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What happens when women in politics deal with foreign aid: The case of Sub-Saharan countries

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Abstract:

This paper seeks to evaluate whether there is any impact on aid effectiveness when there is a different gender composition of parliaments in recipient countries. The sample observed refers to 40 Sub-Saharan African countries over the period 2007-2019. The findings gained demonstrate that a higher presence of women in parliament leads to improvements in the relationship between aid and growth. When controlling for endogeneity problems that can affect the linkages between aid and growth, these results are confirmed. The channel through which their entry into politics seems to bring benefits to economic growth is the social sector, towards which a large part of foreign aid goes.

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The debate on the relationship between foreign aid and economic growth has deep roots, as it dates from about 50 years ago. During these years it has been enriched by an extensive, both theoretical and empirical, literature. The different and often conflicting results reached in empirical analyses led to further investigation in order to shed light on the various aspects of aid effectiveness. The topic has aroused great interest in many scholars because Sub-Saharan countries, in particular, performed worse than other countries and remain stuck in slow growth paths despite the massive delivery of aid to them by the richest countries.

The literature shows that aid effectiveness can be determined by specific features of the receiving country, as, for example, the quality of institutions and the goodness of polity (Burnside and Dollar, 2000 and 2004; Collier and Dollar, 2001; Chauvet and Guillaumont, 2004; Economides et al., 2008; Michaelowa and Weber, 2008; Tang and Bundhoo, 2017; Adedokun, 2017).

With these premises, the aim of this study is to evaluate foreign aid effectiveness considering the gender composition of parliaments in recipient countries, which is a particular characteristic of institutions and which in this study is considered as a proxy of women in institutions.

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To measure aid effectiveness, I observe its effect on the GDP growth rate because, although it is not considerable as a comprehensive measure of welfare, it is at least useful to provide a great deal of information that is closely related to welfare (Dynan and Sheiner, 2018).

The study focuses on the specific link between the proportion of women in parliaments and the effectiveness of aid in receiving countries, due mainly to the fact that the literature showed female policymakers behaving differently from their male counterparts. Indeed, several studies find that women seem to be more altruistic, fairer and less corrupted (Eckel and Grossman, 1998; Dollar et al., 2001; Swamy et al., 2001; Goetz and Hassim, 2003; Chattopadhyay and Duflo, 2004a; Croson and Gneezy, 2009; Brollo and Troiano, 2016; Jha and Sarangi, 2018; DiRienzo and Das, 2019). These specific character traits may of course affect the goodness of the decisions of a policymaker, becoming crucial for the quality of institutions and, hence, also for aid effectiveness (Shukralla and Allan, 2011). Moreover, the literature proves that women are more sensitive to well-being needs, like education, health, and household and gender policies, which in less developed countries are key for the economic growth process; they also constitute the largest sector to which aid is sent.

The intent of this study is to verify whether women in the parliaments of recipient countries can contribute to increase development aid effectiveness. To this purpose, considering endogeneity problems of explanatory variables and mainly the problems between the growth rate and foreign aid, an econometric strategy was employed to overcome them, as there could be a reverse causality of aid, which is usually sent to poorer countries, but also of women in parliament, which may be a higher proportion in more developed countries; there are also problems of omitted variables. The sample considered in the analysis is made up of 40 Sub-Saharan countries in the period 2007-2019. The econometric methodology employed consists of an ordinary least squares (OLS) and a generalized method of moments (GMM) strategy, both with fixed effects and with lagged explanatory variables. The instrument used, inter alia, following the work of Rajan and Subramanian (2008), is an index that captures exogenous political and historical links to instrument the variable representing the amount of foreign aid.

