

# Women as Policy Makers and Donors: Female Legislators and Foreign Aid

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July 2015

## **Abstract:**

This paper investigates whether the gender composition of national legislatures in donor countries impacts the level, composition, and pattern of foreign aid. We provide evidence that the election of female legislators leads countries to increase aid both in total and as a percentage of GDP. Consistent with existing research examining domestic expenditures, we find that the empowerment of women in national legislatures is associated with a reallocation of aid flows in favor of education and health-related projects. These increased flows occur predominately through bilateral aid and reflect a redistribution of aid towards developing countries.

JEL Codes: F35, J16, D70

Keywords: foreign aid; female political representation; gender preferences

Acknowledgements: Jordan Naylor provided valuable research assistance. We would also like to thank Priti Kalsi, Fidan Ana Kurtulus, Edward Miguel, Eric Werker, and Xiaobo Zhang as well as seminar participants at the 2013 NEUDC meetings, the 2014 Public Choice meetings, and the 2014 AEA CSWEP meetings for helpful comments and discussions. Any errors are our own.

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## 1. Introduction

A recent strand of economic research has documented that individual politicians can play a significant role in shaping country level outcomes.<sup>1</sup> Many of these studies robustly associate individual characteristics such as educational status, ethnicity, and gender with particular policy outcomes.<sup>2</sup> In the case of gender, the empowerment of women in governance has been associated with lower levels of corruption and higher levels of spending, both in total and on public goods in particular (Lott and Kenny, 1999; Abrams and Settle, 1999; Swamy *et al.*, 2001; Dollar *et al.*, 2001; Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Aidt and Dallal, 2008; Svaleryd, 2009; Bertocchi, 2011; Brollo and Troiano, 2012).<sup>3</sup>

This paper's primary contribution is to advance the causal analysis of impacts of improvements in women's political empowerment by examining how the election of female legislators impacts another sphere of government policy, foreign aid.<sup>4</sup> Using donor-level panel data on aid flows for the period 1965-2011, we find a robust, positive association between the election of women to national legislatures and levels of foreign aid commitments, both in total and as a percentage of GDP. In addition to larger flows, the inclusion of greater shares of women in governance is associated with changes in the composition of aid flows by intended purpose, and the pattern of aid flows by recipient region. Specifically, we document higher levels of aid earmarked for health, education, and social capital projects as well as reallocations of aid in favor of less developed countries (LDCs). Our analysis suggests that it is the election of women, and not confounding factors, which directly influences these outcomes and we provide multiple pieces of evidence consistent with this hypothesis.

The principal obstacle to examining the causal effect of the election of women to political offices on aid flows is that electoral outcomes are nonrandom and potentially correlated with preferences of the electorate concerning both the level and composition of aid. In our benchmark specification, we limit potential sources of endogeneity by including both time and country fixed effects and controlling for an array of commonly studied time-variant determinants of aid. Our fixed effects strategy restricts identification to that arising from within donor country changes in the

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<sup>1</sup> For instance, Jones and Olken (2005) document a causal impact of national leaders on economic growth, and Dreher and Jensen (2013) find that leadership change impacts voting affinity with the U.S. in the United Nations.

<sup>2</sup> Besley *et al.* (2011) conclude that educated leaders are associated with stronger economic growth; Pande (2003) demonstrates that reservation of seats for lower castes alters the pattern of government transfers in India; while Fearon *et al.* (2007) show that countries with leaders who are ethnic minorities are no more likely to undergo civil conflicts.

<sup>3</sup> A notable exception to this pattern is the case of Latin America, where Aidt and Eterovic (2011) show that female suffrage expansion failed to produce an expansion in the size of government.

<sup>4</sup> Section 2.2 discusses related literature examining aid, gender, and generosity both within economics and more broadly.

gender composition of national legislatures over time. This eliminates the possibility that the effects we observe could result from variation across donors in terms of their preferences for aid and for female legislators.

A key remaining concern for identification within this framework is the potential co-evolution of voter preferences for foreign aid and for the election of women to office. For instance, estimates of the impact of the empowerment of women on aid policy would be biased upwards if donor country electorates became more progressive over the sample period, deciding to elect more women to office and to support more foreign aid, which is a plausible scenario. We employ three novel strategies to address this possibility.

First, we attempt to isolate variation in aid flows that is specifically attributable to policymakers. We do this primarily by controlling for the level of private aid flows originating in the donor nation. Observable variation in private aid flows should capture the underlying preferences of the portion of the electorate concerned with how much foreign aid should be given, leaving the variation due to the election of female legislators. Our results are robust to this inclusion. We further supplement this with two alternative measures of electoral preferences and show that the observed relationship between female legislators and aid flows holds when we include a control for the ideological preferences of the median voter or for the economic ideology of the majority political party in office.

Second, we contrast aid provided bilaterally with aid sent through multilateral channels. The logic behind this comparison is that individual legislators should have more influence over bilateral aid, since multilateral aid is subject to the collective decision making process of cross-country negotiation and is typically channeled through international organizations where it could be impacted both by the existence of formulaic contribution rules and by organizational priorities. Consistent with this logic, we find that the expansion of female representation within donor governments is primarily associated with changes in bilateral aid.

Third, we show that our results hold when we employ a set of time-varying instrumental variables for the election of women to national legislatures. In particular, we employ two different instrumental variables for female representation in government, one based on the adoption of gender quotas and the other on the accumulated electoral experience of women in donor nations. Both instrumental variable strategies produce results consistent with those of the fixed effects estimates.

The impacts we identify are both highly statistically significant and economically meaningful. A 10% percentage point increase in female representation is on average associated with a 30% increase in aid committed as a fraction of GDP per capita. For illustrative purposes, this would imply that if the mean donor in 2010 were to move from the current gender distribution in which 22% of seats are held by females, to a legislative composition in which one third of the seats were held by women, foreign aid would be expected to rise from 0.51% to 0.69% of GDP per capita.

The remainder of this paper is organized as follows. Section 2 examines related literature and provides motivation for the exercises in the paper. Section 3 describes the construction of our data. Section 4 details our empirical strategy and provides evidence that the gender composition of donor legislatures has a causal impact on the level of aid. Section 5 shows that the election of female legislators further affects the composition and pattern of foreign aid flows. Section 6 concludes.

## **2. Motivation**

### *2.1 The Political Economy of Foreign Aid*

A range of donor and recipient country characteristics have been shown to influence foreign aid flows. Early research highlighted the importance of political economy factors, documenting that donors are more likely to give aid to former colonies, ideologically aligned nations, and allies in the Middle East (Alesina and Dollar, 2000). Subsequent work expanded this list dramatically, painting a complicated picture of the decision making process in aid assignment, and including determinants such as geographic distance, level of democratization, proximity to or involvement in a conflict, quality of institutions and governance, the creation of an independent aid agency, extent of media coverage of the recipient nation in donor countries, recipient nation U.N. security council tenure, peer pressure among donors, trade flows, and shared donor-recipient cultural characteristics such as language (Round and Odedokun, 2004; Dollar and Levin, 2006; Kuziemko and Werker, 2006; Stromberg, 2007; Balla and Reinhardt, 2008; Hoeffler and Outram, 2011; Brück and Xu, 2012; Raschky and Schwindt, 2012; Dreher *et al.*, 2013; Fuchs *et al.*, 2014).

The branch of this literature most closely related to our analysis focuses specifically on characteristics of donor governments. Across a set of donor countries, Tingley (2010) shows that the political ideology of the governing party plays an important role in determining foreign aid. In particular, more conservative governments are on average associated with a reduction in the amount of foreign aid going to low income countries. Dreher *et al.* (2013) find that socialist governments in Germany tend to commit less aid than conservative governments. In their examination of voting on

foreign aid packages in the U.S. House of Representatives, Milner and Tingley (2010) show that representatives from conservative districts are more likely to oppose foreign aid packages, but more likely to support military aid packages.

