

Female Legislators and Foreign Aid: The Influence of Preferences on the Level and Composition of Aid

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Abstract:

Research has shown that increased female representation in government can alter the scale and scope of national expenditure because of differences in median preferences between men and women. We investigate whether changes in the gender composition of national legislatures in donor countries impacts the level and composition of foreign aid. While the election of women to political offices is potentially correlated with the preferences of the electorate regarding aid, we present evidence that this relationship is causal through the inclusion of fixed effects and a series of quasi-experimental checks. Our results suggest that additional females in office lead donors to increase aid both in total and as a percentage of GDP. We also document an association between increased female representation and a redistribution of aid towards developing countries and for humanitarian purposes in particular.

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1. Introduction

A recent strand of economic research has documented that individual legislators can play a significant role in shaping important country level outcomes. Many of these studies robustly link individual characteristics such as gender, ethnicity, and educational status to policy decisions and socioeconomic outcomes for constituents.¹ In the case of gender, the involvement of larger numbers of women in governance has been associated with lower levels of corruption and higher levels of spending 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; Bertocchi, 2011; Brollo and Troiano, 2012). This paper examines the role of leader characteristics in a new context by investigating the role of gender composition in national legislatures on foreign aid policy.

To examine this question, we study the impact of leadership changes which alter the gender profile of legislative bodies. The principal obstacle to causal identification is that the election of women to political offices is nonrandom and likely correlated with preferences of the electorate concerning both the level and composition of aid. We limit potential sources of endogeneity through the inclusion of time and country fixed effects and then examine the robustness of this association using a series of quasi-experimental checks. First, we isolate changes in aid flows which are specifically attributable to policymakers by comparing changes in governmental aid with changes in private and non-governmental organization aid flows. Arguably, these other channels of aid should capture preferences of the electorate, but should be unaffected by the share of female legislators. Next, we show that our results hold when we employ an instrument for the election of women to national legislatures. Specifically, we employ a deep-determinant of societal preferences for female advancement, the extent of gender marking present in the dominant national language, constructed by Gay *et al.* (2013). While gender marking has been shown to influence female labor force and political participation, theoretically, it should be unrelated to societal preferences for the level and composition of foreign aid.

¹ Focusing on individuals, Jones and Olken (2005) document a causal impact of national leaders on economic growth and Dreher and Jensen (2009) find that leadership change impacts the likelihood of voting affinity with the U.S. in the United Nations. In the context of individual characteristics, Besley *et al.* (2012) find 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; while Fearon *et al.* (2007) show that countries with leaders who are ethnic minorities are no more likely to undergo civil conflicts.

We find that expansions in female representation within donor governments are associated with significant changes in the level and composition of foreign aid, including higher total aid flows, more bilateral aid, increases in foreign aid commitments and disbursements designated specifically for humanitarian causes, and higher levels of financial assistance sent to the least developed economies. The impacts we identify are both highly significant and economically meaningful. A 10% percentage point increase in female representation is on average associated with a 34.5% increase in aid committed as a fraction of GDP to less developed countries (LDCs) and a 31% increase in humanitarian aid flows as a fraction of GDP.² For illustrative purposes, this would imply that if the US were to move from its current gender distribution in which 16% of seats are held by females, to a legislative composition in which one quarter of the seats were held by women, US foreign aid commitments to LDCs would be expected to increase by a third, on the order of \$10 billion dollars annually.

In addition to informing the literature on the political economy of aid, we examine several dimensions along which gender specific preferences may drive aid flows. In this regard, we provide a real world application and empirical examination of phenomena frequently studied in experimental settings. This analysis suggests an important avenue through which improved female access to the political process and related policies which improve female representation such as gender specific quotas are likely to influence national policy.

The remainder of this paper is organized as follows. Section 2 describes related literature and provides theoretical motivation for the exercises in the paper. Section 3 describes the construction of our data and empirical strategy. Section 4 provides evidence that the gender composition of national representatives has an impact on the level and pattern of foreign aid flows. Section 5 concludes.

2. Motivation

2.1 The Political Economy of Foreign Aid

Existing literature has established that characteristics of both donor and recipient nations are important determinants of aid flows. For instance, Alesina and Dollar (2000) find that foreign aid is driven not just by need, but also by donor countries' political and strategic preferences. Donors are more likely to give aid to former colonies, ideologically aligned nations, and allies in the Middle

² In contrast, aid flows through multilateral organizations, aid designated for many other causes, and aid to middle income economies are largely insensitive to the gender composition of donor nation governments.

East.³ Perhaps unsurprisingly, donor countries are shown to, on average, reward democratization. Other works have documented a range of country characteristics that positively influence foreign aid receipts, including geographic distance from a donor, proximity to or involvement in a conflict, quality of institutions, level of media coverage in donor country, population, UN security council tenure, trade flows, and shared cultural characteristics such as language (Balla and Reinhardt, 2008; Dreher *et al.*, 2013; Hoeffler and Outram, 2011; Kuziemko and Werker, 2006; Raschky and Schwindt, 2012; Stromberg, 2007)

The branch of this political economy literature most closely related to our paper focuses specifically on donor countries. For instance, Round and Odedokun (2004) find evidence of peer pressure among donor nations, in which one nation's aid level is positively influenced by the aid flows of other nations. 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. On average, more conservative governments are associated with a reduction in the amount of foreign aid going to low income developing countries (while the level of aid assigned to middle income developing countries appears invariant to the ruling party). A number of studies have undertaken case studies to examine within country characteristics. In their exploration of voting on different types of foreign aid packages in the US House of Representatives, Milner and Tingley (2010) show that representatives from more conservative districts are more likely to oppose foreign aid packages but more likely to support military aid packages. Similarly, Dreher *et al.* (2013) find that socialist governments in Germany tend to commit less aid than conservative governments.

Our analysis extends this literature in a number of ways. Our principal focus is 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 clear and quantitative measures of female representation which are comparable both across countries and time. In addition, the implementation of gender specific quotas in a number of countries at the national level and within countries by political parties themselves means that the gender composition of national legislatures is alterable through policy. Finally, recent years have seen dramatic advances in the level of female representation across countries, and should current trends continue, the gender

³ The authors measure state alignment using the bilateral correlation of UN voting, while Stromberg (2007) uses this measure as well as data from the Correlates of War Formal Interstate Alliance Data Set.

composition of national legislatures is likely to change rapidly in the near future. Our research suggests that this change has implications for the pattern and level of aid flows.