The results of the empirical analysis reveal that development aid has a negative effect on growth. This can occur because, even if aid is mainly aimed at improving absolute poverty, health, and education and at promoting policies for gender equality, it is often sent for reasons other than the satisfaction of singular needs, such as because of pre-existing relations between countries. Hence, if the institutional context is not adequately prepared to receive a substantial amount of money, these flows may not favor the growth process or could even damage it (Djankov et al., 2008; Moyo, 2009). However, a higher presence of women that can easily deal with more foreign aid (proxied with the interaction term between foreign aid and women in parliament) reduces this negative effect; the variable turns into a positive and becomes significant, while the results are robust when controlling for endogeneity with GMM estimations. In a more in-depth analysis in which those variables that could be defined as more proper efficiency indicators were used as the dependent variable to evaluate the efficiency of each sector, it appears that the interaction between women and aid has a positive effect when the efficiency indicator is an education or health indicator. Women, indeed, as previously shown in the literature (Hicks et al., 2016; Brollo and Troiano, 2016; Hernández-Nicolás et al., 2018; Hessami and da Fonseca, 2020) are found to be more interested in social sectors than in others.

The paper is structured as follows: section 1 includes the literature review; section 2 describes the African context; section 3 presents the empirical analysis (strategy, dataset and summary statistics); section 4 presents results; and section 5 concludes.

1. Literature review

1.1. Foreign aid effectiveness

The recent contributions of the literature on the effectiveness of foreign aid can be divided into three different strands. Some authors argue that foreign aid has positive effects on growth only in certain circumstances, some find only small positive effects of aid on growth and, finally, others claim that foreign aid not only has no effects but it can even undermine the growth process of receiving countries. Table 1 provides a summary of the most influential reference literature with key argument, findings and reference papers.

The first strand of the literature, which includes most studies about the effectiveness of foreign aid, states that it has positive effects on growth only under certain conditions, according to the quality of institutions of recipient countries, the effectiveness of government policies, and the type of aid sent. In this line, the most influential study is the one of Burnside and Dollar (2000). The authors argue that donors should be more selective in sending aid and favor countries with good policies, because only in these countries can aid have a greater impact on growth. Weak policies prevent aid from having a positive impact. Several studies, focused on institutions and policy, confirmed these findings (Burnside and Dollar, 2000 and 2004; Collier and Dollar, 2001; Chauvet and Guillaumont, 2004; Economides et al., 2008; Michaelowa and Weber, 2008; Tang and Bundhoo, 2017; Adedokun, 2017). Collier and Dollar (2001) develop a model of efficient aid in which flows respond to policy improvements that create a better environment for poverty reduction and effective aid. They estimate that policy reform and efficient aid can cut poverty in half. Chauvet and Guillaumont (2004) find that aid effectiveness is positively related to the quality of actual economic policies but also negatively to the quality of past economic policies. Moreover, they find that aid is negatively related to internal political instability and finally, that it is positively related to external economic and political shocks. Therefore, they conclude that the greater the prospects of policy improvements, the more effective aid will be and that aid can amortize the negative impact of the external economic and political shocks on economic growth. Economides et al. (2008) find evidence that aid has a positive effect on growth, which is damaged by the adverse indirect effects of associated rent-seeking activities, in particular in countries with relatively large public sectors where corruption and rent-seeking activities are more likely to take place. Michaelowa and Weber (2008), for instance, find that aid effectiveness for the education sector is determined by a different political governance. Tang and Bundhoo (2017) find that foreign aid helps investment and import requirements in some African countries and that this foreign aid is conditional on the economic, political and institutional context of the recipient country. They thus explain why aid effectiveness is very low in the Sub-Saharan African countries, where corruption and bad governance are endemic. Also, Adedokun (2017) shows that governance other than the size of aid is necessary for aid effectiveness.

