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Gesture politics or real commitment?

Gender inequality and the allocation of aid

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Abstract

Donors of foreign aid increasingly claim to consider gender inequality in the recipient countries to be a serious concern. While aid specifically to promote gender equality receives only a tiny share of aid budgets, allocations to education, health, and civil society projects could be affected by gender inequality concerns. In this paper, we investigate whether donors indeed give more aid to countries with larger gender gaps ('need') in education, health, employment, or women's rights, or rather reward improvements in those indicators ('merit'). We find some evidence that gender gaps in education and health affect the allocation of aid in those sectors and overall, while greater female political representation appears to be 'rewarded' with higher aid flows; employment gaps do not seem to affect the allocation …

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of aid. Taking account of substantive and statistical significance, overall, there is modest evidence that gender gaps affect the allocation of aid in total and for particular sectors. The quantitative effects are rather small in size and differ by donor country (group) and donor as well as recipient characteristics.

1 Introduction

Gender inequality in key indicators of well-being and empowerment is affecting a large number of developing countries. At the same time, there is a great deal of heterogeneity in gender inequality across countries. For example, while gender gaps in education are still a pervasive problem in South Asia and West Africa, they are largely absent in Latin America and South-East Asia (World Bank 2011; Klasen 2006a). Gender gaps in employment are particularly large in South Asia and the Middle East and North Africa, but much smaller in sub-Saharan Africa (SSA). Donors of official development aid (ODA) have officially stated that the reduction of gender inequality is an important goal in development cooperation. This focus on gender inequality has been elevated by international agreements to reduce gender inequality, in particular the 1995 Beijing Platform of Action, the Convention on the Elimination of Discrimination against Women (CEDAW), and the 3rd Millennium Development Goal (MDG) on the promotion of gender equality and empowerment of women. As a result, donors have professed to allocate aid to activities that should reduce gender inequality, to sectors where gender inequality is most severe, and to countries where gender inequality is a particularly serious concern.

The question we address in this paper is whether donors have indeed allocated aid in a way that is consistent with these stated intentions. In order to investigate this question empirically, we draw on the detailed Creditor Reporting System (CRS) of the Organisation for Economic Co-operation and Development's Development Assistance Committee (OECD-DAC) on official development aid. This allows a detailed distinction between aid committed for particular sectors like education or building up a civil society, and thus the identification of potentially gender-relevant aid commitments. We then investigate whether overall aid commitments to countries where gender inequality has been particularly severe are higher. Given the rising importance of gender inequality as a topic of discussion, we also test whether the importance of gender-related indicators of need for the allocation of aid has increased over time. Moreover, we use sectorally disaggregated aid data to examine aid specifically for sectors that are related to the respective indicator of need.[1]

While the importance of gender-related need for the allocation of aid has not been investigated in any detail, related literature exists. For example, Thiele et al. (2007) combine sectorally disaggregated aid data with indicators that reflect the recipient countries' need regarding the MDGs. Using Tobit models, they show that donors differ to some extent in their allocation of aid. Overall, they find that the fight against HIV/AIDS has noticeably shaped the allocation of aid, while donors' actions do not match their rhetoric with respect to the other MDGs.[2] The analysis in Thiele et al. includes MDG3 on gender equality. They investigate whether the ratio of girls to boys in primary and secondary education and male to female literacy ratios affect the allocation of overall aid, aid for education, and aid for basic education, respectively. Their results show that the promotion of gender equality has received little donor attention.

In this paper we broadly follow the approach of Thiele et al. (2007). In particular, we combine a number of indicators measuring gender inequality in various dimensions with aid

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[1] For example, we test whether aid earmarked as addressing 'gender inequality' in the OECD-DAC system has primarily been granted to countries and sectors where gender inequality is particularly severe.

[2] For a related study on aid allocation and HIV/AIDS see Nunnenkamp and Öhler (2011).

committed to sectors that we expect to be related to this particular dimension. Specifically, we examine the sectors education, health, population policies, civil society (as well as sub-categories thereof, including aid given to promote gender equality) and overall aid. Our results show that gender gaps in education and health affect the allocation of aid overall and in the relevant sectors. Greater female political representation and a better protection of women's rights appear to be 'rewarded' with higher aid flows overall and in some sectors, while gender gaps in employment do not seem to affect the allocation of aid. If a recipient country provides good legal conditions for women, but large inequality persists, donors are more likely to increase aid. Regarding donor characteristics, donors that perform better in terms of gender equality themselves seem to put more weight on indicators of gender inequality in recipient countries. In summary, the quantitative effects of the statistically significant variables are rather modest however; they differ by donor (groups) and characteristics, and are affected by the level of women's legal rights in the recipient country.

The second section describes how we measure gender inequality and aid. Section 3 introduces our data and method, while section 4 shows regressions that measure how aid reacts to gender imbalances and female underrepresentation ('need'), aggregated among all donors and over several periods of time. We further test whether donors reward improvements in gender indicators with more aid ('merit'), and condition their reaction on the legal rights situation in the recipient country. Section 5 disaggregates the donors, and shows regressions for individual donors groups for the 'need' regressions. It also examines how conditions in the donor country with regard to government ideology and female political power affect the sensitivity to gender inequality in the recipient country. Section 6 concludes and draws policy implications.

2   Measuring gender inequality and aid: some indicators and a first glance at the data

In order to study whether the allocation of aid takes account of gender inequality, it is first useful to present some stylized facts on the prevalence of different forms of gender inequality across the developing world as well as some information on the allocation of aid.

Broadly, we distinguish between five types of gender inequality: inequality in economic and social rights, in survival, in education, in employment, and in empowerment. Of potential interest are both gaps compared to men (inequality) as well as the absolute status of women. It is for this reason that for all indicators where it is suitable we use a ratio of female status relative to male status as well as the absolute outcomes for women. We calculate all ratios in a way that higher values are related to less inequality and/or better outcomes for women. For example, an increase in the female tertiary enrolment ratio indicates that a potential disadvantage of women in accessing university education has decreased. In addition, the absolute percentage of women enrolled in tertiary education completes the picture and allows a distinction between countries that are performing badly due to overall poor performance (e.g., low numbers of tertiary students overall) or due to discrimination against women. The five types of inequalities cover the areas that are supposedly most well-suited in representing gender inequality and at the same time provide data of acceptable quality.[3]

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[3] The problem of data quality and availability looms large in this area of research. There have been several attempts to create composite indicators, for example *The Economist*'s Women's Economic Opportunity Index, or the Global Gender Gap Index from the World Economic Forum. Both, however, are only available as a pure cross-section or for a very limited amount of time. The development of these indices will hopefully provide

Table 1: Descriptive statistics

World Bank Regional Classification:	East Asia & Pacific			Europe & Central Asia			Latin America & Caribbean		
	Observations (N)	Mean	SD	N	Mean	SD	N	Mean	SD
Primary Completion Ratio	134	0.96	0.1	77	0.98	0.03	259	1.02	0.08
Primary Completion Female	134	88.89	22.82	77	95.41	7.15	259	86.5	18.06
Tertiary Enrolment Ratio	128	0.85	0.46	97	1.06	0.34	233	1.22	0.71
Tertiary Enrolment Female	128	14.45	15.25	97	31.73	20.45	233	22.17	21.48
Vulnerable Employment Ratio (Male/female)	56	1.16	0.49	44	1.01	0.22	177	1.27	0.47
Vulnerable Employment Female	56	49.96	26.02	44	40.57	20.18	177	33.02	15.63
Employment to Population Ratio	115	0.75	0.17	108	0.7	0.13	184	0.57	0.11
Employment to Population Female	115	57.47	14.1	108	42.48	9.74	184	42.01	8.15
Life Expectancy Ratio	284	1.07	0.03	129	1.11	0.04	413	1.08	0.03
Life Expectancy Female	284	66.99	7.73	129	73.04	4.66	413	71.58	6.04
Missing Women	12	0.13	0.25	14	0.07	0.12	19	0	0
Women's Rights	184	3.71	1.18	113	3.92	0.89	294	4.35	1.07
Women in Parliament	124	0.09	0.09	82	0.13	0.08	190	0.15	0.09
Global Gender Gap Index (WEF)	17	0.68	0.04	24	0.67	0.03	49	0.68	0.03
Gender Development Index*	9	0.9	0.06	8	0.94	0.12	20	0.88	0.06
Women's Economic Opportunity	16	44.3	9.29	16	51.85	7.56	17	55.56	6.34

World Bank Regional Classification:	Middle East & North Africa			South Asia			Sub-Saharan Africa		
	Observations (N)	Mean	SD	N	Mean	SD	N	Mean	SD
Primary Completion Ratio	157	0.86	0.17	44	0.74	0.26	419	0.81	0.28
Primary Completion Female	157	73.86	25.39	44	58.1	37.04	419	48.22	28.53
Tertiary Enrolment Ratio	170	0.88	0.67	64	0.51	0.36	353	0.44	0.33
Tertiary Enrolment Female	173	14.93	13.81	64	3.38	3.63	354	2.06	3.52
Vulnerable Employment Ratio (Male/female)	41	1.48	0.92	23	0.94	0.24	70	0.93	0.35
Vulnerable Employment Female	41	34.87	22.69	23	62.6	19.25	70	71.6	30.23
Employment to Population Ratio	111	0.26	0.1	56	0.49	0.25	315	0.78	0.2
Employment to Population Female	111	17.33	7.66	56	38.96	21.52	315	56.44	17.44
Life Expectancy Ratio	227	1.06	0.06	104	1.02	0.04	594	1.06	0.03
Life Expectancy Female	227	68.45	7.53	104	58.97	10.34	594	52.89	7.9
Missing Women	10	0.23	0.22	7	0.43	0.35	43	0.01	0.05
Women's Rights	162	2.45	1.47	81	2.87	1.33	463	3.36	1.06
Women in Parliament	79	0.06	0.06	46	0.1	0.08	259	0.13	0.09
Global Gender Gap Index (WEF)	18	0.58	0.05	12	0.63	0.06	47	0.65	0.06
Gender Development Index*	6	0.65	0.09	4	0.61	0.15	19	0.81	0.09
Women's Economic Opportunity	9	42.81	10.11	4	41.06	5.07	21	40.25	12.1

Note and source: *The Gender Development Index is provided by the United Nations Development Programme, and updated by Klasen (2013).

Table 1 shows descriptive statistics for all indicators we use in the empirical analysis, as well as some others for illustrative purposes, grouped by regions as classified by the World Bank. The table provides details on gender gaps by region, using a broader array of indicators, examining gender gaps and absolute levels of female outcomes in the five dimensions that we focus on. We discuss them in turn, focusing on one representative indicator for each of the five dimensions.

First, gender inequality in economic and social rights remains a serious issue in a range of countries. This includes gender inequality in the rights of women to own and inherit land and other economic assets, and gender inequality in rights within the family, including the right to travel without male consent, to gain custody of children in the case of divorce, and gender inequality in marriage and divorce proceedings. We rely on an aggregate index that includes

future research with a more accurate picture of overall gender inequality. For now, focusing on individual indicators rather than composite indices seems to be the more promising endeavor, as data availability and quality is so heterogeneous between the areas.

women's rights in three dimensions, political, economic and social (CIRI, Cingranelli and Richards 2010).[4] As shown in Figure 1, gender inequalities according to this index tend to be particularly sizable in the Middle East, North Africa, and SSA regions.

Figure 1: Women's Rights Index (CIRI), average over 2002-11
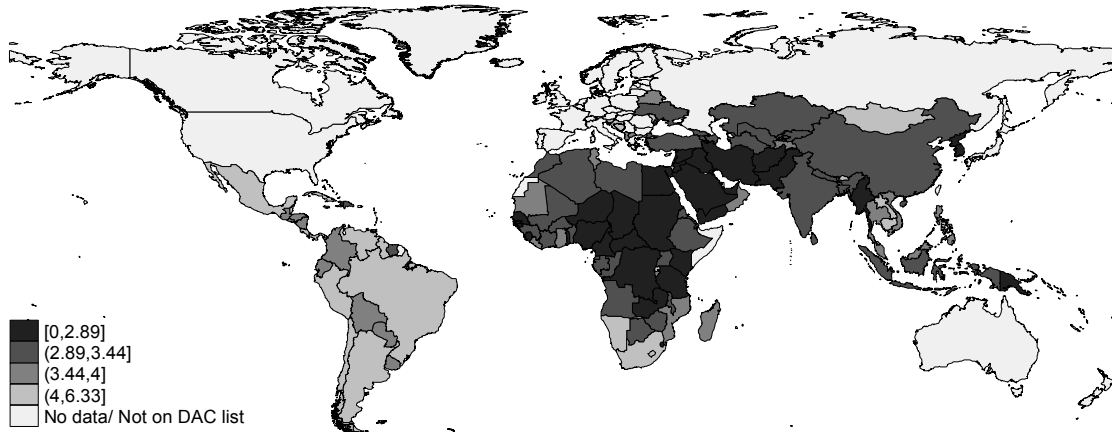
Note: [0,9] scale, higher values indicate a better protection of women's rights.
Source: World Bank (2013).

