribute only 15 percent of the growth in real health spending to the increase in female legislators. Therefore, while significant, the overall effect on health spending is likely to be small despite the dramatic increase in female legislators in this period.

One could interpret these findings in the context of candidates' need for greater resources in contested races and their increased susceptibility to capture by the special interest groups that support them. Such an interpretation would implicitly require male and female candidates to be susceptible to capture by different types of interest groups and that health groups do not capture male candidates in close races. Such theories often arise from an assumption that politicians are naturally inclined to be swayed by certain groups and not others, which brings one back to differing preferences. One would also need to assume that those legislators most in need of resources are not also more susceptible to pressure from their party. However, this explanation is only consistent with the differing effects on health and education spending if those willing to support women prioritize health, but not education spending, or if voters only anticipate the capture by education interests.

3.4 Robustness

3.4.1 Alternate Specifications

These effects also persist if one matches the change in female legislators to the total amount of health spending while they were in office (Table 3B).⁴⁶ In addition, the coefficient of interest in the health spending regressions is not radically changed if one instruments the change in the fraction of legislators who are female Democrats (Republicans) with the success-rate of female Democrats (Republicans) in close races (Table 4). The IV coefficients on female Democrats and female Republicans are close in magnitude and have the same sign suggesting that the results are not simply being driven by the women in one party. Since all regressions include a control for the Democrat fraction of the legislature, the coefficient on female Democrats (Republicans) is the effect of replacing a Democrat (Republican) man with a Democrat (Republican) female. The similar coefficients suggest that, at least on health, women in both parties favor more health spending than their male counterparts and differ from them by a similar margin. Separating the female Democrats and Republicans in the education spending regressions does produce estimates of differing signs, but they are too imprecisely estimated to infer anything. Similarly, the results are suggestive that female Republicans may have a positive effect on welfare spending.⁴⁷

3.4.2 Identifying Assumptions

The key identifying assumption for this approach is that *ex ante* states in which women just win and lose close races against men are comparable. Table 5 shows that the success-rate of female candidates in close races is independent of state spending, demographic and political variables determined before the election. It is also independent of the fraction of voters in the state who

⁴⁶Health spending was summed over 3 years: the fiscal year already in progress when they took office and the two years' budgets the legislature voted on while they were in office.

⁴⁷If one splits the sample period into the 1990s and the earlier period (not shown) the coefficient on female legislators' effect on public welfare spending flips signs between the first and second half of the sample becoming positive for the 1990s. This mirrors Edlund and Pande's (2002) finding that women's preferences shifted in favor of redistribution in the 1990s. In contrast, the estimates of female legislators' effects on health spending are more stable across the time periods. Still, one is hesitant to place much weight on these estimates. The instrument loses much of its power in the split samples leading to noisier and more fragile estimates.

were female in that election year. There is no measurable relationship between the success-rates of female Democrats and Republicans in close races in the same state and year, nor do they systematically deviate from the state’s average success-rate together. This suggests there is not some unobserved common shock to female candidates that is causing them to be successful (or unsuccessful) in their close races. Finally, there is no systematic relationship in the success-rates of female candidates within states over time. While being uncorrelated with the observables is not proof of exogeneity, it is reassuring.

3.5 Survey Data: Legislator’s Perceptions and the Costliness of Competitive Races

The assumption that competitive races are more expensive is borne out in the limited data available on state legislators’ campaign efforts. In 2002 Carey et al surveyed state legislators. Their data include self-reported campaign spending and information on the competitiveness of the race. Those in competitive races (defined as final vote shares within 10 points of each other)⁴⁸, report that they and their opponents spent significantly more on their races (Table 6, columns 4 and 5).⁴⁹ Even after controlling for the candidates’ assessments of the electorates they face, candidates in competitive races report spending more than \$10,000 more on their general election campaigns than those in less competitive contested races. This is a large difference. Fewer than 15% of those in contested races report spending more than \$100,000 on their races and the median candidate in a contested race only reports spending less than \$30,000. While such candidates appear to have less costly primaries (column 6) it is not enough to offset the higher spending in the general election. Those in competitive races also categorize themselves as being ideologically further apart from their opponents than those in less competitive races. This gap persists even

⁴⁸Finer break-downs of the vote-shares of the legislators surveyed were recorded, but in order to maintain confidentiality I was unable to gain access to them.

⁴⁹The survey contains a categorical variable indicating a range of amounts spent on the race. Since the cut points for the bins are known, I was able to estimate an ordered probit and transform the estimates into dollars spent. A linear regression with each candidate assumed to be at the midpoint of his bin produces estimates in the same neighborhood as those presented in Table 5.

after controlling for the candidates' perceptions of the ideological distance of their electorates from center and the ideological distance of both parties' primary voters from center. This suggests that those in competitive districts are not simply in more polarized districts. Rather, they are farther from their opponents even after conditioning on how divided their districts are. Those in competitive races appear to believe that who wins those races matters more. This is in line with the Citizen Candidate Model's predictions and supports the interpretation that women elected in close races may be farther from the median voter than those elected in less competitive races. Also in keeping with the IV results that women appear to affect a subset of real policy outcomes is the fact that female candidates in general report that they are further from their opponents than male candidates. Thus the IV spending results are in line with state legislators' reported beliefs and both line up closely with the predictions of the Citizen Candidate Model.

3.6 Conclusion: Policy Outcomes

Quasi-exogenous changes in women's presence in US state legislatures' lower chambers affected the allocation of state resources in the last quarter of the twentieth century. However, despite the dramatic increase in women's presence in state legislatures, their impact was relatively small compared to the overall growth of health spending in this period and they had no measurable effect on the growth of education spending. Women's movement into public office affected public spending, but was not the main driver of changes during this period. These results are consistent with the Citizen Candidate Model and more generally with models that predict policies will diverge towards politicians' preferences. The finding that women's movement into state houses affected health, but not education spending is consistent with theories of issue bundling and salience in which being a majority of the electorate results in one's preferences on the most salient issue being implemented, but not necessarily lesser issues. It is also consistent with models in which voters select female politicians when they want education spending prioritized (and may even over-estimate the effect female legislators will have on education), but do not take female politicians' preferences into account when voting on issues not explicitly related to

children .

However, finding any effect of female legislators is an out of equilibrium result. In addition to divergence in men and women's preferences, one needs the level or growth rate of health spending to be different from women's preferred levels in order for female legislators to affect health spending. Women may desire more social spending, but they do not desire infinitely more spending. Once a spending category has reached women's desired level, one would not expect further increases in that type of spending. If women desire more education spending than men, but the level of education spending is already at their preferred level, one would not find an effect in this exercise. Similarly, resources are not dramatically shifted instantaneously. Therefore, if education spending was important to women, but health became important more recently or women's preferences on health spending diverged from men's more recently or were simply more volatile, then one would find effects only on health spending in this exercise.

