The Impact of Women Legislators on Trade Policy

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Abstract

The number of female legislators around the world has gone up in recent years. Survey-based individual evidence suggests that women hold more protectionist preferences than males. Should we expect this gender gap to be reflected in higher tariffs as more women are elected into legislatures? We argue that counter to the individual level attitudes recorded in survey responses, female legislators are more likely to value trade openness as an effective means to improve the living conditions of women. Hence, we expect that as more women gain legislative seats, tariff levels towards less developed countries decrease. We examine the relationship between women in national legislatures and tariff policy, using data on tariff rates for developed countries from 1990-2015. We consider alternative explanations and account for confounding variables and endogeneity concerns using an instrumental variable approach. We consistently find that higher levels of female legislators leads to lower tariffs, and that these effects persist in the long run. We also examine US Congressional roll call data on tariff bills, and find that female legislators are more likely to vote for free trade bills. Given that women representation is increasing in government across the world, our results have implications on the future of national trade policy strategies.

The number of female legislators around the world has gone up in recent years. (Mansbridge, 2003; Shea and Christian, 2016). Figure 1a illustrates this trend: the number of women in national legislatures in OECD, non-EU states, has increased steadily from 1990 to 2015. The figure underscores the importance of focusing on women legislators given their increased numbers. The impact of women legislators is reflected in the changing content of legislative activity (Swers, 2002, 2013). Does the content of trade legislation reflect this trend?

There is ample survey evidence suggesting that women favor protectionist trade policies (O'Rourke and Sinnott, 2001; Scheve and Slaughter, 2001; Burgoon and Hiscox, 2008; Mayda and Rodrik, 2005; Mansfield and Mutz, 2009; Ardanaz, Murillo and Pinto, 2013; Mansfield, Mutz and Silver, 2014; Guisinger, 2016). If we take this individual level evidence at face value we would predict a positive correlation between rising female presence in legislatures and protectionism. Figure 1b suggests that this is not the case. While OECD tariffs are generally trending downward, we observe a rate gap between states that have more than the average percentage of women in legislatures (20 percent or above) and those where female share of legislative seats is less than the average.

Figure 1: OECD countries, 1990–2015

(a) Women in Legislatures

(b) Tariffs Rates and Women in Legislatures
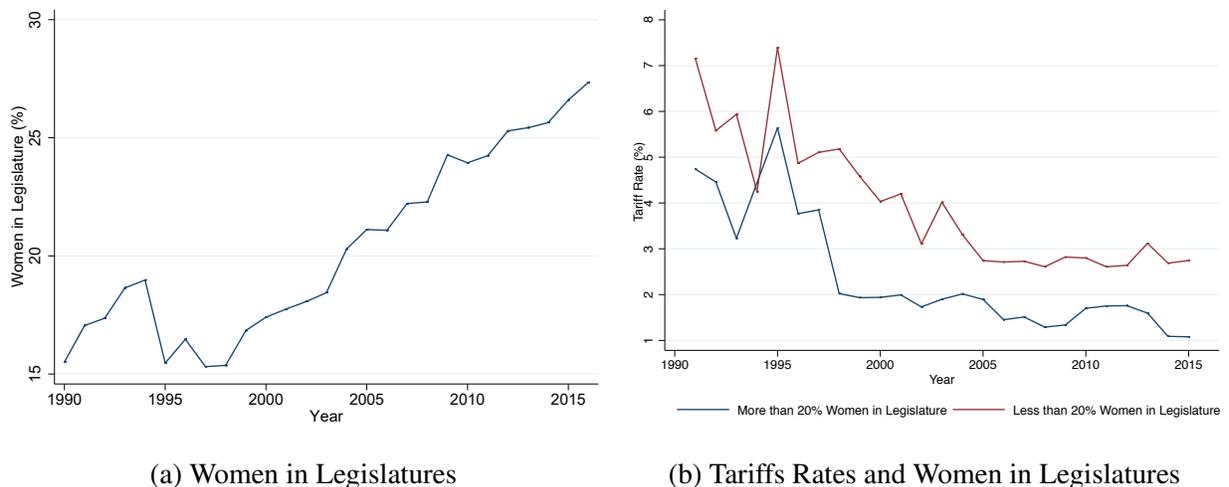
We argue that unlike voters, female legislators are more likely to internalize material and

1

non-material consequences of protectionism at home and abroad when enacting trade policy. Those considerations usually do not arise in surveys questions, which ask respondents about their support for increasing or decreasing trade (Mansfield, Mutz and Silver, 2014). When voting to increase tariffs on foreign goods, female legislators weigh the economic and social effects of their policy choices on other countries more heavily than their male counterparts. Importantly, female legislators are more likely to value trade openness as an effective means to improve the living conditions of women and promote development abroad. Hence, we expect lower tariffs as more women gain legislative seats. The impact should be strongest among legislatures in developed countries, as opening up to trade in these countries will impact economic activity activity in the developing world, which has increasingly engaged global markets.