A second area of gender gaps concerns the inequality in survival, related to son preference and associated sex-selective abortions and relative neglect of female infants and children. This has been captured by the literature on 'missing women' (e.g., Sen 1989; Klasen and Wink 2002, 2003). In Figure 2, we show the female/male life expectancy ratio as one indicator that measures this type of inequality. Clearly women's rights are particularly neglected in South and East Asia, and to some extent in the Middle East and North Africa as well as in some SSA countries.

Figure 2: Female/male life expectancy ratio, average over 2002-11

Source: World Development Indicators (2013)
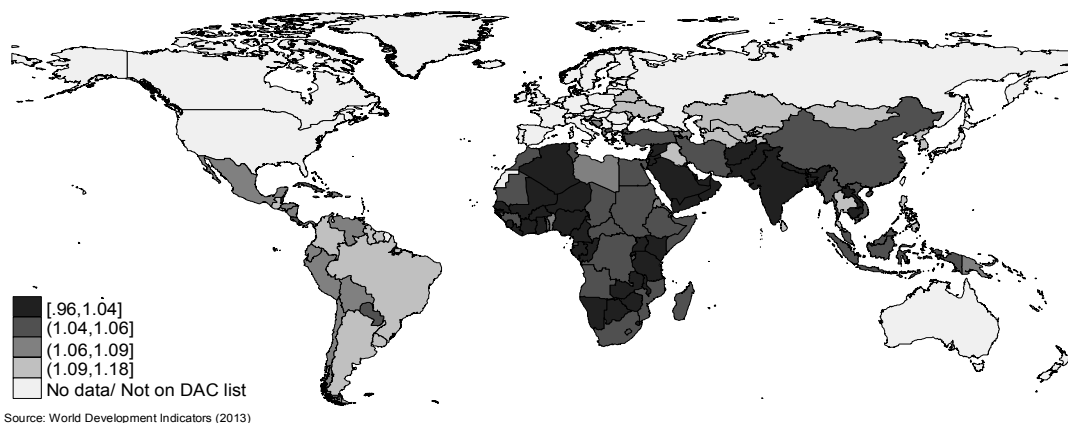
Source: World Bank (2013).

Third, we study gender gaps in educational opportunities, which are the focus of the MDG3 targets. Available data allow one to examine gender gaps in primary enrollment and

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4 For a more recent period, the OECD's Social Institutions and Gender Index (SIGI) is also available (e.g., Branisa et al. forthcoming). It is a new composite measure of gender equality, based on the OECD's Gender, Institutions and Development Database and contains twelve indicators on social institutions in five categories: Family Code, Physical Integrity, Son Preference, Civil Liberties and Ownership Rights.

completion as well as secondary and tertiary enrolment. As shown in Figure 3, the regional distribution in primary completion again differs widely across regions, with SSA and South Asia showing the largest gaps. One should note however that these gaps have reduced substantially in recent years; in particular, in many developing countries, girls now have higher primary completion rates than men and in a majority of developing countries, women have higher tertiary enrolment rates than men (World Bank 2011).

Figure 3: Female/male primary completion ratio, 2002-11
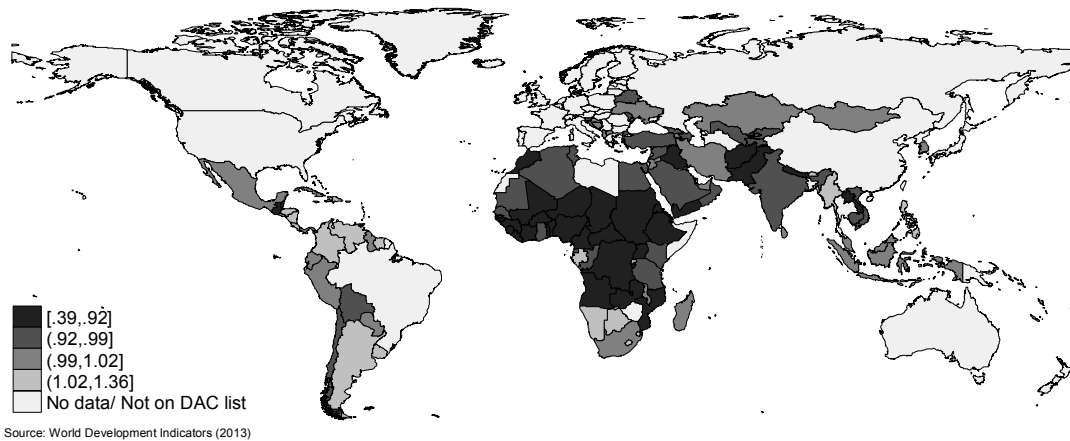
Source: World Bank (2013).

Figure 4: Employment to population ratio among females (15+), average over 2002-11
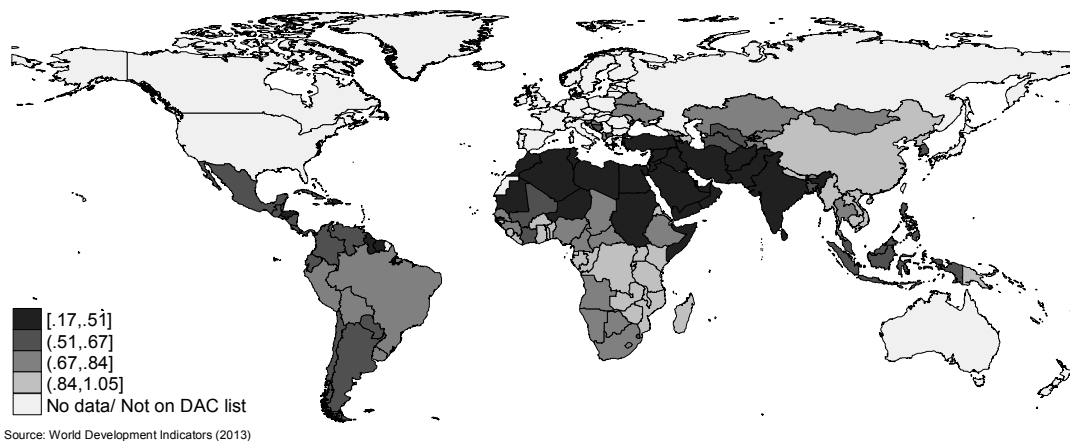
Source: World Bank (2013).

Fourth, we focus on gender gaps in employment. As we show in Figure 4, gaps in employed women in all women of the age 15 and above are particularly large in the Middle East and North Africa as well as in South Asia, while they are smallest in SSA, in Europe, and Central Asia. Gender gaps have fallen somewhat in recent years, but are still sizable. As an alternative measure, we are interested in the share of vulnerable employment of women among all women, as well as the ratio of vulnerable employment of women compared to vulnerable employment of men. We proxy vulnerable employment with self-employment, as self-employed people in less developed countries are usually more vulnerable compared to employees.[5]

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[5] Their employment conditions are more precarious, they often are also more vulnerable to external shocks and can on average rely even less on social safety nets than others. The World Bank (2013) provides an indicator for vulnerable employment, covering unpaid family workers and own-account workers as a percentage of total

Last, we consider women's empowerment. Up until 2010, the United Nations Development Programme (UNDP) measured women's empowerment using the Gender Empowerment Measure, which was discontinued due to problems identified with this indicator (Klasen 2006b; Klasen and Schüler 2011). A rather crude proxy for empowerment is women's political representation, which we show in Figure 5. There do not appear to be any regional patterns (with the partial exception of the Middle East and North Africa regions where gaps are particularly large), instead the map shows large differences between countries in most regions, even between geographically close ones. Overall, women on average face lower political representation than men in all developing regions.

Figure 5: Share of women in parliament, 2002-11
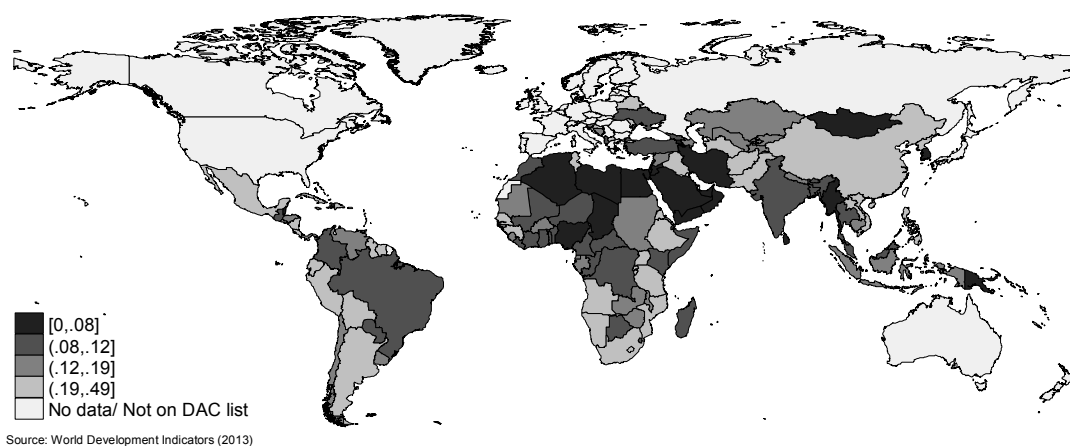
Source: World Bank (2013).

A few important patterns emerge from this discussion for our analysis. First, there are some regions where gender gaps are low according to most of our indicators. They include Latin America and the Caribbean as well as South East Asia. Conversely, gender gaps in South Asia are sizable for basically every measure. Second, the regional distribution differs significantly across the different dimensions of gender inequality. In terms of rights and gender gaps in education, SSA does particularly poorly, while in terms of employment and empowerment, the Middle East scores worst. Depending on what type of gender inequality donors want to target, a different allocation of aid would be warranted. It is unclear, however, whether donors indeed base their sectoral allocation of aid on these regional differences in gender gaps—a question that can be answered empirically. Third, it might also be the case that the allocation of aid is less concerned with gender gaps and instead focuses on the overall well-being of women. If that were the case, SSA (followed by South Asia) should receive relatively more attention as levels of female life expectancy and education are particularly low there. Moreover, if the focus were on levels of female life expectancy, access to reproductive health and family planning services could be another area of concern where again SSA and South Asia are particularly problematic regions. We will therefore consider whether donors are basing their allocation decisions on gender gaps, or rather on low levels of female outcomes.

Using sectorally disaggregated data on aid commitments provided by OECD-DAC's CRS, Table 2 shows those categories of aid in the DAC classification that can be considered as

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employment. We do not use it here due to large gaps in the data. For the developing countries and years where both are available, the correlation is above 0.9.

potentially contributing to greater gender inequality. Linked to the discussion above, we investigate overall aid allocation in addition to focusing on four dimensions: education, health, population policies, and civil society. We also include the (rather small) category of aid directly given to promote gender equality. Health and population policies have the potential to address gender gaps in health and survival as well as promote female well-being in the area of health, including reproductive health. Aid to civil society could promote gender equity in rights and reduce gender gaps in empowerment. Thus, these indicators cover four of the five areas of gender inequality discussed above. The one indicator that is not reflected by a specific category of aid is gender gaps in employment, which cannot easily be mapped to any category.

Table 2: Aid commitments per sector as a share of total aid (period averages)

Sector	Period	1982-1991	1992-2001	2002-2011
	Overall Aid (million constant 2011 US$)	559.5	821.4	796.4
Education	All	4.4%	7.1%	8.7%
	Basic	0.7%	2.2%	2.5%
	Secondary	0.5%	0.8%	1.0%
	Tertiary	1.1%	1.6%	3.2%
Health	All	2.5%	4.7%	5.4%
	General	1.4%	2.4%	1.7%
	Basic	1.1%	2.2%	3.7%
Population Policies	All	0.9%	2.0%	4.8%
	Reproductive health	0.3%	0.6%	0.7%
	Family planning	0.6%	0.6%	0.2%
Civil Society	All	1.8%	5.5%	9.8%
	Women's equality	0.1%	0.1%	0.2%

Source: authors' compilation.

In addition to investigating all aid in these four dimensions, we further disaggregate aid for education into basic, secondary, and tertiary education. Basic education is concerned with primary education, the acquisition of basic life skills where they are lacking, and early childhood education. Secondary education relates to the junior and senior level as well as aid for vocational training programmes. Tertiary education contains aid for advanced technical and managerial training in addition to higher education at universities and colleges. As can be seen in the table, the share of aid committed to education in total DAC aid increased substantially over time. While aid for education was 4.4 per cent of total aid budgets over the 1982-91 period, it increased to 7.1 per cent in the years 1992-2001, and further to 8.7 per cent in the 2002-11 period. Broadly, aid for basic and tertiary education tripled over these periods, while aid for secondary education doubled. The increase in aid for tertiary education is somewhat surprising given that basic education was the particular focus of the MDGs and much related donor efforts. Interestingly, the only MDG that mentioned tertiary education was indeed MDG3, which calls for equalization of enrolment rates in tertiary education by 2015.

The table shows a similar increase for aid that can be related to the health sector (from 2.5-5.4 per cent). The share of general health-related aid is highest in the 1992-2001 period, while

aid for basic health increased threefold over the periods. General aid relates to support for medical services, training, research and management capabilities, whereas basic health is concerned with aid for basic health programmes like maternal feeding, immunization, malaria and tuberculosis control.