Note, these estimates are essentially reduced form effects. They are the effect of treating a legislature's lower chamber with more women and not direct measures of the behavior of the closely-elected female legislator once in office. Research on the bills introduced by, and legislative priorities of female legislators is suggestive that female legislators do indeed behave differently from their male counterparts (see, for example, Dodson (2001); Rosenthal (1998); Thomas (1991)). However, these studies do not have random variation in the gender of legislators, and as discussed above, any observed differences could simply be the result of differences in female legislators' constituents. In the analysis presented below, I will examine the direct behavior of female legislators within the legislature while controlling for the potential endogeneity of women's election.

4 Roll Call Voting

In the preceding analysis I presented quasi-experimental evidence that the number of women in a state's legislature affects its fiscal priorities on a subset of issues in a manner consistent with

the predictions of the Citizen Candidate Model. I will now use newly available data on over 20,000 roll call votes to explore whether individual female legislators' roll call voting behavior differs from that of their male counterparts after controlling for the constituencies that elect them.⁵⁰ If female legislators are indeed different from their male counterparts, one would expect to see them vote differently even after controlling for the voters who elect them. Specifically, one would expect female legislators to deviate as a group from their party's voting patterns more than their male counterparts.⁵¹ In addition, if as the preceding analysis suggests, women do not differ from their male counterparts on all issues, one should expect to find deviation in voting only on a subset of issues. I test for discontinuities in these propensities in close races involving male and female candidates using a variant of the methodology employed by Lee, Moretti and Butler (2004). This complements the research described above by getting inside the black box of the legislature and analyzing how female legislators differ from their male counterparts (as opposed to how the policies enacted by legislatures with more women differ). As in the IV spending results, the relative magnitudes of the regression discontinuity and OLS coefficients indicate whether the closely-elected female legislator diverged farther than those in less competitive races, a feature which distinguishes the Citizen Candidate Model's predictions from many other partial convergence models.

4.1 Data and Methods: Roll Call Voting

Roll call voting data for the cohort elected in 1998 (i.e., data on votes which took place in 1999 and 2000) have recently been made available by Gerald Wright.⁵² Wright's data includes all roll

⁵⁰It is possible that women's (and legislators' in general) primary effect on legislation comes not from their individual votes, but from "log rolling" and back room negotiations. If this is the case, then any observed differences in roll call voting will underestimate the differences between marginal male and female legislators.

⁵¹There is a rich political science and economics literature which seeks to estimate the factors that influence roll call voting and measure the role of party discipline and voter preferences. See, for example: Buchanan and Tullock (1962), Groseclose, Levitt and Snyder (1999), Heckman and Snyder (1997), Poole and Rosenthal (1997), and Snyder and Groseclose(2002).

⁵²Data on Colorado and Idaho's roll call votes are not available. Arkansas was excluded as its roll call votes were available for 2001 only. Kentucky was included even though its roll call votes are available for only 2000 because as in other states the relevant legislators were elected in 1998.

call votes except those in which at least five percent of the legislators did not dissent. These data were matched by district and candidate name to the election data used in the preceding analysis. Bill summaries were then searched for various key words and the bills classified as: prison, health, education, children, or other.⁵³ While neither a complete nor perfect measure of the bills' classification, this does provide a crude measure of the broad types of bills on which one might expect women and men's preferences to diverge. Ideally, one would know how voting in favor of each bill maps to spending in that area or to positions favored by women's groups or female voters. That is not feasible. Legislator ideology scores (such as the ADA or COPE) are also not readily available for state legislators. However, using only the roll call votes and party affiliations I created a measure of how the majority of legislators in each party voted on each bill and how the majority of female legislators voted on each bill.⁵⁴ I then constructed measures for each legislator indicating the percent of the time he voted in line with the majority of his party, A^{party} , and with female legislators, A^{women} ⁵⁵ This measure was created for each legislator both overall, and for the previously enumerated bill types. Table 7 contains summary statistics for each of these created measures along with the overall pattern of legislators voting in agreement with their own parties and with women. Legislators of both parties and genders vote in line with the majority of their party over 75 percent of the time. By adding the diagonal elements of each

⁵³Bills whose summaries contained the words child, children, or mother were classified as "child related" Those containing the words college, education, school, teacher and university were classified as "education related." Those containing the words: health, hospital, maternity, medicine, Medicaid, medical, prenatal and prescription drug were coded as "health related." Those containing the words and phrases correctional facility, correctional institution, corrections institution, department of correction, jail, juvenile detention and prison were coded as "prison related." Words containing the listed keywords as roots (e.g., healthy, children) were also counted as containing the word and classified accordingly. With the exception of the "other" category, bills were allowed to be classified as more than one category. However, bills were classified in the "other" category only if they contained *none* of the listed keywords in their entirety, or as roots. Excluding bills containing the education key words from the health category and vice versa produces the same pattern of results.

⁵⁴The results presented below are generally robust to using the male legislators' votes to define how the majority of the party voted.

⁵⁵Infering a legislator's "true" preferences from her voting records is not straightforward. Legislators may vote contrary to their preferences on one bill in exchange for a colleague's support on a more important piece of legislation. Similarly, a legislator may vote the way her constituents or party desires (and contrary to personal preferences) in situations in which her vote is unlikely to be decisive. While important, the aforementioned are of equal concern in most of the ideology measures commonly used at the federal level. Such measures are generally constructed from the percent of the time a legislator votes the way a particular interest group prefers on legislation that group deems significant.

matrix in Table 7C, one can see that the majority of Democrats and female legislators vote in the same direction on bills 88 percent of the time, while the majority of Republicans and women only vote in the same direction on 69 percent of bills. Thus, on average, female Republicans have to choose between voting with their party and with the other members of their gender. Simple Ordinary Least Squares results for all roll call votes and those that are closer than the average roll call vote in that legislature are presented in column 1 of Table 8. They show that with the possible exception of health bills, on average female legislators do not appear to deviate from their party more than their male counterparts.

4.1.1 Empirical Strategy

As previously discussed, voters are generally aware of the political party and gender of the legislators they are selecting and may take both into account when voting. Thus, any observed differences in average behavior by party and gender could simply reflect the differing preferences of their respective electorates. For example, if voters view both women and Democrats as liberal, then only extremely liberal districts may choose to elect female Democrats. In such a scenario female Democrats might vote with their party more than their male counterparts because they exist only in more solidly Democrat districts. One is interested in estimating β_F in:

$$A = \alpha + \beta_F F + \varepsilon \tag{4}$$

However, having a female legislator, F , is a function of voter preferences for female politicians, FV , which are likely to be correlated with voter preferences more generally. $E[\varepsilon|FV] \neq 0$ and therefore estimates of $\hat{\beta}_{FOLS}$ from equation 4 is likely to be a biased. Regression discontinuity compares the behavior of legislators in districts that were ambivalent about having a male or female representative, overcoming some of these concerns. Specifically, if these unobserved factors, ε , change smoothly and are comparable just above and below the threshold for winning

an election, then β_F can be consistently estimated from:

$$A = \alpha + \beta_F F + f(FV) + \eta$$

Where, $f(FV)$ is a smooth function in ε and serves as a control function while female changes discontinuously. In a standard regression discontinuity approach (Dinardo and Lee (2004) and Lee, Moretti, and Butler (2004)) one would estimate:

$$A = \alpha + \beta_F fem + \theta dem + \sum_1^4 \psi_i fem_vote^i + \sum_1^4 \lambda_i (fem_vote - 0.5)^i fem \quad (5)$$