Figure 1b provides preliminary evidence that variation in descriptive women representation is associated with differences in tariff rates. We develop three more tests of our hypothesis. First, we analyze data on tariff rates for developed countries from 1990-2015 using an autoregressive distributed lag model. Second, we account for confounding variables and endogeneity concerns using an instrumental variable approach. In these first two tests, we consistently find that higher levels of female legislators leads to lower tariffs, and that these effects persist in the long run. Finally, we examine US Congressional roll call data on tariff bills, and find that female legislators are more likely to vote for free trade bills, controlling for partisanship and ideology. Given that women representation is increasing in government across the world, our results have implications on the future of national trade policy strategies.

In the ensuing sections we review the literature on why trade is a gendered issue and on the impact of female representation on policy outcomes, and develop our argument on why we should expect women legislators to support lower trade tariffs. Next, we discuss our empirical strategy and present our findings.

Why Trade is a Gendered Issue

Trade is a gendered issue. Survey based analyses of preferences towards globalization suggest that women are less supportive of free trade than men (O'Rourke and Sinnott, 2001; Scheve and Slaughter, 2001; Burgoon and Hiscox, 2008; Mayda and Rodrik, 2005; Mansfield and Mutz, 2009; Ardanaz, Murillo and Pinto, 2013; Mansfield, Mutz and Silver, 2014; Guisinger, 2016). Some have attributed the gender gap in support to skill endowments, educational attainment and economic knowledge (Burgoon and Hiscox, 2008); mobility constraints (Cooke and Bailey, 1996; Mckinnish, 2008); or preferences towards lower involvement in foreign affairs (Mansfield and Mutz, 2009; Mansfield, Mutz and Silver, 2014). Others have found that women perceive more risk to their own employment as a result of trade openness than men (Guisinger, 2016).

Integration into the global economy through trade not only affects economic activities domestically, but also abroad. For instance, the reduction of tariffs changes the production strategies of both exporting and import competing firms. To remain competitive, firms facing decreased import tariffs usually invest in cost-saving technology and machinery (Juhn, Ujhelyi and Villegas-Sanchez, 2013, 2014). This investment in technology decreases the demand for physically demanding labor, which then makes female labor more substitutable with male labor (Weinberg, 2000). Consistent with this prediction, Black and Brainerd (2004) find that industries in the United States that faced more competition as a result of trade liberalization saw a reduction in the gender wage gap.

Juhn, Ujhelyi and Villegas-Sanchez (2013) further explore this relationship by considering expectations of new technology investments. They find that blue-collar women that worked in export competitive firms experienced higher employment and wages as a result of NAFTA. As a comparison, white-collar women workers did not see the same wage increase, which is expected given that the demand for physically demanding skills should remain unchanged as a result of trade competition (Juhn, Ujhelyi and Villegas-Sanchez, 2013, 2014).

We expect that industries within a country utilize male and female workers in different ways, which usually disproportionately benefits male workers. Increased trade liberalization, however, affects the sizes of these industries, which shift benefits to women workers because of technology investment and changes in demand for female labor. Women employed in exporting firms that compete globally because of reduced tariffs should expect employment and wage benefits. Tariffs reductions abroad should expand production for exporting firms, which increases the general demand for labor. The prospect of increased production should attract investment resulting in new technologies that benefit the relative demand of female workers. Consistent with this, Aguayo-Tellez et al. (2010) find increased employment in female-intensive industries in Mexico after the implementation of NAFTA. Trade liberalization should reduce gender discrimination in hiring because of increased competition (Becker, 2010) and demands from the importing state, resulting in pressure on the exporting state (Krueger, 1996).

Given that reduced trade tariffs can help female wages and employment, we expect improvements in women's overall welfare as a result of trade liberalization. Wages and employment not only increase market and bargaining power for women at the macro-level; at a micro-level they increase women's bargaining position within households. As evidence of this, Aguayo-Tellez et al. (2010) find that household expenditures shift from males preferences (i.e. alcohol and tobacco) to female preferences (i.e. education). This not only signifies that trade can empower women, but that women empowerment can help improve the overall utility of the household and the wellbeing of the country. These positive consequences of openness are likely to escape respondents to public surveys, but should be apparent to legislators, especially those who value peace and prosperity abroad, but favor less interventionism to attain these goals.[1] Hence, we could expect that gender, development, and peace issues surrounding trade relations will increase legislative support for free trade, particularly women legislators.

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[1]The Generalized System of Preferences (GSP) promoted United Nations Conference on Trade and Development (UNCTAD) in the 1960s and adopted by GATT in the 1970s, and the African Growth and Opportunity Ac (AGOA) passed by the US Congress in 2000, are rooted in a similar rationale.

Impact of women legislators on policy outcomes

Previous empirical work has examined the voting patterns of women and men, and have found there is a consistent empirical relationship between the gender of legislators and voting on legislation that affects women issues. Survey research suggests that women officials feel a responsibility to legislate on behalf of women. In 2001, eight-five percent of women in U.S. state legislatures that responded to a survey agreed that "women legislators have a special responsibility to represent women's concerns within the legislature." In addition, two-thirds of the women respondents stated that they worked on legislation directly linked to women issues (Center for American Women and Politics, 2001). This relationship holds for cross-national legislation as well, as more women in legislatures leads to increased development assistance to other states that is thought to help women (Breuning, 2001). Women are also more likely to vote for policies aimed at promoting foreign women's rights (Swers, 2006). Women legislators across parties are more likely to discuss women's interests in floor debates (Pearson and Dancey, 2011), and tend to vote as a block when it comes to these issues (Swers, 1998, 2002; Dolan, 1997).[2]