2.2 Gender Specific Preferences

Research within the experimental economics literature has identified significant differences in preferences and behavior between the sexes. For instance, Croson and Gnezy (2009), in a survey of the literature, conclude that women are more risk averse than men, and that women are more averse to competition. They note that while there is a large amount of confounding evidence on the topic of whether there are gender differences in levels of generosity, several results appear robust, including that women appear more sensitive to the context in which gift giving decisions are made. For instance, Eckel and Grossman (1998) show that variation across the sexes in generosity can be attributed to differences in male and female responses at different levels of social distance. In particular, during double-anonymous dictator games, women were found to donate roughly two times as much as males. This experimental setting is perhaps the most relevant comparison to foreign aid decision making, because these decisions are also made in the context of a high social distance environment.

Existing theories within the experimental economic literature provide testable hypothesis with regards to the impact of female representation on foreign aid flows. For instance, differences in preferences between the sexes concerning generosity (under certain circumstances) suggest that female legislators may be more likely than male legislators to have preferences for higher levels of foreign aid.⁴ We first test the hypothesis that female legislators are more generous than their male counterparts, which we refer to as the *generosity hypothesis*. To do this, we examine whether increased female participation in national legislatures is associated with higher levels of foreign aid -- examining not only the level of aid disbursements and aid commitments, but also the share of these commitments as a fraction of donor country GDP.

It is also possible that the gender composition in national legislatures influences the mechanisms through which aid is given. Why? Croson *et al.* (2010) show that male donors are significantly more likely than female donors to allow their giving behavior be influenced by social norms. At the level of foreign aid, this may suggest that male legislators are more likely to offer foreign aid through multilateral agreement, while female legislators may be more willing to go it

⁴ Similarly, existing studies based on changes in the pattern of government expenditure represent revealed preference evidence of gender specific preference differences.

alone in the form of bilateral aid. We identify this theory as the *social norms hypothesis* and decompose aid into specific channels to examine this possibility.

Existing studies of increased female political participation and representation have identified a number of behavioral differences between males and females with respect to government action. Revealed preference studies have shown that female suffrage and increases in women in governance are associated with higher levels of social spending, particularly on projects related to health, education, and women's outcomes (Lott and Kenny, 1999; Abrams and Settle, 1999; Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Aidt and Dallal, 2008; Brollo and Troiano, 2012). We extend this literature to examine whether the gender composition of leaders alters the composition of aid flows. Aid flows are often earmarked for specific causes, and the median female legislator may have stronger preferences for aid to be purposed towards projects of the same nature as for the domestic agenda, for instance for relatively higher levels of humanitarian, health, or education aid flows. We examine this possibility by disaggregating aid by purpose, and refer to this check as the *social preferences hypothesis*.

Finally, research has documented that an increased share of elected female representatives is generally associated with lower levels of corruption (Swamy *et al.*, 2001; Dollar *et al.*, 2001; Duflo and Topalova, 2004; Brollo and Troiano, 2012). This association may reflect lower levels of risk taking behavior, but may also reflect more honest behavior on the part of female legislators. To examine this possibility, which we label as the *grandstanding hypothesis*, we compare the relative size of changes in committed and disbursed aid associated with increased female representation. In theory, a change in the level of female political participation may affect the level of follow through, in that aid promises (commitments) may be more or less likely to actually send committed aid (disbursements).

3. Data

We construct a panel dataset for 41 countries reporting positive foreign aid flows over the period 1960-2011. We draw foreign aid data from the Organisation for Economic Co-operation and Development's Development Assistance Committee (DAC) and Creditor Reporting System (CRS) databases, which include information for the 22 DAC member countries as well as several non-DAC bilateral donors (see Appendix Table 1 for a list of these countries and the years they are included in our data). We focus on official development assistance (ODA) figures, which include grants and concessional loans (loans with a grant element of at least 25%) for development and welfare

purposes given to less developed countries or multilateral development agencies.⁵ We focus on aid commitments and gross disbursements throughout the paper, and also incorporate information on private commercial flows (including foreign direct investment and purchases of less-developed country bonds and securities) and private flows from non-governmental organizations in later analyses.

Table 1 displays summary statistics for the sample of donor nations. The first panel presents means and standard deviations for ODA disbursements for the full set of countries and years, and the second panel presents ODA disbursements as a percentage of donor GDP. Across the countries and years in our database, government aid disbursed to less developed countries is approximately 0.5% of GDP, with the majority of this being bilateral aid.

We combine these foreign aid statistics with data on female legislative representation in national government, drawn 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 will refer to as the female share (FS) variable. Because governments vary in structure, the precise definition of FS differs somewhat across settings. For unicameral systems, FS is equal to the proportion of seats in the single chamber, while for bicameral systems it is equal to the average of the proportion of seats held in each chamber.⁶ As the third panel of Table 1 shows, the average proportion of legislative seats held by women in our sample of donor nations is 15%, with Sweden having the highest proportion of female seats at 47%. Figure 1 depicts the change in this share globally over time. Most countries have seen an increase in female representation in government, while a few countries have regressed.⁷

We further merge into this database several economic and political controls (see Section 4 for the logic behind including these controls). We include the level and growth rate of GDP per capita, as well as the donor country's exchange rate in relation to the US Dollar, drawn from the Penn World Tables version 8 (Feenstra *et al.*, 2013). We include information on democratization from the Polity IV data set (Marshall *et al.* 2012), and indicators for donor country involvement in an international or civil war, drawn from the Correlates of War (COW) Database 4.0 (Sarkees *et al.*, 2010). Summary statistics on these variables can be found in the last panel of Table 1.

⁵ 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).

⁶ We follow the practice of Dollar *et al.* (2001), who construct their female representation variable in this manner.

⁷ In our sample, the share of female legislators decreases for Cyprus and Romania. There are a number of countries whose share peaks and then decreases towards the end of our sample (e.g. Germany, Latvia, and Poland).

4. Analysis

4.1 The Relationship between Foreign Aid and Female Leadership

This section examines the association between government funds allocated to foreign aid and the level of female representation in donor country legislatures. Our initial analysis includes the full sample of countries included in the DAC data with positive reported aid disbursements or commitments during the period 1960-2011.⁸ We first examine what we call the *generosity hypothesis* – the idea that female legislators tend to give more foreign aid. Because countries have very different levels of resources from which to give foreign aid, our primary measure of legislative generosity is foreign aid flows as a fraction of GDP.

Figure 2 plots the simple relationship between foreign aid as a percent of GDP and the share of legislative seats held by women across countries and years in our sample. There is a clear positive association. However, it is unclear whether this relationship is driven by cross country variation or causal variation within countries and we employ regression analysis and various tests to further unpack this relationship.