Where, "fem_vote" is the share of the vote going to the female candidate in a race with candidates of both genders, "dem" is a dummy indicating the legislator is a Democrat and "fem" is a dummy indicating the legislator is female. In this standard discontinuity specification, β_F identifies the effect of the closely-elected woman (relative to the closely-elected man) on A . The polynomial in female voteshare approximates $f(FV)$, which is unknown in practice. However, gender is not the only variable that changes discontinuously at the cutoff. The closely-elected woman is also a closely-elected Republican or Democrat. Like gender, the Democratic candidate's electoral strength changes smoothly around the 0.5 threshold (and is not perfectly correlated with the female candidate's electoral strength), while the party affiliation of the representative changes discontinuously. θ controls for the average Democrat-only. Additionally, in this sample female legislators are more likely than male legislators to be Democrats (Table 7A). Similar to Card, Chetty and Weber (2007), an additional control function is included to proxy for political party support in the electorate, DV .

$$A = \alpha + \beta_F F + f(FV) + f(DV) + v \quad (6)$$

An interacted quartic in Democrat vote share is included in addition to an interaction between the Democrat and female dummies to control for being a closely-elected Democrat and thus

isolate the closely-elected effect of gender. Equation 6 is estimated as follows:⁵⁶

$$A = \alpha + \beta_F fem + \gamma femXdem + \delta dem + \sum_1^4 \psi_i fem_vote^i + \sum_1^4 \lambda_i (fem_vote - 0.5)^i fem \\ + \sum_1^4 \zeta_i dem_vote^i + \sum_1^4 \vartheta_i (dem_vote - 0.5)^i dem + v$$

With:

$$\gamma + \delta = \lim_{\substack{g \rightarrow 0^+ \\ \rho \rightarrow 0^+}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho] \\ - \lim_{\substack{g \rightarrow 0^+ \\ \rho \rightarrow 0^-}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho]$$

$$\beta_F + \gamma = \lim_{\substack{g \rightarrow 0^+ \\ \rho \rightarrow 0^+}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho] \\ - \lim_{\substack{g \rightarrow 0^- \\ \rho \rightarrow 0^+}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho]$$

$$\beta_F = \lim_{\substack{g \rightarrow 0^+ \\ \rho \rightarrow 0^-}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho] \\ - \lim_{\substack{g \rightarrow 0^- \\ \rho \rightarrow 0^-}} E[A | fem_vote = 0.5 + g; dem_vote = 0.5 + \rho]$$

⁵⁶It is important to note that when dealing with election data, each unique candidate only has one voteshare. Thus: $dem_vote = \langle \frac{fem_voteshare}{1-fem_voteshare} \rangle$ and $|g| = |\rho|$, the distance from the cutoff is the same along both margins. While not perfectly correlated, these voteshares are related. At higher orders, some of these terms become co-linear and are dropped. However, since the purpose of these terms is to serve as control functions, this is not a problem.

$$\gamma = \beta_F + \gamma - \beta_F$$

Conceptually, one could think of this as a difference in difference estimator in the discontinuity. For the analysis that follows, β_F and $\beta_F + \gamma$ will be the primary coefficients of interest as they represent how the closely-elected female legislator differs from the closely-elected male legislator in her party. If β_F and $\beta_F + \gamma$ are both negative, closely-elected female legislators of both parties deviate from their parties more than male legislators who just barely defeat their female opponents.

In practice, the sample is restricted to legislators who ran against a member of the opposite gender as gender only changes at the threshold of victory if there were candidates of both genders involved in the race. In addition, as there can be third party candidates who receive a small share of the vote, the margin of victory, not the vote share received by each candidate, is taken from the election data. This margin of victory is then re-centered around 50 percent and converted back to a voteshare. As in the preceding IV spending analysis, the sample is limited to legislators from single-member districts for ease of theoretical interpretation. States vary greatly in the number of roll call votes that take place over a legislator's term. Delaware had only 63 roll call votes while Utah had over 400 and California more than 2,200. They also vary on the number of roll call votes falling into each of the categories of interest (Table 7A). For example, Alaska only had one health related roll call vote in the period. The information gleaned from a handful of votes is likely a noisier signal of the politician's behavior than that gained from observing numerous votes. Therefore, the regressions are weighted by the number of roll call votes in which the legislator was observed for the relevant bill category.

4.2 Results

Table 8 contains the 3 specifications where the dependent variable of interest is the fraction of roll call votes on which each legislator votes in agreement with the majority of his party. Columns

1 to 3 in Table 8 present the coefficients of interest for OLS, single discontinuity in female vote share and double discontinuity (female and Democrat vote shares), respectively for all the roll call votes and for roll call votes broken down by bill category. Neither the closely-elected nor the average female legislator of either party is more or less likely to vote with her party overall than her male counterpart (Table 8, Panel A). However, on health and correctional institution related bills, as in the preceding IV spending estimates, the closely-elected female legislator's propensity to vote with her party differs from her male counterpart's (Table 8, Panels D and E). Republican women vote with their party less than Democrat women, with both groups of women voting with their party less than their male counterparts.⁵⁷ Furthermore, as in the spending estimates, the discontinuity estimates (columns 2 through 3) are larger in absolute value than the OLS estimates (column 1). If one believes the OLS does not substantially understate the average difference in male and female legislators' behaviors, this suggests the closely-elected woman diverges more than the average woman, just as in the earlier IV spending results. Women also vote with their party less than their male counterparts on bills involving children (Table 8, Panel B).⁵⁸ Finally, the closely-elected woman's roll call voting behavior does not appear to differ from the closely-elected male's of either party on votes related to education or other bills (Table 8, Panels C and F). These estimates suggest that on prison, health and child related bills, the closely-elected female legislator's probability of voting with her party is roughly 10 percentage points lower than that of the closely-elected male legislator. The average legislator only votes in disagreement with his party colleagues approximately 20% of the time. It is important to note that while these estimates imply that the closely-elected female deviating a great deal on this subset of issues, these deviations only represent 1 to 2 percent of all the roll call votes in which they are involved.⁵⁹ This pattern of results is the same as the pattern found in the earlier

⁵⁷The coefficient on the female dummy is larger in absolute value than that on the interaction of female and Democrat. These results are robust to including the fraction of the time women deviate from their party on non-health, non-education, non-child votes as a control.

⁵⁸This category includes bills regarding foster care, child abuse, child support enforcement, etc.

⁵⁹This figure was calculated by taking the coefficients in column 3 and applying them to the average number of roll call votes in a state legislature on each topic (listed in Table 7A) and dividing by 540 (the average number of roll call votes in a state in this period). This estimate assumes that 58% of female legislators in each state are Democrats. To the extent that bills are counted in more than 1 category this will overstate the amount of

IV spending analysis. The magnitude of these results is also comparable to the IV spending results. The earlier analysis demonstrated that closely-elected women had a sizable effect on health spending, those changes represented a small share of the overall state budget. Thus the same pattern of results has emerged from two different statistical methods in two different data sets (state spending and roll call voting).

