

Are Women Less Effective at Passing Bills? Exploring the Direct and Indirect Effects of Gender

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Abstract

Are women as effective as men at passing legislation? What are the institutional pathways through which gender affects bill approval? I argue that gender does not have a direct effect on a legislator's ability to gain legislative approval. Instead, women are marginalized in their access to influential institutional positions – committee leadership positions, influential committee assignment, and bill content -- which may have consequences for bill approval. I examine these relationships using causal mediation analysis on bill data from Argentina from 1983 through 2007. I do not find a direct effect of gender on bill approval. Instead, women are negatively affected by their lack of access to committee leadership positions. While women do not experience legislative consequences directly, by virtue of being women, they do face indirect consequences through the positions they receive. This paper makes important methodological and substantive contributions to understanding relationships between gender and legislative outcomes.

How effective are women at legislating? A large portion of the literature on women's representation within legislatures has focused on the ways in which women are marginalized within these institutions (Barnes 2016; Heath et al. 2005; Htun et al 2013; Jones 1997; Saint-Germain 1989; Schwindt-Bayer 2006, 2010). This literature demonstrates that women are systematically disadvantaged in the legislature in their access to leadership positions within the institution, assignment to influential committees, and their tendencies to legislate on certain bill content. If women are marginalized in their access to influential positions in the legislature, one potential consequence of this marginalization might be on their ability to successfully navigate the legislature and ensure the approval of their bills to the same degree that male legislators can.

A second literature has examined some of these potential legislative consequences by studying the ability of female and male legislators to gain legislative approval for their proposals. This literature has largely found that when these institutional positioning differences between men and women are controlled for, women are just as effective in achieving legislative bill approval as their male counterparts (Kerevel and Atkeson 2013; Jeydel and Taylor 2003; Saint-Germain 1989; Volden et al. 2013a). Until this point, the conventional practice of controlling for these intervening institutional positioning differences indicates that at face value, women are not inherently disadvantaged in their abilities to pass legislation. However, we know that women are disadvantaged in their access to these institutional positions and these studies also suggest that these gendered disadvantages may affect women's ability to legislate effectively. This highlights the fact that these institutional disadvantages might have indirect consequences on women's ability to legislate effectively.

Instead of simply controlling for these institutional differences between men and women, I measure the extent to which gender indirectly affects legislator effectiveness through

institutional positioning mediators by examining how gender might disadvantage women through certain institutional positions within the legislature which may, in turn, affect legislative effectiveness. Specifically, I focus on three institutional aspects: committee leadership positions, assignment to influential committees, and the content of the bills women tend to legislate on. This will determine whether women face disadvantages in their legislative effectiveness based solely on their status as women or whether gender indirectly disadvantages women through these institutional differences. Thus, I am able to parse the direct and indirect effects of gender on legislative effectiveness.

I investigate these relationships using bills initiated by legislators in the Argentine Chamber of Deputies from 1983 through 2007, which provides a context in which women have had prolonged and varied access to positions of power in the legislature. I employ causal mediation analysis adapted to accommodate multiple, related mediators to obtain identifications of the direct and indirect effects of gender through each institutional mediator. Using causal mediation analysis to identify the direct and indirect effects of gender makes significant methodological and substantive contributions. Methodologically, this approach avoids potential post-treatment bias in estimates of the direct and indirect effect of gender that conventional methods of controlling for institutional mediators might induce (Acharya et al 2016; King and Zeng 2006; Montgomery et al. 2018). Substantively, it provides a full understanding of the ways in which gender may directly and indirectly disadvantage women's legislative effectiveness. Specifically, this application of mediation analysis determines how much legislative effectiveness is directly affected solely by women's status as women as well as the extent to which gender indirectly passes through each institutional mediator.

The results demonstrate that gender does not directly affect the probability of bill approval. Instead, women are disadvantaged by the fact that they are less likely to receive legislative leadership positions. Although women are not less likely to gain approval for their bills based solely on their status as women, they are less likely to receive crucial committee leadership positions which, in turn, has an adverse effect on their ability to shepherd their bills through the chamber. This paper suggests the importance in exploring direct and indirect relationships between gender, institutional positions, and legislative consequences and adopts the appropriate methodological framework to correctly model and account for these complex relationships.

The Literature on Gender and Legislative Effectiveness: A New Path Forward

A large literature has examined the effect of gender on legislative effectiveness across several legislative contexts to determine whether women are disadvantaged in their ability to navigate the legislature. However, this literature presents inconclusive results on the direct effect that gender has on legislative effectiveness. These results range from women being more effective in the legislature (Anzia and Berry 2011; Lazarus and Steigerwalt 2018; Saint-Germain 1989; Volden et al. 2013a), women being less effective in the legislature (also, Volden et al. 2013a), and women being just as effective in the legislature compared to their male counterparts (Alemán and Calvo 2008; Bratton 2005; Bratton and Haynie 1999; Jeydel and Taylor 2003; Kerevel and Atkeson 2013; Thomas and Welch 1991). One explanation for these varying conclusions is likely due to the various ways in which these studies have accounted for certain institutional positions within the legislature where women are disadvantaged like committee leadership, committee assignment and bill content. These studies broadly fall into two bodies in

addressing these institutional differences: one in which institutional positions are not measured and included and one in which they are held constant as controls.

This foundational literature points to a third possibility that neither approach addresses: these institutional differences actually lie on the causal pathway between gender and legislative effectiveness. Women tend to face marginalization within legislatures that systematically makes them less likely to hold leadership positions within the legislature, achieve access to influential committees, and they tend to legislate on certain issue areas (Barnes 2016; Heath et al. 2005; Htun et al 2013; Jones 1997; Saint-Germain 1989; Schwindt-Bayer 2006, 2010). This marginalization in the legislature may have consequences for women's legislative effectiveness. In this respect, gender may have an indirect effect on legislative effectiveness through these institutional differences as gender leads to systematic differences in institutional positioning between men and women and these institutional differences may, in turn, have an effect on legislative effectiveness. To completely understand the entire effect of gender on legislative effectiveness, it is important to examine these indirect effects gender might have, in addition to the direct effect.