Our analysis extends this literature by focusing on female representation in national legislatures. A key advantage of examining this particular donor country characteristic is that, unlike measures of ideology or alignment which are subjective and have definitions which potentially vary over time and across settings, it is possible to obtain quantitative measures of female representation which are comparable across countries and consistent over time. At the same time, this does not mean that the influence of female representatives is the same across countries and over time. Political systems, institutions, power-structures, and country-specific characteristics have an impact on the overall influence of representatives in the legislatures and are important factors to control for in our empirical analysis.

In addition, the gender composition of legislatures is of interest because this ratio is in flux. Recent years have brought dramatic increases in the level of female representation in many countries, and should current trends persist, the gender composition of national legislatures may continue to evolve. Similarly, estimating this relationship is important for understanding the effects of policy targeted at closing the gender gap, such as the adoption of gender-based legislative or party quotas. Our findings suggest that the empowerment of women in political office will have important implications for the pattern and level of aid flows going forward.

## *2.2 Gender Specific Preferences Concerning Aid and Generosity*

Recent work at the nexus of gender and foreign aid suggests that preference differences are significant enough to impact decisions concerning the allocation of foreign aid. Evidence from roll call voting of elected officials in the U.S. (Olsen-Telles, 2013), from direct democracy voters (Funk and Gathmann, 2015), and from the analysis of development ministers (Fuchs and Richert, 2015) suggest that men and women may have different preferences with respect to both the level and composition of foreign aid. Looking at the percentage of women in donors' national legislatures and the percentage of women cabinet members, Breuning (2001) and Lu and Breuning (2014) find a positive relationship between women's representation in donor countries and the amount of foreign assistance provided. Dreher *et al.* (2015) find that donors with more female politicians and development ministers give higher levels of aid to countries with greater female representation in government and which exhibit greater gender gaps in outcomes such as relative levels of women's

tertiary enrollment rates and life expectancy. Also looking at female development ministers, Kleeman *et al.* (2014) find no significant difference in the allocation of aid for education between female and male development ministers, Lu and Breuning (2014) find a negative association, and Fuchs and Richert (2015) show that female development ministers gave less ODA in general and also gave lower levels of development assistance to LDCs during the Cold War, a period in which political economy concerns notoriously dominated aid allocations. Our study expands this literature by providing rigorous evidence on the causal impact of the share of women in national legislatures of DAC-reporting donor nations on foreign aid levels, compositions, and patterns.

In addition to extending the literature on the political economy of aid flows, this study provides a real-world analysis of a phenomenon frequently studied by economists in laboratory settings. The experimental economics literature has identified significant differences in behavior between the sexes. Croson and Gneezy (2009), in a survey of the literature, conclude that women are generally found to be more averse to risk and competition than men. Similarly, they note that in studies of generosity, women appear more sensitive to the context in which gift giving decisions are made. This is echoed by Eckel and Grossman (1998), who show that variation between the sexes in generosity can be attributed to differences in male and female responses at various levels of social distance. In particular, during double-anonymous dictator games, women were found to donate roughly two times as much as males. This is perhaps the most relevant comparison to foreign aid because decision making in this context also occurs in an environment of high social distance. To the extent that there exist differences in preferences between the sexes concerning generosity, changes in the gender composition of national legislatures could be expected to impact foreign aid flows. Formally, we examine this possibility in our empirical analysis by testing whether increased female participation in national legislatures is associated with changes in foreign aid flows.

### **3. Data**

We construct a panel dataset for 28 countries reporting positive foreign aid commitments during the period 1965-2011. We draw foreign aid data from the Organization for Economic Cooperation and Development's Development Assistance Committee (DAC) (OECD, 2014c) and Creditor Reporting System (CRS) (OECD, 2014b) databases, which include information for DAC member countries as well as several non-DAC bilateral donors (see Appendix Table 1 for a list of the countries and years included in our primary analysis sample). We focus on official development assistance (ODA) figures, which include grants and concessional loans (loans with a grant element of

at least 25%).<sup>5</sup> We also incorporate information from the DAC database on private aid through non-governmental organizations (NGOs) in some analyses.

Table 1 displays summary statistics for our primary sample of donor nations. The first panel presents means and standard deviations for ODA commitments and NGO aid flows, and the second panel presents these same measures as a percentage of donor country GDP. Across the countries and years in our database, government aid commitments average nearly 0.6% of GDP, with just over two thirds of this assistance being bilateral aid.

We combine these foreign aid statistics with data on female legislative representation in national governments, compiled using data from Paxton *et al.* (2008) and the Inter-Parliamentary Union (2013). Our measure of female leadership is the percentage of legislative seats held by women in a given year, which we refer to as the female share (FS) variable. Specifically, we look at the share of seats held by women in the only chamber in unicameral systems and in the lower chamber in bicameral systems.<sup>6</sup> As the third panel of Table 1 shows, the mean share of legislative seats held by women in our sample of donor nations is 16%, with Sweden having the highest proportion of female held seats (at more than 40% since 1994). Figure 1 depicts the change in this share globally over time. While there are yearly fluctuations in the share of legislative seats held by women, most donor countries have seen an increase in female representation in government over this period.<sup>7</sup>

We further merge into this database several time-variant economic and political controls, for which summary statistics can be found in the bottom panel of Table 1. We include the log of GDP per capita drawn from the Penn World Tables (PWT) version 8 (Feenstra *et al.*, 2013) and government expenditure and trade openness both as a percentage of GDP (World Bank, 2015). These are economic variables that plausibly affect the amount of aid donors give, and are commonly cited in the foreign aid determinants literature. For instance, countries with strong economic activity, as measured by GDP per capita, may be able to give more aid. Donor countries which are more dependent on trade are also likely to be better donors (Tingley, 2010), while countries with large government expenditures may find themselves unable to give as much aid.

Political factors have been shown to play an important role in determining aid flows and are also relevant for electoral outcomes. We include the Polity 2 score from the Polity IV data set, which

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<sup>5</sup> ODA figures do not include loans that are repayable within one year, grants and loans given for military or peacekeeping purposes, or transfer payments between individuals (i.e., remittances).

<sup>6</sup> The literature on women's representation focuses on the share of women in the lower or only house (e.g. Swamy *et al.*, 2001; Rosen, 2011).

<sup>7</sup> Germany is an exception in our sample.

ranks the political regime in donor countries from autocratic to democratic on a scale from -10 to 10 (Marshall *et al.*, 2012). In our sample, the average score is 9.39, which is perhaps not surprising considering the majority of donor countries are economically developed democracies. It is important to control for the level of democracy, both because it may be a determinant of aid, and because it may provide information on the level of accountability legislators have to the electorate.<sup>8</sup> We also include indicators for donor country involvement in an international conflict, drawn from the Correlates of War Database 4.0 (Sarkees *et al.*, 2010), although the theoretical impact of donor country participation in war on aid flows is unclear. For instance, conflict may deplete fiscal solvency and resources for aid, negatively impacting aid flows. Alternatively, it may heighten political economy aid flows. Nevertheless, these events are not especially common in our sample, with international wars occurring in about 8% of our country-year observations.

## 4. Analysis

### 4.1 *The Relationship between Foreign Aid and Female Leadership*

This section examines the association between government resources allocated to foreign aid and the level of female representation in donor country legislatures. Figure 2 reveals a strong positive association between foreign aid commitments as a percentage of GDP and the share of legislative seats held by women across OECD countries and years in our sample.

However, naïve estimates of the relationship between the share of women in national legislatures and foreign aid are likely to reflect variation both within and across donors in terms of preferences for aid and for female legislators. Stated differently, OLS estimates of the effect of female legislators would likely be biased as some countries may have electorates which prefer both higher levels of gender equality in governance and higher levels of aid. This would obfuscate precise estimation of the causal effect of female legislators on aid policy, as any observed effect of female legislators could simply be attributable to these electorate preferences.