The second strand of the literature on aid effectiveness proves that aid has some positive effects on growth and that negative results, detected in certain cases, is determined by problems of identification strategy, by improper indicators of aid effectiveness and by the presence of non-linearity in individual variables (Dalgaard and Hansen, 2001; Hansen and Tarp, 2001; Dalgaard et al., 2004; Sachs et al., 2004; Dalgaard and Erickson, 2009; Clemens et al., 2012; Juselius et al., 2014; Arndt et al., 2015). Clemens et al. (2012), for example, focuses on the typologies of aid that are expected to have an "early impact" on growth, such as infrastructure development aid, and finds that aid inflows are systematically associated with modest but positive growth. Juselius et al. (2014) investigate the long-run effect of foreign aid on key macroeconomic variables in Sub-Saharan African countries and find broad support for a positive long-run impact of aid and little evidence of harmful effects. Moreover, they assert that several analyses in the literature are

econometrically inadequate. Finally, Arndt et al. (2015) confirm recent evidence of a positive impact of aid on growth, observing that aid has always enhanced growth, promoted structural change, improved social indicators, and reduced poverty.

The third strand states that aid programs do not improve economic growth and can even undermine it. Several studies (Easterly and Levine, 1997; Easterly, 2007; Friedman, 1995; Moyo, 2009; Rajan and Subramanian, 2007 and 2008; Easterly and Chamberlain, 2017; Bauer and Yamey, 2018) observe that development aid in poor countries is responsible for the increase of bureaucracy, the endurance of poor governments, the enrichment of the ruling class or is simply a waste of resources. Citing the widespread poverty in Africa and South Asia, they argue that these countries, despite decades of aid, show a very low growth rate. According to this evidence, aid programs should be radically reformed, consistently reduced or totally abolished. The strongest attacks on the robustness of Burnside and Dollar's growth pattern were presented by Easterly et al. (2004). This study, using the same dataset, model specifications and econometric approach as Burnside and Dollar (2000), extends slightly the sample period and reaches completely different results. Other authors (Meier and Stiglitz, 2001; Moyo, 2009; Rajan and Subramanian, 2008 and 2011), agree that development aid can even undermine incentives for production in the private sector and can weaken growth, while maintaining weak governments, helping to perpetuate poor economic policies and postpone reform. Among the most influential studies of this strand, Rajan and Subramanian (2007 and 2008[1]) examine the effectiveness of aid and find a relationship between aid inflows sent to a country and its economic growth and that there is no evidence that aid works better in a better political or geographical context, or that a different type of aid works better than others; they obtain a different result from mine, but they do not consider the presence of women in politics as a political context variable.

According to Meier and Stiglitz (2001), large increases in resources from rich countries to poor countries can lead to unwanted effects, especially those associated with Dutch Disease[2] (Rajan and Subramanian, 2011; Williams, 2011), because higher aid flows can contribute to a slowdown in the growth of export sectors. In a further analysis, Rajan and Subramanian (2011) show that aid has systematically negative effects on a country's competitiveness because of the real exchange appreciation caused by the inflows of aid. A remarkable conclusion is the one of Moyo (2009), who argues that foreign aid was and continues to be harmful in the political, economic and humanitarian fields for the majority of developing countries. She demonstrates that in African countries loans and grants (different from emergency resources) have the same effect as valuable natural resources: aid flows encourage corruption and conflicts and at the same time discourage free enterprise, damaging the growth process.

[1] In particular, in order to treat the endogeneity problems between aid and growth, as I do, they instrument aid with an instrument that takes into account the willingness of the donor to give aid. They assume that donors are more likely to want to give aid the more they expect to have influence over the recipient. They suppose that, the greater the extent of historic relationships between a donor and a recipient, the more likely a donor will be to give aid. They capture historic relationships through colonial links and commonality of language. Moreover, they capture the willingness of the donor to give aid also through the relative sizes of donor and recipient. They estimate an equation that is then aggregated across donors to yield a level of the fitted value of aid-to-GDP for the recipient for that period. In the present study, I capture influence in a similar way but with some different variables, like asylum seekers in the donor country, the former colonizer influence, and the value of the International Monetary Fund quota of donors, as indicated in the next section, which in my opinion best identifies the willingness of the donor to give aid.