Taking this approach resolves the substantive and statistical issues of previous studies that either fail to include these key institutional differences or hold them constant as control variables. Because the literature indicates a potential statistical relationship between gender, institutional positions, and legislative effectiveness, institutional differences should be accounted for in studying the relationship between gender and bill approval. Substantively, placing these institutional differences on the causal pathway between gender and legislative effectiveness provides a more complete understanding of the way in which gender directly and indirectly effects legislative behavior by providing estimates of these effects. To fully understand the effect

of gender on legislative effectiveness, it is important to disentangle the effect gender might have through these indirect pathways.

Methodologically, including these institutional differences on the causal pathway between gender and legislative effectiveness more appropriately models their relationships and avoids potential post-treatment bias. This is because including these institutional differences as controls in a statistical model is potentially problematic. Controlling for these institutional differences introduces post-treatment bias which can affect substantive conclusions regarding the direct effect of gender on bill passage (Acharya et al 2016; King and Zeng 2006; Montgomery et al. 2018). Post-treatment bias occurs when researchers control for covariates that are potentially affected by the treatment (Acharya et al 2016; King and Zeng 2006; Montgomery et al. 2018). This bias is particularly insidious because the bias can be in any direction and of any size (Montgomery et al. 2018). Since these institutional positions are known to vary according to gender, this indicates that they are affected by gender and controlling for these differences introduces post-treatment bias into the estimate of the direct effect of gender. If institutional positions vary according to gender, holding these positions at a constant level as controls removes this variation. It then becomes impossible to investigate how variation in institutional positions across gender affects legislative effectiveness. As a result, this eliminates the indirect effect of gender on legislative effectiveness that passes through these institutional positioning variables. Not accounting for these indirect effects biases the estimate of the direct effect of gender on legislative effectiveness in studies that control for these institutional differences. This bias has implications for substantive conclusions drawn regarding the effect of gender on legislative effectiveness.

Although the previous literature has demonstrated the substantive and statistical importance of the relationships between gender, institutional differences, and legislative effectiveness, the approaches these studies have taken do not provide a complete, substantive understanding of the direct and indirect effects that gender might have on legislative effectiveness. In order to fully understand and measure the effect that gender has on legislative effectiveness, it is important to measure both the direct effect that is solely the result of women's status as women as well as the effect that gender might have by indirectly disadvantaging women through access to differential institutional positions inside the legislature. Additionally, these approaches introduce potential sources of bias which can lead to substantively inconclusive results regarding the effect of gender. Previous approaches that either do not include these institutional differences or control for and hold them constant are substantively and methodologically flawed. To fully measure the effect of gender on legislative effectiveness, these institutional differences should be included and allowed to vary according to gender.

Establishing the Causal Mediation Pathways

In this section I establish that institutional positions like committee leadership, committee assignment, and bill content are influenced by gender and lie on the causal pathway between gender and legislative effectiveness. Thus, instead of controlling for these institutional positions and inducing post-treatment bias, this section provides a theoretical basis for exploration of the indirect effect of gender on legislative effectiveness through these institutional positions.

Committee leadership positions are the first pathway through which gender indirectly affects legislative effectiveness. Committee leaders are endowed with considerable advantages in getting their bills approved that rank and file members do not possess, such as organizational

resources and informational advantages (Adler and Wilkerson 2005; Anderson et al 2003; Alemán and Calvo 2008; Browne 1985; Fenno 1973; Hall 1996; Hibbing 1991; Mayhew 1974; Moore and Thomas 1991). These advantaged and influential institutional positions tend to be male-dominated. The literature on gender marginalization in legislatures demonstrates that women are systematically denied these important committee leadership positions in legislatures (Jeydel and Taylor 2003; Rosenthal 1997; Volden et al. 2013a) and specifically in Argentina (Alemán and Calvo 2008; Barnes 2016; Htun et al. 2013; Schwindt-Bayer 2010). If committee chairs are more influential and effective in passing bills, and if men mainly hold these positions because women are systematically marginalized in legislature, then this explains male legislators' higher rates of bill passage. In this way, gender has a clear effect on leadership positioning in the legislature as women are marginalized in their access to these influential positions and leadership positions also have an established effect on advantaging bill approval success. Therefore, leadership is the first mechanism through which gender indirectly affects legislative effectiveness.

Assignment to different types of committees provides the second pathway through which gender operates indirectly on legislative effectiveness. Committees termed “power committees” or “influential committees,” like the Budgetary, Constitutional Affairs, General Legislation, and Agricultural Committees tend to be considered higher profile committees in the legislature because they have the authority to allocate funding. Because their resources are less limited in comparison with lower profile committees, they possess a greater ability to ensure that their legislation is implemented (Barnes 2016). According to Alemán and Calvo (2008), bills introduced by legislators sitting on two of the most important committees in the Argentine legislature were more likely to pass than bills introduced by members of congress seated on

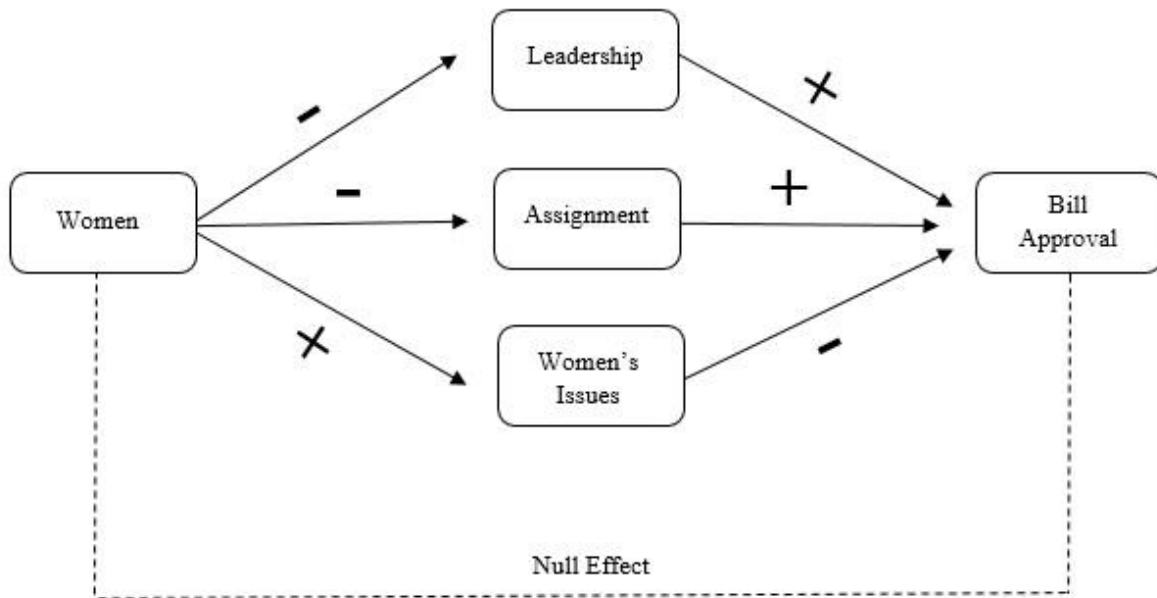
other, less important committees. Women tend to be marginalized in terms of the committees they are assigned to where they tend to be relegated to less influential committees (Darcy 1996; Diamond 1977; Heath et al. 2005; Rosenthal 1997; Schwindt-Bayer 2010; Thomas and Welch 1991). If certain committee assignments are more influential and effective in gaining approval for legislation, and if women are disproportionately marginalized on less influential committees, then this offers an explanation of why male legislators have higher rates of bill approval. Thus, gender affects the level of influence of the committee legislators are assigned to and women are marginalized in their access to influential committees. Consequently, the level of committee influence also has an effect on successful bill approval. Committee assignment provides the second pathway through which gender indirectly influence bill approval.