Given that legislators' votes are rarely pivotal, one might be concerned that female legislators' deviations are simply cheap talk. Column 4 contains estimates of the specification in column 3 for closer than average roll call votes.⁶⁰ The effects are generally robust to this restriction and are clearly not being driven by the most lopsided votes. This is not surprising since the earlier spending results showed that women's presence changed the distribution of state expenditures, an effect that would be unlikely if they were simply engaging in cheap talk. The exception is votes related to correctional institutions. Closely-elected female Democrats deviate from their party far less than closely-elected female Republicans on closer than average correctional institution votes and behave similarly to closely-elected male Democrats.

One can also compare the voting behavior of male legislators who barely defeated female candidates to male legislators who barely defeated male candidates (Table 9). The classic Median Voter Model predicts that men representing electorates that are indifferent between male and female candidates should behave more like female legislators than those who did not just squeak by female opponents. The Citizen Candidate Model, in contrast, predicts that both candidates locate symmetrically about the median voter's preferences and therefore one would

deviation. To the extent that there are other types of bills on which women deviate that are not considered here it will be an underestimate.

⁶⁰The average margin for roll call votes was calculated for each state. Each bill was then classified as having a margin closer or farther than the average margin for that state. Researchers seeking to estimate the degree of party discipline and its effects on outcomes tend to focus on the most lopsided votes on the grounds that those are most likely to be free of party pressure and signal true preferences (See, for example, Snyder and Groseclose (2000); Heckman and Snyder (1997)). However, the converse, the degree to which female legislators' preferences alter policy is of interest here.

not expect male candidates who beat women to be closer to their female counterparts.

$$A = \alpha + b_{fem_opponent} + \rho_{fem_opponent} X_{dem} + \delta_{dem} + \sum_1^4 \zeta_i dem_vote^i + \sum_1^4 \vartheta_i (dem_vote - 0.5)^i dem + v$$

Table 9 presents the estimates for the above equation. The sample is restricted to male legislators in contested races. As the sample now includes legislators who did not run against opponents of the opposite gender the polynomial in female voteshare is not included. Panel A of Table 9 shows that male legislators who ran against women appear to be slightly exaggerated versions of their parties with respect to their tendency to vote with their female colleagues. The closely-elected male Democrat votes with women more overall than the closely-elected male Republican (Table 9, Panel A) and male Democrats who defeat women appear to vote with the majority of women even more often. In contrast, Republican men who defeat female opponents vote with women in the legislature even less than the closely-elected Republican. As in the earlier results, there is no measurable gender related difference on education bills. These votes do not appear to be simply cheap talk. When the sample is restricted to more lopsided than average roll call votes, the coefficients on having a female opponent shrink in size and are generally fairly precise zeros. While the effects are much smaller than those in Table 8, men who just barely defeated women are also more likely to vote in accordance with their parties on closer than average roll call votes than those who defeated men. Their behavior is farther from female legislators on this dimension as well.

Finally, the Median Voter Model's policy convergence result is a special case of the Citizen Candidate Model. In that model uncontested races involve politicians with the median voter's preferences.⁶¹ It is impossible to do a regression discontinuity for an unopposed race, but one can still compare the roll call voting behavior of women in contested and uncontested races.

⁶¹Note, if there is heterogeneity in the location of the median voter across districts, then the prediction that an unopposed candidate is at the median of her district does not imply that she is located at the median of her state-wide party.

The results are not the product of exogenous variation, but they are striking. As one can see in Table 10, women in uncontested races are less likely than women in contested races to vote with their party on almost every type of bill. The coefficient on uncontested Democrats has the opposite sign as that on Democrats, suggesting that the uncontested Democrats are closer to the Republicans than the contested Democrats.⁶² This is surprising given that these women are in districts that are more solidly aligned with their party than those in contested districts. A similar pattern is also present in such candidates' propensity to vote with other women. Women in unopposed races appear to vote more like men than those in contested races (they are less likely to vote with the other women in their legislature than women in contested races). These results are in keeping with the Citizen Candidate Model's prediction of less divergence in less costly races. Alternately, if the cost of running for public office increases discontinuously when a challenger enters the race, the threat of a more moderate challenger could lead parties to select more moderate candidates for these districts. Leaving the Citizen Candidate framework, if one believes these deviations (particularly the lower probability of voting with the majority of other female legislators) represent strategic behavior instead of preferences one could interpret these results through the lens of Snyder and Ting (2003). Their model predicts: "nonsincere voting records will occur mostly in moderate districts, where extreme incumbents are vulnerable to challenges from relatively centrist candidates" (p. 419).

5 Conclusion

The preceding analyses demonstrate that the gender of democratically elected politicians shapes policy outcomes on a subset of issues and appears to matter most when electorates are evenly divided in their support for male and female candidates. Like numerous other studies, my results conflict with the predictions of the classic Median Voter Model. Real policy outcomes

⁶²For example, the coefficients in column 5 suggest that, all else equal unopposed Democrats and Republican women's propensities to vote with female legislators are only approximately 0.2 apart while Democrats and Republicans in contested races are over 0.4 apart.

(state spending), roll call voting behavior and surveys of state legislators all provide a consistent pattern of results. The closely-elected female legislator differs from her male counterpart on issues related to health and crime and possibly child-related issues, but not more generally. Additionally, these effects appear to be larger when districts are indifferent between the male and female candidate standing for election. The average female legislator does not appear to dramatically differ from her male colleagues either in her propensity to deviate from her party in roll call voting or in the state budgets enacted after her election. These findings are in accord with state legislators' own perceptions. Women and those in competitive races report a larger ideological distance between themselves and their opponents even after controlling for their perceptions of the ideological position of their electorate and the perceived distance between the political parties in their district. Legislators in competitive races also report that they and their opponents spend significantly more on their campaigns than those in less competitive races. Taken together, these findings are highly suggestive of closely-elected legislators differing from their opponents more than the average legislator does.

These findings that legislator identity matters for policy outcomes (at least on a subset of issues) and that politicians in close races appear to be farther from their opponents line up closely with the predictions of the Citizen Candidate Model. These findings are highly suggestive of a role for politician preferences in policy formation when coupled with the fact that female Democrats and Republicans appear to deviate in the same direction on the areas in which female legislators were found to deviate. The finding that closely-elected female Democrats and Republicans deviate in the same direction is consistent with there being a "woman" effect and with female and male politicians being drawn from differing distributions of preferences.

The reasons female legislators deviate on the issues on which they do, especially their deviation on health issues, but not education, remain open questions for future researchers. Their own roll call votes are only one of the numerous dimensions on which women could affect policy outcomes. Female legislators could also affect policy by influencing the legislative agenda and the votes of their fellow legislators. When more state legislative roll call voting data become available, testing

for the existence of and estimating these peer effects would be a worthwhile endeavor. Finally, the applicability of the Citizen Candidate’s Model’s predictions and the above results for female politicians outside of state legislatures is unknown. As female representatives become more common in the U.S. Congress and in other higher profile offices, it will be interesting to learn if a similar pattern of results are found in those settings.