We limit this and related sources of endogeneity in our benchmark analysis by including both time and country fixed effects and by controlling for an array of commonly studied time-variant determinants of aid. Use of donor country fixed effects restricts identification to that arising

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<sup>8</sup> It is important to note that there is no theoretical argument which predicts in which direction this variable will influence the amount of aid a donor commits. It may very well be the case that in our sample, small positive movements by small donors may actually result in a negative coefficient. Nevertheless, we include the variable as part of our donor sample is not democratic (e.g. Kuwait). Results do not differ when instead using the Cheibub *et al.* (2010) dichotomous democracy variable.



from within donor country changes in the gender composition of national legislatures over time. This eliminates the possibility that the effects we observe could result from differences in preferences across countries.

Our primary analysis sample includes country years between 1965 and 2011 during which a donor reports positive aid commitments in the DAC database, and we principally focus on foreign aid flows as a function of domestic country resources.<sup>9</sup> We estimate the relationship between foreign aid as a fraction of GDP and the share of female leaders in the national legislature using the following panel regression specification:

$$Y_{it} = \alpha + \beta(FS)_{it} + \mathbf{X}_{it}\Gamma + \mathbf{\Omega}_i + \boldsymbol{\eta}_t + \varepsilon_{it} \quad (1)$$

where  $i$  indexes donor countries and  $t$  indexes years.  $Y$  is a measure of foreign aid commitments, which is measured either as  $\ln(\text{aid})$ ,  $\text{aid}/\text{GDP}$ , or  $\ln(\text{aid}/\text{GDP})$ .  $FS$  is the share of legislative seats held by women in donor country  $i$  at time  $t$ .  $\mathbf{X}_{it}$  represents a vector of time variant donor country controls, which we include to account for political and economic factors that may influence donor country decision making. As detailed in Section 3, these controls include the log of real GDP per capita, government consumption and trade openness (both as a share of GDP), the Polity 2 score, and an indicator for participation in an international war on foreign soil.<sup>10</sup>  $\mathbf{\Omega}_i$  is a vector of country fixed effects and  $\boldsymbol{\eta}_t$  is a vector of year fixed effects. We assume the residuals,  $\varepsilon_{it}$ , are clustered by donor country.

Table 2 presents the results of estimating equation (1) to examine the relationship between foreign aid and the gender composition of the donor country legislature. All regression equations include country and year fixed effects and the full set of controls listed above. Identification with both time and year fixed effects comes from variation in aid within donor countries over time. We first examine the relationship between female representation and the level of aid. To do this, Column (1) includes the log of total aid commitments as the dependent variable. Within our fixed effect framework and conditioning on a standard set of aid determinants, higher levels of female representation in the legislature are associated with significantly higher levels of foreign aid.

Columns (2) and (3) examine aid commitments as a fraction of GDP and the log of this measure. Because it captures donations as a share of domestic resources, aid as a fraction of GDP has been previously termed “the generosity ratio” or an indicator of “aid effort” (Round and

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<sup>9</sup> Our results can be interpreted as the impact of changes in the share of female legislators within the subset of aid granting nations. Appendix Table 1 lists the full set of country-years included in the primary analysis sample.

<sup>10</sup> No countries in our sample have a civil war during the time period under consideration.

Odedokun, 2004). We document a large, positive association between aid effort and female representation on a within country, over time basis, in both of these specifications – and one that is economically meaningful. To give a sense for the magnitude, if one were to interpret the estimates in column (3) as causal, it would suggest that a one percentage point increase in the share of seats held by women should increase total aid commitments as a share of GDP per capita by 0.027% from their base of 0.44%. This positive association suggests that legislatures with a higher proportion of female legislators are more generous with foreign aid, allocating a higher percentage of GDP for these purposes.

The first three columns of Table 2 explore foreign aid commitments rather than disbursements, following standard practice in the literature on aid determinants (Kleeman *et al.*, 2014). As a robustness check, the final three columns of Table 2 replicate the exercise for gross aid disbursements, which provides a useful check because disbursements represent actual aid flows. The results again show a positive and strongly significant association between the share of female legislators and the amount of foreign aid disbursed. The magnitude of the estimated association is nearly 50% larger. Taken together, the results in Table 2 indicate that legislatures with higher percentages of seats held by women tend to commit and disburse more foreign aid, both in absolute terms and as a percentage of GDP.<sup>11</sup> For the remainder of the analysis presented in this paper, we follow the literature by focusing on foreign aid commitments; similar results are obtained when aid is instead measured in gross disbursements.

#### *4.2 Sample Robustness Checks*

To explore whether the effects we identify are driven in part by idiosyncratic factors specific to the sample of countries and years included in our analysis, we re-estimate our benchmark specification presented in Table 2, column (3), applying a series of sample restrictions or adding additional controls. The results of this robustness analysis are reported in Table 3.

Column (1) excludes the United States; a concern is that since the U.S. is one of the largest and most prominent foreign aid donors, it could have undue influence on our findings. As the results show, the coefficient estimate for the female share variable is similar to the original results

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<sup>11</sup> We observe a similar association between the empowerment of women and aid commitments when estimating the specification in Table 2, column (3) using 2, 3, 4 and 5 year averages (not shown).

both in magnitude and statistical significance.<sup>12</sup> Another possibility is that the Nordic countries in our sample (Denmark, Finland, Norway, and Sweden) could drive the result as these countries are both generous donors and have higher than average share of women in parliament. Column (2) presents the results when we exclude these four countries from the analysis. The coefficient is slightly smaller than in the full sample but still positive and highly statistically significant (P-value < 0.01).

Column (3) excludes former Eastern Bloc nations, and column (4) excludes Kuwait (the oil producing nation in our sample), as the aid determination surrounding these countries may plausibly be influenced by a wide range of political economy factors not common across other donors. The results in both columns are again robust to this exclusion. Column (5) excludes country-year observations which are non-contiguous (e.g. Switzerland before 1980, the Czech Republic, and Kuwait), for fear that countries which donate in non-contiguous years do so as a result of sporadic economic circumstances (offering aid as a result of a boom, or ceasing aid as a result of a crisis). The resulting estimates remain positive and significant. Finally, column (6) controls for non-linearity in donor GDP, with the results robust to this inclusion.

The study period spans a long time horizon which is unbalanced across countries. Columns (7) - (10) explore the temporal nature of the data in more depth. In particular, a number of the donors' data series begin in 1980. This raises the possibility that some countries contribute disproportionately to the effects we observe. Column (7) presents results when we restrict the sample to the pre-1980 period only. The resulting coefficients are positive and significant with an estimated magnitude which is more than double that of the full sample. Column (8) repeats this exercise for the post-1980 period. In this case, the estimated coefficient is highly significant, with a magnitude which is roughly half that produced by the full sample. As an alternative approach to capture time effects, we also employ a richer control set for the temporal nature of the data. We address this through the inclusion of country-year time trends in column (9), and both a linear and quadratic country-year trend in column (10). In both cases the estimated coefficients remain positive and highly significant, although the estimated magnitude including quadratic donor year trends is somewhat smaller.

One additional issue for interpretation of the estimated magnitude of our coefficient of interest is that there could be some non-linearity in the relationship between women's representation

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<sup>12</sup> We further perform a country-by-country jackknife exercise in which we re-estimate the main specification in Table 2, excluding each donor country one at a time. Our estimates are robust to the exclusion of any country in our sample (results not shown).

in national legislatures and aid. To test for this, we first directly control for the share of women in parliament and for the square of the share. This check, shown in column (11), provides little support for non-linearity being a key concern, as the specification yields a positive but not statistically significant estimate on the linear impact and a square term which is not statistically different from zero. As an alternative check on non-linearity, we exclude country-years where the share of women in parliament exceeds the top quartile. The estimated coefficient, shown in column (12), is even larger in magnitude and remains significant after this exclusion.