Attention to different bill issue areas is the third pathway through which gender indirectly influences legislative effectiveness. The content and issue areas bills address matter for the rate of bill passage, with bills containing certain content passing at higher rates than others (Adler and Wilkerson 2005; Jones 2002). Specifically, evidence suggests that bills addressing both traditionally defined women's issues and women's equality issues tend to gain approval and passage at lower rates when compared with bills addressing other issue areas (Saint-Germain 1989; Volden et al. 2013b). In Argentina, Htun et al. (2013) find that while more women in the Chamber has led to an increase in women's rights bills, this increase in women's issue bill proposals has led to a decrease in their passage rates. Thus, bills concerning areas that address women's issues may lead to lower levels of bill approval. Additional literature suggests that gender affects the issue areas and the content of the bills men and women propose in a systematic way with men and women exhibiting different patterns in bill sponsorship. These differences are observed in the Argentine context with women proposing more women's issue

bills concerning family and children (Htun et al 2013; Jones 1997, Schwindt-Bayer 2006, 2010). Thus, I argue that if certain bill issue areas, like women's issue bills, are approved at lower rates, and if women are systematically more likely to introduce bills containing women's issue content, then this explains why female legislators have lower rates of bill approval. Accordingly, gender affects the issue areas of the bills legislators introduce with women introducing more women's issue bills and these issue areas also affect bill approval rates. For these reasons, bill content is the third pathway through which gender indirectly affects bill approval.

From this theoretical model, I expect that there should be no direct effect of gender on legislative effectiveness. Specifically, I do not expect that women should be affected in their ability to legislate effectively by sole virtue of their gender. Instead, I expect that the effect of gender on legislative effectiveness should operate indirectly and negatively through these institutional positions. In this respect, gender should disadvantage women's legislative ability only because gender has an effect on the positions women receive within the legislature, which in turn should have consequences for their legislative effectiveness. Figure 1 summarizes the theoretical model and the hypothesized pathways between gender, leadership positioning, prestigious committee assignment, and the sponsorship of women's issue bills.

Figure 1: Expected Indirect Effect of Gender on Bill Approval

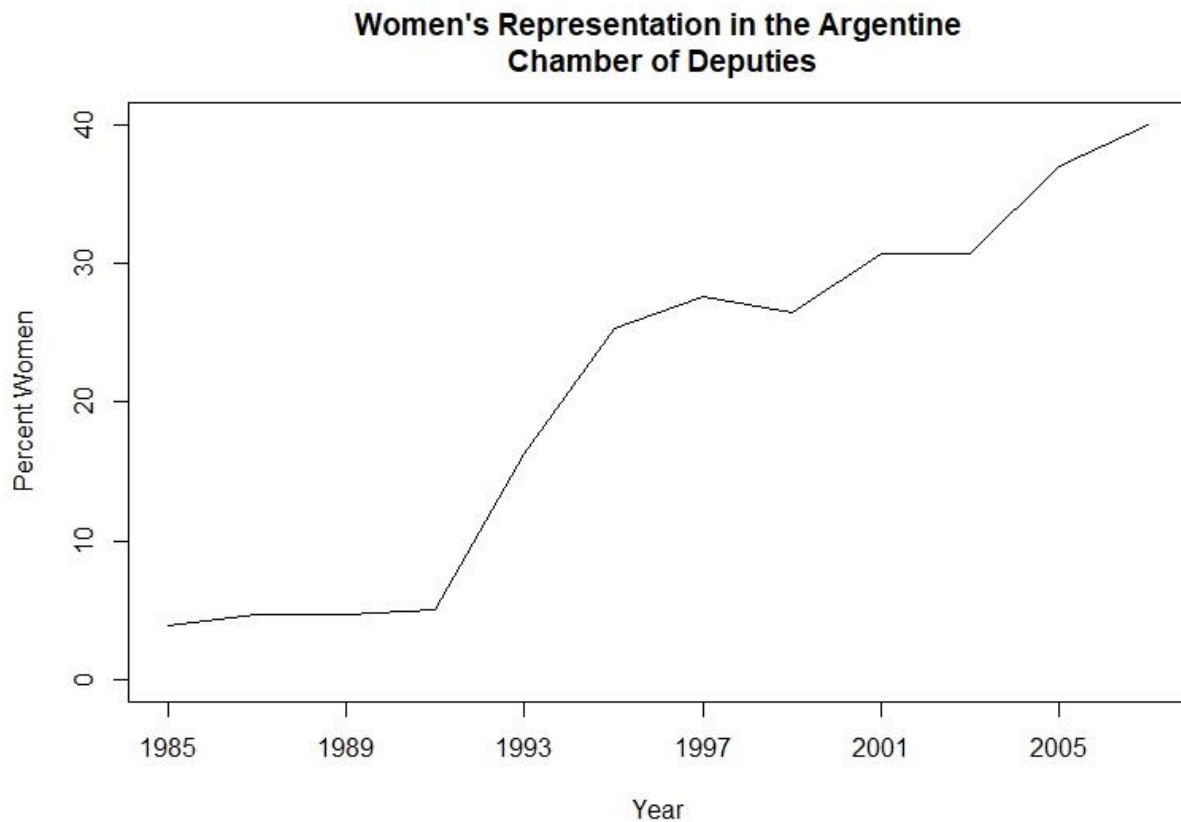


Why Argentina?