We first test the *generosity hypothesis*, focusing on foreign aid flows as a function of domestic country resources. Specifically, 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 regression specification:

$$\left(\frac{Aid}{GDP} \right)_{it} = \alpha + \beta_1(FS)_{it} + \delta X_{it} + \gamma \Omega_i + \theta \eta_t + \varepsilon_{it} \quad (1)$$

where i indexes donor countries and t indexes years. FS is the share of legislative seats held by women in donor country i at time t . Ω is a vector of country fixed effects and η is a vector of year fixed effects. Because both foreign aid flows and female political participation increase over time during the sample period, we include both year fixed effects and a linear time trend in our analysis.

X represents a vector of time variant donor country controls, which we include to control for a range of political and economic factors that may influence donor country decision making. Specifically, we include the growth rate of GDP per capita, as foreign aid is likely to increase during periods of economic growth and decrease during recessions, and these changes could be related to electoral turnover as well. We also include the donor country's exchange rate in relation to the US

⁸ Appendix Table 1 lists the full set of country-years included in the sample.

dollar, as foreign aid flows are measured in dollars. Political factors have also been shown to play an important role in determining aid flows. As a measure of democratization, we include the Polity 2 score, which ranks the political regime in donor countries from autocratic to democratic on a scale from -10 to 10. In our sample, the average score is 9.09, which is perhaps not surprising considering the majority of donor countries are economically developed democracies. We also include indicators for donor country involvement in an international war or a civil war. While conflict may influence donor solvency or act as a motivation for aid, these events are uncommon in our sample, with less than 4% of our country-year observations including these types of conflicts.

Table 2 presents the results of estimating equation (1) to examine the relationship between foreign aid flows and the gender composition of the legislature. The results are presented for aid disbursements in the left panel and for aid commitments in the right panel. Sets of controls are added sequentially, with column (1) in each panel including only aid as a fraction of GDP on the right hand side of the regression, column (2) adding the full set of controls in X , and the remaining columns additionally including year and country fixed effects, respectively.

Looking at both commitments and disbursements, the significance of columns (1) and (2) which lack fixed effects is perhaps unsurprising given the pattern depicted in Figure 2. A positive association between foreign aid as a fraction of GDP and female legislative representation may simply reflect differences in preferences across countries. That is, differences across countries in the gender composition of legislatures may be correlated with aid flows. The fixed effect results suggest however that the relationship is not simply limited to a across country correlation. Identification with both time and year fixed effects comes from variation in the level of aid as a fraction of GDP within specific donor countries over time, as donor fixed effects absorb variation due to time invariant country specific factors and time fixed effects absorb variation specific to a given year.

Once we include both of these in column (5), we document a positive association between aid generosity and female representation on a within country, over time basis. The first thing to note is that the estimated relationship for both disbursements and commitments is not only positive and significant in all cases, but also economically meaningful. To give a sense for the magnitude, naively interpreting the disbursement estimates in column (5) as causal would suggest that a one percentage point increase in the share of seats held by women should increase total aid disbursements by 0.024% as a percentage of GDP from their base of 0.51% (or a 4.7% increase in the percentage of GDP allocated to aid). This positive association suggests that legislatures with a higher proportion of female legislators may be more generous as a higher percentage of GDP gets allocated towards aid.

While aid as a percentage of GDP gives us a sense of the legislature's generosity, it is also worthwhile to look at the level of aid. Table 3 presents the results using the log of aid disbursements and commitments and the full set of controls and fixed effects. The results still show a positive and strongly significant association between the share of female legislators and the amount of foreign committed and disbursed. In other words, legislatures with higher percentage of females tend to give more foreign aid both as a percentage of GDP and in absolute terms.

As an example of the magnitude of the effect, if we once again interpret the relationship as causal, a percentage point increase in the share of female legislators increases total aid disbursement by 2.79% and commitments by 1.92%. Interestingly, this information suggests that female representatives may make foreign aid donors more accountable in terms of their financial promises. Consistent with the *grandstanding hypothesis*, we observe that higher female representation is associated with a larger increase in aid disbursements than commitments, suggesting a smaller fraction of pledged aid is failed to be delivered by these donor nations.

This section has identified a strong association between the relative share of national legislative seats held by women and the amount of foreign aid commitments and disbursements by donor nations. Section 4.2 conducts a number of extensions to this exercise. We examine first the stated purpose of aid, based on the reported composition of aid, and second the pattern of aid, based on the allocation of funds across recipient regions. Section 4.3 then undertakes a set of sample and quasi-experimental checks in an effort to examine both the robustness of these results and whether we can attribute causality to this relationship.

4.2 The Composition and Pattern of Foreign Aid

So far the analysis has examined aid disbursements and commitments at the national level. We now turn to disaggregated analysis to take advantage of information about the mechanisms through which aid flows travel and the purposes for which ODA flows are targeted. For instance donors can act without their peers and grant bilateral aid or through international agencies or agreements (i.e. multilaterally). Multilateral aid agreements are subject to cross-country negotiation and sometimes based on formulaic agreements with international institutions like the UN, IMF and World Bank. This suggests that changes in bilateral aid flows (in which a donor nation essentially goes it alone) may be more influenced by the individual legislators. Because of this, if female preferences are for a higher mean level of development assistance, we should expect to see a larger

impact of female representation on bilateral as opposed to multilateral aid, which we referred to as the *social norms hypothesis*.

We separate total aid into bilateral and multilateral in columns (2) and (3) of Table 4, with column (1) reproducing the results for total aid. Panel A shows the results for aid disbursements and Panel B the results for aid commitments. As can be seen from the table, the coefficient estimates for bilateral aid are very similar to the estimates for total aid, both when dealing with disbursements and commitments. Consistent with individual female legislators having a direct effect on policymaking, while the percentage of women in the legislature has a positive effect on overall aid, the majority of this increase comes in the form of bilateral aid.

A robust finding in the literature examining the impact of expanded gender equality on policy making has been an increase in the share of expenditure devoted to public goods such as health and education spending (Lott and Kenny, 1999; Abrams and Settle, 1999; Chattopadhyay and Duflo, 2004; Duflo and Topalova, 2004; Aidt and Dallal, 2008; Bertocchi, 2011; Brollo and Troiano, 2012). In the same vein, it is also plausible that males and female representatives differ not only in their desired level of generosity, but in their intended purpose for these financial flows, which we discussed in Section 2.1 as the *social preferences hypothesis*. Foreign aid is earmarked for a wide range of specific purposes, from infrastructure projects and military support to humanitarian needs and food aid. While we lack information on aid designated for militaristic purposes, the richness of the ODA data allows for an examination of some disaggregated categories.