Women are not a homogenous political group with uniform interests and beliefs. Only a small part of the experiences of women (or any group) "is reflected in the experience of any particular individual" (Weldon, 2002, 232). While women's interests and experiences are diverse, they do share some common experiences of being women. A female legislator will feel responsibility for women's issues even when those issues affect non-constituents, especially when the representative has shared similar experiences with the surrogate constituents (Mansbridge, 2003). This sense of surrogate responsibility is more likely to emerge when women legislators empathize with surrogates in a way that men legislators do not (Shea and Christian, 2016). We argue that gender discrimination in the workforce is such as shared experience. Female legislators, for instance, are likely to experience discrimination from both voters and from their political colleagues, which discourages many capable women from running for office in the first place (Anzia and Berry,

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[2]For more discussion of women legislators' impact in see Dodson (2006) and Carroll (2002).

2011). While men can have empathy for gender discrimination, male legislators are less likely to be politically motivated by this empathy than their female counterparts.

Women legislators and trade policy

As discussed above trade liberalization benefits females within a country that is liberalizing, as well as female workers in partner countries who are employed – or potentially will work – in an industry which expands when a partner country liberalizes. The expansion of trade related activities also results in greater female bargaining power, better educational and social outcomes, and accelerated development (Duflo, 2012). Women legislators are more likely to act as surrogate representatives for women in their constituency and act as transnational surrogate representatives for other women beyond their constituency.[3] Hence, we argue that women legislators will be more supportive of reduced tariffs.

Women legislators are not only more likely to prefer reduced tariffs, we expect that women legislators are effective in legislating on these issues. As a result, we expect that greater female presence in legislative bodies will lead to lower tariffs on trade. We outline three main mechanisms that connect numbers of women legislators to lower tariffs. First, we expect that as more women enter a legislature, they will form strategic coalitions that will grow more influential with increased numbers. Growing strategic women coalitions should not only increase voting influence, but it may sway men's behavior, causing both male and female legislators to pay more attention to trade liberalization. We expect that the probability that men are influenced increases as more women enter office. Some scholars note that the opposite effect can occur; as more women enter office, men legislators will concentrate their efforts to defeat policies that favor women (Childs and Krook, 2009). We suspect that this potential backlash is less likely to happen over trade liberalization because it is not necessarily identified as a women's issue, nor is it a threat to men's dominant

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[3]See Mansbridge (2003); Angevine (2014); Shea and Christian (2016) for a more in-depth discussion on surrogate representation.

6

position in government.

Female legislators' ability to influence their colleagues in legislatures is necessary, given that men have traditionally dominated legislative processes across most countries. If men do not perceive that the politics surrounding tariff reduction are threatening their position of political dominance in governance, then we expect that they will be less likely to oppose these types of policies on the grounds of their relevance to women's issues. Similarly, we expect that male legislators will be more likely to be influenced by women legislators if tariff reduction policies are not framed or perceived as women issues, but rather around broader issues of economic growth and prosperity at home and abroad.

The second reason why we expect women legislators to impact trade policy is that the shared experience of gender discrimination. This will motivate women legislators to mobilize and overcome the constraints placed by their minority status. We expect that identity issues and shared experiences will motivate women legislators to assume the role of critical actors in the legislature.[4] In terms of trade policy, we expect women to be more likely to emerge as critical actors because of the salience of gender discrimination, and the impact of trade on women empowerment and development abroad.

Critical actors on issues surrounding women's employment status do not necessarily have to be women, but they will more likely be women. While men may share the same empathy as women legislators, we expect some divergence on how much men are willing to advocate for trade policies based on gender motivations. More women in legislatures will increase the likelihood that a critical actor emerges. In addition, while critical actors' effect on policy outcomes may be independent of the number of women legislators, we expect that the likelihood that a critical actor emerges is a function of the number of women legislators. In other words, more women legislators increases the domain from which a critical actor may emerge.

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[4]Critical actors on female issues are those "who act individually or collectively to bring about women-friendly policy change." (Childs and Krook, 2009, 127).

Finally, we expect women to be more effective in legislating on women issues. Gender bias in the electoral process prompts only the most talented female candidates to succeed in elections. Thus, the women who do win elections will perform their job better (Anzia and Berry, 2011). This expectation is consistent with research in American Politics that finds that U.S. Congresswomen are more likely to deliver federal spending to their home districts (Anzia and Berry, 2011) and women are more likely to get their sponsored legislation further through the legislative process (Wiseman, Volden and Wittmer, 2013). This is also consistent with research that finds that legislatures with higher proportions of women introduce and pass more bills on women's issues than legislatures with lower proportions of women (Bratton, 2005; Thomas, 1991, 1994). While this empirical evidence comes within the American political context, the gender bias prevalent in many countries' suggests more general empirical implications. Thus, we expect that women in many legislatures are highly effective in advocating on issues that are of interest to women. Also, we expect that if women legislators do not advocate on behalf of other women, it will be less likely than anyone will. This idea is supported by a quote from Republican U.S. representative Marge Roukema:

> "I didn't really want to be stereotyped as the woman legislator... I wanted to deal with things like banking and finance. But I learned very quickly that if the women like me in Congress were not going to attend to some of these family concerns, whether it was for jobs or children, pension equity, or whatever, then they weren't going to be attended to. So I quickly shed those biases that I had and said 'Well nobody else is going to do it; I'm going to do it.' "[5]

Empirical Implications

Women's employment is not a new issue. However, more women in positions of power in government is a relatively new phenomenon. Mendelberg, Karpowitz and Goedert (2014) find that as

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[5]Quoted in Carroll (2002, 55).

more women enter office, they will be more likely to advocate on issues related to women. As a result, women legislators are in a better position to advocate for trade policies that benefit women at home and abroad. We expect that as more women gain power in a country's legislature, that country will be more likely to reduce tariffs.