The most striking increases can be seen for population policies (from 0.9-4.8 per cent) and civil society (1.8-9.8 per cent). The areas of reproductive health and family planning can be seen as important in increasing female independence.[6] Counseling that provides information and education about the use of contraceptives, for example, might prevent unwanted pregnancies and enable women to acquire adequate education or be employed. However, aid for family planning has decreased by over 60 per cent over the last two decades. Pre-natal and post-natal care can be seen as a means to narrow the gender gap in life expectancy and has doubled over the decades. Aid to support improvements in civil society for a variety of purposes such as public sector management, anti-corruption activities, human rights, and democratic development has more than quadrupled, from 1.8 per cent to 9.8 per cent. On the other hand, the share of aid directly committed to organizations and institutions that engage in activities to reduce gender inequality, while having doubled over the three periods, remains tiny (0.1-0.2 per cent).

Table 3: Correlation between gender inequality and types of aid

Aid Commitments to	Total	Education				Health			Population Policies			Civil Society	
Gender indices		All	Basic	Second-ary	Tertiary	All	General	Basic	All	Repro-ductive health	Family planning	All	Women's equality
Primary Completion Ratio	-0.10	-0.03	-0.04	0.02	0.05	-0.05	-0.05	-0.04	-0.01	-0.03	-0.07	-0.02	-0.01
Primary Completion Female	-0.09	-0.03	-0.04	0.04	0.10	-0.08	-0.08	-0.06	-0.03	-0.02	-0.07	-0.02	-0.01
Tertiary Enrolment Ratio	-0.15	-0.07	-0.07	-0.06	0.02	-0.11	-0.11	-0.09	-0.07	-0.04	-0.10	-0.04	-0.05
Tertiary Enrolment Female	-0.09	-0.02	-0.05	-0.04	0.09	-0.10	-0.10	-0.08	-0.08	-0.04	-0.08	0.02	-0.01
Vulnerable Employment Ratio (male/female)	-0.26	-0.21	-0.11	-0.17	-0.15	-0.27	-0.25	-0.24	-0.15	-0.15	-0.16	-0.21	-0.21
Vulnerable Employment Female	0.42	0.39	0.31	0.26	0.19	0.49	0.44	0.45	0.21	0.31	0.28	0.35	0.27
Employment to Population Ratio	-0.02	-0.04	-0.05	-0.01	-0.03	0.10	0.09	0.09	0.14	-0.05	0.01	-0.07	-0.03
Employment to Population Female	0.03	0.02	0.00	0.04	-0.01	0.15	0.14	0.13	0.15	-0.01	0.06	-0.06	0.04
Life Expectancy Ratio	-0.18	-0.17	-0.16	-0.13	-0.07	-0.16	-0.14	-0.15	-0.19	-0.11	-0.17	-0.08	-0.15
Life Expectancy Female	-0.07	0.00	-0.04	0.02	0.10	-0.11	-0.10	-0.10	-0.12	-0.03	-0.07	-0.02	0.00
Women's Rights	-0.04	-0.05	-0.04	-0.02	-0.02	-0.06	0.00	-0.09	-0.08	-0.03	-0.02	-0.06	-0.03
Women in Parliament	0.13	0.11	0.06	0.07	0.08	0.15	0.09	0.16	0.20	0.01	-0.02	0.19	0.14

Source: authors' compilation.

In Table 3, we show simple correlations between the gender indicators that we use in the empirical analysis with overall aid, as well as with the categories of aid that could be expected to relate to gender inequality. It is important to use disaggregated data on the sectoral level, because it is quite possible that gender inequality affects donor behaviour in certain areas, while the overall aid data might be too noisy to detect any aggregate effect. At first glance, it seems that total aid is negatively related to most gender indicators; adverse environments for women are associated with higher overall aid disbursements. There is a negative correlation between female primary completion, as well as the primary completion ratio that measures the relative outcomes compared to men, and most aid categories. This could reflect that donors take account of the need of recipient countries in this area. The life expectancy ratio as well as female life expectancy show a negative correlation with aid, potentially pointing towards a needs-based donor approach. Overall, the simple correlation coefficients are relatively low, with the exception of female self-employment, which is positively correlated with most aid categories under consideration. In contrast, aid is

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[6] Reproductive health includes aid for pre-natal and post-natal care including delivery, as well as for the prevention and management of consequences of abortion. Family planning is concerned with counseling that provides information and education for the delivery and use of contraceptives.

negatively correlated with the self-employment ratio, which measures the ratio of female to male self-employment. Women's rights are mostly negatively related to aid, however the correlations are low.

Studies comparing the allocation of aid across donors show substantial differences in motives that shape the allocation of aid. Dollar and Levin (2006) show that some donors (International Development Association (IDA), Denmark, the United Kingdom (UK), Norway, the Netherlands, and Sweden) take account of poverty and the quality of institutions, while France and the United States (US) do not. Alesina and Dollar (2000) show that the US and Japan give aid predominantly in line with their own geopolitical and commercial interests, respectively.[7] Thiele et al. (2007) find important differences between donors as to how the MDGs shaped the allocation of their aid.

While multilateral institutions also seem to take account of their major shareholders' political motivations, they generally seem to pay greater attention to recipient needs than bilateral donors do (Alesina and Dollar 2000). Canavire et al. (2006) show that the allocation of multilateral aid does not reflect individual donor countries' trade and political interests. However, various other studies suggest that multilateral institutions take account of their major shareholders' preferences when allocating aid (Fleck and Kilby 2006; Kilby 2006, 2011; Dreher and Jensen 2007; Dreher et al. 2009a, 2009b).

We therefore look at some important (groups of) donors separately. We broadly follow Thiele et al. (2007) and separately investigate aid by the two main multilateral donors (European Union (EU) and World Bank), the five biggest bilateral donors (France, Germany, Japan, US, and UK), and a group of countries (Denmark, Netherlands, Norway, and Sweden), which are not only considered to be generous donors but are also supposed to target aid largely according to recipient needs ('good donors'; e.g., Neumayer 2003, Kilby 2006). We investigate Germany, France, and the UK (EU3) jointly rather than separately to reduce clutter, following Dreher and Fuchs (2011a), and add aid by the United Nations (UN) as a further donor.

Table 4 shows disaggregated aid commitments for the 2002-11 period, in million constant 2011 US$ and as a share of total aid by a particular donor (group). As can be seen, total aid shares mask substantial variation across donors. The shares of aid for education in the donors' total aid range between 3.3 per cent for the US to almost 16 per cent for France, Germany, and the UK, and more than 16 per cent for the UN. The 'good donors' commit 10.5 per cent to education, arguably because they grant a larger share of their aid as budget support, and thus leave it at the recipient government's discretion as to how to use the aid. Surprisingly, the EU and Japan focus their aid on tertiary education rather than primary education, which would be more conducive to help in achieving the MDGs (see also Thiele et al. 2007).[8] Regarding aid for health, commitments range between 2.3 per cent (Japan) and 10.8 per cent (UN). The US and the UN stand out in committing most of their aid to the basic health component of the health sector.

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7 Kuziemko and Werker (2006) show that US aid increases by 59 per cent in the two years countries are temporary members of the UN Security Council. Vreeland and Dreher (2014) find similar results for Germany and Japan, but not for France and the UK.

8 This is most likely related to the fact that scholarships to students from developing countries to study in Japan and the EU are counted as bilateral aid to tertiary education of the donor country. This can be a substantial amount.

Table 4: Aid allocation by sectors for selected groups of donors, 2002-11

Sector		USA	EU3	GoodDonors	Japan	World Bank	UN	EU
Total (million constant 2011 US$)		162.39	162.95	87.33	117.40	134.08	17.52	75.40
Education	All	5.28 (3.3%)	24.55 (15.1%)	9.17 (10.5%)	7.26 (6.2%)	14.83 (11.1%)	2.92 (16.7%)	4.42 (5.9%)
	Basic	3.69 (2.3%)	3.60 (2.2%)	4.61 (5.3%)	0.92 (0.8%)	4.84 (3.6%)	2.75 (15.7%)	1.44 (1.9%)
	Secondary	0.13 (0.1%)	1.79 (1.1%)	0.56 (0.6%)	0.60 (0.5%)	2.51 (1.9%)	0.03 (0.2%)	0.64 (0.8%)
	Tertiary	0.50 (0.3%)	15.95 (9.8%)	1.02 (1.2%)	3.95 (3.4%)	2.51 (1.9%)	0.00 (0.0%)	0.70 (0.9%)
Health	All	5.96 (3.7%)	5.84 (3.6%)	6.24 (7.1%)	2.75 (2.3%)	9.27 (6.9%)	1.95 (11.1%)	2.62 (3.5%)
	General	0.48 (0.3%)	3.23 (2.0%)	1.94 (2.2%)	1.42 (1.2%)	4.48 (3.3%)	0.16 (0.9%)	0.85 (1.1%)
	Basic	5.48 (3.4%)	2.61 (1.6%)	4.30 (4.9%)	1.32 (1.1%)	4.79 (3.6%)	1.79 (10.2%)	1.76 (2.3%)
Population Policies	All	21.03 (13.0%)	4.15 (2.5%)	1.96 (2.2%)	0.23 (0.2%)	2.76 (2.1%)	3.35 (19.1%)	0.59 (0.8%)
	Reproductive health	1.70 (1.0%)	1.71 (1.0%)	0.53 (0.6%)	0.11 (0.1%)	0.79 (0.6%)	1.38 (7.9%)	0.06 (0.1%)
	Family planning	1.64 (1.0%)	0.15 (0.1%)	0.09 (0.1%)	0.00 (0.0%)	0.01 (0.0%)	0.06 (0.3%)	0.00 (0.0%)
Civil Society	All	24.09 (14.8%)	9.10 (5.6%)	14.10 (16.1%)	1.65 (1.4%)	20.02 (14.9%)	2.44 (13.9%)	12.00 (15.9%)
	Women's equality	0.06 (0.0%)	0.20 (0.1%)	0.65 (0.7%)	0.01 (0.0%)	0.07 (0.1%)	0.05 (0.3%)	0.14 (0.2%)

Source: authors' compilation.

There is particularly substantial variation in the shares of aid the various donors commit to population policies and the civil society. The US commits 13 per cent of its budget to population policies and almost 15 per cent as support for the civil society. The lowest budget shares are committed by Japan, amounting to 0.2 per cent of its budget for population policies and 1.4 per cent for civil society.

In what follows, we investigate whether and to what extent aid is committed in line with measurable recipient country need or merit.

3   Data and method

Our empirical approach broadly follows Thiele et al. (2007). We analyse the allocation of aid in various categories from the sectorally disaggregated DAC database on aid commitments (the CRS) that should be most relevant for aid to be effective in reducing gender inequality in the respective dimension. We chose aid categories ranging from specific categories such as basic education or reproductive health policies (so-called 5-digit CRS purpose codes) to more broadly defined categories such as education (so-called DAC sector codes). In addition, we investigate total aid committed to a particular recipient to test whether specific dimensions of inequality have been sufficiently strong in shaping the overall allocation of aid. These aid commitments constitute our dependent variables, measured in millions of constant 2011 US$.

We estimate our regressions using Poisson Pseudo Maximum Likelihood (PPML) with standard errors clustered by recipient country and average our data over different time horizons to reduce year-to-year fluctuations. As Santos Silva and Tenreyro (2006) argue, PPML outperforms OLS and Tobit approaches with heteroskedasticity and many zero observations in the data.[9] PPML is frequently used for non-count data in the recent international economics literature (see Berger and Nitsch 2008; Egger and Larch 2011, among many others). Absolute indicators like the share of employed women are scaled from 1 to 100, while the female-to-male ratios range from 0 to 1. Appendix A shows the exact definition of each ratio. As explained above, we calculate all gender indicators such that

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[9] Zero aid is prevalent in our data when we focus on sectoral aid rather than all aid, in particular when we disaggregate donors.

higher values imply 'better' outcomes for women. It is necessary to use both indicators to measure the relative outcomes of women compared to men as well as the absolute outcomes of women. An increase in the primary completion ratio of girls compared to boys could either imply that female completion has increased or that male completion has decreased. Improvements in women's lives might thus take place, but not be visible in the ratios if male outcomes have improved at the same time.[10] Most of our estimations use data averaged over 3-year periods. By taking period averages we intend to mitigate the impact of unsystematic short-term fluctuations in aid commitments that our explanatory variables are unlikely to capture.

In line with the previous literature on aid allocation, we include a set of possible determinants as control variables (e.g., Dreher et al. 2011; Dreher and Fuchs 2011a, 2011b). We control for (logged) population of recipient countries in order to control for the size of a recipient country. Larger countries need more resources to develop. Given that our dependent variable is not in per capita terms, we expect aid to rise with population. Logged per capita GDP is a commonly used indicator of recipient need, which has repeatedly been shown to shape the distribution of aid (e.g., Fleck and Kilby 2010). As a further proxy for recipient need, we use a dummy measuring the occurrence of a natural disaster like volcanic eruptions, floods or tsunamis in the recipient country (taken from EM-DAT 2012).

Our primary measure for institutional quality is a dummy for democratic regimes, which are coded as 1 if multiple parties are legally allowed and exist outside the governing coalition and the selection of the executive and the legislature involve an either direct or indirect mandate from an electorate (Cheibub et al. 2010). Moreover, in order to qualify as a democracy, incumbents must not be able to unconstitutionally close the lower house of the legislature and rewrite the rules in their favor. We control for the International Country Risk Guide's (ICRG) indicator of bureaucratic quality as a further proxy of merit. We also include a recipient country's openness to trade, measured as total exports and imports as a percentage of GDP, taken from the World Bank's World Development Indicators (2013). Trade openness might to some extent also account for donors' commercial interests (rather than reflecting 'open' policies).