In particular, we examine aid flows designated as either food aid or aid for humanitarian purposes. The results for this portion of aid flows can be seen in columns (4) and (5). The results for food aid are weakly significant and negative when looking at food aid as a percentage of GDP. These effects are not robust to examining total aid, and when we consider the log of food aid flows the results are positive in magnitude and insignificant. In contrast, humanitarian aid is positive and strongly significant in all specifications suggesting that as the share of females in the legislative body increases, donor countries are more likely to give humanitarian aid both in levels and as a percentage of GDP. Using the coefficient estimate in the first row of column (5) as an example, a one percentage point increase in the share of females in the legislature is associated with 3.1% more humanitarian aid disbursed. The strength of this association is consistent with the *social preferences hypothesis*, suggesting that female legislators have preferences which differ from men with regards to spending programs, in this case which manifest themselves in increases in types of aid that are geared more towards relief.

Finally, we examine whether in addition to specific channels and types of aid, female representation in donor countries alters the pattern of aid across regions. Table 5 shows the results when aid is disaggregated by income level and recipient regions (e.g. Latin America and Asia). Panel A reports the results for disbursements and Panel B the results for commitments. The only significant results are increases in aid committed to Africa and LDCs and aid committed and disbursed to Latin America. These results are consistent with the changes in aid composition from Table 4, as a larger share of aid to the LDCs is sent for development and humanitarian purposes.

4.3 Sample Robustness Checks

One concern is that because there are only a limited number of donor nations, the results may be driven by idiosyncratic factors specific to the sample of countries and years we have been able to include in our analysis. In order to explore whether these concerns are valid, we now re-estimate our primary model with all the controls and fixed effects for different subsets of countries. Table 6 reports the results estimated for different sub-samples. Column (1) replicated the full sample results as reported in Table 2 for comparison. We first excluded the United States from our analysis in column (2). A concern is that since the US is one of the largest foreign aid donors in terms of total aid disbursements, that it would have undue influence on the results. However, as the results show, the coefficient estimate for the female share variable is similar to the original results. In other words, while the United States is an important donor nation, they do not appear to have undue influence on our results.

Next we exclude country years which are non-contiguous (e.g. Czech Republic before 1998 and Kuwait before 1991). We exclude these country break years 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, shown in column (3) remain positive and significant, although the magnitude of the effect is slightly smaller. Finally we exclude oil producing states, out of concern that these countries may have motivations for foreign aid which may be either unrepresentative of other nations, or that their aid flows may be exogenously impacted by oil price fluctuations. These results are presented in column (4). Again the results are robust to this exclusion. Finally, in column (5) we restrict the sample to OECD countries only, with the estimated relationship largely unchanged.

4.4 Underlying Mechanisms for the Female Representative-Aid Relationship

The inclusion of fixed effects in the analysis up to this point should be able to account for a large degree of potential omitted variable bias. For instance, fixed effects should capture variation driven by specific donor countries having on average both better female political participation and preferences for higher levels of aid. The remaining predominant scope for endogeneity results from time-variant within country factors. In this regard, the primary concern would be that our estimates could be biased in a situation where changing domestic electorate preferences led to both the election of more female legislators and to increasing aid flows over time.

We address this issue by attempting to control for the preferences of the electorate with regard to foreign aid flows directly. Specifically, we include as a control, the total level of private aid flows from a given donor country in each year (both through NGOs and through private and commercial donors) as a fraction of GDP. These disbursements should proxy for the preferences of the domestic population. Controlling explicitly for these preferences should thus capture variation in aid due to the generosity of the populace in a given year, leaving variation in aid attributable to individual legislators and the mechanisms through which foreign aid is approved at the legislative level.

The results of this exercise are presented in Table 7, which examines the composition of aid flows, as in Table 4. We focus on the composition and not the pattern of aid in this exercise because of the strength of the relationship between total, bilateral, and humanitarian aid documented previously and because doing so allows for a larger sample than is available for regional decompositions. Panel A reports the results for disbursements and panel B for commitments. Once we include private aid flows, the coefficient on the female share variable is reduced in size but remains significant for total aid, bilateral aid, and humanitarian aid. The coefficients on private aid flows are not significant. So while the magnitude of the effect is reduced, the share of legislative seats held by women still appears to be associated with higher levels of foreign aid as a fraction of GDP even when accounting for the preferences over aid from the domestic population.

So far in our analysis we have tried to estimate the direct effect of female legislators through the use of fixed effects and controls for private aid flows. Ultimately, we are interested in whether the percentage of legislative seats held by females has a causal effect on the amount aid committed and disbursed. The principal empirical concern has been that countries which give more aid may also be more likely to elect female leaders and that this association may be somehow time variant. As a final check on causality, we employ an instrumental variables strategy for the potentially endogenous level of female political participation in a country. As an instrument we employ a

measure of linguistic gender marking based on *Gay et al.*, (2013). Specifically, we examine whether a country's dominant language has grammatical components which are gendered.

The assignment of gender in a language's grammatical system has been shown to persist over time, with the original determination having historical origins (Wichmann and Holman, 2009). Examples of gender marking include assigning gender to pronouns (he/she) or having genders assignment systems specifically designated as masculine or feminine. This measure has been associated with skewed gender outcomes in other studies; in societies where the language makes a gender distinction, gender divisions are more likely to arise in economic outcomes as well. For instance women are less likely to participate in the labor force, bear a larger burden of household chores, and importantly, are less likely to engage in politics at any level (*Gay et al.*, 2013; *Hicks et al.*, 2013; *Santacreu-Vasut*, 2013). We posit that grammatical structure can act as a valid instrument because countries which lack sex-based linguistic assignment should have a higher share of women in parliament should be more likely to start this adoption earlier in time. At the same time, there is no strong theoretical reason, why a priori, gender assignment in language should violate the exclusion restriction and be related to the level of foreign aid at the national level, other than through its impact of the gender composition of the legislature. Appendix Table 2 presents the results of the first stage relationship. Consistent with existing research, a lack of sex-based grammatical assignment is strongly positively correlated with female representation.⁹

Table 8 reports the results of the second stage. The results corroborate the previous findings. The percentage of female legislators is estimated to have a positive and significant effect on the amount of total aid, bilateral aid, multilateral aid, and humanitarian aid for both commitments and disbursements. As before, the majority of the increase in total aid is coming from increases in bilateral aid instead of multilateral aid. Interpreting the coefficient for bilateral aid disbursements, a one percentage point increase in the share of women legislators should increase bilateral aid disbursements by 0.023% as a percentage of GDP from their base of 0.36% (or a 6.5% increase in the percentage of humanitarian aid disbursed).