### *4.3 The Effect of Female Leaders on Foreign Aid*

We have thus far documented a robust association between the election of female legislators in donor countries and aid outflows. This section examines the possibility that the empowerment of women in politics has a causal effect on aid flows. While the inclusion of country and year fixed effects in the analysis so far should be able to account for a large degree of potential omitted variable bias, a remaining issue could be omitted third factors which are time-variant within country. Of these, changing domestic electorate preferences leading to both the election of female legislators and to increasing aid flows over time is the most likely culprit. Such correlation could lead us to overstate the impact of the empowerment of women on aid policy. We employ three novel strategies to address this possibility.

#### *4.3.1 Controlling for Measures of the Preferences of the Electorate*

First, we incorporate measures of the preferences of the electorate with regard to foreign aid flows into the empirical framework described in equation (1). An advantage of looking at the impact of female legislators on foreign aid flows is that unlike studies focusing on specific types of domestic government expenditures, we have a rough proxy for how private citizens would choose to allocate their own aid flows. In particular, we can control for the total level of private NGO aid from donor countries in each year as a fraction of GDP.<sup>13</sup> These flows should reflect, albeit imperfectly, the preferences of a portion of the domestic population for the level and pattern of aid.<sup>14</sup> Controlling

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<sup>13</sup> This information is available in the OECD DAC database (OECD, 2014b). NGO aid is defined by the DAC as “grants provided by NGOs and other private bodies resident in the donor country for development assistance and relief. The development and welfare expenditures of religious bodies or of private profitmaking entities may also be included, provided such expenditures do not have a primarily religious or commercial motive” (Development Co-operation Directorate, 2013).

<sup>14</sup> We argue that the measure of private aid flows from NGOs proxies for the portion of the population which has stronger preferences for aid. This is not necessarily a proxy for preferences of the median voter.

explicitly for NGO aid flows should thus capture variation in government aid attributable to the preferences (generosity) of the populace in a given year.

The results of this exercise are presented in Table 4, column (2). In comparison to our benchmark fixed effects regression presented in column (1), the inclusion of this control for private aid halves the magnitude of the estimated effect of female representation on aid commitments, but the result is still statistically significant at high levels of confidence (P-value < 0.01). In fact, the halving of the point estimate is due to the decrease in sample size (by nearly 20%) when the private aid term is included, and is not a result of the inclusion of the term itself (not shown). This provides suggestive evidence that the relationship we observe between aid and female share is driven by individual legislators, and not by underlying electoral preferences.

Including a control for voter ideology is another way of addressing this issue. We employ a measure constructed by Kim and Fording (1998, 2003) which captures the ideological position of the median voter. This measure ranges from zero to 100, with zero being the most right-wing and 100 being the most left-wing along the ideological spectrum.<sup>15</sup> The results for estimating equation (1) when including this variable as a control are reported in Table 4, column (3). Although this inclusion reduces the sample size, the coefficient is still positive, significant, and identical in magnitude to our benchmark specification, suggesting that even when controlling for voter ideology, female leaders have a positive and significant effect on foreign aid.

Finally, the existing literature has documented that government ideology affects the amount of aid that countries give (e.g. Milner and Tingley, 2010; Dreher *et al.*, 2013). One might expect left-leaning parties to both vote for more aid and to also elect more women to office, raising the possibility that the share of women in parliament is simply proxying for the presence of an ideologically progressive government in power. To test this, we use a government ideology index constructed by Tingley (2010), which captures the ideology of all parties involved in government. This index ranges from zero to ten, with more conservative governments having higher values. The last column in Table 4 shows the results when including this measure into the equation (1) estimation. The coefficient on the government ideology is insignificant suggesting that, within our sample, ideology is not driving aid commitments. While the sample size decreases from our benchmark, the results are robust to the inclusion of government ideology suggesting that the share

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<sup>15</sup> The sample mean and standard deviation for this variable are included in Table 1. The average value of 55.87 suggests that across countries and time, the median voter in our sample is slightly left of center.

of women in parliament have a positive and significant effect on aid which is independent from the impact of changing government ideology.

#### 4.3.2 *Examining the Channel of Aid*

Next, we examine the mechanism through which aid is channeled. When sending foreign aid, donors can act without their peers and grant bilateral aid, or they can co-ordinate with them, sending funds multilaterally through international agencies or agreements. In theory, an individual legislator should have more influence over bilateral aid flows (in which the foreign aid is determined within the domestic political arena). This is perhaps most clearly seen by recognizing that multilateral aid is subject to cross-country collaboration and to international pressure, and may even be based on formulaic agreements negotiated together or with international institutions like the United Nations, International Monetary Fund, and World Bank. Because a portion of multilateral aid determination is determined exogenously from the influence of individual policymakers, we can use this comparison as a falsification check. If female preferences are for a higher mean level of aid, and this effect is causal, then we should expect to see the largest impact of female representation on aid which can more easily be influenced by the legislators themselves – aid channeled bilaterally.

We explore this in Table 5. Column (1) reproduces our benchmark result from Table 2, column (3) for comparison. Columns (2) and (3) examine the relationship between female legislators and foreign aid separately for multilateral and bilateral aid, respectively. While bilateral aid comprises nearly three-quarters of overall foreign aid to begin with, the coefficient estimates suggests that the addition of female representatives yields an increase in bilateral aid, without significantly impacting multilateral aid. These findings are consistent with individual female legislators being able to exert more influence over bilateral aid and thus having a direct effect on policymaking outcomes in this arena.

A caveat and an intriguing alternative explanation is that male and female legislators may actually have different preferences for the channel of aid - directly influencing the mechanisms through which aid is given. Croson *et al.* (2010) show that male donors are significantly more likely than female donors to allow their giving behavior to be influenced by social norms. At the level of foreign aid, this could suggest that male legislators are more likely to offer foreign aid through multilateral agreements in which giving behavior is subject to international peer pressure, while

female legislators may be more willing to go it alone in the form of bilateral aid.<sup>16</sup> In our empirical test, this outcome is observationally equivalent to the situation previously described in which female legislators are able to have a larger impact on domestically determined bilateral aid flows.

#### 4.3.3 *Employing an Instrumental Variable*

As a final piece of evidence in favor of a causal connection between female legislators and increased foreign aid flows, we employ a set of instrumental variables for the potentially endogenous level of female political representation in a country. First we consider the electoral experience of women in society, employing as an instrumental variable the accumulated years since female suffrage was granted. Intuitively, when suffrage is granted earlier, more women will have been exposed to politics, either through direct participation or through the observation of previous generations of women in these roles. This experience could either directly encourage more women to engage in politics or facilitate their success in winning elections – such that the current generation should observe more women running for office.<sup>17</sup> Recent research supports this case as well. For example, Beaman *et al.* (2009) provide rigorous experimental evidence that previous exposure to female leaders weakens gender stereotypes and reduces prejudicial bias against women in the electorate.

As a second strategy, we consider the adoption of gender quotas as an instrumental variable. We interact the adoption of gender quotas with an exogenous measure of gender roles in society, the extent of sex-based grammatical gender marking present in the dominant language of a country.<sup>18</sup> The presence and intensity of female/male grammatical gender distinctions in language have been robustly associated with lower levels of women in government (Santacreu-Vasut *et al.*, 2013), stronger gender roles in the household placing the burden of non-market labor on women (Hicks *et al.*, 2014), and lower female labor force participation (Gay *et al.*, 2015). We employ an existing measure of linguistic intensity derived from these studies which ranges from 0 to 3 and captures the intensity of sex-based gender dimensions in a language's grammatical rules.

The intuition behind the interaction of these variables is as follows. While the adoption of gender quotas should on average lead to higher female representation, the impact of implementing any individual quota should be greater in countries where there are much larger gender gaps in society in the first place (where we isolate variation in gender gaps through the historically

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<sup>16</sup> In this situation, the election of female legislators would still have a direct effect on aid, albeit in the form of a reallocation across channels.

<sup>17</sup> For a discussion of suffrage expansions and the construction of this measure, see Grier and Maldonado (2015).