[2] The term was coined in 1977 to describe the decline of the manufacturing sector in the Netherlands after the discovery of a large natural gas basin in Slochteren in 1959. In the literature it is used to explain the relationship between the exploitation of natural resources and the decline of the manufacturing sector.

Table 1 – *Previous studies on foreign aid effectiveness: a summary*

Key argument	Findings	Reference papers
Foreign aid has positive effects on growth only in certain circumstances	- Donors should be more selective in sending aid and favor countries with good policies, because only in these countries may aid have a greater impact on growth	Burnside and Dollar (2000)
	- Policy reform and efficient aid can cut poverty in half	Collier and Dollar (2001)
	- Aid effectiveness is positively related with the quality of actual economic policies but also negatively related with the quality of past economic policies - Aid is negatively related with internal political instability - Aid is positively related with external economic and political shocks	Chauvet and Guillaumont (2004)
	- Aid has a positive effect on growth, which is damaged by the adverse indirect effects of associated rent-seeking activities, in particular in countries with large public sectors	Economides et al. (2008)
	- Aid effectiveness for the education sector depends on a different political governance	Michaelowa and Weber (2008)
	- Aid helps investment and import requirements and this foreign aid is conditional on the economic, political and institutional context of the recipient country	Tang and Bundhoo (2017)
	- Good governance other than the size of aid is necessary for aid effectiveness	Adedokun (2017)
Foreign aid has only small positive effects on growth	- Good policies accelerate growth and may at the same time lead to decreasing effectiveness of foreign aid	Dalgaard and Hansen (2001)
	- Aid increases the growth rate, and this result is not conditional on 'good' policy. Aid impacts growth via investment	Hansen and Tarp (2001)
	- Aid has been effective in promoting growth, but the magnitude of the effect depends on climate-related circumstances	Dalgaard et al. (2004)
	- Aid is effective but low levels of aid generate slow growth, so a lot of aid would be needed. Thus, African countries need a "big push" in public investments to produce a rapid "step" increase in Africa's underlying productivity	Sachs et al. (2004)
	- Aid inflows are systematically associated with modest but positive growth focusing on the typologies of aid that is expected to have an "early impact" on growth, such as infrastructure development aid	Clemens et al. (2012)
	- There is broad support for a positive long-run impact of aid and little evidence of harmful effects	Juselius et al. (2014)
	- Aid has a positive impact on growth; aid has always enhanced growth, promoted structural change, improved social indicators, and reduced poverty	Arndt et al. (2015)
Foreign aid not only has no effects but may even undermine the growth process of the receiving countries	- Large increases in resources from rich countries to poor countries can lead to unwanted effects, especially those associated with Dutch Disease	Easterly and Levine (1997)
	- Foreign aid is harmful in the political, economic and humanitarian fields for the majority of developing countries. In African countries, loans and grants (different from emergency resources) have the same effect as valuable natural resources: aid flows encourage corruption and conflicts and at the same time discourage free enterprise, damaging the growth process	Moyo (2009)
	- Aid sent to a country is related to its economic growth and there isn't any evidence that aid works better in a better political or geographical context, or that some different type of aid work is better than others	Rajan and Subramanian (2008)

1.2. Women in institutions

The role of women in institutions has long been debated in the literature. Some studies (Chattopadhyay and Duflo, 2004a and 2004b; Childs et al., 2005; Paxton and Kunovich, 2003; Baskaran and Hessami, 2018) suggest that the involvement of women in politics brings considerable changes within societies. Some empirical analyses on this issue (Powley, 2006; Caiazza, 2004; Schwindt-Bayer, 2006) show that the presence of women in parliament fosters policies and laws aimed at reducing gender discrimination and promoting health and family care.