5. Conclusion

Evidence from the experimental literature suggests that, on average, males and females may differ in their underlying preferences, which then manifests in differences in behavior. We examine a

⁹ The bottom of the table reports the first-stage F-statistic as well as the p-value for the Hausman test for endogeneity. The large F-statistic suggests that the instrument is sufficiently strong while the results of the Hausman tests indicate that the instrumental variable results presented in the Table 8 may be preferred over the ordinary least squares results.

potentially important implication of these differences, by examining the impact of female legislators on the level and composition of foreign aid flows. In our analysis, we document that the share of female representatives in national legislators is associated with higher levels of foreign aid commitments and disbursements, both in terms of the level of foreign aid and in terms of aid as a percentage of GDP. These results provide revealed preference evidence that female representatives differ in their preferences in terms of overall generosity with respect to aid. Consistent with literature examining the impact of female legislators on within country spending patterns, we show that the majority of the increase in foreign aid was given through bilateral aid and that more aid went for humanitarian relief and to LDCs.

A principal empirical concern is that the election of females to policy making positions may be correlated with changes in voter preferences concerning the level and composition of foreign aid. We circumvented this problem by employing a novel strategy to examine the causal effect of female leadership, using an IV as well as accounting for domestic preferences regarding aid by looking at private aid flows. Nevertheless, a caveat for the application of these findings to other settings is that the preferences of the subset of elected officials differ from those of the typical individual. The results we describe result from both male and female legislator preferences, and the characteristics and personality which lead individuals to become elected officials may effectively represent sample selection, such as would be the case if either males or females interested in public service were also more inclined to be altruistic.

Our results have important implications for the future of development policy. As legislatures around the world become more inclusive with respect to women, we should expect to see concomitant increases in foreign aid, particularly in aid directed towards the world's poorest regions. Many countries around the world have begun to adopt gender quotas in legislative bodies. This analysis suggests that such programs are likely to alter the scale and scope of government not only with respect to domestic spending patterns but also in regards to international transfers as well.

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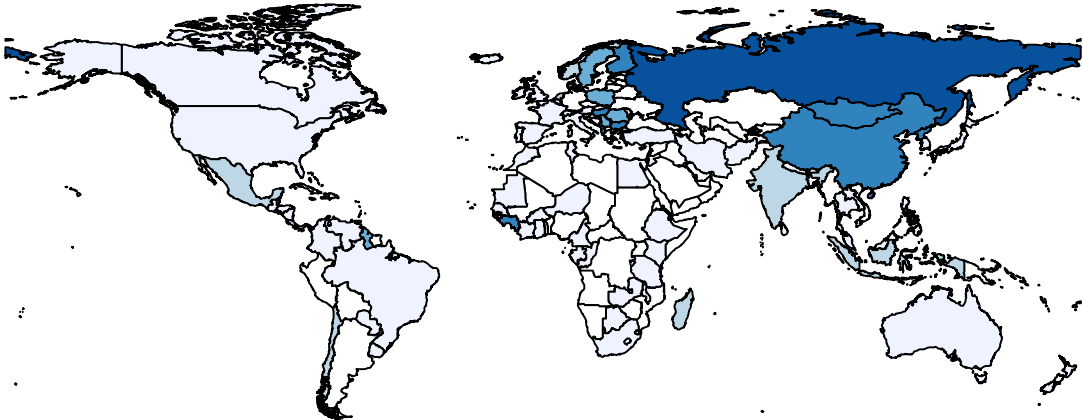
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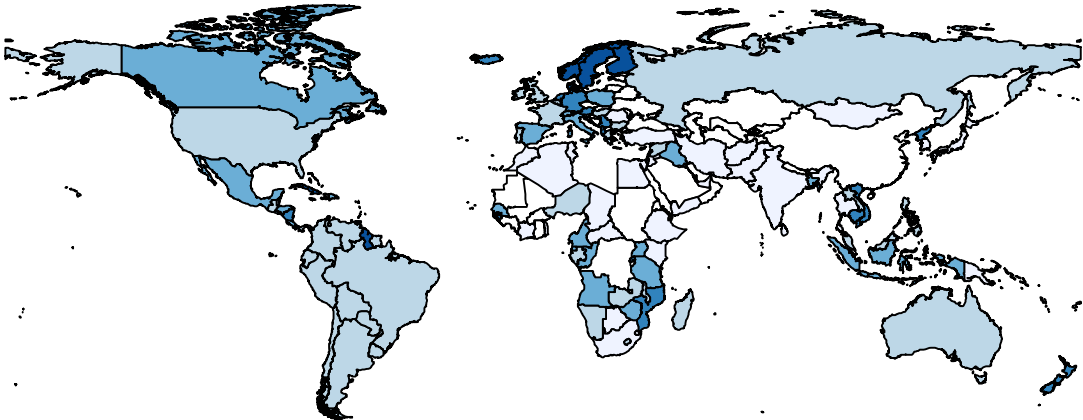
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Figure 1: Share of Seats Held By Women in National Legislatures

1970



1990



2010

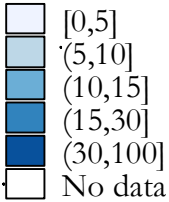
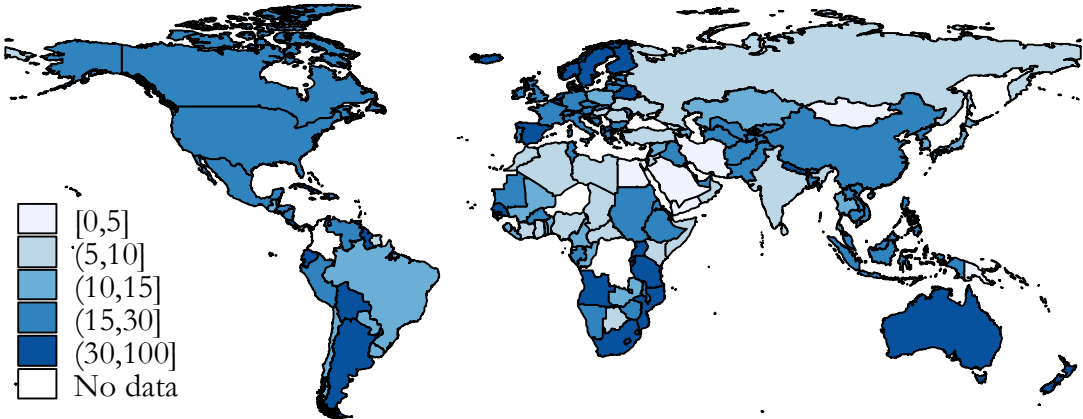