I focus specifically on the Chamber of Deputies because of the variation in women's representation over time. Argentina became the first country to adopt a national legislative gender quota in 1993 (IDEA). Argentina's quota adoption was largely successful, witnessing a steady increase in women's representation within the Chamber of Deputies as this electoral quota applies strictly to the Chamber (IDEA). Being the first country to adopt such a quota has meant that women have held positions in substantial numbers over a long period within the Chamber. Examining the Argentine Chamber of Deputies prior to and after the implementation of the gender quota allows for the examination of this research question in environments with varied levels of women's representation ranging from well below 10% to near 40% over an extended period (IPU 2018). This provides a robust test of a research question which investigates how

gender affects legislative effectiveness. Figure 2 provides a visualization of the varied levels of women's representation in the Argentine Chamber of Deputies over the period covered by the data. While the Senate has exhibited similarly high levels of women's representation, this has only been the case after the institution of direct elections for the Senate in 2001. Focusing on the Chamber of Deputies allows for a greater overlap of these patterns of women's representation with the years in the dataset used (1983-2007).

Figure 2: Women's Representation in the Argentine Chamber of Deputies (1983-2007)



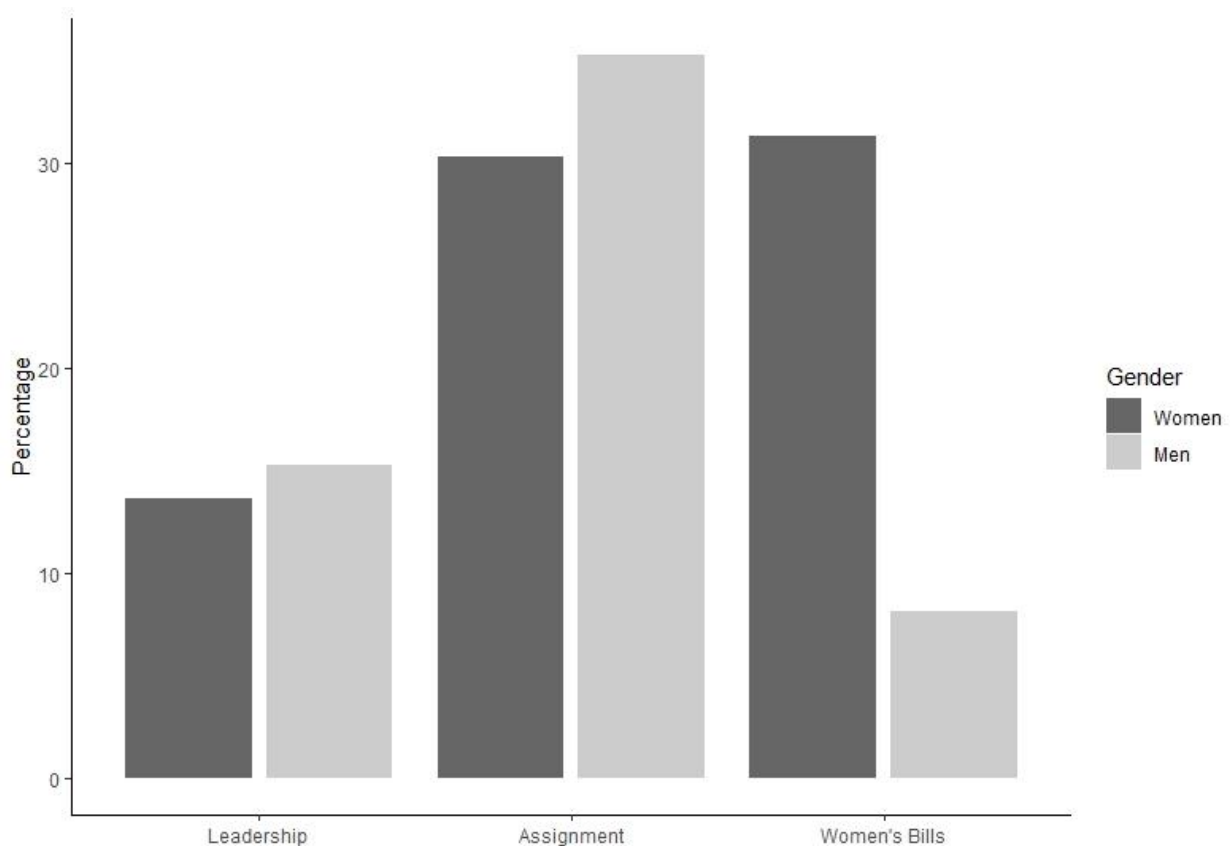
In addition to substantial women's representation over time, Argentina is an appropriate legislative setting to study the effects of women's marginalization within the legislature. This is because the formal and informal rules of the Chamber, in practice, result in the relationships

theorized above, where women lack access to committee leadership posts, assignment to prestigious committees, and tend to introduce more women's issue bills than men. In the Argentine Chamber, committee chairs exercise a considerable influence over whether the bill will move out of the committee and advance to a floor vote or whether it will be tabled (Barnes 2016; Alemán and Calvo 2008; Jones 2002; Schwindt-Bayer 2010). For this reasons, committee leaders are key legislative gatekeepers in the Chamber. Additionally, certain committee assignments in the Argentine Chamber are considered more prestigious than others because of the influence these committees carry (Barnes 2016; Heath et al. 2005). In addition to influence, these prestigious committee assignments are also accompanied by additional legislative resources (Barnes 2016; Jones 2002). Not only do these represent key positions of institutional power, but they are also positions that are typically male dominated. In the Argentine Chamber, access to committee leadership positions and assignment to prestigious committees is controlled by the party which traditionally distributes these positions to male legislators (Barnes 2016; Heath et al. 2005; Schwindt-Bayer 2010). Because of the institutional power these positions carry in the Argentine context and because these positions are male dominated, the Argentine Chamber provides an ideal case for examining how these gendered differences influence legislative effectiveness.