<sup>18</sup> Grammatical gender in language is a very stable linguistic feature, with deep historical origins.

determined intensity of sex-based gender in language). The interaction of these two variables thus produces a richer measure of the impact of quotas, and one in which the observed variation is arguably more exogenous to current aid decision making than employing either measure alone.

In both cases, satisfaction of the exclusion restriction is again bolstered by the inclusion of our full set of controls and fixed effects. Identification in this framework derives from over time variation in within-country policies influencing the temporal variation in the share of women in government without directly affecting the fraction of aid given as a percentage of GDP. Conditional on the addition of these covariates, it is unlikely that either instrument should be related directly to the amount of foreign aid given as percentage of GDP at the national level, other than through their impact of the gender composition of the legislature.

Formally, we instrument for the share of women in national legislature using the 2SLS methodology as follows:

$$\ln\left(\frac{Aid}{GDP}\right)_{it} = \alpha_2 + \beta(\widehat{FS})_{it} + \mathbf{X}_{it}\Gamma_2 + \mathbf{\Omega}_i + \boldsymbol{\eta}_t + v_{it} \quad (2)$$

$$FS_{it} = \alpha_1 + \varphi(Instrument)_{it} + \mathbf{X}_{it}\Gamma_1 + \mathbf{\Omega}_i + \boldsymbol{\eta}_t + \omega_{it} \quad (3)$$

where equation (2) presents the second stage and equation (3) presents the first stage, respectively.

Table 6 presents the results of this exercise, with the first stage displayed in Panel A and the second stage in Panel B. The first stage suggests a highly significant relationship between both instruments and the share of legislative seats held by women within a country over time, supporting instrumental validity. Furthermore, both instruments yield a Kleibergen-Paap F-statistic in excess of 10.

The estimated relationship between the share of women in national legislatures and foreign aid generosity produced by the second stage in Panel B is positive and highly statistically significant in both cases, as well as being larger in magnitude than the OLS estimates. Specifically, the estimates in column (2) suggest that a one percentage point increase in the share of women legislators should increase aid commitments by 0.044% as a percentage of GDP per capita.

Together, the results from this battery of empirical tests (controlling for NGO aid flows, controlling for voter or government ideology, contrasting multilateral and bilateral aid, and instrumenting for the female share of legislative seats) lend credence to the hypothesis that female legislators have a causal impact on foreign aid flows. If female legislators influence the aid flows, we



may also expect them to influence the composition of aid flows by intended purpose and the pattern of aid flows across recipients, and we examine these possibilities in the next section.

## 5. Do Female Legislators Influence the Purpose and Distribution of Aid Flows?

### 5.1 Purpose of Aid

A robust finding in the literature examining the impact of expanded gender equality on policy making has been an increase in total spending and an increase in the share of expenditure devoted to public goods (Lott and Kenny, 1999; Abrams and Settle, 1999; Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Aidt and Dallal, 2008; Svaleryd, 2009; Bertocchi, 2011; Broilo and Troiano, 2012). The previous sections have demonstrated that increased female representation is associated with higher amounts of foreign aid, both in the level and as a percentage of GDP. This confirms other work, which suggests that the gender of development ministers may be an important factor in determining aid allocations (Kleeman *et al.*, 2014; Fuchs *et al.*, 2015). It is equally plausible that male and female representatives differ not only in their desired level of generosity, but in their intended purpose for these financial flows.

The analysis presented in Section 4 utilizes ODA data drawn from the OECD's DAC database, a well-known and heavily used source for information on foreign aid flows. However, the information contained in the DAC database is highly aggregated and does not include aid flows broken out by narrow purpose or project type. In contrast, the OECD's Creditor Reporting System (CRS) database contains project-level information on aid commitments which can be used to compare flows across a range of expenditure categories. Like domestic expenditure, foreign aid is often earmarked for a specific purpose, over which men and women may exhibit different preferences. The CRS includes a wide range of project specific aid flows which allow us to further investigate this line of reasoning.

Table 7 presents estimates obtained from equation (1) where the dependent variable is iteratively changed to examine aid commitments for a wide array of purposes.<sup>19</sup> Among those listed in the table, we document a positive and statistically significant association for a number of the project categories, including aid commitments dedicated to public goods like education, health, water and sanitation and social infrastructure. These findings are consistent with those highlighted in the literature examining female suffrage and the election of women to office (Lott and Kenny, 1999;

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<sup>19</sup> We present a range of expenditure categories here, which we selected based on findings present in previous literature on the impact of women in government on domestic expenditure (including categories that were strongly associated with women in government and categories that showed no association).

Abrams and Settle, 1999; Duflo and Topalova, 2004; Brollo and Troiano, 2012). Furthermore, these effects are economically meaningful in magnitude.

Interestingly, we document no statistically significant association with the share of women in national legislatures and aid provided as general government budget support (Column 10). Researchers have argued that foreign aid given directly to governments has the potential to promote or sustain corruption in recipient nations (Svensson, 2000; Alesina and Weber, 2002; Moyo, 2009). If female legislators are less tolerant of corruption as suggested by Swamy *et al.* (2001) and Dollar *et al.* (2001), they may prefer to channel aid toward projects that are characterized by less government discretion. The election of female legislators also appears to have no significant impact on food aid as a percentage of total ODA either. This result is consistent with the findings of Milner and Tingley (2010), who show that U.S. food aid is largely driven by domestic political economy concerns, and by Nunn and Qian (2014), who show that U.S. food aid is strongly influenced by U.S. wheat production and storage capacity.<sup>20</sup>

### *5.2. Distribution of Aid Flows*

Finally, we examine whether changes in female representation in donor countries alters the distribution of aid across recipient regions. We again employ the CRS aid commitment data, as it contains donor flows disaggregated by recipient region. Table 8 presents estimates of the impact of female legislators on aid flows disaggregated by recipient geographic regions and income groups. The results indicate a positive association between the share of women in legislatures and aid commitments to Latin America and the Middle East. Aid is also increased to countries classified as LDCs and LMICs, with the poorest countries receiving the largest amount of aid from countries with more women in the legislature. These patterns are consistent with female legislators having different preferences than their male counterparts for the use of aid, as previously documented. Because the empowerment of women in legislatures is associated with larger shares of aid directed towards development purposes, it is logical that we should observe the largest reallocation in aid in favor of LDCs.

## **6. Conclusion**

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<sup>20</sup> In the context of U.S. aid flows, Milner and Tingley (2010) show that domestic interest groups and agricultural enterprises have a large effect on the roll call voting patterns of members of the U.S. House of Representatives when considering votes for food aid.

Previous research suggests that males and females differ in their median preferences. These differences have been shown to alter both the scale and scope of domestic expenditure. In this paper, we examine the possibility that the empowerment of women in politics may similarly have an impact on foreign aid. We document a robust correlation between the share of female representatives in national legislatures and foreign aid, both in terms of the level of aid and in terms of aid as a percentage of GDP, and for foreign aid commitments as well as disbursements. While many factors may be correlated with the election of women to office, we provide multiple pieces of evidence consistent with the effects we observe being the causal impact of female legislators.

We also show that the election of women imparts a redistribution of aid, both by type of project and by type of recipient - consistent with the existing evidence for domestic expenditures, increasing shares of women in government leads donor nations to allocate higher levels of aid targeted for education and health. We observe a reallocation of aid towards LDCs.

Our results have important implications for the future of development policy. As the empowerment of women in governments around the world advances, our findings suggest that we could expect to see concomitant increases in foreign aid, particularly aid directed towards the world's poorest regions and targeted for human capital improvements. Legislatures and political parties in numerous countries have begun to adopt gender quotas to close the gender gap in representation in government. This analysis suggests that such programs are likely to alter the scale and scope of fiscal policy, not only with respect to domestic spending patterns, but also in regards to the international arena as well.