To proxy for the donors' political self-interests, the literature suggests using a recipient country's voting behaviour in the UN General Assembly (UNGA). Various studies show that developing countries get more aid and better conditions from a donor when they have closer political ties with them, as measured by their UNGA voting alignment (Alesina and Dollar 2000; Dreher and Jensen 2007; Kilby 2009, 2011; Dreher and Fuchs 2011b). Relying on data from Strezhnev and Voeten (2012), we calculate the number of times a country votes in line with one of the five largest bilateral donors; namely, the US, Japan, France, Germany, and the UK (either both voting 'yes', both voting 'no', abstaining, or both being absent). We then divide by the total number of votes in a particular year to derive a measure of voting

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[10] If male performance is close to 100 per cent, we can interpret changes in the ratios in a rather straightforward way: An increase in the primary completion ratio of girls compared to boys, for example from a ratio of $\frac{80\%}{90\%} \approx 0.89$ to $\frac{85\%}{90\%} \approx 0.94$ would lead to a change of approximately $0.05 * \beta$ per cent in aid. However, if male completion has increased as well, the overall ratio might stay constant and thus not indicate the improvement in women's lives. The interpretation of the economic significance of the ratios depends on the male performance in the denominator.

coincidence between zero and one. We provide all variables with their definitions and sources in Appendix A. Appendix B shows descriptive statistics for the control variables.

Note that our approach has clear limitations. Arguably, the indicators of need may be endogenous to the allocation of aid. For example, the correlation between primary school enrolment in the recipient countries and aid for basic education may understate the extent to which donors took low enrolment ratios into account when deciding on the allocation of aid for education as such aid may help increase primary enrolment (Thiele et al. 2007). As shown by Clemens et al. (2012) however only about half of total aid can reasonably be expected to have short-term effects on the economic performance of recipient countries. What is more, at least some of the indicators used here are clearly exogenous, and we allow for considerable lags between aid and indicators of gender inequality in some of our regressions. In a second set of regressions we focus on the effect of changes in the indicators of gender inequality on aid allocation within a specific recipient country over time.

A further limitation of our approach concerns fungibility. Even if the bulk of sector-specific aid were to be allocated to where it could most reduce gender inequality, this would not necessarily imply the availability of more resources in these sectors. The fungibility of aid may undermine donor attempts to direct more funds to specific targets (Thiele et al. 2007; World Bank 1998). Aid for basic education or reproductive health however is unlikely to be fully fungible (Feyzioglu et al. 1998), in particular in countries that heavily depend on aid. As Thiele et al. (2007) point out, the observation that donors allocate aid for specific purposes, such as basic education and basic health, suggests that they expect limited fungibility. Alternatively, donors might expect aid to be fungible, but might still allocate aid to sectors to signal intentions. The fine-tuning of aid to specific purposes would otherwise be fruitless. What is more, in the context of our assessment of donor intentions, donors can hardly be blamed if recipients use the fungibility of aid to redirect it in ways that suits their interests (or at the very least, the policy implications would be different).

4   Empirical results for all donors

We present the results for all donors starting with our panel analysis of levels of gender inequality over the 1973-2011 period in the next section (4.1). In section 4.2, we turn to cross-sections covering three periods of time, 1982-91, 1992-2001, and 2002-11. Section 4.3 turns to changes of inequality rather than levels, while we try to disentangle the effect of women's rights and outcome-related indicators of need for the amount of aid a country receives in section 4.4.

4.1   Panel results for levels of gender inequality

Table 5 shows our first set of results. The estimations are based on pooled cross-country time-series regressions with all data averaged over three-year periods. As we are particularly interested in exploiting the cross-country variation in our data, we do not include fixed country effects. However, all regressions include regional dummies and period fixed effects. The control variables introduced above are included in all regressions but not shown, to reduce clutter. We follow Cameron and Trivedi (2009: 350) and draw conclusions based on average marginal effects rather than marginal effects at the means. The average marginal effects reported in the table below can be interpreted as semi-elasticities: An increase by one unit in the independent variable increases the dependent variable by β per cent.

Table 5 investigates whether all donors taken together consider gender inequality-related indicators of need when allocating aid. Specifically, we evaluate (i) whether indicators of need affected specific categories of aid, such as basic education or women's equality, (ii) whether or not the relationship persists on a more aggregated level such as education or aid for civil society ('all'), and (iii) whether a particular indicator shaped the allocation of total aid ('total'). We relate our indicators of gender inequality to those aid commitments that can be expected to be shaped by them; i.e., inequality in life expectancy could affect the allocation of aid for health, but should not be directly related to aid for education. The Poisson regression specification is

$$\text{Aid}_{i,j,t} = \exp(\beta_1 \text{GenderIndicator}_{i,t} + \beta_2 \text{Controls}_{i,t} + \beta_3 \text{Regiondummy}_i + \beta_4 \text{Period}_t + \varepsilon_{i,j,t}) \ ,$$

where i indicates the recipient country, j the sector where aid is committed and t the period of time.

Among our indicators of 'need', only a few seem to affect total aid commitments significantly. Female tertiary school enrollment and life expectancy are most clearly related to aid commitments. Specifically, lower female tertiary enrollment increases aid for basic and secondary education, aid for the civil society as well as overall aid commitments, at least at the 5 per cent level. Donors thus seem to rely on a need-based approach—aid goes to those countries performing badly on these indicators.

While total aid decreases with higher tertiary enrollment numbers, at the 1 per cent level of significance, the category at first sight most directly related to tertiary enrolment—aid for tertiary education—is not affected, at conventional levels of significance. However, it seems plausible that as a requirement to increase the number of female students, there needs to be an increase in the number of women who successfully complete primary and secondary education. The results for tertiary enrolment ratios—reflecting gender differences rather than absolute levels of enrolment—are generally weaker. We find that commitments to basic education increase however with larger inequality. We also find that aid for women's equality is affected, at the 10 per cent level, and in the expected direction.

In line with a need-based allocation, life expectancy shows a clear correlation with aid commitments. As higher values indicate greater equality, the negative coefficients indicate that donors give less aid to less needy recipients. Lower life expectancy of women relative to men on average leads to increases in total aid. In absolute terms, if a country exhibits a gender imbalance that is 0.5 points lower, which is about the difference between Bangladesh and Bolivia, the country with the smaller ratio would get about 0.125 per cent more in overall aid commitments.[11] The increases are substantially larger in the sectors that are more closely related to a specific indicator: A difference in the ratio of 0.05, which is about the difference between the average South American and the average African country, is related to an increase of about 0.75 per cent in aid for population policies and an increase of 0.5 per cent in aid to promote women's equality. The differences are significant at the 1 per cent level for

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[11] For most countries this ratio is somewhere between 1.0 and 1.1 (as women's life expectancy usually exceeds those of men). In general, South American countries do well on this indicator, while problems seem to prevail in particular in South and West Africa, as well as in India.

population policies and family planning, and at the 1 and 5 per cent level for total aid and women's equality respectively.

Aid for health is not significantly affected by the gender imbalance ratio. When we investigate absolute female life expectancy of women rather than the ratio relative to men however, lower values are related to more aid for basic and overall health, at the 5 per cent level. It is possible that donors instead try to target gender imbalances directly through aid specifically aimed at reducing these imbalances, and helping women to overcome gender-specific problems. Aid for health is more directly affected by the absolute health problems of women. If absolute life expectancy in a country is 10 years lower, which is about the difference between Burkina Faso and Angola or Vietnam and East Timor, aid commitments are 0.27 per cent and 0.33 per cent higher for all health and basic health, respectively.

We do not find aid to be affected by our indicators of gender-specific need in employment. Thus, at least aggregated among all donors, gender imbalances or discrimination in the labour market are not reflected in aid allocation practices. Regarding primary schooling, the only significant coefficients are positive. Specifically, aid for secondary education and aid for civil society increase with the primary completion ratio, at the 1 and 10 per cent level respectively. Aid for secondary education also increases with the number of women completing primary education. Arguably, a larger pool of potential secondary school pupils could reflect larger need in terms of financing for secondary schooling.

When we look at efforts to reduce women's rights rather than gender gaps, Table 5 generally shows larger aid commitments for countries granting more extensive rights to women. Aid for women's equality, education, and overall aid significantly increase with women's rights. In Egypt for example, women's rights have decreased from an average score of about 3.5 in the 1990s to about 2.5 in the 2000s; according to our estimates, this would amount to a decrease in total aid of 0.13 per cent. Hence, while donors seem to take account of women's rights when allocating aid, the estimated coefficients tend to be positive rather than negative. Policies thus do not seem to be considered as indicators of need, but rather proxy merit. Note however, that the economic relevance and the absolute effect on aid commitments are modest.

Aid for the civil society, education, health, and total aid also increases with a rising number of women in parliament. Again, this indicator seems to reflect merit rather than need. If the share of women increases from 20 per cent to 40 per cent—about the difference between India and Macedonia or Jordan and Uganda—total aid increases by 0.4 per cent, aid for education by 0.3 per cent, and aid for the civil society by about 0.45 per cent.

While we do not report the results for the control variables, some remarks are in order (see Appendix C, where we report the full specification for total aid without including measures of gender-related inequality): Total aid increases with lower (log) per capita GDP and (log) population, significant at the 1 per cent level. This is in line with much of the previous literature. At the 10 per cent level, aid increases with the number of natural disasters. UNGA voting in line with the UK and Japan increases aid (at the 10 and 5 per cent level respectively), while those with France reduces it; voting with the US has no effect at conventional levels of significance.

Table 5: Aid commitments and gender imbalances, 1973-2011, panel

Dependent variable (Aid sector)	Total	Education					Civil Society		
Level of Gender Indicator		All	Basic	Secondary	Tertiary		All	Women's equality	Observations
Primary Completion Ratio	0.739	0.316	0.324	2.478***	0.729		1.559*	-0.25	461
Primary Completion Female	0.004	-0.002	-0.002	0.016**	0.003		-0.001	-0.006	461
Tertiary Enrolment Ratio	-0.252	-0.329	-0.740*	-0.437	0.379		-0.431	-0.722*	435
Tertiary Enrolment Female	-0.012***	-0.015***	-0.028**	-0.025**	-0.003		-0.023***	-0.011	435
Vulnerable Employment Ratio (male/female)	-0.303						-0.234	-0.601	291
Vulnerable Employment Female	0.004						0.005	0.014	291
Employment to Population Ratio	0.352						-0.142	-0.403	515
Employment to Population Female	0.003						515	515	515

	Total	Health			Population Policies			Civil Society		
		All	General	Basic	All	Reproductive health	Family planning	All	Women's equality	Observations
Life Expectancy Ratio	-2.464*	-1.338	-2.792	-0.013	-12.999***	-4.509	-13.529***	0.919	-8.657**	672
Life Expectancy Female	0.000	-0.027**	-0.022	-0.033**	-0.095***	-0.066***	-0.041	-0.018	-0.010	672

	Total	Health	Education	Population Policies			Civil Society		
		All	All	All	Reproductive health	Family planning	All	Women's equality	Observations
Women's Rights	0.132**	0.062	0.130**	0.05	0.009	0.021	0.032	0.151*	650
Women in Parliament	1.932***	3.177***	1.593*	2.511	0.359	-1.004	2.187***	1.242	404

Notes: The dependent variables are aid commitments in the respective sector. Data are averages over 3-year periods from 1973-2011. All regressions include control variables, regional dummies and period fixed effects. Standard errors are clustered at the recipient level. *** (**, *): significant at the 1 (5, 10) per cent level.

Source: authors' compilation.

4.2 Cross-section results for levels of gender inequality

We next turn to cross-sections of ten years, allowing us to investigate whether and to what extent the correlation between the allocation of aid and our measures of gender inequality has changed over time. The three periods we focus on are the years 1982-91, 1992-2001, and 2002-11. Table 6 reports the marginal effects of the indicators for gender inequality in each of the three periods, calculated the same way as above. We are further interested in the differences in coefficients between the three periods and their statistical significance. We therefore introduce dummies for each decade and interact them with all explanatory variables, so that the results mirror individual regressions for these decades. Running nested regressions in such a way enables us to interpret the interaction of the indicator with the decade dummy as a test of significant differences between periods. We take the most recent period as a baseline for comparison and indicate significant differences at least at the 10 per cent level with bold coefficients.[12]

The results are to some extent similar to those for the panel discussed above. Overall, aid significantly increases with lower need in the indicators primary completion, women's rights, and women in parliament. With regard to the primary completion ratio, no clear developments between the periods can be observed, while the importance of absolute primary completion rates for women was stronger in the 1980s. It is not possible to identify this difference over time statistically, however, as the differences in coefficients are relatively small.

Lower tertiary education ratios increase total aid and aid for secondary education in the two most recent periods only, but only the difference in total aid is significant at conventional levels. Similar increases as a reaction to lower female tertiary enrolment ratios can be seen in aid for civil society and women's equality. Thus, in these two aid categories the need-focus of donors seems to have increased over time. Donors may increase aid for secondary education as a reaction to low female tertiary enrolment ratios, because completion of secondary education is a prerequisite to be able to go to university. Compared to the 1982-91 period the emphasis on need has increased significantly in all categories except secondary and tertiary education and aid for civil society.