The literature identifies some reasons why women in politics govern differently from their male colleagues (Chattopadhyay and Duflo, 2004a; Eckel and Grossman, 1998; Goetz and Hassim, 2003; Croson and Gneezy, 2009). Women have different life experiences from men and bring their experience to support their political decisions. In particular, in a randomized policy experiment[3] in India, Chattopadhyay and Duflo, (2004a and 2004b) observe that, in politics, women who are empowered to decide invest more in infrastructure directly relevant to their own needs as, for example, drinking water, childcare, education and gender policy. Eckel and Grossman (1998) found that women are more "socially orientated" (altruistic) while men are more "individually orientated" (selfish); they also found that women on average donate two times more than men even when the donor cannot be traced back. Hicks et al. (2016) reveal that an increase of women in donor countries' governments will increase the total amount of aid sent to poorer countries and the portion allocated to social infrastructure.

Brollo and Troiano (2016) find that female mayors are less corrupt than their male colleagues. Moreover, they find that female mayors attract more transfers for capital investment than their male colleagues, that having a female mayor seems to lead to better health outcomes related to prenatal care delivery and, finally, that female mayors seem more likely to head municipalities with better educational facilities. Analyzing mayors in Spanish local government, Brollo and Troiano (2016) show that councils with women mayors have lower annual interest and debt repayment obligations and have higher expenditures on security, protection, and social promotion. In addition, in councils with more inhabitants, women mayors are more common but women on average occupy the office for shorter periods.

Baskaran and Hessami (2018) find higher growth in economic activity when more women are elected in councils. Moreover, they find that women legislators are less prone to political opportunism, are more efficacious, and tend less to criminal or corrupt behaviors. Finally, more recently Abras et al. (2021) find a negative relation between COVID-19 outcomes and the presence of a woman head of state. This, according to them, happened because countries with a woman head of state have a higher rate of universal healthcare coverage than countries with a male head of state. An Inter-Parliamentary Union (IPU) survey conducted in 1999 on female parliamentarians from 65 countries revealed that 40% of respondents entered into politics because of their social interests and 34% of them through non-governmental organizations, which is different from the more traditional path of the political party often followed by men. Also, a 2008 survey (IPU, 2008), which involved 272 parliamentarians from 110 countries around the world,[4] found consistent differences in policy priorities when female and male

[3] A randomized controlled trial (RCT) is an experimental form of impact evaluation that tests the extent to which specific planned impacts are being achieved and in which the population receiving the policy intervention (e.g., people, schools, villages, etc.) and a control group are chosen randomly from the eligible population. Among the first to implement RCTs in development economics are Esther Duflo, Abhijit Banerjee and Michael Kremer, who won the Nobel Prize in Economics for this reason.

[4] The sample includes all the countries of the analysis and of the European Parliament.

politicians identified the areas in which they were more active and interested. These results closely reflect a well-established tendency among women to engage in civil society as a way to promote projects that support the survival of families. Also, Hessami and da Fonseca (2020), in their literature review, summarize that previous studies found that: a higher female representation improved institutional quality by reducing corruption; in developing countries, a higher proportion of women in politics generated a better provision of public goods, especially with regard to education and health; and in developed countries, a higher share of female representation led to changes in parliamentary decisions and specific policies like more public child care.

2. The Sub-Saharan context

This section describes the geographic area object of the analysis, the Sub-Saharan countries. This geographical context was chosen because of the considerable development aid flows in the past decades to and the persistence of a weak growth path in these countries. Following is evidence on the role and the main interests of women in African parliaments and a brief descriptive analysis of the development aid sent to these countries.