Figure 3 displays the rates at which men and women occupy each of the three institutional positions in the Chamber (1983-2007). Women have a slightly lower rate of holding committee leadership positions compared to men. Although the overall rates of holding committee leadership positions are less stark, this trend varies over time. Specifically, women's rates of leadership occupation tend to be more equitable in the earlier chamber sessions and this diverges at the introduction of the national quota in 1993, where women's rates of leadership positioning plummet. This indicates potential backlash that political newcomers tend to face,

which results in their marginalization. Men tend to hold higher prestigious committee assignments at higher rates, illustrating additional marginalization. Finally, women introduce women's issue bills at an overwhelmingly higher rate than their male colleagues do. More women have sponsored at least one women's issue bill when compared to men.

Figure 3: Rates of Men and Women across Institutional Positions (1983-2007)



I expect that the results and findings from this study should generalize to other legislative settings where women are marginalized from receiving key institutional positions of power and where this marginalization might pose consequences for their ability to legislate effectively. In contexts that differ across factors like legislative norms and rules, electoral rules, and candidate selection processes, these findings may not hold. For example in the U.S., candidate selection

and electoral procedures lead to the selection of especially effective female legislators across several legislative activities, including bill passage (Anzia and Berry 2011; Bratton 2005; Lazarus and Steigerwalt 2018). Women in the U.S. context might also be more effective at legislating because they are not facing the same marginalization within the legislature where they are just as likely to receive leadership posts as men (Bratton 2005). These key differences in context might make female legislators in the U.S. more effective and this example illustrates how differences in legislative settings may lead to different legislative outcomes for women. For this reason I expect my findings to generalize only to legislative settings similar to Argentina's where women face marginalization in their access to key legislative positions of power.

Data

To test my hypothesis, I use Calvo and Sagarzazu's (2014) dataset on *Proyectos de Ley* bill proposals in the Argentine Chamber of Deputies from 1983-2007.¹ The data are multilevel in structure because bills are nested within legislators nested with in congressional mandates. The unit of analysis is conducted at the level of a legislator's bill and examines the probability that a legislator's bill is approved in the Chamber. The dependent variable measures the approval of a legislator's bill in the Chamber which is coded as one for bills that receive legislative approval and zero for those that do not. Because legislative effectiveness should measure a legislator's influence over their own bills, I measure this as chamber approval and not whether a bill introduced becomes a law. This is because measuring legislative effectiveness as whether a bill

¹ Legislators in the Argentine Chamber of Deputies can introduce three types of bills: *Proyectos de Ley*, *Resoluciones*, and *Declaraciones*. While *Proyectos de Ley* have the potential to become law, *Resoluciones* and *Declaraciones* are more symbolic in nature and are excluded from the analysis. Focusing on *Proyectos de Ley* bills aligns with the research question of this project on examining legislative effectiveness and bills that have the potential to become law. It is also in line with previous studies conducted in Argentina which limit analysis to *Proyectos de Ley* bills (Barnes 2016; Schwindt-Bayer 2010). For similar reasons, this study is limited to *Proyectos de Ley* bills introduced by legislators and excludes bills introduced by the president.

is enacted into law would involve looking at Senate approval in a bicameral system and this is beyond a given legislator's control.

The main independent variable of interest is the gender of the legislator who is the lead sponsor of a bill and this is coded according to that legislator's first name.² Women are coded as one and men are coded as zero. In Argentina, the legislative process distinguishes the lead sponsor as the legislator who drafts the bill from additional co-sponsors who subsequently sign onto the bill. Therefore the first sponsor on the bill is considered the primary author of the bill and this lead sponsor designation is substantively important in this context. For this reason, the empirical analysis focuses on the information and characteristics of the lead sponsor.

The three mediators of interest are committee leadership, committee assignment, and bill content. Given that my theoretical argument concerns the positions that legislators hold in the chamber and the types of bills they introduce, these mediators are measured both at the legislator level (ie: committee leadership and committee assignment) and at the bill level (ie: bill content). Because the mediators occur at the level of the legislator and at the bill level, the unit of analysis must occur at the bill level. The committee leadership mediator is coded as one if the legislator initiating the bill was a committee chair and zero otherwise. Committee assignment indicates membership on one of the top influential committees in the Chamber (Budget, General Legislation, Constitutional Affairs, and Agriculture).³ Legislators assigned to one of these four top committees are coded as one while those not assigned to one of these influential committees are coded as zero. These mediators are measured at the legislator-level to capture the positions that legislators hold within the legislature. Finally, I code the bill content mediator as a one if the

² Descriptive statistics on bill introduction and passage rates by gender are available in the Appendix Table A1.

³ I restrict the definition of influential committees to four top committees: the Budget, Constitutional Affairs, General Legislation and Agricultural committees according to previous coding by country experts (Barnes 2012 and 2016; Heath et al. 2005).

content of the bill addresses women's issues and zero otherwise.⁴ This mediator is measured at the bill level and captures the types of bills legislators introduce.

First, I include a set of post-treatment confounders. I control for the legislative tenure of the legislator initiating a given bill. Previous studies have shown that more senior legislators are more adept at navigating the legislative process and may have a greater probability of passing the bills they initiate (Alemán and Calvo 2008; Bratton 2005; Jeydel and Taylor 2003). In addition, I account for the fact that legislators can initiate multiple bills, which may affect legislative approval. To account for this I control for the total number of bills sponsored by a legislator initiating a particular bill. Women are both more likely to be political newcomers to the legislature, having shorter tenures, and are more likely to introduce more bills than men (Lucardi and Micozzi 2016).

Additionally, I control for the number of co-sponsors a given legislator's bill has, whether more than one party cosponsors a legislator's bill, and the number of committee referrals a legislator's bill receives. According to Barnes (2016) women are both more likely to collaborate on legislation in general and across party lines. Additionally, because the bills women tend to introduce often span multiple issue areas, bills introduced by women might also be more likely to be referred to more committees (Franceschet 2010). All of these factors are expected to increase the likelihood of bill approval (2002). Because both tenure, the number of bills a legislator introduces, number of co-sponsors, multiparty co-sponsorship, and the number of committees a bill is referred to are affected by the treatment, gender, and may affect bill approval, these covariates are considered post-treatment confounders in the modeling strategy.