From this discussion we derive the following hypothesis:

Hypothesis 1: The more women legislators in a state's government increases the likelihood that a state will reduce tariff levels.

A potential challenge to our hypothesis is related to the ability of women in legislative bodies to actually affect policy outcomes. Some scholars suggest that a critical mass of women legislators is needed to observe their legislative impact. This threshold is commonly thought to be thirty-five percent representation, though it varies across studies (Kanter, 1977). We do not expect this critical mass threshold to be relevant for our theoretical expectations for two reasons. First, a critical mass is often expected because women legislators face backlash from their male counterparts. As more women enter office, male officials will fight harder against an agenda that favors women's issues. It is not until women reach a critical threshold that they can affect policy. However, we do not expect men to advocate against tariff protection on the sole grounds that it is a women's issue. Moreover, male legislators may support trade liberalization policies for non-gender related issues, such as advocating for constituents who benefit from openness, or those who internalize the aggregate welfare consequences of free trade. We only expect that women legislators are more likely to advocate for trade liberalization than their male counterparts, all else equal.

The second reason we do not believe that critical mass is the appropriate theoretical model for our paper is that critical mass has little supporting empirical evidence. Childs and Krook (2009) review a host of studies that fail to find a critical mass relationship between women representation and policy outcomes.[6] This lowers our expectation that the correct theoretical relationship between

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[6]See also Childs and Krook (2008) and Celis et al. (2008) for a review of critical mass studies.

women in legislatures and tariff reduction policies is defined by critical mass. Ultimately, we believe that it is an empirical question, which we examine in the next section.

Empirical Analysis

We employ three empirical strategies to test our hypothesis. First, we analyze data on tariff rates using an autoregressive distributed lag model. Second, we use instrumental variable estimation. Finally, we examine US Congressional roll call data on a tariff bill.

To begin, we compile cross-sectional-time-series data on tariff rates and women in legislatures. Our data extends from 1990 to 2015. Our unit of observation is country-year. We limit our cases to Organization for Economic Cooperation and Development (OECD) states for several reasons. First, these states are the most developed states in the world and thus will have active trade with other states. Second, these states tend to be more consolidated democracies, where legislators actually have an impact on policy outcomes. Third, given that developed states often have international development programs, we expect that women legislators in these countries will be more likely to empathize with women's working conditions in less developed countries. We find it less likely that women legislators in less developed countries empathize with women's working status in more developed countries. We also exclude European Union (EU) members from our analysis given that these states negotiate common tariff rates. The appendix lists the country-years included in our analysis.

Despite our limited sample, the possibility remains that unit heterogeneity threatens our inferences. To address this issue we utilize unit-fixed effects to control for time invariant heterogeneity and provide a "within-unit" estimation. We expect that this modeling approach accounts for country differences that may explain both trade policy and the number of women in government.

An additional problem is our dynamic data that varies over time. Up until this point we have

10

not specified our expectations in terms of how women in legislatures affects tariffs. We surmise that women in legislatures should have more long-term consequences as these policies take time to develop and negotiate. Consequently, we focus on long-term effects of women legislators and estimate an autoregessive distributed lag (ADL) model with a lagged dependent variable and lagged covariates.[7] We express the simplified version of the model as:

$$Y_t = {}_0 Y_{t-1} + {}_1 X_{t-1} + {}_i + ''$$

Dependent variable: Tariffs

We examine two tariff measures as our outcome of interest. First, we examine the weighted average of all applied tariffs rates as a percent. Second, we examine the weighted average of most-favored-nation (MFN) tariffs rates as a percentage. Both indicators are from the World Bank's World Development Indicators (WDI) and are consistent with other research on tariffs (Rose, 2004).

We decided to focus on tariffs instead of alternative dimensions of trade liberalization for several reasons. Most importantly, legislatures directly deliberate, debate, and legislate over tariffs. Alternatively, other trade liberalization measures, such as export value as a percentage of GDP, may be more of a function of state's general economic well-being rather than specific legislative policies. In addition, previous research on the connection between trade liberalization and gender employment and wage-gap issues have focused on tariffs as their main explanatory factor. Our modeling strategy is consistent with this research.

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[7]The long temporal scope of our data makes it unlikely that the inclusion of both a lagged dependent variable and unit fixed effects would bias our results (Beck and Katz, 2011). In the appendix, we estimate a general ADL model that includes changes in covariates and find support for our temporal restriction assumptions in the ADL model (De Boef and Keele, 2008).