Figure 2: Foreign Aid and Female Legislators

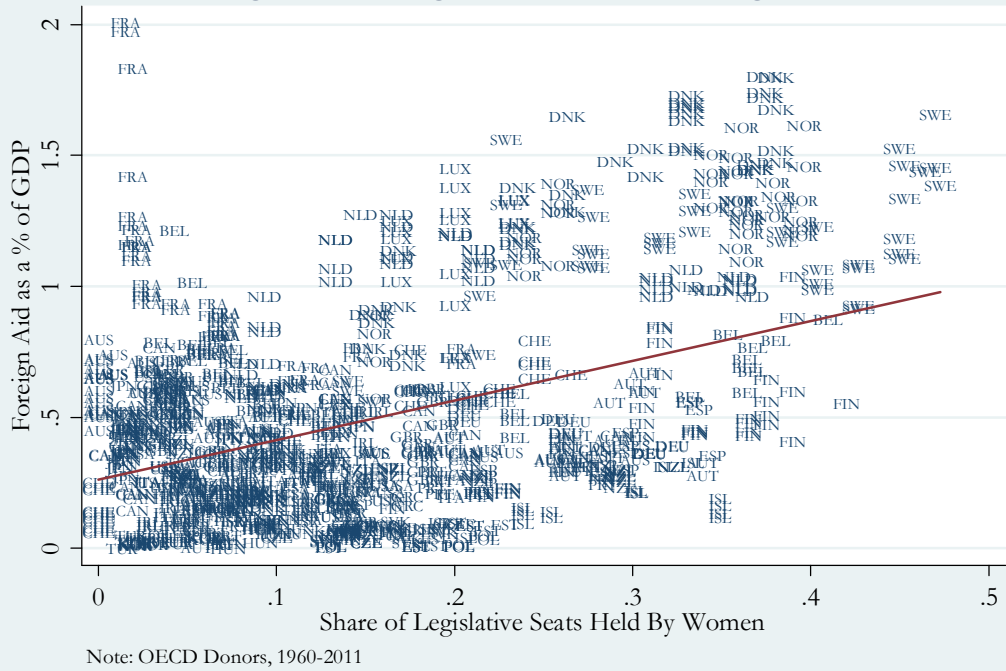


Figure 3: Humanitarian Aid and Female Legislators

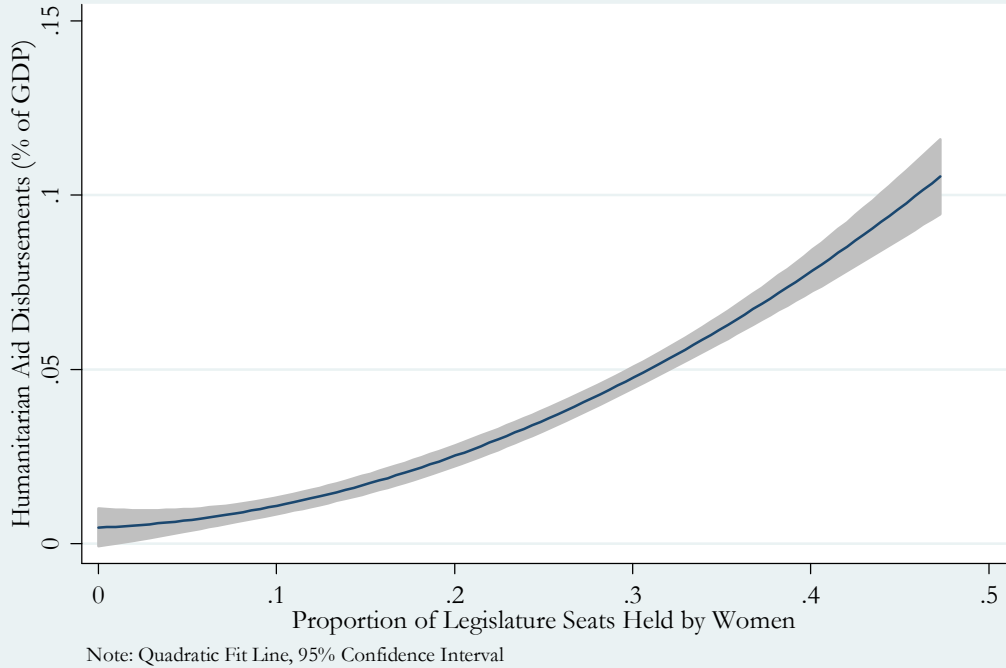


Table 1: Summary Statistics

Aid Disbursements, Levels (millions of USD)	Obs	Mean	Std. Dev.
Total ODA	1,222	3,253	4,962
Bilateral	1,199	2,487	4,081
Multilateral	1,196	830	1,120
Bilateral relief & developmental food aid	814	210	566
Bilateral humanitarian aid	750	144	382
Private flows from NGOs	772	508	1,761
Private commercial flows	886	6,117	13,103
<hr/>			
Aid Disbursements, % of GDP	Obs	Mean	Std. Dev.
Total ODA	1,222	0.51	0.47
Bilateral	1,199	0.37	0.39
Multilateral	1,196	0.15	0.14
Bilateral relief & developmental food aid	814	0.02	0.03
Bilateral humanitarian aid	750	0.03	0.04
Private flows from NGOs	772	0.05	0.04
Private commercial flows	886	0.68	0.89
<hr/>			
Political and Economic Variables			
Fraction of legislative seats held by women	1,222	0.15	0.11
Polity 2 score	1,222	9.09	3.36
External war indicator	1,222	0.03	0.16
Civil war indicator	1,222	0.03	0.20
Real GDP per capita	1,222	24,297	11,875
Population (in millions)	1,222	34	54
Exchange rate	1,222	0	2

Note: See text for the source and definition of all variables. ODA gross disbursements are presented in millions of 2010 USD. Private flows from NGOs and private commercial flows are net, and are also presented in millions of 2010 USD. Real GDP per capita is presented in 2005 USD.