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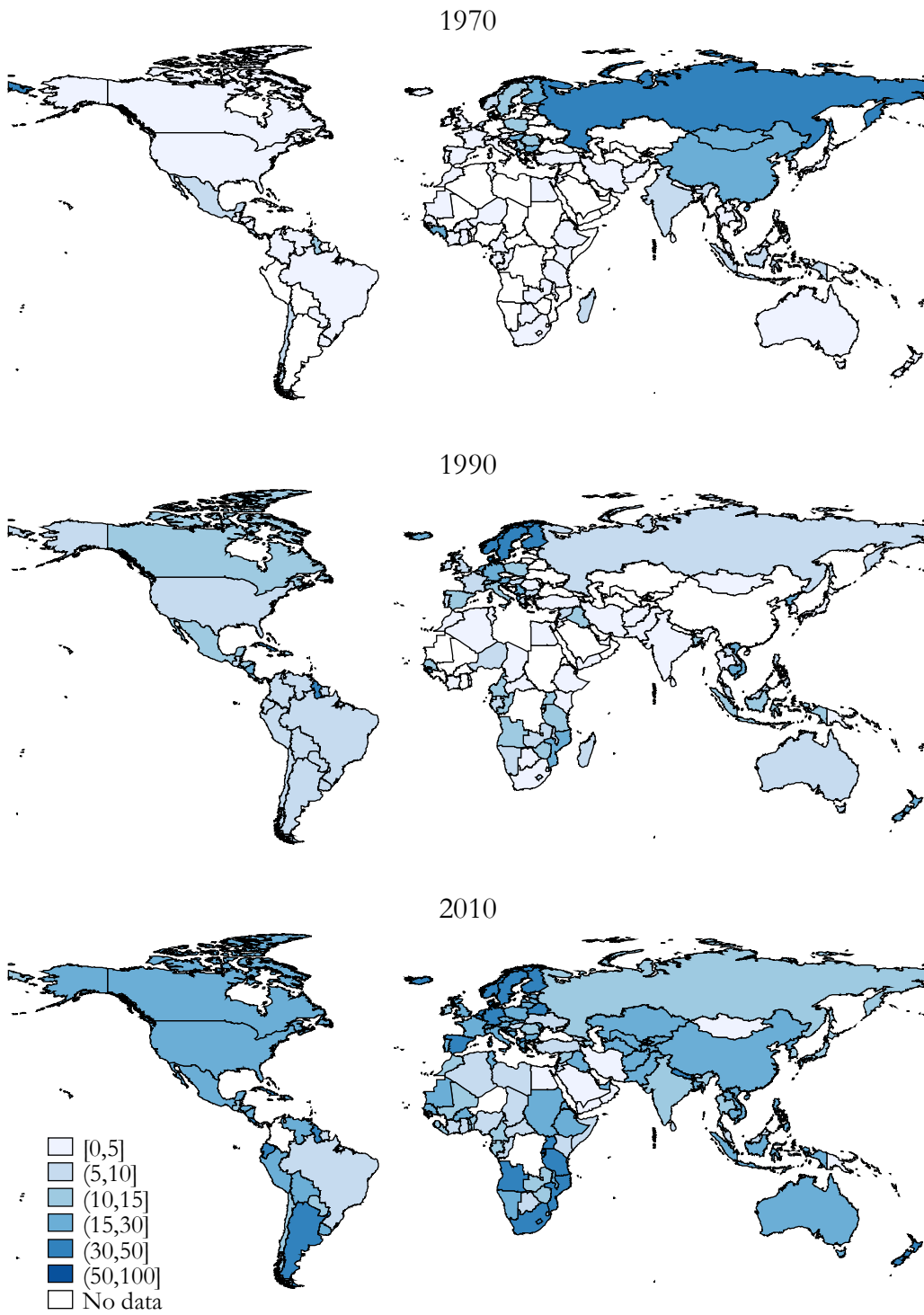
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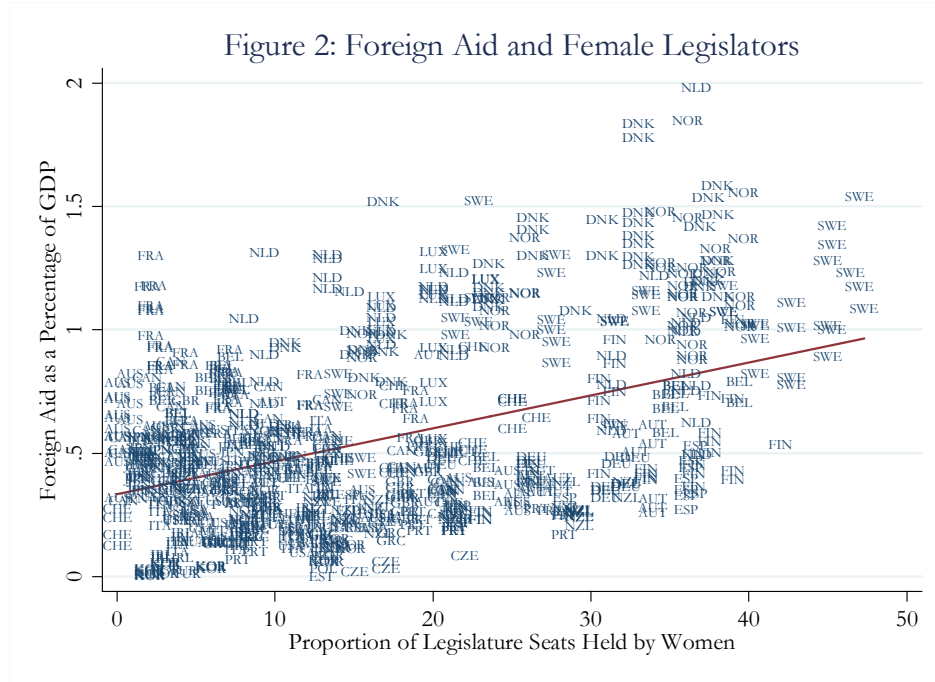
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Figure 1: Share of Seats Held By Women in National Legislatures



Notes: See text for the source and description of the female representation data.



Notes: The sample in this figure includes the set of OECD countries listed in Appendix Table 1 with positive aid commitments. See text for the sources of variables.

**Table 1: Summary Statistics**

| <b>Aid Commitments, millions of USD</b>      | Mean   | Std. Dev. |
|--|--------|-----------|
| Official Development Assistance              | 4,012  | (5,243)   |
| Multilateral                                 | 1,044  | (1,190)   |
| Bilateral                                    | 2,968  | (4,271)   |
| Bilateral relief & developmental food aid    | 168    | (525)     |
| Bilateral humanitarian aid                   | 117    | (350)     |
| NGO aid flows (disbursements)                | 426    | (1,629)   |
| <b>Aid Commitments, % of GDP</b>             |        |           |
| Official Development Assistance              | 0.55   | (0.42)    |
| Multilateral                                 | 0.16   | (0.13)    |
| Bilateral                                    | 0.38   | (0.34)    |
| Bilateral relief & developmental food aid    | 0.01   | (0.02)    |
| Bilateral humanitarian aid                   | 0.02   | (0.03)    |
| NGO aid flows (disbursements)                | 0.03   | (0.04)    |
| <b>Political and Economic Variables</b>      |        |           |
| Share of legislative seats held by women (%) | 16.33  | (12.15)   |
| Real GDP per capita                          | 29,082 | (10,785)  |
| Government consumption share (% of GDP)      | 18.96  | (4.45)    |
| Trade openness (% of GDP)                    | 68.87  | (42.93)   |
| Polity 2 score                               | 9.39   | (2.75)    |
| International war indicator                  | 0.08   | (0.27)    |
| Voter ideology                               | 55.87  | (12.05)   |
| Government ideology                          | 5.63   | (0.65)    |
| Female quota indicator                       | 0.29   | (0.45)    |
| Years since female suffrage                  | 61.99  | (24.18)   |
| Gender intensity index                       | 1.90   | (0.68)    |

Notes: Appendix Table 1 lists the full set of donor country-years included in the sample (for a total of 914 observations). Voter ideology, government ideology, and the gender intensity index have fewer observations (685, 670, and 847, respectively). See text for the source and definition of all variables. ODA is presented as commitments, while private (NGO) aid flows are net disbursements. All monetary amounts are presented in 2010 USD.