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Figure 1: Fraction of State Legislature and House Female

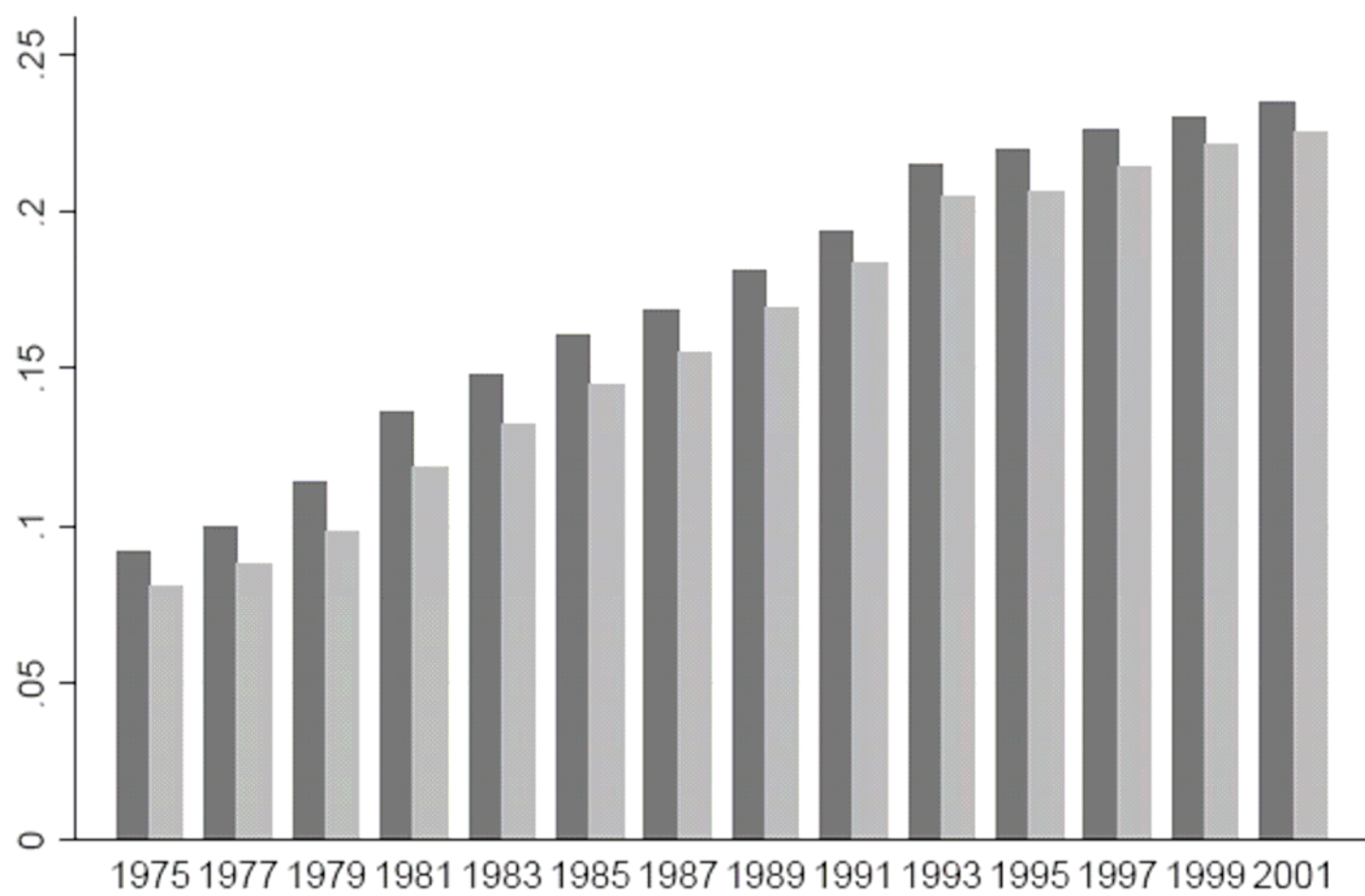


Table 1A: State Spending Summary Statistics						
	<i>Total Spending</i>	<i>Health and Hospitals</i>	<i>Total Education</i>	<i>Elementary Spending</i>	<i>Higher Education</i>	<i>Correctional Institutions</i>
Budget Share 1977						
Mean		0.065	0.349	0.181	0.043	0.016
S.d.		0.016	0.064	0.060	0.018	0.007
Budget Share 2000						
Mean		0.063	0.327	0.186	0.051	0.032
S.d.		0.021	0.059	0.038	0.018	0.011
Growth in Spending 1977 to 2002	100%	115%	96%	106%	170%	370%

Table 1B: State House Member Summary Statistics					
	<i>Mean</i>	<i>s.d.</i>	<i>Min</i>	<i>Max</i>	
Female House Members (percent)					
1975	17	9	1	43	
2000	23	8	8	40	
Size of State Houses (number of members)	111	56	38	400	
Average Number of People per State House Member	47,300	54,400	2,700	358,100	
State House Members' Annual Salary (2000) ¹	\$24,000	\$20,000	\$100	\$100,000	

¹Compensation and term length data are from the National Council of State Legislatures. Per diems and non-cash compensation are excluded from these figures. Annual salaries imputed for those paid a daily salary based on the length of the legislative session. It was assumed that the legislature was in session for every calendar day in the months listed as in session for the purposes of estimating annual salaries for those paid by the "legislative day." New Mexico was excluded as it is listed as having \$0 annual salary. Salaries for legislators paid for the entire term were converted to an annual rate.

Table 2: Main IV Results: Effect of Female House Members on Health Spending

	<i>First Stage</i>		<i>Total Expenditures</i>		<i>Correction Institutions</i>		<i>Education</i>		<i>Health & Hospital</i>		<i>Public Welfare</i>		
Fraction of House Female			OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	
			0.09	-0.1	0.14	-4.10**	0.18	0.97	0.36	3.19**	-0.47*	0.76	
			[0.15]	[0.51]	[0.34]	[2.00]	[0.19]	[0.80]	[0.29]	[1.62]	[0.28]	[1.35]	
Success Rate of Women in Close Races (Instrument)			0.016***										
			[0.003]										
Has at least 1 Woman in a "Close" Race			-0.008***	0	0	0.01	0.01	-0.01	-0.01	0.03	0.03	0.02*	0.02
			[0.003]	[0.01]	[0.01]	[0.02]	[0.03]	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]	[0.01]
Fraction of House Democrat			0.100***	-0.13**	-0.12	-0.2	0.22	-0.04	-0.12	-0.28*	-0.56**	-0.36*	-0.48*
			[0.018]	[0.05]	[0.08]	[0.24]	[0.34]	[0.09]	[0.13]	[0.17]	[0.25]	[0.21]	[0.27]
Log Population			0.150***	0.84***	0.85***	0.72**	1.36***	0.66***	0.54***	0.73***	0.29	1.44***	1.25***
			[0.015]	[0.11]	[0.13]	[0.30]	[0.37]	[0.11]	[0.16]	[0.26]	[0.40]	[0.30]	[0.41]
Democrat House Majority			-0.005	0.02	0.02	0	-0.02	0.01	0.02	-0.04	-0.03	0.09***	0.10***
			[0.004]	[0.01]	[0.01]	[0.05]	[0.06]	[0.02]	[0.02]	[0.03]	[0.04]	[0.03]	[0.03]
Turnover Last Election			0.020**	0.05	0.06	-0.08	0.005	0.12**	0.11**	0.07	0.01	-0.01	-0.04
			[0.009]	[0.04]	[0.04]	[0.07]	[0.11]	[0.06]	[0.06]	[0.08]	[0.08]	[0.06]	[0.06]
Number of Close Races			-0.00*	0	0	0	-0.01	0	0	0	0	0	0
			[0.00]	[0.00]	[0.00]	[0.01]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Unemployment Rate			-0.021	0	-0.26	-0.02	-1.89	-0.01*	-1.01**	-0.01	-1.03	0.01	0.8
			[0.092]	[0.00]	[0.28]	[0.01]	[1.58]	[0.01]	[0.51]	[0.01]	[0.84]	[0.01]	[1.00]
Constant			-1.93***	4.24***	3.57**	1.52	-7	4.71***	6.24***	2.03	7.5	-6.63	-4.21
			[0.195]	[1.42]	[1.66]	[3.91]	[4.70]	[1.49]	[2.08]	[3.43]	[5.26]	[4.00]	[5.43]
Excluded Instrument													
F-Stat			21.65										
Partial R-squared			0.02										
Number of Observations	1224	1175	1175	1224	1224	1224	1224	1224	1224	1224	1224	1224	1224