Independent variable: Women in legislatures

As argued above, trade liberalization appears to benefit women at home and abroad, making these particular issues more salient to women legislators. Hence, more women in legislatures increases the probability that a country will lower tariffs. To measure the percentage of women in state legislatures, we rely on data from WDI (1991, 1997 – 2015) and Paxton, Green and Hughes (2008) to fill in some gaps in the data in years (1990, and 1992–1997).

One implication of critical actors within legislatures is their effect on policy outcomes may be independent of the number of women legislators. This might counter our linear assumption of the relationship between women legislators and tariffs. We, however, do not believe that this would threaten our inferences from our statistical results. If critical actors were the causal driving force between gender and trade policy, we would expect the coefficients of our analysis to be biased downwards. In other words, if critical actors totally negated the importance of representative numbers, we would expect a null result. In that scenario, our test provides a conservative estimation of the effect of *Women in Legislatures*.

Theoretically, we expect that more women legislators in a state's government increases the likelihood that states will lower tariffs. Instead of focusing on women within specific political parties, we expect that gender discrimination issues that women will work together, across party

Other covariates

We include several control variables to attempt rule out possible alternative explanations that may explain both women in legislatures and tariff policies. First, focus on structural economic conditions in a states, including the following economic variables into our empirical models: real log of GDP, real GDP per capita, economic growth, and unemployment rates. Data for these variables are drawn from WDI (World Bank, 2016). These economic variables affect trade conditions and the politics under which tariffs are negotiated. They also may affect the likelihood of women being elected in office.

We also consider institutional and political factors that may influence women legislators' affect on policy. We control for government partisanship. It may be the case that governments of certain idealogy are more likely to have more women and have more liberal trade policies. Cross-sectionally, we observe left-leaning governments are more likely to have women officials and advocate for more trade protection. We use the DPI data (Cruz, Keefer and Scartascini, 2016) to code executives as left or not, and also code the largest legislative party as left or not. In addition, we include a binary control variable to indicate a proportional representation system, which generally lead to more women legislators (Norris, 1997). This variable is also taken from DPI (Cruz, Keefer and Scartascini, 2016).

Finally, we attempt to control for societal or governing attitudes that would make it more (less) likely to elect women into the national legislatures and be more (less) liberal on tariff policies. Specifically, we include a series of women rights variables drawn from Cingranelli, Richards and Clay (2014): a political rights variable, a social rights variable, and an economic rights variable. Summary statistics for the covariates are presented in the appendix.

Results

Table 1 presents our main results. The first three models examine the weighted average of all applied tariffs rates as a percent. Models 4-6 examine the weighted average of most-favored nation (MFN) tariffs rates as a percentage. In model 1, we find that more women legislators decreases the tariff rate. To illustrate the substantive importance of this estimated effect, we plot the predicted tariff levels from this model over *women in legislatures* in Figure 2, keeping all other covariates at their mean value. We observe a dramatic decrease in tariffs.

Model 2 examines the robustness of the results with the inclusion of time fixed-effects. The estimated effect of *women in legislatures* remains the same. Model 3 includes a number of additional controls in an attempt to control for confounding factors, such as partisanship, institutional rules, and general attitudes and societal norms towards women. The inclusion of these variables does reduce our sample given data availability, so we are cautious in comparing coefficients across models. Nevertheless, *women in legislatures* still has a statistically significant negative relationship with tariff rates in model 3, and the result remains substantively large.

Finally, we replicate models 1-3 using the weighted average of most-favored nation tariffs rates as the dependent variable in models 4-6. We observe similar results in these models. The

Table 1: OLS of Women Legislators and Tariffs Rates, 1990 - 2015

	Weighted Mean All Tariff Rates			Weighted Mean MFN Tariff Rates		
	(1)	(2)	(3)	(4)	(5)	(6)
Women in Legislature (%)	-0.230*	-0.235*	-0.474*	-0.132*	-0.112*	-0.166*
	(0.043)	(0.046)	(0.093)	(0.025)	(0.026)	(0.040)
Tariffs$_{t-1}$ (All)	0.297*	0.258*	-0.137			
	(0.049)	(0.055)	(0.106)			
Tariffs$_{t-1}$ (MFN)				0.622*	0.624*	0.455*
				(0.032)	(0.036)	(0.074)
Unemployment	0.152*	0.159*	0.270	0.070*	0.106*	0.133*
	(0.064)	(0.074)	(0.139)	(0.035)	(0.038)	(0.057)
GDP	-2.624	-2.554	9.246	-1.683	-1.335	2.613
	(1.769)	(2.065)	(5.633)	(0.969)	(1.079)	(2.366)
Growth	-0.036	-0.039	-0.146	-0.012	-0.003	-0.054
	(0.040)	(0.051)	(0.104)	(0.022)	(0.028)	(0.044)
GDP per cap	0.095	0.170*	0.072	0.092*	0.139*	-0.004
	(0.060)	(0.072)	(0.145)	(0.034)	(0.038)	(0.061)
Left Executive			-1.591			-0.864
			(1.236)			(0.513)
Left Legislature			1.332			0.993
			(1.245)			(0.518)
PR system			-0.301			0.685
			(2.332)			(0.994)
Women's Econ. Rights			0.201			-0.039
			(0.517)			(0.218)
Women's Polit. Rights			-0.027			0.080
			(0.719)			(0.300)
Women's Social Rights			-0.948			-0.388
			(0.587)			(0.243)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	No	Yes	Yes	No	Yes	Yes
R-Squared	0.52	0.57	0.55	0.83	0.87	0.83
AIC	785	806	438	503	501	237
N	234	234	115	234	234	115
Countries	18	18	16	18	18	16

$*p < 0.05$; ; MFN = Most Favored Nation, All RHS variables are lagged one year. Sample analyzed includes only OECD, non-EU states.