**Table 2: Female Legislators and Foreign Aid**

| Dependent Variable:                      | ODA Commitments     |                     |                     | ODA Disbursements   |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | Ln                  | % of GDP            | Ln(%GDP)            | Ln                  | % of GDP            | Ln(%GDP)            |
|  | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 |
| Share of legislative seats held by women | 0.026***<br>(0.005) | 0.014**<br>(0.006)  | 0.026***<br>(0.005) | 0.035***<br>(0.009) | 0.026***<br>(0.007) | 0.038***<br>(0.009) |
| Log of real GDP per capita               | 2.636***<br>(0.489) | -0.114<br>(0.322)   | 1.713***<br>(0.495) | 1.897***<br>(0.559) | 0.299**<br>(0.146)  | 1.138**<br>(0.504)  |
| Government consumption                   | 0.041***<br>(0.010) | 0.037***<br>(0.007) | 0.044***<br>(0.012) | 0.053*<br>(0.028)   | 0.013<br>(0.012)    | 0.056**<br>(0.028)  |
| Trade openness                           | 0.005**<br>(0.002)  | 0.007**<br>(0.003)  | 0.005**<br>(0.002)  | 0.011***<br>(0.003) | 0.005*<br>(0.003)   | 0.011***<br>(0.003) |
| Polity 2 score                           | -0.016<br>(0.100)   | -0.022<br>(0.014)   | -0.025<br>(0.096)   | -0.031<br>(0.122)   | -0.040<br>(0.025)   | -0.040<br>(0.115)   |
| International war indicator              | 0.073*<br>(0.038)   | 0.078<br>(0.050)    | 0.086*<br>(0.049)   | 0.069<br>(0.085)    | 0.035<br>(0.049)    | 0.076<br>(0.083)    |
| Number of observations                   | 914                 | 1,205               | 914                 | 1,201               | 1,205               | 1,201               |
| R <sup>2</sup>                           | 0.953               | 0.619               | 0.851               | 0.940               | 0.709               | 0.838               |
| Mean of dependent variable               | 7.53                | 0.45                | -0.81               | 6.87                | 0.47                | -1.24               |
| Std. dev. of dependent variable          | (1.46)              | (0.50)              | (0.83)              | (1.91)              | (0.43)              | (1.17)              |

Notes: Appendix Table 1 lists the full set of donor country-years included in the sample for the primary specification in column (3). See text for the source and definition of all variables. All monetary amounts are presented in 2010 USD. All regressions include year and donor country fixed effects. Standard errors are clustered by donor country and reported in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3: Sample Robustness Checks**

|  |  | Dependent Variable: Ln(ODA Commitments as % of GDP) |                                   |  |   |   |  |
|--|--|---|-----------------------------------|--|---|---|--|
| <b>Panel A:</b>                          |  | <b>Excluding US</b>                                 | <b>Excluding Nordic Countries</b> | <b>Excluding Former Eastern Bloc</b>               | <b>Excluding Oil Producers</b>                          | <b>Excluding Year Breaks</b>                      | <b>Controlling for GDP<sup>2</sup></b>               |
|  |  | (1)   | (2)                               | (3)  | (4)   | (5)   | (6)  |
| Share of legislative seats held by women |  | 0.025***<br>(0.005)                                 | 0.020***<br>(0.007)               | 0.026***<br>(0.005)                                | 0.022***<br>(0.004)                                     | 0.021***<br>(0.005)                               | 0.024***<br>(0.005)                                  |
| Number of observations                   |  | 868   | 733                               | 908  | 892   | 908   | 914  |
| R <sup>2</sup>                           |  | 0.947   | 0.956                             | 0.949  | 0.962   | 0.957   | 0.850  |
| <b>Panel B:</b>                          |  | <b>Pre-1980 Period Only</b>                         | <b>Post-1980 Period Only</b>      | <b>Including Linear Donor Specific Year Trends</b> | <b>Including Linear and Quadratic Donor Year Trends</b> | <b>Controlling for (Female Share)<sup>2</sup></b> | <b>Excluding top quartile of female share values</b> |
|  |  | (7)   | (8)                               | (9)  | (10)  | (11)  | (12)   |
| Share of legislative seats held by women |  | 0.060***<br>(0.011)                                 | 0.017**<br>(0.007)                | 0.026***<br>(0.005)                                | 0.018***<br>(0.004)                                     | 0.016<br>(0.014)                                  | 0.047***<br>(0.012)                                  |
| Number of observations                   |  | 212   | 702                               | 914  | 914   | 914   | 630  |
| R <sup>2</sup>                           |  | 0.867   | 0.891                             | 0.851  | 0.904   | 0.852   | 0.857  |

Notes: The sample used here includes all country-years included in Appendix Table 1 which meet the specifications listed at the top of the column. All specifications include donor and year fixed effects, and the full set of controls from equation (1). See text for the source and definition of all variables. Standard errors are clustered by donor country and reported in parenthesis. Column (2) excludes Denmark, Finland, Norway, and Sweden. Column (3) excludes the Czech Republic, Estonia, and Poland. Column (4) excludes Kuwait. Column (5) excludes Switzerland before 1980, the Czech Republic, and Kuwait. Column (12) includes a control for (Female Share)<sup>2</sup>, and that estimated coefficient is not statistically significant (not shown). \*\*\*p<0.01, \*\* p<0.05, \* p<0.1.

**Table 4: Preferences of the Electorate**

| Dependent Variable:                       | Ln(ODA Commitments as % of GDP)  |                                     |                                      |  |
|---|----------------------------------|-------------------------------------|--------------------------------------|--|
|   | Table 2<br>Column (3)<br>Results | Controlling<br>for NGO Aid<br>Flows | Controlling<br>for Voter<br>Ideology | Controlling<br>for<br>Government<br>Ideology |
|   | (1)                              | (2)                                 | (3)                                  | (4)  |
| Share of legislative seats held by women  | 0.026***<br>(0.005)              | 0.013***<br>(0.004)                 | 0.026***<br>(0.004)                  | 0.024***<br>(0.004)                          |
| Ln(Private aid disbursements as % of GDP) |                                  | 0.010<br>(0.022)                    |                                      |  |
| Voter ideology                            |                                  |                                     | 0.001<br>(0.002)                     |  |
| Government ideology                       |                                  |                                     |                                      | 0.022<br>(0.033)                             |
| Number of observations                    | 914                              | 747                                 | 685                                  | 670  |
| R <sup>2</sup>                            | 0.851                            | 0.870                               | 0.821                                | 0.791  |

Notes: Appendix Table 1 lists the full set of donor country-years included in the sample for column 1. All specifications include donor and year fixed effects, and the full set of controls from equation (1), as well as the electorate preferences proxy listed at the top of the column. See text for the source and definition of all variables. Standard errors are clustered by donor country and reported in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 5: Female Legislators and the Composition of Aid Commitments**

|  | <b>Total</b>                    | <b>Multilateral</b> | <b>Bilateral</b>    |
|--|---------------------------------|---------------------|---------------------|
|  | (1)                             | (2)                 | (3)                 |
| Dependent Variable:                      | Ln(ODA Commitments as % of GDP) |                     |                     |
| Share of legislative seats held by women | 0.026***<br>(0.005)             | 0.017<br>(0.013)    | 0.032***<br>(0.006) |
| Number of observations                   | 914                             | 906                 | 914                 |
| R <sup>2</sup>                           | 0.851                           | 0.745               | 0.800               |

Notes: Appendix Table 1 lists the full set of donor country-years included in the sample. All specifications include donor and year fixed effects, and the full set of controls from equation (1). See text for the source and definition of all variables. Standard errors are clustered at the donor country and reported in parenthesis. \*\*\*p<0.01, \*\* p<0.05, \* p<0.1.