Note: All regressions have state and year fixed effects. Standard errors clustered by state are in brackets. Definition of close: 3.0 percentage point margin.

Table 3A: IV Effect of women in Close Races on State Spending (Alternate Specifications)

	Log Real Health Spending		Real per capita Health Spending		Budget Share Health		Log Real Correction Institutions Spending		Real Correction Institutions Spending per Capita		F-stat: Excluded Instrument
	Spending	Health Spending	Health Spending	Health Spending	Health	Health	Institutions Spending	Institutions Spending	Capita		
Main Specification	3.19** [1.62]	373* [190]	0.18* [0.09]	-4.10** [2.00]	-199** [89]	22					
No Controls	3.31** [1.68]	323* [197]	0.16* [0.09]	-3.63** [1.82]	-192** [82]	21					
State Specific Time Trends	2.45* [1.29]	282* [149]	0.12 [0.08]	-2.98 [2.07]	-118* [66]	21					
Excluding the South	3.33* [1.76]	360* [205]	0.20* [0.11]	-4.41** [2.06]	-243** [103]	18					
5.0 margin close	1.73 [1.22]	267 [174]	0.12 [0.08]	-3.47** [1.58]	-152* [68]	24					
2.5 margin close	3.15 [2.26]	341 [288]	0.20 [0.13]	-4.10 [2.58]	-215 [124]	12					
1.5 margin close	5.46 [6.38]	704 [865]	0.32 [0.39]	-5.55 [6.43]	-300 [344]	3					
3.0 margin (includes multi-member districts)	2.78** [1.40]	356** [168]	0.15** [0.07]	0.59 [0.72]	-3.71** [1.57]	29					

Note: Each Cell represents a separate regression. Standard Errors clustered by state are in brackets below the coefficients. "Main specification refers to the IV specification in Table 2.

Table 3B: Sum of Real Spending the Legislators Could have Voted On (IV)

	Health and Hospital				Total Education				Correction Institutions			
	Log	Per Capita	Log	Per Capita	Log	Per Capita	Log	Per Capita	Log	Per Capita	Log	Per Capita
Fraction House Female	3.18* [1.67]	2.74** [1.37]	1020* [600]	890* [460]	1.09 [0.82]	0.04 [1.20]	2820* [1610]	1310 [2190]	-3.76* [1.99]	-1.99 [1.76]	-570** [260]	-260 [160]
State Specific Time Trends?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	588	588	588	588	588	588	588	588	588	588	588	588

All regressions contain controls for: fraction of the house Democrats, Democrat house majority, log population, number of close races in the election year, turnover rate, unemployment rate, state and year fixed effects. Standard errors clustered by state in brackets. Definition of close: 3.0 margin. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: IV Spending with Female Legislators Broken out by Party

	Log Real Expenditures (1982-2001)							
	Total	Education	Health and Hospital	Corrections Institutions	Public Welfare	F-stat:	Excluded Instrument	
Main	Fraction House Members	0.91	3.28	2.69	-2.93	-0.58	5	
	Female Democrats	[1.32]	[2.70]	[2.58]	[4.84]	[2.57]		
	Fraction House Members Female Republicans	-1.11 [1.09]	-1.33 [1.82]	1.11 [2.61]	-6.15* [3.52]	1.98 [1.56]	13	
No Controls	Fraction House Members	1.55	3.19	2.52	-1.59	1.44	6	
	Female Democrats	[1.35]	[2.14]	[2.17]	[3.66]	[2.38]		
	Fraction House Members Female Republicans	-0.32 [0.99]	-0.4 [1.60]	2.21 [2.09]	-4.92* [2.71]	2.44 [1.61]	17	
No South	Fraction House Members	1.69	5.92	3.43	-6.41	-1.97	4	
	Female Democrats	[2.72]	[6.03]	[4.18]	[7.32]	[3.46]		
	Fraction House Members Female Republicans	-2.08 [2.22]	-4.25 [3.75]	1.08 [3.83]	-3.78 [5.60]	3.48 [2.33]	9	
2.5 margin	Fraction House Members	1.54	3.08	1.2	-1.19	0.33	6	
	Female Democrats	[1.58]	[2.55]	[2.34]	[4.40]	[2.45]		
	Fraction House Members Female Republicans	-1.59 [1.43]	-0.89 [2.11]	2.36 [3.64]	-7.76 [5.01]	1.38 [2.25]	8	

Standard errors clustered by state are in brackets. All regressions contain state and year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Success Rate of Female Candidates and Pre-Determined Variables

<i>Panel A: State Spending</i>		Log Real Spending in the Election Year					Budget Shares		
	Total	Health and Hospital	Education	Public Welfare	Prisons	Health and Hospital	Education	Prisons	
Success Rate of Female Candidates in Close Races	0.014 [0.124]	0.103 [0.141]	0.005 [0.126]	0.09 [0.150]	0 [0.147]	0.005** [0.002]	-0.004 [0.009]	-0.001 [0.001]	
Constant	15.589*** [0.082]	12.813*** [0.093]	14.458*** [0.083]	13.777*** [0.099]	11.557*** [0.097]	0.065*** [0.002]	0.371*** [0.006]	0.019*** [0.001]	
Observations	334	334	334	334	334	334	334	334	
R-squared	0	0	0	0	0	0.01	0	0	