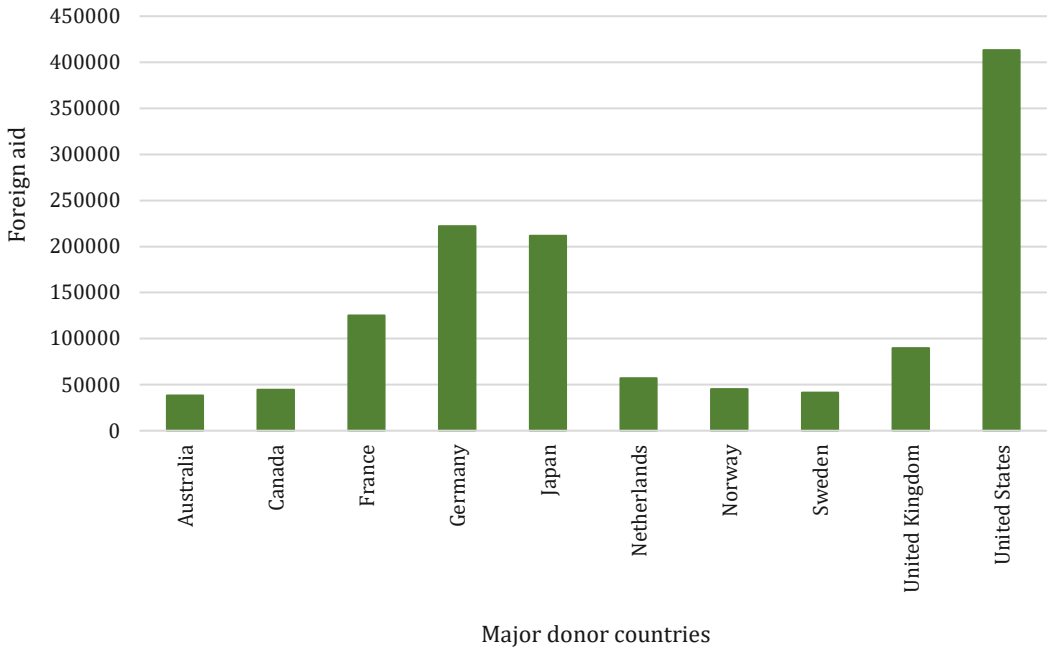
The participation of women in African government helped to promote and implement projects closely related to their main interests. These are mostly projects aimed at improving social well-being and that imply an increase in spending on health, nutrition and education programs.

Goetz (1998) and Goetz and Hassim (2003) noted that, despite the adversities, women in African governments, particularly in Uganda and South Africa, managed to insert the interests of women in the political agenda. Similarly, Bauer and Britton (2006), show that African women working together, despite the presence of religious, ethnic and class divisions, succeeded in formulating or pushing for the adoption of laws concerning social welfare. Focusing on Rwanda, Burnet (2008) found that the increasing representation of women in government paved the way to democracy and greater social participation, while Powley (2006) highlighted their contribution to pushing a law strengthening the rights of women, for example the right to inherit land. In the wake of the Rwandan genocide, indeed, the exclusion of women from land ownership became a critical issue. Apart from being a violation of women's rights, the impossibility of owning land had a negative impact on food production, safety, the environment, settlement patterns and family life. More women in parliament have also actively supported the increase in spending on health and education.

Moreover, Seguino and Wereb (2013), analyzing the causes of slow growth in Sub-Saharan African countries, find that a need to reach gender equality is essential for promoting growth, so they propose an increase in public investment to reduce the gender gap in care burdens.

Moving now to the context of development aid received by African countries, data were used from the OECD Creditor Reporting System (CRS), which contains data on Official Development Assistance (ODA) sent to poor countries from worldwide donors (OECD, 2014a, 2014b). In particular, the sample consists of 40 countries in Sub-Saharan Africa. Foreign aid data include flows from individual country members of the Development Assistance Committee (DAC) as well as from multilateral organizations. The time horizon considered in this analysis is 2007-2019.