**Table 6: Instrumental Variables Regressions**

|   | (1)                 | (2)                          |
|---|---------------------|------------------------------|
| <b>Panel A: First Stage Results</b>                 |                     |                              |
|   | Female Suffrage     | Quota*Gender Intensity Index |
| Instrument  | 0.408***<br>(0.126) | 2.245***<br>(0.631)          |
| Number of observations                              | 914                 | 847                          |
| R <sup>2</sup>                                      | 0.913               | 0.928                        |
| <b>Panel B: Second Stage Results</b>                |                     |                              |
| Dependent Variable: Ln(ODA Commitments as % of GDP) |                     |                              |
| Share of legislative seats held by women            | 0.141***<br>(0.034) | 0.044**<br>(0.019)           |
| Kleibergen-Paap F-statistic for weak identification | 10.439              | 12.639                       |
| Number of observations                              | 914                 | 847                          |
| R <sup>2</sup>                                      | 0.600               | 0.852                        |

Notes: The sample used here includes all country-years included in Appendix Table 1 for which we have information on the instrument. The specification used in this table is as defined in equations (2) and (3) in the text. Total ODA was drawn from the DAC database as commitments. See text for the source and definition of all other variables. Standard errors clustered by donor country are reported in parenthesis. \*\*\*p<0.01, \*\* p<0.05, \* p<0.1.



**Table 7: Female Legislators and Aid Commitments by Project Type**

| Dependent Variable: Ln(ODA commitments by sector as % of GDP) |   |  |                               |                               |   |  |
|---|---|--|-------------------------------|-------------------------------|---|--|
|   | <b>Education</b>                        | <b>Health &amp; Population</b>                   | <b>Water &amp; Sanitation</b> | <b>Social Infrastructure</b>  | <b>Civil Society, Conflict, &amp; Peace</b> | <b>Transportation, Communication, &amp; Energy</b> |
|   | (1)                                     | (2)  | (3)                           | (4)                           | (5)   | (6)  |
| Share of legislative seats held by women                      | 0.045**<br>(0.022)                      | 0.057***<br>(0.022)                              | 0.022*<br>(0.014)             | 0.042*<br>(0.024)             | 0.047<br>(0.032)                            | 0.035*<br>(0.021)                                  |
| R <sup>2</sup>  | 0.575                                   | 0.666  | 0.629                         | 0.690                         | 0.604                                       | 0.564  |
|   | <b>Banking, Finance, &amp; Business</b> | <b>Agriculture, Industry, &amp; Trade Policy</b> | <b>Environment</b>            | <b>General Budget Support</b> | <b>Food Aid &amp; Security</b>              | <b>Other</b>                                       |
|   | (7)                                     | (8)  | (9)                           | (10)                          | (11)  | (12)   |
| Share of legislative seats held by women                      | -0.036<br>(0.025)                       | 0.030*<br>(0.017)                                | 0.006<br>(0.016)              | -0.006<br>(0.056)             | -0.022<br>(0.027)                           | 0.041***<br>(0.015)                                |
| R <sup>2</sup>  | 0.622                                   | 0.665  | 0.674                         | 0.454                         | 0.503                                       | 0.610  |

Notes: Appendix Table 2 lists the full set of donor country-years included in the sample. The sample size ranges from 406 to 610. All specifications include donor and year fixed effects, and the full set of controls from equation (1). See text for the source and definition of all variables. Standard errors are clustered by donor country and reported in parenthesis. \*\*\*p<0.01, \*\* p<0.05, \* p<0.1.

**Table 8: Female Legislators and the Geographic Pattern of Aid Commitments**

|  | Africa           | Asia             | Latin America       | Europe           | Middle East        | LDCs                | LMICs             |
|--|------------------|------------------|---------------------|------------------|--------------------|---------------------|-------------------|
|  | (1)              | (2)              | (3)                 | (4)              | (5)                | (6)                 | (7)               |
| Dependent Variable: ln ODA commitments as % of GDP |                  |                  |                     |                  |                    |                     |                   |
| Share of legislative seats held by women           | 0.023<br>(0.015) | 0.021<br>(0.016) | 0.068***<br>(0.023) | 0.015<br>(0.020) | 0.065**<br>(0.028) | 0.052***<br>(0.017) | 0.025*<br>(0.015) |
| Number of observations                             | 693              | 687              | 644                 | 545              | 583                | 687                 | 695               |
| R <sup>2</sup>                                     | 0.709            | 0.697            | 0.711               | 0.594            | 0.575              | 0.702               | 0.552             |

Notes: Appendix Table 2 lists the full set of donor country-years included in the full sample. The sample size for all regressions ranges from 479 to 611. All specifications include donor and year fixed effects, and the full set of controls from equation (1). Total ODA commitments data was drawn from the CRS database. See text for the source and definition of all other variables. Standard errors are clustered by donor, and reported in parenthesis. \*\*\*p<0.01, \*\* p<0.05, \* p<0.1.

**Appendix Table 1: Donor Countries and Years, Main Sample**

| Donor           | Years                 | Donor           | Years                             |
|-----------------|-----------------------|-----------------|-----------------------------------|
| Australia*      | 1965 - 2011           | Korea*          | 1987 - 2011                       |
| Austria*        | 1966 - 2011           | Kuwait          | 1991 - 1997, 2000-2004, 2010-2011 |
| Belgium*        | 1966 - 2011           | Luxembourg*     | 1991 - 2011                       |
| Canada*         | 1966 - 2011           | Netherlands*    | 1966 - 2011                       |
| Czech Republic* | 1998, 2002-2003, 2011 | New Zealand*    | 1972 - 2011                       |
| Denmark*        | 1965 - 2011           | Norway*         | 1965 - 2011                       |
| Estonia         | 1998                  | Poland*         | 1998                              |
| Finland*        | 1972 - 2011           | Portugal*       | 1989 - 2011                       |
| France*         | 1966 - 2011           | Spain*          | 1991 - 2011                       |
| Germany*        | 1990 - 2011           | Sweden*         | 1965 - 2011                       |
| Greece*         | 1996 - 2011           | Switzerland*    | 1966 - 1969, 1980 - 2011          |
| Ireland*        | 1974 - 2011           | Turkey          | 2001, 2003                        |
| Italy*          | 1966 - 2011           | United Kingdom* | 1966 - 2011                       |
| Japan*          | 1966 - 2011           | United States*  | 1966 - 2011                       |

Notes: The sample includes all donor-years which record positive ODA disbursements in the DAC database and for which we have data on our main controls as defined in equation (1). \* denotes a DAC country (as of May 2014).

**Appendix Table 2: Donor Countries and Years, CRS Sample**

| Donor          | Years                    | Donor          | Years                                      |
|----------------|--------------------------|----------------|--|
| Australia      | 1973 - 2011              | Korea          | 2006 - 2011                                |
| Austria        | 1974, 1976 - 2011        | Kuwait         | 2010 - 2011                                |
| Belgium        | 1973 - 2011              | Luxembourg     | 1989, 2001 - 2011                          |
| Canada         | 1973 - 2011              | Netherlands    | 1973 - 2011                                |
| Czech Republic | 2011                     | New Zealand    | 1974, 1976, 1981 - 1985, 1995, 2002 - 2011 |
| Denmark        | 1973 - 2011              | Norway         | 1973 - 2011                                |
| Finland        | 1974 - 2011              | Portugal       | 1983, 1989, 1991 - 2011                    |
| France         | 1973 - 2011              | Spain          | 1988 - 2011                                |
| Germany        | 1990 - 2011              | Sweden         | 1973 - 2011                                |
| Greece         | 2002 - 2011              | Switzerland    | 1980 - 2011                                |
| Ireland        | 2000 - 2011              | United Kingdom | 1973 - 2011                                |
| Italy          | 1973 - 1977, 1980 - 2011 | United States  | 1973 - 2011                                |
| Japan          | 1973 - 2011              |                |  |

Notes: The sample includes all donor-years which record positive ODA commitments in the CRS database and for which we have data on our main controls as defined in equation (1).