Figure 2: Predicted Tariff Rates, 1990 - 2015
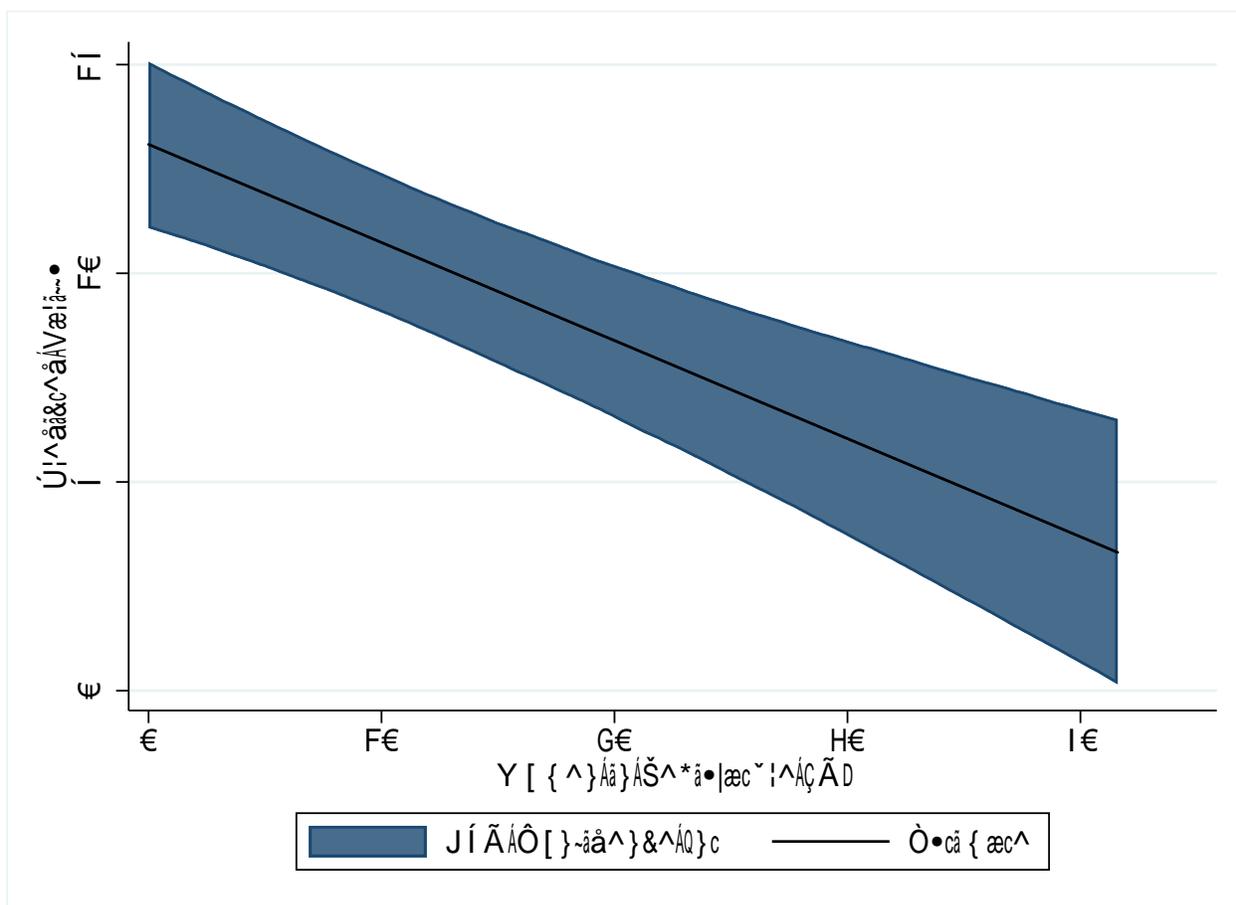
with the working condition of women abroad. As expected, we find null relationship between between women legislators and tariff rates in the non-OECD sample. These results can be found in the replication materials.

The sum of these findings suggest important implications on the future trends of national trade policy strategies. We now turn to an instrumental variable approach to ensure that our inferences are not undermined by endogeneity concerns.

Instrumental Variable Estimation

The analysis above attempted to address confounding factors that may explain both women's descriptive representation and tariff policies. Nevertheless, if an unobservable, time variant confounder is omitted from the above models, then the estimates may be biased. One solution to this endogeneity problem is identifying an instrument that is uncorrelated with the error term (exclusion restriction), has no direct effect on tariffs, and explains the variance in *women in legislatures* (Wooldridge, 2012). We are unaware of any previous, cross-sectional study that has instrumented women's political participation, which is understandable given the difficulty in satisfying the exclusion restriction.