Table 2: Female Legislators and Foreign Aid as a Percentage of GDP

Dependent Variable:	ODA Disbursements as % of GDP					ODA Commitments as % of GDP				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Legislative seats held by women, %	1.210*	2.228***	2.327***	1.990***	2.427***	1.057*	2.408***	2.448***	1.776***	1.952***
	(0.655)	(0.628)	(0.651)	(0.253)	(0.286)	(0.632)	(0.599)	(0.632)	(0.482)	(0.483)
Growth of Real GDP per capita		-1.644***	-1.458***	-1.695***	-1.556***		-3.448***	-3.218***	-3.348**	-3.097**
		(0.488)	(0.534)	(0.499)	(0.515)		(0.970)	(0.884)	(1.304)	(1.373)
Exchange Rate to US\$		-0.005	-0.002	0.021	0.041***		-0.005	-0.003	0.061***	0.079***
		(0.012)	(0.013)	(0.013)	(0.015)		(0.013)	(0.013)	(0.024)	(0.024)
External War Indicator, Current Year		0.028	0.078	0.048	0.103**		0.019	0.076	0.120	0.216**
		(0.095)	(0.133)	(0.043)	(0.052)		(0.100)	(0.141)	(0.087)	(0.093)
Civil War Indicator, Current Year		0.115	0.137	0.124***	0.134***		0.020	0.005	0.037	0.020
		(0.107)	(0.086)	(0.031)	(0.043)		(0.155)	(0.149)	(0.037)	(0.046)
Polity 2 Score		-0.050***	-0.051***	-0.101***	-0.103***		-0.097***	-0.096***	-0.207***	-0.209***
		(0.013)	(0.013)	(0.029)	(0.032)		(0.010)	(0.010)	(0.062)	(0.061)
Year		-0.016***	-0.014***	-0.008**	-0.008*		-0.025***	-0.012***	-0.017**	-0.004
		(0.002)	(0.003)	(0.003)	(0.004)		(0.004)	(0.003)	(0.007)	(0.008)
Year Fixed Effects	No	No	Yes	No	Yes	No	No	Yes	No	Yes
Donor Country Fixed Effects	No	No	No	Yes	Yes	No	No	No	Yes	Yes
Number of observations	1,222	1,222	1,222	1,222	1,222	924	924	924	924	924
R2	0.082	0.458	0.500	0.661	0.697	0.053	0.477	0.509	0.617	0.655
Mean of Dependent Variable	0.51	0.51	0.51	0.51	0.51	0.64	0.64	0.64	0.64	0.64
Std. Dev of Dependent Variable	0.47	0.47	0.47	0.47	0.47	0.55	0.55	0.55	0.55	0.55

Note: Data include all reported bilateral and multilateral DAC-ODA aid flows. Exchange rate coefficients have been scaled by 100 for interpretation. Columns (1) - (3) and (6) - (8) present standard errors clustered at the donor level in parenthesis. Columns (4) - (5) and (9) - (10) include donor fixed effects with Huber-White robust standard errors in parenthesis. All regressions include a control for the level of Real GDP per capita and a year trend. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Female Legislators and the Level of Foreign Aid

	Dependent Variable: Log of	
	Disbursements	Commitments
Legislative seats held by women, %	2.754*** (0.506)	1.901*** (0.339)
Log of Real GDP per capita	1.850*** (0.217)	2.164*** (0.224)
Growth of Real GDP per capita	-0.596 (0.610)	-1.056 (0.911)
Exchange Rate to US\$ (scaled)	0.270*** (0.040)	0.209*** (0.043)
External War Indicator, Current Year	0.156 (0.099)	0.227** (0.096)
Civil War Indicator, Current Year	0.431*** (0.095)	0.175*** (0.055)
Polity 2 Score	-0.105** (0.047)	-0.105* (0.056)
Year Fixed Effects	Yes	Yes
Donor Country Fixed Effects	Yes	Yes
Number of observations	1,222	924
R2	0.935	0.948
Mean of Dependent Variable	6.84	7.52
Std. Dev of Dependent Variable	1.91	1.46

Note: Data include all reported bilateral and multilateral DAC-ODA aid flows. Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include include a control for the level of real GDP per capita and a year trend. Huber-White robust standard errors in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Table 4: Female Legislators and the Composition of Aid

	Total	Bilateral	Multilateral	Food Aid	Humanitarian
Panel A: Disbursements	(1)	(2)	(3)	(4)	(5)
Dependent Variable: ODA Disbursements as % of GDP					
Legislative seats held by women, %	2.427*** (0.286)	2.147*** (0.252)	0.389*** (0.058)	-0.042** (0.019)	0.093*** (0.020)
Mean of dependent variable	0.51	0.37	0.15	0.02	0.03
Dependent Variable: ln(ODA Disbursements)					
Legislative seats held by women, %	2.221*** (0.510)	3.491*** (0.617)	0.917 (0.572)	0.065 (1.051)	2.513*** (0.912)
Mean of dependent variable	6.84	6.41	5.65	3.47	3.61
Number of Observations	1,222	1,199	1,196	814	750
Panel B: Commitments	(1)	(2)	(3)	(4)	(5)
Dependent Variable: ODA Commitments as % of GDP					
Legislative seats held by women, %	1.952*** (0.483)	1.765*** (0.447)	0.178** (0.070)	-0.025* (0.015)	0.088*** (0.023)
Mean of dependent variable	0.64	0.46	0.19	0.02	0.03
Dependent Variable: ln(ODA Commitments)					
Legislative seats held by women, %	1.518*** (0.361)	2.108*** (0.479)	0.123 (0.586)	0.491 (1.112)	3.033*** (1.114)
Mean of dependent variable	7.52	7.10	6.25	3.62	3.70
Number of Observations	924	924	916	685	687

Note: Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Female Legislators and the Geographic Pattern of Aid Flows

Dependent Variable: ODA Disbursements as % of GDP							
	Africa	Asia	Latin America	Europe	Middle East	LDCs	LMICs
Panel A: Disbursements	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Legislative seats held by women, %	0.247 (0.182)	-0.044 (0.057)	0.185*** (0.041)	0.035 (0.024)	-0.051 (0.047)	0.247 (0.167)	0.132* (0.072)
Mean of Dependent Variable	0.12	0.06	0.03	0.02	0.02	0.10	0.08
Number of observations	412	409	391	348	375	394	415
R2	0.673	0.790	0.695	0.705	0.464	0.709	0.672
Dependent Variable: ODA Commitments as % of GDP							
Panel B: Commitments	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Legislative seats held by women, %	0.421*** (0.139)	-0.033 (0.059)	0.051* (0.029)	0.028 (0.017)	0.002 (0.027)	0.414*** (0.111)	0.096 (0.061)
Mean of Dependent Variable	0.15	0.10	0.03	0.02	0.02	0.12	0.10
Number of observations	700	694	651	552	590	694	702
R2	0.657	0.694	0.590	0.641	0.432	0.703	0.562