Turning to inequality in employment, we find no evidence that this particular motive has shaped the allocation of total aid. The only significant coefficient is positive, relating to the number of self-employed women in the 1982-91 period. We find that aid for civil society decreases with a higher male-female self-employment ratio in the 1982-91 period, but increases with a larger number of self-employed women. More aid to help organizations that fight against women's inequality goes to countries more in need as indicated by a large self-employment ratio, and a higher share of self-employed women, however only in the most recent (2002-11) period.

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[12] Appendix D shows the p-values of Wald tests for differences in the coefficient of each indicator for a particular past decade with respect to the most recent decade in brackets.

Table 6: Aid commitments and gender imbalances, 1982-2011, cross-sections

Level of Gender Indicator	Period	Total	Education					Civil Society		Observations
			All	Basic	Secondary	Tertiary		All	Women's equality	
Primary Completion Ratio	2002-2011	1.717***	1.863***	2.902***	3.889***	1.532		1.910**	1.526	80
	1992-2001	1.286**	**0.044**	0.727	1.741**	1.014*		1.653	0.446	79
	1982-1991	1.587***	1.685**	2.243**	3.144***	1.496		2.326***	-1.662	56
Primary Completion Female	2002-2011	0.007*	0.004	0.003	0.014*	0.008		0.005	-0.004	80
	1992-2001	0.009**	-0.001	0.003	0.013**	0.005		0.007	0.004	79
	1982-1991	0.014***	**0.022***	**0.036***	**0.038***	0.023**		0.013	0.007	56
Tertiary Enrolment Ratio	2002-2011	-0.369	-0.195	-0.775*	-0.330	0.668		-0.634**	-1.062**	76
	1992-2001	-0.508**	-0.540**	-0.708*	-0.410	-0.210		-0.457	-0.225	83
	1982-1991	0.224	0.286	**2.082**	**1.160**	**-0.888***		1.240**	0.059	65
Tertiary Enrolment Female	2002-2011	-0.018***	-0.014**	-0.014	-0.025**	-0.006		-0.015**	-0.021**	76
	1992-2001	-0.011	-0.021***	**-0.040***	-0.018*	-0.012		-0.025**	-0.019	83
	1982-1991	**0.010**	**0.013**	0.053	0.006	0.004		0.011	**0.029**	65
Vulnerable Employment Ratio (male/female)	2002-2011	0.047						0.183	-1.002**	65
	1992-2001	**-0.448**						-0.555	-1.352	63
	1982-1991	-0.563						-1.882***	2.336	25
Vulnerable Employment Female	2002-2011	0.010						0.010	0.019*	65
	1992-2001	0.004						0.005	0.013	63
	1982-1991	0.015***						0.048***	**-0.007**	25
Employment to Population Ratio	2002-2011	-0.200						-0.077	-0.193	88
	1992-2001	0.426						0.155	-0.418	95
	1982-1991	0.011						0.163	-1.011*	80
Employment to Population Female	2002-2011	-0.006						-0.003	0.001	88
	1992-2001	**0.005**						-0.003	-0.005	95
	1982-1991	-0.001						-0.001	-0.011	80

	Period	Total	Health			Population Policies			Civil Society		Observations
			All	General	Basic	All	Reproductive health	Family planning	All	Women's equality	
Life Expectancy Ratio	2002-2011	-4.304*	-4.307*	-5.670	-3.707*	-11.251***	-8.043**	-6.166	-5.016**	1.256	88
	1992-2001	-0.428	-1.979	-4.311	1.103	-8.777**	0.476	-15.018***	3.708	**-12.001****	95
	1982-1991	-3.365*	-0.658	-1.956	0.521	-8.126*	-3.928	-11.841**	**2.741**	**-17.394****	81
Life Expectancy Female	2002-2011	-0.009	-0.020	-0.007	-0.027**	-0.098***	-0.055***	-0.058**	-0.021	-0.001	88
	1992-2001	0.007	-0.049***	-0.050***	-0.047***	-0.078***	-0.072***	-0.056**	-0.036*	-0.014	95
	1982-1991	0.005	0.000	-0.007	0.000	-0.046	-0.091**	-0.034	0.018	-0.029	81

	Period	Total	Health	Education	Population Policies			Civil Society		Observations
			All	All	All	Reproductive health	Family planning	All	Women's equality	
Women's Rights	2002-2011	0.010	-0.014	0.221*	0.078	-0.333***	-0.347*	-0.109	0.395**	88
	1992-2001	0.202***	0.115	0.221*	0.034	**0.302***	**0.059**	**0.144**	0.231*	94
	1982-1991	0.221**	-0.023	0.082	0.098	0.151	0.254	0.107	**-0.010**	79
Women in Parliament	2002-2011	1.579**	3.456***	2.470**	1.758	1.421	2.054	1.901***	3.485**	88
	1992-2001	3.404***	4.134***	2.312**	2.191	2.703	3.520**	**5.410***	5.401***	85
	1982-1991	**-3.048***	-5.032***	-2.846	-14.116**	-12.154**	-17.569**	-4.894**	-3.019	66

Notes: The dependent variables are aid commitments in the respective sector. All regressions include control variables and regional dummies. Bold coefficients are significantly different from those for the 2002-11 period. Standard errors are clustered at the recipient level. *** (**, *): significant at the 1 (5, 10) per cent level.

Source: authors' compilation.

The effect of the employment to population ratio on aid is negligible overall. Employment indicators do not seem to play a role for the average donor's aid allocation decisions. We obtain the clearest and most consistent results regarding life expectancy. There are few changes in the importance of our need indicators for the allocation of aid in the three decades. At least in the most recent periods donors also seem to take account of gender imbalances in health provision. The coefficients for the aid categories population policies and reproductive health indicate that donors seem to take gender imbalances in life expectancy into account by providing more aid for women-specific problems. The central importance of improving health in developing countries by allocating aid according to specific needs is thus not only important according to the rhetoric of donors but is also reflected in their aid allocation decisions.

As an exception, aid for the civil society was less need-based in the 1982-91 period compared to the most recent decade, but more need-based regarding its sub-category women's equality. This result might indicate that donors start to see the answer to gender inequality more in approaches that strengthen civil society in general and thus institutions, rather than more directly focusing on women's equality. In conclusion, we find that the coefficients of the life expectancy ratio and the absolute measure of female life expectancy are negative, indicating need-based commitments, in many cases significant at conventional levels. This holds for the sub-categories of population policies, civil society, and the health sector; in the periods 1982-91 and 2002-11 it also holds regarding the effect of the life expectancy ratio on total aid.

Regarding women's rights, we observe that countries granting more rights to women received in total more aid in the earlier decades, but not in the more recent 2002-11 period. These differences however are not significant at conventional levels. The results on the sub-categories of aid are mixed, with women's rights increasing aid for education and for women's equality in the more recent decades, and aid for reproductive health in the 1992-2001 period, but less aid for reproductive health and family planning in the most recent decade. This could also be related to the fact that those recipient countries with low women's rights, in particular those with strong religious societies, also show low support for education about the use of contraceptives or the like. Thus it is possible that donors try to substitute for this reduction by sponsoring private or non-profit organizations that provide these services. On the other hand, aid specifically directed to women's equality increases with better women's rights, suggesting that merit rather than need shapes the allocation of this type of aid. The share of women in parliament is also significantly correlated with the amount of aid a country receives. This holds for overall aid, aid for health, and aid for civil society in all periods, aid for education and women's equality in the two more recent periods, family planning in the earlier decades, and population policies and reproductive health in the years 1982-91. A larger share of women in parliament leads to larger total aid commitments in the two most recent periods; in the 1982-1991 period however, it is related to lower aid commitments. The differences arise in almost all sectors, and are significant at least at the 10 per cent level. Hence, donors seem to have shifted their allocation behaviour. Rather than speculating about the reasons, we restrain ourselves to noting that a more equal representation of women in parliament seems to pay off for recipient countries in terms of larger aid commitments.

4.3 Panel results for changes in gender inequality

We turn next to changes in gender inequality rather than levels. While we think that exploiting differences in levels is essential in gauging whether and to what extent need shapes the allocation of aid, we are aware that this approach has limitations. Reverse causality might challenge our results. To the extent that aid is effective, and continued to be allocated to the same country for some time, positive correlations between aid and outcomes might reflect aid's effectiveness rather than badly targeted aid when aid budgets are sticky (see Fuchs, Dreher and Nunnenkamp 2012). Aid might be granted to reward countries that improved on gender-inequality indicators. A negative correlation between aid and need might thus reflect these rewards. We therefore adjust our regression specification, replacing levels of gender inequality with changes in inequality between period t and period t-1:

$$\text{Aid}_{i,j,t} = \exp(\beta_1 \Delta \text{GenderIndicator}_{i,t} + \beta_2 \text{GenderIndicator}_{i,t-1} + \beta_3 \text{Aid}_{i,j,t-1} +$$

$$\beta_4 \text{Controls}_{i,t} + \beta_5 \text{Regiondummy}_i + \beta_6 \text{Period}_t + \varepsilon_{i,j,t})$$

Note that in addition to the control variables used above, we now also control for the initial level of a respective gender indicator and for the level of aid commitments in the previous period. We thus ask whether, controlled for the level of inequality and the amount of aid received in the previous period, improvements in gender inequality lead to more or less foreign aid.

We show the results in Table 7. As can be seen, there is little evidence of a merit-based allocation of aid. Overall, donors seem to react to improvements in gender indicators with reductions in aid. Improvements in primary completion ratios, tertiary enrolment of women and their life expectancy are followed by considerable reductions in aid, significant at the ten-, five-, and 10 per cent levels respectively. This is again in line with a needs-based allocation of aid. The exception is the share of women in parliament where improvements are rewarded with more aid. Again, 'good behaviour' is rewarded, while improvements in outcomes seem to be taken to reflect less need, and thus lead to less aid.

The picture is very similar if we look at different sectors of aid: If countries improve in an indicator compared to the previous period, they receive less aid. This holds for female life expectancy (reductions in aid for health), the life expectancy ratio (reductions in aid for population policies) and the employment to population ratio and its share (reductions in aid for women's equality). The exception is an improvement of women's rights in the recipient country, where improvements are rewarded with more aid for women's equality, significant at the 1 per cent level, and more aid for education, significant at the 5 per cent level. Economically, none of the effects is very large; for example, an increase in women's rights by one point on a nine-point scale increases aid for women's equality by 0.38 per cent.

Overall, there seem to be very few areas where donors reward improvements in gender-specific indicators with more aid. None of the indicators seems to be sufficiently important for donors to shape the allocation of overall aid significantly, except for female political representation. Merit-based aid allocation takes place to some extent in aid for education and women's equality when recipient countries improve women's rights.

Table 7: Aid commitments by sector and changes in gender imbalances

Dependent variable (Aid sector)	Total	Education					Civil Society		Observations
Δ Gender Indicator		All	Basic	Secondary	Tertiary		All	Women's equality	
Primary Completion Ratio	-1.245*	-0.93	1.133	-1.496	-1.092		-3.068**	0.773	389
Primary Completion Female	0.003	-0.004	-0.004	0.007	0.005		-0.021**	-0.005	389
Tertiary Enrolment Ratio	-0.15	0.100	-1.568	-0.685	1.372		-1.22	0.547	341
Tertiary Enrolment Female	-0.040**	-0.018	-0.087***	-0.037	0.014		-0.029	-0.034	341
Vulnerable Employment Ratio (male/female)	-0.097						-0.242	-0.906	198
Vulnerable Employment Female	0.007						-0.001	-0.008	198
Employment to Population Ratio	0.606						-3.644*	-7.755**	425
Employment to Population Female	0.011						-0.055***	-0.068**	425

	Total	Health			Population Policies			Civil Society		Observations
		All	General	Basic	All	Reproductive health	Family planning	All	Women's equality	
Life Expectancy Ratio	3.338	-3.781	-5.65	-2.873	-19.409***	15.055	-6.605	0.072	-3.945	664
Life Expectancy Female	-0.050*	-0.065*	-0.064	-0.071	-0.065	-0.135	-0.200**	-0.083**	-0.199***	664

	Total	Health	Education	Population Policies			Civil Society		Observations
		All	All	All	Reproductive health	Family planning	All	Women's equality	
Women's Rights	0.022	0.025	0.136**	-0.031	0.028	0.152	0.035	0.378***	643
Women in Parliament	2.553*	1.681	0.217	-3.321	-0.255	-0.117	2.974	-2.947	244

Notes: The dependent variables are aid commitments in the respective sector. Data are averages over 3-year periods from 1973-2011. All regressions include the change and the initial level in the gender indicator, the initial aid level, the control variables, and period fixed effects. The displayed coefficient is the change in the gender indicator compared to the period before. Standard errors are clustered at the recipient level. *** (**, *): significant at the 1 (5, 10) per cent level.

Source: authors' compilation.