⁴ For a detailed explanation of the coding process used, see the online Appendix Table 2A.

In addition to these post-treatment confounders, I include several pre-treatment covariates as well. I control for several partisan factors like whether a legislator's bill is introduced during a period of divided government and whether a legislator introducing a bill has a co-partisan in the executive position. Although some of these controls address partisan circumstances which extend beyond the Chamber of Deputies, I take additional precautions by including these controls. I also control for partisan factors within the Chamber by including whether a legislator initiating a bill belongs to a party possessing a majority of legislative seats in the Chamber. Bills initiated by a legislator in the majority party will stand a better chance of gaining Chamber approval (Jones 2002). All of these partisan factors have the potential to influence bill approval in the chamber which is why they are included in the model.

Controls at the bill level provide additional justification for examining this question at the level of a legislator's bill. In addition to the post-treatment bill-level covariates mentioned above (ie: number of co-sponsors, multiparty co-sponsorship, and number of committee referrals), I control for whether the lead sponsor on a particular legislator's bill is a member of the committee considering the bill which should also increase the likelihood of bill approval (Jones 2002). Conducting this analysis at the legislator level inhibits including these important bill level controls that may affect the probability of a bill gaining chamber approval. Finally, I include a binary variable to indicate whether a legislator proposes a bill prior and subsequent to the implementation of the national gender quota legislation for elections to the Chamber of Deputies.

Causal Mediation Analysis

Causal mediation analysis answers the main empirical question that motivates this paper: what is the direct and indirect effect of gender on legislative effectiveness? According to the

theoretical section, I propose that the effect of gender on legislative effectiveness passes through three binary institutional positioning variables that lie along the causal pathway: committee leadership, committee assignment, and bill content. Causal mediation provides estimates of the direct effect of gender on legislative effectiveness as well as its indirect effect through all three mediators (Hicks and Tingley 2012; Imai et al. 2010a; Imai et al. 2010b; Imai et al. 2011; Imai and Yamamoto 2013; Pearl 2001; VanderWeele 2015). The direct effect of gender is identified by holding the causal mediators, or institutional differences, constant. The indirect effect is identified by allowing the mediators to vary according to gender, holding the direct effect of gender constant. Including committee leadership, committee assignment, and bill content as mediators avoids potential post-treatment bias that would result from simply conditioning on these post-treatment mediators (Acharya et al. 2016; Elwert and Winship 2014; Montgomery et al. 2016).

To perform causal mediation analysis in practice, two sets of models are estimated.⁵ The first set of models estimates the effect of gender on the individual mediators, with each mediator acting as a dependent variable at this stage. This produces three models that predict the effect of gender on committee leadership, committee assignment, and bill content, respectively. In the second stage, gender and the three mediators are included together in a model that predicts the outcome, bill approval. This is because the conventional approach for modeling multiple, related mediated pathways requires considering the mediators jointly as a vector in the outcome equation instead of independently from each other to avoid violating the sequential ignorability

⁵ I use the `gmediate` package in R to estimate the causal mediation analysis. This package allows for the inclusion of multiple mediators in the outcome equation and allows for these pathways to be modeled non-linearly, accommodating binary mediators and outcome variables. It also allows for clustering standard errors.

assumption that must hold for mediation analysis (Imai et al. 2010a; Imai et al. 2010b; Imai et al. 2011; Imai and Yamamoto 2013; VanderWeele 2015).⁶

Thus, these two sets of models provide the indirect effect of gender through each mediator which takes into account the effect of gender on a particular mediator and how that mediator affects the dependent variable. Additionally, these models estimate the direct effect of gender. Because the analysis is conducted using two sets of models, the output also produces path effects that show the effect of gender on each of the three mediators as well as the effect of each of the mediators on bill approval. I model each of these relationships with a logit because the outcome variables for each set of models are binary (ie: each of the mediators and bill approval). In the first set of models, I include all of the pre-treatment covariates mentioned above.⁷ In the second modeling stage, I include all of the pre-treatment covariates as well as

⁶ See Appendix 1 for a detailed description of the sequential ignorability assumption under the condition of multiple mediators. Following Robins (2003), I make an additional assumption that allows me to consider these mediators jointly without assuming independence between the mediators: the no interaction assumption. Specifically, this assumption requires that the treatment does not interact with the mediators (Imai and Yamamoto 2013). Theoretically, I do not expect that the effect of gender on bill approval has an interactive effect with the three mediators (ie: leadership, committee assignment, and bill content). Specifically, I do not expect that the indirect effect of gender on bill approval that passes through each mediator should be different depending on mediator levels. Instead the effect of gender should be consistent across mediator levels.

⁷ Pre-treatment covariates include divided government, co-partisan in the executive, majority party, national quota, and whether the lead sponsor is on the committee considering the bill.

additional post-treatment covariates mentioned above.⁸ Additionally, I account for dependence in the data of the data by clustering standard errors at the legislator level.⁹

Findings on the Direct and Indirect Effect of Gender

Figure 4 reports the results from the two-stage mediation analysis.¹⁰ This figure reports the path effects between gender, the mediator, and the dependent variable located on the lines that represent these respective pathways and the 95% confidence intervals are in parentheses.¹¹ These coefficients, for example, represent the effect that gender has on the probability of holding a leadership position and then, the effect that holding a leadership position has on the probability of bill approval. The main results presented in Figure 4 are the direct effect of gender on bill approval as well as the mediation effects of gender that pass through committee leadership,

⁸ Following conventional approaches to causal mediation analysis, I include pre-treatment covariates in the models to predict the mediator and I include these same pre-treatment covariates along with post-treatment confounders in the outcome equation (Imai et al. 2010a; Imai et al. 2010b; Imai et al. 2011; Imai and Yamamoto 2013). The no interaction assumption from the Robins (2003) framework permits conditioning on post-treatment covariates while still upholding the sequential ignorability assumption. Following the same logic for including multiple, related, post-treatment mediators in the outcome equation, this practice avoids violating the sequential ignorability assumption. Without the no interaction assumption, post-treatment confounders must be treated as mediators or dropped entirely instead of conditioned on. In the Appendix Figure A1 and Figure A2, I relax the no interaction assumption and model the post-treatment confounders as mediators as well as exclude them entirely from the analysis and the results are robust (Appendix Figure A3). Post-treatment confounders are tenure, total number of bills introduced, number of co-sponsors on a bill, whether co-sponsors are from more than one party, and the number of committee referrals a bill receives.