Note: Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Sample Robustness

Dependent Variable: ODA Disbursements, Commitments as % of GDP					
	Main Sample	Excluding US	Excluding Year Breaks	Excluding Oil Producers	OECD Sample
	(1)	(2)	(3)	(4)	(5)
Panel A: Disbursements					
Legislative seats held by women, %	2.427*** (0.286)	2.347*** (0.296)	2.005*** (0.178)	1.937*** (0.173)	1.952*** (0.177)
Mean of Dependent Variable	0.51	0.37	0.15	0.02	0.03
Number of observations	1,222	1,170	1,202	1,179	1,139
R2	0.697	0.697	0.777	0.801	0.800
Panel B: Commitments					
Legislative seats held by women, %	1.952*** (0.483)	1.942*** (0.499)	0.934*** (0.214)	0.946*** (0.183)	0.946*** (0.183)
Mean of Dependent Variable	0.64	0.46	0.19	0.02	0.03
Number of observations	924	878	918	902	902
R2	0.655	0.649	0.724	0.810	0.810

Note: Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Robustness Check for Private Aid Flows

	Dependent Variable: ODA Disbursements as % of GDP				
	Total	Bilateral	Multilateral	Food Aid	Humanitarian
Panel A: Disbursements	(1)	(2)	(3)	(4)	(5)
Legislative seats held by women, %	0.609*** (0.199)	0.530*** (0.174)	0.030 (0.062)	-0.014 (0.017)	0.117*** (0.025)
Private Flows (NGOs)	-0.103 (0.283)	0.132 (0.243)	-0.145 (0.099)	0.000 (0.023)	0.044 (0.049)
Private Flows (Commercial Aid)	-0.005 (0.009)	-0.003 (0.007)	-0.001 (0.003)	-0.001 (0.001)	-0.001 (0.001)
Mean of Dependent Variable	0.56	0.39	0.18	0.01	0.02
Number of observations	638	638	638	560	554
R2	0.863	0.797	0.869	0.593	0.779
Panel B: Commitments	(1)	(2)	(3)	(4)	(5)
Legislative seats held by women, %	0.369* (0.203)	0.417** (0.175)	-0.051 (0.075)	-0.035* (0.020)	0.134*** (0.026)
Private Flows (NGOs)	-0.146 (0.331)	-0.016 (0.261)	-0.094 (0.140)	0.014 (0.025)	-0.003 (0.047)
Private Flows (Commercial Aid)	0.000 (0.013)	0.001 (0.012)	-0.001 (0.004)	-0.001* (0.001)	-0.002* (0.001)
Mean of Dependent Variable	0.61	0.42	0.19	0.02	0.02
Number of observations	628	628	627	510	518
R2	0.811	0.752	0.818	0.574	0.693

Note: Private aid flows calculated as a percentage of GDP. Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

**Table 8: 2nd Stage 2SLS Estimates of the Relationship
Between Female Representation and Aid**

	Dependent Variable: ODA Disbursements as % of GDP				
	Total	Bilateral	Multilateral	Food Aid	Humanitarian
Panel A: Disbursements	(1)	(2)	(3)	(4)	(5)
Legislative seats held by women, %	4.159*** (0.240)	2.339*** (0.193)	1.786*** (0.102)	-0.025* (0.014)	0.342*** (0.026)
Mean of Dependent Variable	0.50	0.36	0.15	0.02	0.02
Number of observations	1,190	1,171	1,164	789	727
R2	0.420	0.470	0.253	0.394	0.379
Panel B: Commitments	(1)	(2)	(3)	(4)	(5)
Legislative seats held by women, %	4.336*** (0.235)	2.524*** (0.162)	1.851*** (0.123)	-0.031** (0.013)	0.298*** (0.036)
Mean of Dependent Variable	0.63	0.45	0.19	0.02	0.02
Number of observations	903	903	895	667	671
R2	0.435	0.482	0.146	0.373	0.459

Note: First-stage estimates are presented in Appendix Table 2. Exchange rate coefficients have been scaled by 100 for interpretation. All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. Appendix Table 1 lists the full set of donor country-years analyzed. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 1: Sample Donor Countries and Years

Donor	Years	Donor	Years
Australia	1960 - 2011	Latvia	2002 - 2011
Austria	1960 - 2011	Lithuania	2001 - 2011
Belgium	1960 - 2011	Luxembourg	1980 - 2011
Bulgaria	2010 - 2011	Netherlands	1960 - 2011
Canada	1960 - 2011	New Zealand	1961 - 2011
Cyprus	2005 - 2011	Norway	1960 - 2011
Czech Republic	1993-1994,1998 - 2011	Poland	1998 - 2011
Denmark	1960 - 2011	Portugal	1980 - 2011
Estonia	1998 - 2011	Romania	2008 - 2011
Finland	1961 - 2011	Russia	2010 - 2011
France	1960 - 2011	Saudi Arabia	2004 - 2011
Germany	1990 - 2011	Slovak Republic	1999 - 2011
Greece	1996 - 2011	Slovenia	2005 - 2011
Hungary	1991-1992, 2003-2011	Spain	1980 - 2011
Ireland	1974 - 2011	Sweden	1960 - 2011
Israel	1997 - 2011	Switzerland	1960 - 2011
Italy	1960 - 2011	Thailand	2006 - 2011
Japan	1960 - 2011	Turkey	1990 - 2011
Korea	1987 - 2011	United Arab Emirates	1987 - 2010
Kuwait	1971-1976, 1981-1986, 1991-2011	United Kingdom	1960 - 2011
		United States	1960 - 2011

Note: Sample includes all donor-years which record positive ODA flows in the DAC database.

Appendix Table 2: First Stage IV Estimates

Dependent Variable: Share of Legislative Seats Held by Women

Absence of Sex Based Grammar Structure	0.149*** (0.006)
Number of observations	1,190
R2	0.613
F-Statistic	632.273***
Hausman Test (p-value)	0.000

Note: Grammatical indicator taken from Gay *et al.* (2013). All specifications include donor and year fixed effects and the full set of controls from Table 2. Huber-White robust standard errors reported in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ The p-value of the Hausman test is for the Wu–Hausman chi-squared test.