4.4 Interaction between rights and need

Table 8 furthers the effort to disentangle need from merit. To this end, we interact women's rights—which can most clearly be attributed to recipient governments' policies—and those indicators that mostly relate to outcomes, and are thus only partially under the control of the recipient countries' governments. Arguably, controlling for merit should strengthen the donors' need-orientation. Omitting merit from the regression, the resulting coefficients might reflect a combination of the effects of need and merit at the same time. What is more, we would expect the effect of need to be stronger for countries with 'good' policies, to the extent that donors expect aid to be more effective in such 'good' policy environments (e.g., Burnside and Dollar 2000).[13] Table 8 thus includes interactions between the CIRI women's rights indicator and the level of the gender indicators, focusing on sectoral aid. The regression specification is:

$$\text{Aid}_{i,j,t} = \exp(\beta_1 \text{GenderIndicator}_{i,t} + \beta_2 \text{CIRI}_{i,t} + \beta_3 \text{GenderIndicator}_{i,t} * CIRI_{i,t}$$

$$+ \beta_4 \text{Controls}_{i,t} + \beta_5 \text{Regiondummy}_i + \beta_6 \text{Period}_t + \varepsilon_{i,j,t})$$

Table 8 displays the marginal effects of the gender indicators at three levels (L) of the CIRI women's rights index: the tenth percentile (weak rights, L=1), the mean value (L=2), and the ninetieth percentile (well-established female rights, L=3):

$$\frac{\delta(\text{Aid}_{i,j,t})}{\delta(\text{GenderIndicator}_{i,t} \mid \text{CIRI}_{i,t} = L)}$$

The results are mixed. However, they are in part consistent with the hypothesis that donors take account of need more strongly in an environment of better women's rights. Specifically, donors' reaction to need in terms of the primary completion ratio depends on the level of women's rights. If women's rights are low, aid does not react to need, most likely because aid cannot be expected to be used to promote equality in bad policy environments. If women's rights are at the mean or high, aid reacts more to need, as reflected in the negative coefficient, significant at the 1 per cent level. The same holds for need in terms of absolute female primary completion and tertiary enrolment rates. Only countries at the mean or with high levels of women's rights receive more aid for education when in need, significant at the 1 per cent level. The same pattern can be observed for aid targeted specifically at tertiary education. If women's rights are at the mean or above, countries with low values in tertiary enrolment rates and the corresponding gender ratio receive more aid.

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[13] As is well known, the results in Burnside and Dollar are not robust however (e.g., Rajan and Subramanian 2008).

Table 8: Interaction between rights and need, marginal effects of gender indicators

Dependent variable (Aid sector) / Level of Gender Indicator	Marginal Effect at …	Total	(p-value)	Education All	(p)	Basic	(p)	Secondary	(p)	Tertiary	(p)	Civil Society All	(p)	Women's equality	(p)	Observations
Primary Completion Ratio	1	-0.945**		-0.497		-1.224**		0.28		0.271		-1.402**		-1.177***		889
	2	-1.294***	0.466	-1.205***	0.346	-2.007***	0.206	-0.269	0.109	-0.256	0.473	-1.400**	0.622	-1.530**	0.665	889
	3	-1.675**	0.493	-1.979***	0.401	-2.864***	0.203	-0.869	0.124	-0.832	0.561	-1.398	0.595	-1.915*	0.676	889
Primary Completion Female	1	-0.005		-0.001		-0.006		0.004		0.009**		-0.007*		-0.008*		889
	2	-0.008***	0.227	-0.007***	0.22	-0.012***	0.041	0.000	0.01	0.003	0.153	-0.011***	0.415	-0.010***	0.616	889
	3	-0.012***	0.23	-0.013***	0.257	-0.019***	0.038	-0.004	0.01	-0.002	0.224	-0.014***	0.436	-0.013**	0.628	889
Tertiary Enrolment Ratio	1	-0.927***		-0.650***		-1.255***		-0.596**		-0.006		-1.112**		-1.136***		819
	2	-0.930***	0.871	-0.868***	0.929	-1.376***	0.07	-0.789***	0.964	-0.364**	0.986	-0.992***	0.628	-1.058***	0.640	819
	3	-0.932***	0.873	-1.083***	0.911	-1.495***	0.075	-0.980***	0.967	-0.717***	0.971	-0.875***	0.615	-0.981***	0.630	819
Tertiary Enrolment Female	1	-0.021***		-0.009		-0.027*		-0.018**		0.011**		-0.019*		-0.026***		819
	2	-0.021***	0.9	-0.019***	0.373	-0.042***	0.021	-0.023***	0.921	-0.001	0.745	-0.020***	0.881	-0.024***	0.651	819
	3	-0.021***	0.901	-0.030***	0.411	-0.056***	0.020	-0.028***	0.928	-0.014**	0.736	-0.020***	0.877	-0.022***	0.642	819
Vulnerable Employment Ratio (male/female)	1	-0.876**										-0.637*		-1.373***		369
	2	-1.172***	0.815									-1.028**	0.788	-1.603**	0.905	369
	3	-1.554***	0.641									-1.530**	0.930	-1.898*	0.840	369
Vulnerable Employment Female	1	0.016***										0.014***		0.016***		369
	2	0.021***	0.901									0.020***	0.770	0.022***	0.420	369
	3	0.028***	0.939									0.027***	0.901	0.029***	0.478	369
Employment to Population Ratio	1	0.107										-0.515		0.082		830
	2	-0.149	0.541									-0.660	0.914	-0.403	0.332	830
	3	-0.389	0.538									-0.795	0.927	-0.855	0.322	830
Employment to Population Female	1	0.003										-0.005		0.007		830
	2	0.004	0.908									-0.005	0.964	0.004	0.573	830
	3	0.005	0.914									-0.006	0.954	0.001	0.568	830

		Total	(p)	Health All	(p)	General	(p)	Basic	(p)	Population Policies All	(p)	Reproductive health	(p)	Family planning	(p)	Civil Society All	(p)	Women's equality	(p)	Observations
Life Expectancy Ratio	1	-7.323**		-7.423***		-7.752***		-7.279***		-15.041***		-16.480***		-26.076***		-2.373		-12.290**		1281
	2	-11.076**	0.088	-13.303**	0.038	-13.183**	0.035	-13.476***	0.068	-21.474***	0.450	-23.821***	0.504	-28.843***	0.139	-3.952	0.724	-14.890***	0.316	1281
	3	-15.492**	0.114	-20.223**	0.068	-19.575**	0.053	-20.769***	0.131	-29.044***	0.535	-32.461**	0.522	-32.100***	0.169	-5.809	0.741	-17.950**	0.313	1281
Life Expectancy Female	1	-0.008		-0.027***		-0.021**		-0.030***		-0.048***		-0.016		-0.009		-0.016		-0.007		1281
	2	-0.016**	0.250	-0.036***	0.273	-0.033***	0.063	-0.038***	0.636	-0.060***	0.609	-0.031***	0.456	-0.026***	0.121	-0.023***	0.628	-0.019***	0.163	1281
	3	-0.024**	0.249	-0.047***	0.298	-0.047***	0.081	-0.047***	0.673	-0.075***	0.651	-0.049***	0.513	-0.046***	0.154	-0.032***	0.648	-0.034***	0.190	1281

Notes: Marginal effect of gender indicators (level in period t) at different levels of women's rights in the recipient country in the same period (1 = 10th percentile, 2 = Mean, 3 = 90th percentile). The dependent variables are aid commitments in the respective sector. Data are averages over 3-year periods from 1973-2011. All regressions include control variables, regional dummies and period fixed effects. The displayed coefficient is the change in the gender indicator. Standard errors are clustered at the recipient level. *** (**, *): significant at the 1 (5, 10) per cent level. p-values indicate significant differences of the coefficient compared to a level of 1.

Source: authors' compilation.

We also observe differential impacts on the indicators of female life expectancy and female-to-male life expectancy ratio. If women's rights in the recipient country are at the mean or high, more need in terms of low female life expectancy is followed by larger aid. Regarding sectoral aid, differences arise as well. Donors react more strongly to need in terms of the life expectancy ratio by providing more aid for health if women's rights are higher. Similar effects can be observed for aid for reproductive health, family planning, civil society and women's equality. In each of these sectors aid responds to need only at the mean or high levels of women's rights.

Overall, these results support the hypotheses that donor countries take account of the recipient countries' women's rights when allocating their aid. This holds for need in terms of education, as well as in terms of health conditions as proxied by life expectancy. In both cases, the results are similar for the absolute level of women's conditions (indicating female need in absolute terms), and for the ratio compared to men (signaling gender imbalances).

5 Results for individual donors and donor groups

Arguably, the overall results presented so far might mask important differences between (groups of) donors. We therefore replicate some of our regressions focusing on selected donors, sector totals, and all aid. Arguably, it is important to distinguish between donors, as their specific interests are heterogeneous and thus their aid allocation policies are likely to differ. This distinction is necessary when we consider the effect of gender imbalances, where donor interests and approaches might also differ. Differences might, for example, exist in the importance of specific imbalances as well as in the way donors react to these imbalances. Thus, we present the results for the individual donors for all indicators and the main sectors to take account of potentially different approaches and sensitivity towards gender inequality. The regressions become:

$$\text{Aid}_{d,i,j,t} = \exp(\beta_1 \text{GenderIndicator}_{i,t} + \beta_2 \text{Controls}_{i,t} + \beta_3 \text{Regiondummy}_i + \beta_4 \text{Period}_t + \varepsilon_{d,i,j,t})$$

The new subscript d indicates the respective (groups of) donors. The donors are classified broadly following Thiele et al. (2007), who focus on the two main multilateral donors (the EU and IDA), the five biggest bilateral donors (France, Germany, Japan, US, and UK), and the so-called 'good donors' (Denmark, Netherlands, Norway, and Sweden). Following Dreher and Fuchs (2011a), we investigate Germany, France and the United Kingdom (EU3) as a group rather than separately. We also add the UN as a further donor. Regressions are run for each group of donors separately, the coefficients thus reflecting the behaviour of the average donor of that group.

Table 9 shows the results for those (groups of) donors for which we obtained significant results, at the 10 per cent level at least, focusing on the cross-country time-series regressions in levels, and thus focusing on need rather than merit. The table includes those countries out of the group of donors introduced above for which the correlation between aid and need is significant, separated into positive correlations (+), and negative ones (-). Surprisingly, the results show substantial variation between significantly positive and negative correlations. The results are quite consistent across absolute indicators and ratios, indicating that both seem to proxy for related concerns. Moreover, different donor groups seem to emphasize different characteristics.

Table 9: Aid commitments and gender imbalances

Dependent variable (Aid sector) / Gender Indicator	Direction	Total	Education (All)	Health (All)	Population Policies (All)	Civil Society (All)	Civil Society (Women's equality)
Primary Completion Ratio	(+)	USA, Good D.,	Good D., Japan			USA, Good D., Japan	
	(-)						
Primary Completion Female	(+)	Japan				Japan	
	(-)						USA, WB, EU Inst.
Tertiary Enrolment Ratio	(+)					USA	WB,
	(-)	EU3, Good D., WB	EU3, Good D., WB			EU3, UN	EU3, UN
Tertiary Enrolment Female	(+)		UN				USA
	(-)	EU3, Good D., WB	Good D., WB, EU Inst.			EU3, Good D., WB, EU Inst.	EU3, Good D.
Vulnerable Employment Ratio (male/female)	(+)	UN				USA, Japan	USA
	(-)	EU3, Good D., WB				EU3, WB	EU3, Good D.
Vulnerable Employment Female	(+)	EU3, Good D., WB				EU3, Good D.	EU3, Good D., EU Inst.
	(-)	USA				USA	
Employment to Population Ratio	(+)	Good D.				Good D.	Good D.
	(-)					USA	EU Inst.
Employment to Population Female	(+)	Good D.				Good D.	Good D.
	(-)					USA	
Life Expectancy Ratio	(+)	Japan		Japan			
	(-)	EU3, WB		EU3	USA, EU3, Good D.,	WB	Good D., UN
Life Expectancy Female	(+)					Japan	
	(-)	EU3		USA, EU Inst.	USA, EU3, Good D., WB, UN , EU Inst.	EU3	
Women's Rights	(+)	USA, EU3, Good D., Japan	EU3, Good D., Japan, EU Inst.	Japan, WB, EU Inst.		Good D., Japan	USA, Good D.
	(-)			UN	EU3, WB		Japan, WB
Women in Parliament	(+)	EU3, Good D., UN , EU Inst.	Good D.	Good D., Japan, EU Inst.	Good D.	EU3, Good D., Japan, EU Inst.	
	(-)				WB		WB

Notes: The dependent variables are aid commitments in the respective sector. Data are averages over 3-year periods from 1973-2011. All regressions include control variables, regional dummies and period fixed effects. The table lists those donors where our regressions show a coefficient that is significant at the 10 per cent level at least. Standard errors are clustered at the donor-recipient level.

Source: authors' compilation.

Regarding total aid commitments, the EU3, the good donors and the World Bank all react to need in terms of tertiary enrolment and vulnerable employment, both for the ratios and absolute values, by providing more aid. Japan gives more aid to countries that perform better in terms of primary education and the life expectancy ratio. The good donors give more aid to countries with low employment of women, both on the absolute level and in relation to men. They give more aid to countries where a larger share of women is working. This is more in line with a reward-based behaviour rather than a focus on need. It might reflect the high share of working women in these donor countries that want to reward countries that show similar preferences. The EU3 reacts to need in terms of female life expectancy for both absolute values and the inequality ratio, whereas the World Bank increases aid only with a lower ratio. The USA, the EU3, the good donors and Japan reward more women's rights with significantly more total aid; a higher share of women in parliament attracts more aid by the EU3, the good donors, the EU, and the UN.