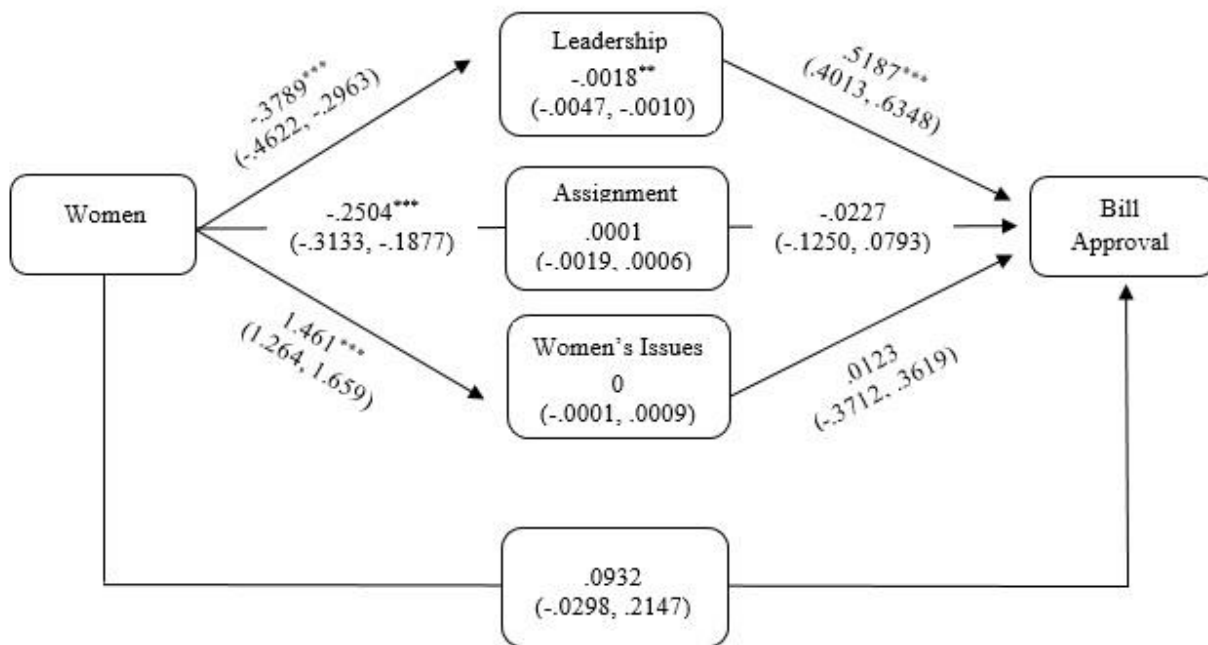
⁹ I include an additional mediation model in the Appendix Figure A4 that clusters standard errors at the legislator-mandate level.

¹⁰ The `gmediate` package is flexible enough to allow for two levels of mediators: first and second order mediators. Package limitations require that both stages are modeled. For this reason, I model bill content as a second order mediator. Thus, the model provides estimates for causal pathways between the first stage mediators (ie: committee leadership and committee assignment) and the second stage mediator (ie: bill content). However, the estimated effect of gender that passes from the first stage mediators to the second stage mediators is estimated to be zero and statistically insignificant (see the Appendix Table A3 for these path effects). This means that the estimate for women's issue bills presented in Figure 4 represents the entire indirect effect of gender on women's bills because none of this effect is filtered through the first order mediators (ie: committee leadership and committee assignment). Therefore, the estimate on women's issue bills can be treated as a first stage mediator since these intermediate pathways are non-existent. Figure 4 presents a simplified diagram of these relationships.

¹¹ Estimates from the full mediator and outcome models for all coefficients included can be found in the Appendix Table A4.

committee assignment, and bill content.¹² The coefficients for the direct effect and the mediation effects are reported in their respective, labeled boxes and the confidence intervals are in parentheses. Examining the coefficient in the box labeled gender, the direct effect of gender on bill approval is not statistically significant following my theoretical expectations. Based on this finding, we can conclude that women are not disadvantaged in their ability to gain approval for their bills solely as a result of their status as women. Women by virtue of being women are not less likely to gain approval for their bills when compared with their male peers.

Figure 4: Casual Mediation Direct and Indirect Effects of Gender



*Confidence intervals are in parentheses

¹² These estimates are reported for $\rho = 0$, where ρ is a sensitivity parameter. The estimates are robust to different levels of the sensitivity parameter indicating that the results are robust to various degrees of violations of the sequential ignorability assumption. See the Appendix Table A5 for full sensitivity analysis of the indirect estimates to other levels of ρ .

However, Figure 4 indicates that women may face indirect disadvantages as a result of their gender. Specifically, the negative coefficient on the pathway between gender and committee leadership indicates that women are less likely to receive committee leadership positions than male legislators. The path effect between committee leadership and bill approval, consequently, indicates that holding a committee leadership position is positively associated with bill approval. Taken together, the combined negative coefficient for the indirect effect of committee leadership indicates that the marginalization that women face in committee leadership positions has a negative effect on women's ability to gain legislative approval for their bills. Put differently, gender has a negative effect on women's legislative effectiveness indirectly through their lack of access to committee leadership positions. Following my theoretical expectations, women are negatively affected in their ability to legislate effectively as a result of the positions they receive within the legislature.

The indirect effects of committee assignment and bill content are not statistically significant, indicating that gender does not have an indirect effect through these mediators. The path effects between these mediators show that women are less likely to receive prestigious committee assignments and are also more likely to introduce women's issue bills as expected. However, the path effects between these mediators and bill approval indicate that prestigious committee assignments and the introduction of women's issue bills do not have an effect on bill approval. Because of this, the combined indirect effects of committee assignment and bill content are not statistically significant. Thus, even though women are less likely to receive prestigious committee assignments and are more inclined to introduce women's issue bills, these factors do not seem to have any adverse effects on their ability to pass bills through the Chamber.