<i>Panel B: Political and Demographic Variables</i>		Political Variables					Log Population		
	Fraction State Female	Fraction House Democrats	Fraction Voters Female	Turnover Rate	UI Rate	Over 65	Under 4	Aged 4-17	
Success Rate of Female Candidates in Close Races	0.012 [0.011]	0.002 [0.020]	0.003* [0.002]	-0.005 [0.018]	-0.003 [0.003]	0.003 [0.145]	-0.025 [0.132]	-0.011 [0.130]	
Constant	0.185*** [0.007]	0.572*** [0.013]	0.526*** [0.001]	0.294*** [0.012]	0.006*** [0.002]	12.795*** [0.095]	12.400*** [0.087]	13.358*** [0.085]	
Observations	373	373	326	373	350	334	334	334	
R-squared	0	0	0.01	0	0	0	0	0	

<i>Panel C: Success Rates of Female Candidates in Close Races within States</i>		Female Democrats		Success Rate Year T		Success Rate Year T+2	
	No	Yes	Success Rate Year T	Constant	No	Yes	
Female Republicans	-0.039 [0.083]	-0.011 [0.093]	0.071 [0.059]	0.474*** [0.038]	-0.032 [0.063]	0.254 [0.196]	
Constant	0.472*** [0.058]	0.006 [0.305]					
State Fixed Effects?	No	Yes			No	Yes	
Observations	137	137			285	285	
R-squared	0	0.03			0.01	0.03	

Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. Adjusted R-squared reported for regressions with state fixed effects.

Table 6: Analysis of Carey et al's 2002 Legislator Survey

	Legislators' Self Reported....					
	Ideological Distance	Own from Center	Opponents' from Center	Own General Election	Opponents' General Election	Strongest Supporters ³
Competitive Election (10 pts or closer)	0.21* [0.11]	0.07 [0.07]	0.15** [0.06]	11,148** [4,375]	23,648*** [5,608]	-0.02 [0.04]
Female	0.22** [0.10]	0.01 [0.05]	0.07 [0.06]	3,119 [3,560]	6,160 [3,858]	0.42*** [0.03]
Competitive X Female	0 [0.24]	-0.16 [0.14]	-0.19 [0.13]	157 [9,788]	-908 [12,686]	0.08 [0.10]
Democrat Dummy	-0.45*** [0.10]	-0.18*** [0.06]	0.08 [0.08]	2,455 [3,052]	-1,176 [2,736]	0.40*** [0.03]
Candidates' Rating of Voters' Ideology	-0.03 [0.07]	0.41*** [0.03]	0.02 [0.04]	-3,694 [2,575]	-2,202 [1,918]	-0.01 [0.02]
Own Primary Voters' Ideological Distance from Center	0.37*** [0.05]	0.25*** [0.03]	-0.07** [0.03]	2,559 [2,054]	-401 [1,762]	0.06*** [0.02]
Opponents' Primary Voters' Ideological Distance from Center	0.08 [0.07]	-0.01 [0.03]	0.22*** [0.04]	916 [1,295]	-242 [1,905]	-0.04*** [0.01]
Constant	2.23*** [0.14]	0.75*** [0.05]	1.52*** [0.07]	23,639*** [5,065]	28,745*** [5,271]	10,471*** [3,751]
Observations	1441	1441	1441	1269	796	721
R-squared	0.13	0.32	0.11			

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors clustered by state are in brackets. All regressions are weighted by the survey weights.

Data from Carey et al (2007).

² Estimates are from an ordered probit with known cut points. The dependant variables are z6_2a, z6_2b and z6_1a, respectively.

³ Marginal effects from logistic regressions are displayed.

Table 7A: Sample Summary Statistics Roll Call Voting Data (1999-2000)

	Legislators	
	Number	Percent
Number of Legislators	4206	
Democrats	2221	53%
Independents ⁴	2	0
Women	915	22%
Democrats	529	58%
Had an Opponent	2719	65%

	Roll Call Votes			
	Mean	s.d.	Min	Max
Number of Roll Call Votes ⁵	540	428	63	2215
Children	15	13	0	61
Education	64	65	4	302
Health and Hospitals	36	41	1	187
Prisons	6	9	0	52

Table 7B: Average Percent of the Time Legislators Vote with Women and/or their Party
(All numbers are percents; standard deviations in parenthesis)

Party	All Legislators		All Democrats		All Republicans	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
	61 (19)	17 (15)	69 (17)	9.5 (10)	52 (17)	25 (15)
Women						
	4 (4)	18 (15)	3 (3)	19 (15)	6 (5)	17 (14)
Party						

⁴ Independents are excluded from the regression analysis.

⁵ Bills are included in *all* categories that apply to them.

Table 8: Dependent Variable is Percent of Time Legislators Vote with their Party

	1	2	3	4	1	2	3	4
	OLS	Female Discontinuity	Female & Party Closer than Average		OLS	Female Discontinuity	Female & Party Closer than Average	
Panel A: All Bills								
Female	0.001 [0.013]	-0.033 [0.031]	-0.035 [0.029]		-0.033 [0.027]	-0.069 [0.044]	-0.075* [0.040]	-0.111* [0.054]
FemaleXDemocrat	-0.004 [0.018]	-0.002 [0.019]	-0.004 [0.019]		0.03 [0.033]	0.03 [0.034]	0.028 [0.033]	0.036 [0.029]
Democrat	0.053** [0.025]	0.051 [0.026]	0.074* [0.037]		0.089** [0.034]	0.090** [0.033]	0.142*** [0.043]	0.074 [0.050]
Constant	0.777*** [0.017]	0.725*** [0.094]	0.646*** [0.118]		0.760*** [0.020]	0.633*** [0.105]	0.337** [0.128]	0.318 [0.342]
Panel B: Children								
Panel C: Education								
Female	-0.013 [0.030]	-0.054 [0.044]	-0.058 [0.039]	-0.059 [0.048]	-0.046 [0.031]	-0.145*** [0.039]	-0.147*** [0.034]	-0.145*** [0.042]
FemaleXDemocrat	0.004 [0.034]	0.003 [0.034]	0.003 [0.033]	0.021 [0.031]	0.059 [0.040]	0.058 [0.040]	0.056 [0.039]	0.082** [0.031]
Democrat	0.067** [0.031]	0.064* [0.034]	0.110** [0.041]	0.079 [0.056]	0.045 [0.030]	0.044 [0.031]	0.083** [0.039]	0.048 [0.056]
Constant	0.770*** [0.025]	0.735*** [0.088]	0.699*** [0.185]	0.764*** [0.216]	0.793*** [0.020]	0.763*** [0.079]	0.693*** [0.126]	0.750*** [0.189]
Panel D: Health and Hospitals								
Panel E: Prisons⁶								
Female	-0.024 [0.019]	-0.086** [0.038]	-0.088** [0.035]	-0.09 [0.068]	0.004 [0.012]	-0.028 [0.034]	-0.028 [0.032]	-0.041 [0.026]
FemaleXDemocrat	0.048* [0.024]	0.037 [0.026]	0.039 [0.026]	0.103* [0.050]	-0.008 [0.017]	-0.005 [0.018]	-0.007 [0.019]	0.024 [0.016]
Democrat	-0.035 [0.043]	-0.018 [0.037]	0.06 [0.050]	-0.023 [0.086]	0.050** [0.025]	0.048* [0.026]	0.064 [0.040]	-0.007 [0.048]
Constant	0.809*** [0.030]	0.314*** [0.104]	-1.260* [0.696]	-2.241* [1.072]	0.778*** [0.017]	0.735*** [0.096]	0.650*** [0.114]	0.740*** [0.150]

Sample restricted to legislators who ran against opponents of the opposite gender. Regressions are weighted by the number of roll call votes in the state on the relevant topic. All columns include majority party dummy, the size of the majority. Column 2 also has an interacted quartic in female vote share. Columns 3-5 also have interacted quartics for female and democrat vote shares. Standard errors clustered by state in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

⁶ CT, DE, MA, MO, MS, NM, NV, NY, PA, RI, TN, TX, VT and WV did not have any roll call votes on bills with summaries containing prison keywords and are therefore excluded.