Focusing on the individual aid sectors, similar differences arise. With regard to aid for education, we again find that the EU3, the good donors and the World Bank react to need in terms of the tertiary enrolment ratio (gender imbalance). On the other hand, the good donors, the World Bank and the EU react to the absolute female tertiary enrolment rates as well. The EU3, the good donors, the EU and the UN reward higher women's rights with significantly more aid for education.

When looking at aid for health and the respective life expectancy indicators, only the EU3 react with more aid to need in terms of the ratio, and the USA and the EU to need in terms of absolute female life expectancy. Japan, the EU and the World Bank all provide more aid for health when women's rights are higher, and Japan, the EU and the good donors provide more aid when the share of women in parliament is higher.

While most donors do not increase aid for health in the presence of inequality (indicated by the life expectancy ratio), these factors affect aid for population policies. Most donors seem to react to gender imbalances in life expectancy by providing more aid for population policies, which includes reproductive health and family planning services; these are key for female life expectancy as they affect the health of mothers and small children. The USA, the EU3, the good donors, the World Bank, the EU, and the UN also provide more aid for health if female life expectancy is low. The USA, EU3, the good donors and Japan react to imbalances in life expectancy with more aid for population policies. Thus, most donors seem to react to female health problems not by providing more aid in the health sector in general, but by more aid for population policies that are more directly related to female health, particularly reproductive health.

Concerning aid for the civil society and its subcategory women's equality, the evidence is heterogeneous. The USA seems to react to female underrepresentation in employment, as well as rewarding good ratios in primary and tertiary education. The EU3 and the good donors put emphasis on female vulnerable employment. They provide significantly more aid for the civil society, as well as for its subcategory women's equality, when female vulnerable employment is high itself and high in relation to men. The good donors also provide more aid for civil society if recipients perform better in terms of female employment, which might show their relatively strong emphasis on female labour market participation. However, one should not overemphasize these results as the employment indicators are rather unspecific and there is no corresponding category of aid that is designed specifically to promote female employment.

Aid for women's equality is, for example, going to organizations that try to promote and protect female rights. This might be of particular importance if governments in the recipient country are not themselves actively promoting women's rights. The EU3, the good donors, and the UN in particular, also provide more aid to these two sectors if need, in terms of high inequality in the forms of female tertiary enrolment, or low absolute levels of female tertiary enrolment, is high. Various donors also reward better outcomes in terms of women's rights and the female share of members of parliament (MP) with more aid in these two sectors.

Overall, some interesting patterns arise. The EU3, the good donors, and the World Bank seem to be the only donors that strongly react to gender imbalances or female need in terms of vulnerable employment or low female employment rates. Many donors, in particular the European ones, reward improvements in women's rights with significantly more aid. The UN and the EU also reward higher female political representation. Need in terms of gender imbalances in health do not attract more aid for health, but they are linked to more aid for population policies like family planning and reproductive health. Aid for the civil society and women's equality is given when there are gender imbalances in tertiary enrolment, and the labour market. The importance of gender imbalances for the allocation of aid seems to vary strongly between donors, as do the areas that the individual donor groups consider important.

As our final test we investigate whether donor characteristics matter for the allocation of aid. Rather than grouping donors according to countries, we consider three potentially relevant characteristics to group them for specific periods in time. First, we consider whether women's political representation in the donor country affects donors' aid allocation policies, focusing on the share of women in parliament introduced above. We expect female MPs to be more sensitive to gender issues than their male counterparts. The support base of female MPs might contain more female voters and thus be more likely to be concerned with gender-related issues. This may be reflected in the MP's policy decisions, especially those made with reelection in mind.

Even though the share of women in parliament is below the majority threshold of 50 per cent in all donor countries, larger shares of women representatives might still be important. If male MPs would be largely indifferent about gender issues, even a small share of gender-sensitive female MPs could affect the allocation of aid. In addition, male MPs might perceive gender issues as being more important due to the fact that women participate in parliamentary work.

Second, we investigate to what extent governments on the left, right, and center of the political spectrum differ in their aid allocation policies.[14] An obvious explanation why this would matter is variations in attitudes about and the emphasis on gender-related problems for the respective electoral bases of the parties.

Third, we test whether female ministers of development put a greater emphasis on gender inequality. Our expectations correspond to those for female political representation above, but we expect the minister to have a more immediate effect on aid allocation policies.[15]
The regression in levels is thus:

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[14] The data are taken from Beck et al. (2001). We code an indicator that is 1 for governments that are right-wing, 2 for center, and 3 for left-wing.

[15] We thank Andreas Fuchs for providing these data.

$$\text{Aid}_{d,i,j,t} = \exp(\beta_1 \text{GenderIndicator}_{i,t} + \beta_2 \text{DonorCharacteristic}_{d,t} + \beta_3 \text{GenderIndicator}_{i,t} * \text{DonorCharacteristic}_{d,t}$$
$$+ \beta_4 \text{Controls}_{i,t} + \beta_5 \text{Regiondummy}_i + \beta_6 \text{Period}_t + \varepsilon_{d,i,j,t})$$

and the regression focusing on changes in gender indicators is adopted in accordance. We display the marginal effect of the gender indicator conditional on donor characteristics:

$$\frac{\delta(\text{Aid}_{d,i,j,t})}{\delta(\text{GenderIndicator}_{i,t} \mid \text{DonorCharacteristic}_{d,t} = L)}$$

Table 10 shows the results, focusing on total aid commitments. We show the effect of the gender indicator ('need') and the change in the indicator ('merit) at three distinct levels (L) of the three interactions. The analyses again span the 1973-2011 period. Because we now investigate bilateral aid commitments, we add exports to the recipient as a percentage of a donor's total exports to control for bilateral trade interests. For political representation we show marginal effects at the tenth percentile (low representation, L=1), the mean value (L=2), and the ninetieth percentile (high representation, L=3). We code the government's ideological orientation in the three categories left (1), centrist (2), and right-wing (3). The gender of ministers responsible for development in the donor country is coded (1) when the minister is male throughout the period, (2) when the gender of the minister has changed within periods, and (3) when the minister is female. The p-value indicates a significant difference of the coefficient at the level L=2 or 3 compared to the coefficient when L=1. We therefore investigate whether the importance of the respective indicator of need for the allocation of aid depends on donor country-specific characteristics.

We expect that countries with a larger share of women in parliament, left-leaning governments, and a female minister of development, will take account of inequality to a larger extent when allocating aid. We also hypothesize that they reward merit more than other donors.

As can be seen from Table 10, donor characteristics do seem to shape sensitivity to gender issues. Only donor countries where female political representation is at the mean or above react significantly to need in terms of low female tertiary enrolment rates, an unequal tertiary enrolment ratio or low female life expectancy, and reward higher female political representation. Accordingly, countries where the share of female politicians is relatively high seem to allocate more aid, significant at the 1 per cent level, to recipients that also have a high share of female politicians. Surprisingly, however, donors with these characteristics do not react to need in terms of employment imbalances, but rather allocate more aid when female labour market participation is already high, as well as to recipients where primary completion rates are high. This allocation appears to follow a rule where more aid is allocated to countries that pursue policies and display norms and values similar to the donor country. In terms of merit, little differences arise. There are no clear signs of a merit-based aid allocation, which could set incentives for recipients to improve the situation of women.

Table 10: Aid commitments conditional on donor characteristics

Gender Indicator	Interaction with Marginal Effect at…	Share of Women in Parliament (1 = 10th percentile, 2 = Mean, 3 = 90th percentile)				Government Orientation (1 = Right, 2 = Center, 3 = Left)				Gender of Development Minister (1= Male, 2 = Varies within period, 3 = Female)			
		Need	(p-value)	Merit	(p-value)	Need	(p-value)	Merit	(p-value)	Need	(p-value)	Merit	(p-value)
Primary Completion Ratio	1	1.095*		-0.878		1.383***		-3.235**		0.723		-2.775**	
	2	0.529	0.116	-0.925	0.763	0.527	0.003	-1.193	0.037	0.72	0.762	-1.306	0.07
	3	0.013	0.092	-0.966	0.72	-0.33	0.001	0.849	0.031	0.718	0.752	0.164	0.068
Primary Completion Female	1	0.010**		0.017*		0.009**		0.003		0.003		-0.005	
	2	0.001	0.021	0.002	0.082	0.002	0.001	-0.005	0.376	0.003	0.909	-0.001	0.548
	3	-0.007	0.021	-0.011	0.079	-0.006	0.000	-0.012	0.386	0.003	0.902	0.003	0.546
Tertiary Enrolment Ratio	1	-0.117		-0.910		0.184		-0.542		-0.003		-0.442	
	2	-0.817***	0.376	-0.147	0.315	-0.320	0.025	-0.287	0.460	-0.282	0.135	-0.395	0.828
	3	-1.461***	0.661	0.534	0.296	-0.824***	0.033	-0.031	0.441	-0.562**	0.140	-0.348	0.820
Tertiary Enrolment Female	1	-0.003		-0.078**		0.000		-0.097**		-0.001		-0.123***	
	2	-0.023***	0.432	-0.065***	0.083	-0.016**	0.018	-0.097***	0.185	-0.010	0.171	-0.089***	0.037
	3	-0.041***	0.710	-0.054**	0.056	-0.033***	0.037	-0.097***	0.143	-0.019**	0.172	-0.054**	0.031
Vulnerable Employment Ratio (m/f)	1	0.016		-0.071		-0.199		-0.205		-0.021		-0.591	
	2	-0.159	0.668	0.036	0.840	-0.054	0.471	-0.370	0.973	-0.112	0.658	-0.184	0.338
	3	-0.320	0.741	0.135	0.855	0.090	0.469	-0.534	0.996	-0.203	0.659	0.223	0.331
Vulnerable Employment Female	1	0.000		-0.002		0.002		0.007		-0.002		0.016	
	2	0.003	0.808	0.012	0.613	0.000	0.576	0.011	0.993	0.002	0.138	0.008	0.412
	3	0.006	0.869	0.024	0.701	-0.002	0.590	0.016	0.942	0.007	0.129	0.000	0.407
Employment to Population Ratio	1	-0.192		-1.260		0.519		0.401		0.453		3.993	
	2	0.570*	0.287	-0.359	0.758	0.657	0.866	1.553	0.815	0.747	0.234	0.559	0.133
	3	1.242***	0.377	0.439	0.752	0.795*	0.804	2.705	0.833	1.040**	0.256	-2.875	0.132
Employment to Population Female	1	-0.002		-0.031		0.006		-0.005		0.004		0.050	
	2	0.005	0.432	0.009	0.392	0.007	0.693	0.027	0.444	0.008	0.251	0.012	0.197
	3	0.012**	0.512	0.045	0.400	0.007	0.655	0.059	0.462	0.011*	0.270	-0.027	0.195
Life Expectancy Ratio	1	1.484		7.256		-0.730		12.260*		0.899		12.622*	
	2	-0.673	0.526	0.591	0.365	-0.102	0.635	5.615	0.039	-1.683	0.058	5.797	0.067
	3	-2.499	0.550	-4.892	0.388	0.527	0.645	-1.029	0.036	-4.265*	0.060	-1.029	0.063
Life Expectancy Female	1	0.020		0.062		0.010		0.074		0.007		0.096	
	2	-0.016	0.017	-0.025	0.147	-0.006	0.016	0.034	0.116	-0.009	0.006	0.016	0.014
	3	-0.046***	0.036	-0.097	0.168	-0.023*	0.021	-0.007	0.105	-0.025*	0.007	-0.065	0.014
Women's Rights	1	0.103		-0.009		0.162***		0.100		0.164***		0.081	
	2	0.030	0.156	0.056	0.716	0.133***	0.091	0.094**	0.575	0.114**	0.089	0.103**	0.872
	3	-0.032	0.137	0.110	0.772	0.105*	0.073	0.089	0.535	0.064	0.080	0.125**	0.897
Women in Parliament	1	0.345		0.677		1.391		0.455		0.163		1.439	
	2	2.014***	0.716	1.994*	0.922	1.361	0.579	1.706	0.615	1.533	0.025	1.552	0.919
	3	3.418***	0.856	3.117	0.992	1.331	0.532	2.956*	0.646	2.902***	0.023	1.665	0.919

Notes: The dependent variables are total aid commitments. Data are averages over 3-year periods from 1973-2011. All regressions include control variables, regional dummies and period fixed effects. The 'need' regressions also include the level of the gender indicator, the 'merit' regressions include the change and the initial level in the gender indicator, and the initial aid level. For the need (merit) regressions we display the marginal effect of the level (change) at the specified levels of the interaction variable (1, 2, 3). Standard errors are clustered at the donor-recipient level. *** (**, *): significant at the 1 (5, 10) per cent level. Each p-value indicates a significant difference of the marginal effect to the first category (1).

Source: authors' compilation.