While women are disadvantaged in their legislative effectiveness through their lack of access to committee leadership positions, the same is not true for their assignment to less prestigious committees. Although more prestigious committees, which women tend to be excluded from, are endowed with certain resources that might potentially aid legislators in their work perhaps this advantage is not as significant compared to the advantage committee chairs receive. Specifically, committee leaders in Argentina receive additional resources for their staff salaries and a permanent staff assigned to assist with legislative work. In addition to these tangible resources, committee leaders are also endowed with formal agenda setting powers that give them large discretion over which bills will successfully leave the committee and advance to a floor vote (Barnes 2016; Alemán and Calvo 2008; Jones 2002; Schwindt-Bayer 2010). Perhaps the combination of formal power over the legislative agenda and additional resources gives committee leaders a greater legislative advantage when compared to assignment to prestigious committees which only confers certain legislative resources. This is one potential explanation for the fact that women's lack of access to committee chairmanships adversely affects their ability to legislate effectively while their marginalization in committee assignment has no such effect.

Similarly for bill content, women are not disadvantaged in their ability to pass bills despite introducing more bills to promote women's interests. Surprisingly, the path effects between women's issue bills and bill approval demonstrate that bills addressing women's issues are not less likely to gain chamber approval. This finding is counterintuitive in light of previous findings, specifically from the Argentine Chamber, which demonstrate that women's issue bills are less likely to gain chamber approval (Htun et al. 2013). Although these results are similar to the findings for committee assignment, the null effect for bill content is more surprising and unexpected. Taken together these findings indicate that although women tend to face

marginalization in their access to committee leadership positions, assignment to prestigious committees, and tend to introduce more women's issue bills, it is only their lack of access to committee chairmanships that has negative consequences for their effectiveness in the legislature. This demonstrates that gender does have an adverse indirect effect on women's ability to legislate and this negative effect is largely the result of not receiving key committee leadership posts.

This finding is important because it provides a first insight into the complex and nuanced ways in which gender affects legislative outcomes within legislatures structured similarly to Argentina's. In legislatures where women face marginalization in their access to prominent positions within the legislature, it is their lack of access to committee leadership positions that poses the greatest threat to their ability to navigate the legislature effectively. Even if women are marginalized in their access to influential committee assignments or tend to introduce bills with content less likely to pass, these positions do not have significant consequences for their ability to legislate effectively. Further, women do not face legislative consequences as a result of overt gender discrimination. Instead in these legislative settings, it is key gatekeeping positions like committee chairmanships that matter for bill passage because these positions are endowed with agenda setting powers. Under these circumstances, women's lack of access to these committee leadership positions is the most important way in which gender functions to undermine women's legislative effectiveness. Thus for similarly structured legislatures, women are not disadvantaged by direct marginalization but they do face indirect marginalization through committee leadership access.

Conclusion

A large portion of the literature on women's representation has been devoted to studying the mechanisms by which women are marginalized within institutions. This literature has established that women are systematically disadvantaged from receiving influential institutional positions like committee leadership positions, assignment to powerful committees, and the content of the bills legislators sponsor. However, there is a dearth of literature on whether and how this marginalization has consequences for the legislative output and policy effectiveness of female legislators. Some of the literature that has attempted to examine gender differences in legislative effectiveness highlights that these institutional disadvantages that women face are important for legislative effectiveness. However, the conventional methodological approaches they employ do not correctly model the causally related direct and indirect relationships between gender, institutional positions, and legislative effectiveness. This risks biasing estimates of the direct effects of gender and does not provide a way to estimate the indirect effects.

This paper contributes to our understanding of the role gender plays in the legislature by exploring these direct and indirect relationships. Using causal mediation analysis adapted to analyze multiple mediated pathways I evaluate a more accurate model of these causal direct and indirect relationships. This methodological approach allows this paper to make two contributions. Methodologically, the causal mediation strategy reduces the potential for post-treatment bias in estimating the direct effects of gender while still measuring and including important institutional positioning variables. Substantively, this provides a way to estimate the indirect effects of gender through each institutional mediator on the causal pathway, providing an understanding of how gender operates through different mechanisms.

Although women are not hindered in their ability to gain approval for their bills simply for being women, these findings reveal that their lack of access to important committee

leadership posts within the chamber hinders their ability to legislate successfully. In this respect, women do not face overt gender discrimination but they still face marginalization within the chamber evidenced by their lack of access to committee leadership and prestigious committee posts, as well as in their propensity to introduce women's issue bills. However, it is their lack of access to committee leadership positions with agenda setting power that threatens their legislative effectiveness. This holds for legislative settings where women similarly lack access to key institutional positions and where these positions carry agenda setting powers. In these contexts, lack of access to committee leadership positions is the key mechanism through which women are disadvantaged.

These conclusions indicate that in cases where party leaders distribute committee leadership positions, their focus should be on ensuring that women appear in equitable numbers in these positions. Once women are able to access these leadership positions at the same rates as men, they will no longer face any indirect disadvantages in their ability to legislate effectively. These highlight the complexities of how gender operates in legislative settings through indirect pathways. In addition to the institutional mediators studied in this paper, there may be other pathways in which women are marginalized and these disadvantages women face may have other negative consequences outside of bill approval. However, the scope of this study is limited to the three institutional mediators measured—committee leadership, committee assignment, and bill content—as well as a specific operationalization of legislative success—bill approval. Future work should explore potential ways in which gender may operate through other indirect pathways and how these pathways may have consequences on other legislative outcomes.

This paper sets the theoretical and methodological groundwork for future research to explore potential direct and indirect relationships between gender and other legislative outcomes

that operate through different institutional and non-institutional mediators not investigated in this paper. Implementing causal mediation analysis to analyze multiple mediated pathways provides framework for future research to theoretically model these relationships and accurately estimate new ways in which gender might directly and indirectly affect various legislative outcomes across several potential mediated pathways. Research following this approach will expand our understanding of how gender operates in the legislature by exploring not only the direct effect gender has on certain legislative outcomes, but the causal mechanisms through which gender indirectly affects these outcomes.

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