We put forward two plausible instruments: (1) the number of years since the first woman legislator (data from Paxton, Green and Hughes (2008)), and (2) the ratio of female-to-male enrollment in secondary schools, lagged by a generation (data is from World Bank (2016)). We consider each instrument in turn. First, we expect that the longer women have been in official positions in power, the more likely individual voters will view a female running for office as normal occurrence. In addition, the longer women have been in official positions in power, potential female candidates will be more likely view their own prospects for winning an election favorably. Having examples of women in office give female candidates a framework on how to win their own elections. The correlation between years since first woman legislator and women legislators is moderate ($= 0.40$), but weak instrument tests reject the null that years since first woman legislator is a weak instrument.[10] The sample mean for years since first woman legislator is 64 years (median is 28 years), which lessens the chance that the event of having the first women in office a generation or two ago has any direct effect on trade policy in the present.

Models 1 and 2 in Table 2 examines the effect of the instrumented variable, *Women in Legislature* across both tariff dependent variables. We find consistent results with our main results

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[10]The Cragg-Donald Wald F statistical is larger than the rule-of-thumb of ten ($F = 16.593$) and the Anderson canonical correlation LM statistic rejects the null ($\chi^2(1) = 17.15 p \quad val < 0.001$).

in Table 1, though the estimated effect is larger in the IV models.

Table 2: IV Models of Women Legislators and Tariffs Rates, 1990 - 2015

	Years Since First Female Legislator		Ratio of female/male secondary enrollment	
	(1)	(2)	(3)	(4)
Women in Legislature (%)	-0.314	-0.295*	-0.749*	-0.475*
	(0.164)	(0.123)	(0.315)	(0.198)
Tariffs$_{t-1}$ (All)	0.271*		0.131	
	(0.068)		(0.103)	
Tariffs$_{t-1}$ (MFN)		0.537*		0.612*
		(0.072)		(0.125)
Unemployment	0.183*	0.122*	0.504	0.301*
	(0.085)	(0.053)	(0.262)	(0.139)
GDP	-0.888	1.532	9.146	6.443
	(3.699)	(2.581)	(7.410)	(3.928)
Growth	-0.056	-0.054	-0.161	-0.085
	(0.054)	(0.039)	(0.092)	(0.057)
GDP per cap	0.075	0.046	-0.073	-0.044
	(0.069)	(0.049)	(0.144)	(0.079)
Constant	28.395	-43.352	-263.119	-186.247
	(107.239)	(74.321)	(214.863)	(113.021)
R-Squared	0.77	0.94	0.59	0.93
AIC	823	581	662	451
N	234	234	157	157

$*p < 0.05$; ; MFN = Most Favored Nation, All = All states. RHS variables are lagged one year. Sample analyzed includes only OECD, non-EU states. Unit-fixed effects included

Next, we consider an instrument that considers the consequences of household decisions on education. Specifically, we look at the ratio of females enrolled in secondary school (as a percent of all female eligible to attend school) to males enrolled in secondary school (as a percent of all males eligible to attend school). This measure captures the household's investment in female household members and also a reflection of the household's gender socialization processes. We lagged this variable by a generation (twenty-five years) as this household investment and socialization process should affect womens' decisions to run for office later in their life. This lag also make it difficult connect the ratio of female-to-male enrollment to trade and tariff policies a generation later. The correlation between ratio measure and women legislators is moderate (= 0.44); additional tests

indicate a strong and valid instrument.[11]

Models 3 and 4 in Table 2 examines the effect of the instrumented variable, *Women in Legislature* across both tariff dependent variables using the ratio enrollment measure as the IV. We find consistent results with our main results in Table 1 again, with larger estimated effects in the IV models.

Roll Call Analysis

The above results consistently show that more female legislators leads to lower tariffs, and that these effects persist in the long run. This section examines whether female legislators are more likely to vote for trade liberalization. Specifically, we collect data on preferential trade initiatives (such as Andean Trade Preference Act) that assist countries in developing world through duty-free trade relationship with the US.

This empirical approach has the advantage of examining individual legislators' behavior in relations to trade policy. We analyze roll call data from the 93rd to the 114th US Congresses in the years 1990 - 2015. The unit of analysis is a legislator's vote.

The dependent variable is binary, with each legislator's vote coded as one when a legislator votes in favor of a bill and coded zero otherwise.[12] Our main explanatory variable is the gender of the individual legislator, where we code female legislators as one and males as zero. We control for potential confounders including partisanship and ideology. Legislators are coded as one if they are a Democrat and zero otherwise. Ideology is measured using the DW nominate score, with higher values indicating more conservative legislators obtained from Carroll et al. (2011). Model 1 in Table 3 estimates a logistic regression with fixed effects for each vote, with standard errors clustered on Congressional session to control for any unaccounted heterogeneity across bills. We find that female US legislators are statistically more likely to vote for free trade legislation than

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[11]The Cragg-Donald Wald F-statistic is larger than the rule-of-thumb of ten ($F = 13.515$) and the Anderson canonical correlation LM statistic rejects the null ($\chi^2(1) = 13.95$; p-value< 0.001).

[12]Data on roll-call votes were from www.voteview.com

their male counterparts. Substantively, female legislators are 17 percent more likely to vote in favor of this legislation.