Some significant differences in donor behaviour also arise for government orientation. Only left-wing governments react to need represented by female tertiary enrolment rates, and only left-wing and centrist governments to an unequal tertiary enrolment ratio. The differences between governments' ideologies are significant at the 1 per cent level, as indicated by the p-values. Another significant difference in the coefficient is the reaction to low female life expectancy, to which only left-wing governments react by giving more aid. Right-wing governments on the other hand increase aid in response to improvements in the life

expectancy ratio, which differs significantly from the coefficients for other government ideologies. Providing an economic incentive for recipients to make improvements in a gender indicator might also be an important mechanism to promote gender equality. In terms of female political representation, only left-wing governments reward increases in the share of women in parliament with significantly more aid. Thus, government ideology seems to matter: left-wing governments reward improvements in political representation and focus aid on need, while right-wing governments respond less to both need and merit.

The gender of the minister responsible for development helps to explain differences in donors' reactions to gender indicators as well. Only female ministers react to need in the areas of low female tertiary enrolment rates, an unequal tertiary enrolment ratio, as well as low female life and unequal life expectancy ratios. Female ministers also allocate significantly more aid to recipient countries with a higher share of women in parliament in contrast to their male counterparts for whom this has no effect on their allocation decisions. These results are in line with those for female political representation, and indicate that female influence in the donor countries clearly affects sensitivity to gender issues. Male ministers, on the other hand, allocate more aid to countries with a higher level of women's rights and reward improvements in the life expectancy ratio. However, with regard to setting incentives for improvements in the area of women's rights, it is only during periods with a female minister or mixed female/male office-holders that donors provide more aid.

Overall, this supports our earlier finding that considerations of recipient country merit do not shape donor behaviour in the majority of cases, with the exception of women's political representation. Donors where women play a larger role in politics seem to react more strongly to need in many of the gender indicators. In addition, these donors seem to reward countries that show a similarly high level of female representation in politics. In terms of government ideology, left-wing governments seem to be more sensitive to gender issues, and reward improvements in female political representation and women's rights. Only female ministers react to need in terms of tertiary education and life expectancy. In addition, female ministers reward countries with improvements in women's rights and a high level of female political representation. Male ministers, on the other hand, allocate more aid to countries where women's rights are already quite high and reward improvements in the life expectancy ratio.

6   Summary and conclusions

In this paper we have examined whether donors adjust their aid allocation to reflect gender gaps or low female outcomes in recipient countries. In general we find some evidence that donors increase aid to countries where need in terms of gender gaps and low female achievement in health and education indicators are larger. In addition, donors seem to 'reward' countries with greater female representation in parliaments with more aid. These effects are more pronounced among the 'good donors' and the EU3 (France, Germany, UK), as well as among donors with higher female representation or female development ministers. We find no evidence that donors allocate aid based on merit in the sense of rewarding countries that achieve reductions in gender gaps, or reduce female deprivations in health and education. The only achievement of recipient countries that is rewarded with more aid is increasing female parliamentary representation. It should be noted that the quantitative effects are all rather modest. We find few systematic results that gender gaps in employment affect aid allocation, except for the good donors, the EU3 and the World Bank. However, in this

area, the available indicators are not very consistent and comparable (Klasen and Lamanna 2009; Gaddis and Klasen 2012).

These results lead to some implications for research and policy. As far as further research questions are concerned, there are a number of open questions. One issue is whether changes in the sectoral allocation of aid are actually due to changed priorities or due to changes in the reporting categories at the OECD (Michaelowa and Michaelowa 2011). Second, there might be endogeneity issues that would need to be addressed more carefully. For example, it might be the case that the association between higher female representation and more aid is not causal but due to some unmeasured third factor that affects both female representation and the allocation of aid. While we have a full set of control variables to minimize this problem, the literature on aid allocation does not so far offer smoking-gun evidence regarding causality, and our study is no exception in this regard.

With respect to policy, our results hold lessons for donors and recipients. For donors, it appears that they adjust their allocation priorities to countries with large gender gaps in health and education. While the effects are modest, we would not necessarily expect huge effects as there are other competing priorities besides reducing gender inequality. What is interesting is that donors seem to do too little to reward improvements, which might make need-based aid allocation incentive-incompatible. If, as we find, improvements in gender indicators in health and education lead to reduced aid commitments, this might send the wrong message. If donors want to have a larger effect they might want to reward improvements in gender equality more explicitly. Here the lessons from the Millennium Challenge Account (MCA) from the US are interesting, where the MCA increased aid as a response to reaching a specific set of governance targets. Apparently, these incentives serve to improve governance significantly in countries that were close to the threshold (Öhler et al. 2012).

As far as recipients are concerned, the results give some guidance on what type of countries and political circumstances steer more aid flows to sectors that affect gender equality. In particular, donor countries where female representation in parliament is high, the development minister is female and, to some extent, the government is left-wing, seem to be more sensitive to gender issues. Promoting women and women's rights in donor countries seems to indirectly benefit women in developing countries as well.

Appendix A: Definitions and sources

Indicator	Definition/ Calculation	Scale	Source
	Indicators of gender inequality		
Primary Completion Ratio	Primary completion rate, female (% of relevant age group) / Primary completion rate, male (% of relevant age group)	$[0, \infty)$	World Bank (2013)
Primary Completion Female	Primary completion rate, female (% of relevant age group)	$[0,1]$	World Bank (2013)
Tertiary Enrolment Ratio	School enrollment, tertiary, female (% gross) / School enrollment, tertiary, male (% gross)	$[0, \infty)$	World Bank (2013)
Tertiary Enrolment Female	School enrollment, tertiary, female (% gross)	$[0,1]$	World Bank (2013)
Vulnerable Employment Ratio (male/ female)	Self-employed, female (% of females employed) / Self-employed, male (% of males employed)	$[0, \infty)$	World Bank (2013)
Vulnerable Employment Female	Self-employed, female (% of females employed)	$[0,1]$	World Bank (2013)
Employment to Population Ratio	Employment to population ratio, 15+, female (%) / Employment to population ratio, 15+, male (%)	$[0, \infty)$	World Bank (2013)
Employment to Population Female	Employment to population ratio, 15+, female (%)	$[0,1]$	World Bank (2013)
Life Expectancy Ratio	Life expectancy at birth, female (years) / Life expectancy at birth, male (years)	$[0, \infty)$	World Bank (2013)
Life Expectancy Female	Life expectancy at birth, female (years)	$[0, \infty)$	World Bank (2013)
Missing Women	Methodology in detail provided by the OECD, measures discrimination of female foetuses	$[0,1]$	OECD (2013)
Women's Rights	Sum of the CIRI indexes for social rights (traveling, marriage, ...), economic rights (choose work, maternal absence, ...) and political rights (right to vote, candidate, ...)	$[0,9]$	Cingranelli and Richards (2010)
Women in Parliament	Proportion of seats hold by female MP's	$[0,1]$	World Bank (2013)
Global Gender Gap Index (WEF)	Methodology in detail provided by the WEF	$[0,1]$	Hausmann et al. (2012)
Gender Development Index	Methodology in detail provided by UNDP	$[0, \infty)$	UNDP (2013), update Klasen (2013)
Women's Economic Opportunity	Methodology in detail provided by the Economist	$[0, 100]$	The Economist (2013), Women's Economic Opportunity Index, The Economist Intelligence Unit Limited
	Control variables		
(Log) GDP	Gross Domestic product (constant 2000 US$)	$[0, \infty)$	World Bank (2013)
(Log) Population	Population	$[0, \infty)$	World Bank (2013)
Bureaucratic Quality	Bureaucratic quality in the recipient country	$[0,4]$	ICRG (2012)
Democracy	Dummy that takes the value of one if classified as democracy	$[0,1]$	Cheibub et al. (2010)
Openness	Trade (% of GDP)	$[0,1]$	World Bank (2013)
Occurence of Natural Disaster	Occurence of any of the following: Earthquakes, Extreme Temperatures, Floods, Waves or Landslides	$[0,1]$	EM-DAT (2012)
INLINE Germany (UNGA)	Share of voting in line with Germany in the United Nations General Assembly (UNGA)	$[0,1]$	Strezhnev and Voeten (2012)
INLINE France (UNGA)	Share of voting in line with France	$[0,1]$	Strezhnev and Voeten (2012)
INLINE United Kingdom (UNGA)	Share of voting in line with United Kingdom	$[0,1]$	Strezhnev and Voeten (2012)
INLINE United States (UNGA)	Share of voting in line with United States	$[0,1]$	Strezhnev and Voeten (2012)
INLINE Japan (UNGA)	Share of voting in line with Japan	$[0,1]$	Strezhnev and Voeten (2012)

Source: authors' compilation.

Appendix B: Descriptive statistics for control variables

	Observations	Mean	Standard Deviation	Min	Max
(Log) GDP	680	23.3	1.74	18.86	28.52
(Log) Population	680	16.27	1.57	12.5	21
Bureaucratic Quality	680	1.72	0.9	0	4
Democracy	680	0.44	0.49	0	1
Openness	680	72.32	41.61	12.35	351.2
Natural Disaster	680	0.43	0.38	0	1
INLINE Germany (UNGA)	680	0.67	0.07	0.5	0.89
INLINE France (UNGA)	680	0.61	0.06	0.49	0.84
INLINE United Kingdom (UNGA)	680	0.59	0.06	0.47	0.83
INLINE United States (UNGA)	680	0.29	0.09	0.12	0.84
INLINE Japan (UNGA)	680	0.72	0.06	0.5	0.86

Source: authors' compilation.

Appendix C: Full regression results

	Total Aid Commitments
	Coef./SE.
(Log) GDP	-0.354***
	[0.080]
(Log) Population	0.830***
	[0.076]
Bureaucratic Quality	0.087
	[0.054]
Democracy (Cheibub et al. 2010)	-0.001
	[0.132]
Openness	0.002
	[0.002]
Natural Disaster	0.277*
	[0.148]
INLINE Germany (UNGA)	2.353
	[4.516]
INLINE France (UNGA)	-19.897***
	[5.797]
INLINE United Kingdom (UNGA)	8.821*
	[4.603]
INLINE United States (UNGA)	3.639
	[2.242]
INLINE Japan (UNGA)	8.237**
	[3.592]
Number of observations	680
R-squared	0.61

Notes: Data are averages over 3-year periods from 1973-2011. All regressions include regional dummies and period fixed effects. *** (**, *): significant at the 1 (5, 10) per cent level.

Source: authors' compilation.

Appendix D: p-values for differences between periods

Level of Gender Indicator	Period	Total	Education					Civil Society	
			All	Basic	Secondary	Tertiary		All	Women's equality
Primary Completion Ratio	2002-2011								0.307
	1992-2001	0.707	0.037	0.108	0.116	0.947		0.873	0.307
	1982-1991	0.440	0.889	0.425	0.399	0.922		0.886	0.144
Primary Completion Female	2002-2011								
	1992-2001	0.690	0.367	0.936	0.991	0.896		0.712	0.378
	1982-1991	0.356	0.011	0.008	0.005	0.287		0.560	0.547
Tertiary Enrolment Ratio	2002-2011								
	1992-2001	0.669	0.404	0.866	0.895	0.160		0.663	0.122
	1982-1991	0.182	0.339	.	0.010	0.062		0.009	0.108
Tertiary Enrolment Female	2002-2011								
	1992-2001	0.508	0.146	0.053	0.679	0.137		0.269	0.803
	1982-1991	0.001	0.045	.	0.169	0.619		0.549	0.010
Vulnerable Employment Ratio (male/female)	2002-2011								
	1992-2001	0.066						0.086	0.761
	1982-1991	0.329						0.449	0.140
Vulnerable Employment Female	2002-2011								
	1992-2001	0.555						0.587	0.523
	1982-1991	0.435						0.341	0.097
Employment to Population Ratio	2002-2011								
	1992-2001	0.139						0.742	0.700
	1982-1991	0.541						0.866	
Employment to Population Female	2002-2011								
	1992-2001	0.045						0.919	0.490
	1982-1991	0.265						0.987	0.238

		Total	Health			Population Policies			Civil Society	
			All	General	Basic	All	Reproductive health	Family planning	All	Women's equality
Life Expectancy Ratio	2002-2011									
	1992-2001	0.443	0.209	0.197	0.517	0.736	0.534	0.352	0.241	0.024
	1982-1991	0.697	0.363	0.533	0.322	0.396	0.219	0.844	0.003	0.001
Life Expectancy Female	2002-2011									
	1992-2001	0.374	0.168	0.107	0.332	0.345	0.512	0.968	0.386	0.526
	1982-1991	0.627	0.329	0.976	0.279	0.238	0.500	0.684	0.276	.

		Total	Health	Education	Population Policies			Civil Society	
			All	All	All	Reproductive health	Family planning	All	Women's equality
Women's Rights	2002-2011								
	1992-2001	0.105	0.204	0.766	0.799	0.000	0.020	0.077	0.367
	1982-1991	0.107	0.914	0.262	.	.	.	0.223	0.070
Women in Parliament	2002-2011								
	1992-2001	0.193	0.284	0.737	0.901	0.707	0.530	0.036	0.472
	1982-1991	0.011	0.000	0.024	0.015	0.018	0.027	0.010	0.080

Notes: Relates to Table 6. The p-values indicate significant differences of the coefficients in the 1992-2001 and 1982-91 period compared to the 2002-01 period. We indicate regressions where the pseudo maximum likelihood estimator did not converge with a dot.

Source: authors' compilation.

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