Table 9: Male Legislators who Defeated Women vs. Male Legislators who Defeated Men

		<i>Panel A: Fraction of the Time Male Legislators Vote in the Same Direction as the Majority of Female Legislators</i>														
		All Bills			Health			Education			Children			Other		Not
		All	Close	Not Close	All	Close	Not Close	All	Close	Not Close	All	Close	Not Close	All	Close	Close
Female Opponent		-0.045*** [0.014]	-0.026** [0.010]	-0.031 [0.019]	0.003 [0.019]	-0.016 [0.011]	-0.014 [0.016]	-0.006 [0.013]	-0.044*** [0.014]	-0.070*** [0.010]	-0.005 [0.017]	-0.033*** [0.008]	-0.039** [0.015]	-0.023** [0.010]		
DemXFem Opponent		0.106*** [0.025]	0.064** [0.024]	0.084** [0.033]	0.018 [0.025]	0.065** [0.025]	0.082** [0.030]	0.018 [0.031]	0.094*** [0.034]	0.153*** [0.042]	0.041 [0.033]	0.076*** [0.024]	0.094*** [0.029]	0.047* [0.027]		
Democrat		0.129*** [0.039]	0.238*** [0.053]	0.368*** [0.081]	0.112** [0.044]	0.219*** [0.070]	0.324*** [0.089]	0.06 [0.045]	0.165** [0.064]	0.267*** [0.088]	0.065 [0.065]	0.116** [0.052]	0.202** [0.075]	0.03 [0.041]		
Constant		0.529*** [0.039]	0.450*** [0.119]	0.232 [0.144]	0.723*** [0.082]	0.472*** [0.078]	0.270** [0.102]	0.752*** [0.086]	0.501*** [0.081]	0.272** [0.121]	0.639*** [0.111]	0.569*** [0.071]	0.427*** [0.114]	0.748*** [0.046]		
Obs		3066	1589	1512	1589	1589	1589	1589	1577	1529	1577	1589	1589	1589	1589	1589
R-squared		0.23	0.49	0.57	0.19	0.39	0.48	0.19	0.33	0.4	0.14	0.28	0.35	0.17		
<i>Panel B: Fraction of the Time Male Legislators Vote in the Same Direction as the Majority of Their Party</i>																
Female Opponent		0.014 [0.011]	0.022* [0.012]	0.033*** [0.012]	0.011 [0.015]	0.022 [0.013]	0.040*** [0.013]	-0.002 [0.015]	0.007 [0.011]	0.033** [0.013]	-0.012 [0.016]	0 [0.007]	0.016* [0.009]	-0.017* [0.009]		
DemXFem Opponent		0.026 [0.017]	0.001 [0.018]	-0.001 [0.017]	0.009 [0.022]	0.015 [0.021]	0.001 [0.020]	0.027 [0.026]	0.037 [0.025]	0.031 [0.023]	0.054 [0.032]	0.032* [0.018]	0.015 [0.015]	0.046* [0.024]		
Democrat		0.030*** [0.014]	0.027 [0.030]	0.016 [0.034]	0.039 [0.039]	0.041 [0.032]	0.045 [0.038]	0.028 [0.039]	0.055 [0.052]	0.007 [0.059]	0.092 [0.057]	0.001 [0.033]	-0.014 [0.036]	0.008 [0.040]		
Constant		0.774*** [0.017]	0.894*** [0.078]	1.016*** [0.122]	0.728*** [0.068]	0.873*** [0.114]	0.969*** [0.135]	0.793*** [0.094]	0.751*** [0.122]	0.803*** [0.111]	0.693*** [0.118]	0.854*** [0.076]	0.915*** [0.098]	0.796*** [0.058]		
Obs		3066	1589	1512	1589	1589	1589	1589	1577	1529	1577	1589	1589	1589	1589	1589
R-squared		0.08	0.12	0.06	0.23	0.13	0.07	0.18	0.1	0.04	0.12	0.13	0.11	0.18		

All regressions have standard errors clustered by state. In addition to the variables listed above, all regressions contain: majority party dummy, the membership gap between the two parties, and interacted quartiles in democrat vote share. Regressions are weighted by the number of roll call votes in each state. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 10: Female Legislators who Obtained Office through Contested and Uncontested Races⁷

	<i>Fraction of Time Voted with the Majority of Her Party</i>					<i>Fraction of Time Vote with Women</i>		
	All Bills	Health	Education	Children	Other	Health	Education	Children
Unopposed	-0.031** [0.015]	-0.044* [0.025]	-0.056** [0.027]	-0.055* [0.029]	-0.061** [0.023]	0.152*** [0.045]	0.162*** [0.054]	0.099*** [0.033]
UnopposedXDemocrat	-0.003 [0.022]	0.001 [0.031]	0.021 [0.034]	0.035 [0.032]	0.022 [0.023]	-0.268*** [0.081]	-0.255*** [0.090]	-0.154** [0.059]
Democrat	0.049** [0.019]	0.093*** [0.029]	0.053* [0.031]	0.097*** [0.034]	0.040** [0.017]	0.500*** [0.067]	0.427*** [0.085]	0.388*** [0.071]
Incumbent	-0.039** [0.014]	-0.039 [0.024]	-0.054** [0.023]	-0.030* [0.016]	-0.040** [0.016]	0.031 [0.019]	0.013 [0.018]	0.025 [0.018]
Majority Size	-0.16 [0.126]	-0.266 [0.224]	-0.350* [0.184]	-0.013 [0.240]	-0.396** [0.152]	0.137 [0.168]	0.106 [0.127]	0.002 [0.203]
In Majority Party	0.042** [0.018]	0.014 [0.023]	0.015 [0.025]	0.027 [0.029]	0.006 [0.015]	0.106* [0.059]	0.096 [0.067]	0.149** [0.069]
Constant	0.808*** [0.020]	0.828*** [0.022]	0.846*** [0.035]	0.786*** [0.031]	0.846*** [0.022]	0.216*** [0.048]	0.271*** [0.066]	0.289*** [0.058]
Observations	727	632	700	641	700	632	700	641
R-squared	0.1	0.11	0.09	0.09	0.11	0.53	0.44	0.35

* significant at 10%; ** significant at 5%; *** significant at 1%

Standard errors clustered by state in brackets. Regressions weighted by the number of roll call votes on that topic in the state.

⁷ Sample restricted to women who were unopposed and those who ran against men.