Table 3: US Congressional Roll Call Votes on Free Trade Bills, 1990 - 2015

	(1)	(2)
Female Legislator	0.162*	0.184*
	(0.045)	(0.055)
Democrat	-0.863	-0.921*
	(0.512)	(0.330)
DW Nominate	0.717	0.971*
	(1.032)	(0.412)
High Skill		1.128
		(2.274)
Unemployment		1.634
		(5.393)
Log Likelihood	-4861	-1620
AIC	9733	3248
N	9791	3668

$*p < 0.05$; Roll call fixed effects. Standard errors clustered on Congressional session.

However, given some citizen's concerns regarding the free trade agreements (Hiscox 2002; Milner and Tingley 2011), legislators vote on such bills might also reflect the characteristics of their constituency. Therefore, Model 2 include control variables to account for the economic characteristics of US legislators' districts or states. We includes measures for the percent of high skilled labor and employment rate.[13] These added covariates do not substantively change our inferences, as female legislators are 20 percent more likely to vote for free trade legislation.[14]

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[13]This values were obtained from Milner and Tingley (2011) replication data. Including these variables limit the sample to 1990 - 2002, and decreases sample size.

[14]We also examine robustness of the findings accounting for confounders, such as contributions from labor PACs and corporate PACs, median household income at the district level as well as percentage of foreign population of the district. The main inferences do not change. These robustness tests can be found in the replication materials.

Conclusion

There is evidence that trade openness is an effective tool for improving the living conditions and bargaining power of women in sectors engaging global markets. There is also evidence that empowering women in the household and the polity has positive development spillovers. The same individual level evidence suggests that while less supportive of openness and more reluctant to endorse military and economic intervention abroad, women are more likely to support global peace and prosperity.

We argue that despite the gender gap in individual support for trade, women legislators are less protectionist than their male counterparts. When voting on trade, female policymakers are more likely to weigh the economic and social effects of their policy choices at home and abroad. Hence, we expect that as more women gain legislative seats tariffs will decrease. The trend will be more apparent in developed countries, as opening up to trade will result in higher exports from the developing world.

Using multiple modeling strategies - including data on tariff policy for developed countries over time, instrumental variable estimations, and roll call data - we find evidence that a higher proportion of female legislators is associated with lower import tariffs. Given the trend in rising female participation in government across the world, our findings have implications on the future of national trade policy strategies.

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Supplemental Appendix:

The Impact of Women Legislators on Trade Policy

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Contents

A   List of Countries in ADL Model Sample

Table 1: Sample of OCED, Non-EU Countries, 1990 - 2015

Country	Years
United States	1992 - 2015
Canada	1995 - 2015
Mexico	1998 - 2015
Switzerland	1996 - 2015
Poland	1997 - 2003
Austria	1992 - 1994
Hungary	1996 - 2003
Czech Republic	1996 - 2003
Slovak Republic	2001 - 2003
Finland	1992-1994
Sweden	1992-1994
Norway	1996 - 2015
Iceland	2001 - 2015
Turkey	2000 - 2015
South Korea	2000 - 2015
Japan	1992 - 2015
Australia	1997 - 2015
New Zealand	1993 - 2015

B Summary Statistics

Table 2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Tariffs (All)	3.234	3.023	0	18.56	272
Tariffs (MFN)	4.473	3.375	0	19.87	272
Women in Legislature (%)	20.736	11.111	1.3	47.6	327
Unemployment	6.086	3.226	1.7	19.9	293
GDP	27.027	1.757	22.744	30.44	316
Growth	2.576	2.669	-5.914	10.731	316
GDP per cap	37.419	21.931	6.424	91.594	316
Left Executive	0.33	0.471	0	1	282
Left Legislature	0.334	0.473	0	1	308
PR system	0.821	0.384	0	1	308
Women's Econ. Rights	1.96	0.633	1	3	272
Women's Polit. Rights	2.228	0.508	1	3	272
Women's Social Rights	2.135	0.794	0	3	200

C Error Correction Model

Table 3: ECM Women Legislators and Tariffs Rates, 1990 - 2015

	(1)	(2)
Long Run Multiplier	-0.325*	-0.309 *
Women in Legislature	(0.063)	(0.067)
Women in Legislature$_{t-1}$	-0.234*	-0.120*
	(0.047)	(0.030)
Δ Women in Legislature (%)	0.014	-0.022
	(0.055)	(0.031)
Unemployment$_{t-1}$	0.095	0.076*
	(0.052)	(0.032)
Δ Unemployment	-0.198	-0.150*
	(0.134)	(0.074)
GDP$_{t-1}$	-2.202	-1.227
	(1.861)	(1.111)
Δ GDP	37.834	-111.298
	(153.490)	(85.682)
GDP per cap$_{t-1}$	0.056	0.131*
	(0.065)	(0.042)
Δ GDP per cap	-0.122	0.051
	(0.195)	(0.115)
Growth$_{t-1}$	-0.490	1.017
	(1.512)	(0.845)
Δ Growth	-0.432	1.048
	(1.508)	(0.844)
Tariffs$_{t-1}$ (All)	-0.720*	
	(0.049)	
Tariffs$_{t-1}$ (MFN)		-0.387*
		(0.038)
R-Squared	0.52	0.57
AIC	829	525
N	248	248
Countries	19	19

$*p < 0.05$; ; MFN = Most Favored Nation, All = All states. Sample analyzed includes only OECD, non-EU states. Unit and year fixed effects included. F-Test of Δ coefficients fails to reject the null hypothesis that these are jointly zero.