Figure 1 – *Major donor countries in the period 2007-2019*



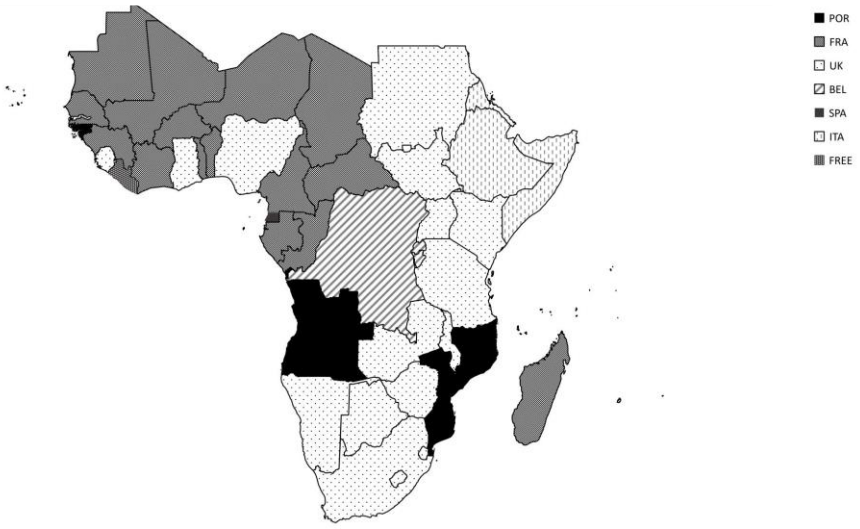
Source: elaboration on OECD (CRS) dataset.

Figure 1 shows the aggregate quantity of aid[5] sent from the major donors to all Sub-Saharan African countries. Data show that the major donor is the United States, followed by Germany, Japan, France, and the United Kingdom, in that order. A common characteristic of all donors is the existence of a particular relationship with the recipient countries, based either on former colonization links or on political and economic strategies. To better understand this particular relationship, figure 2 presents a map of Sub-Saharan African countries and their former colonizers.

Most foreign aid sent to Sub-Saharan African countries in the period 2007-2019 (fig. 3a) was devolved to the Social Infrastructure and Services sector (42%). Less consistent are flows addressed to other sectors, like: Economic Infrastructure and Services (15%); Production (7%); Action Relating to Sovereign Debt (4%); Commodity (4%); Humanitarian (12%); Multisector, to which mainly flows foreign aid to the environment (9%); and Administrative costs of donors.

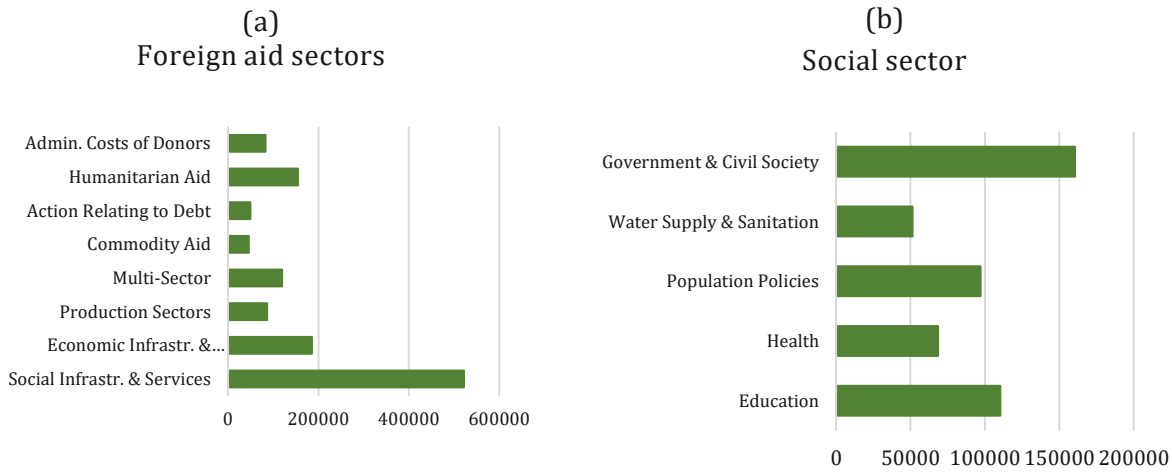
[5] Data are measured in terms of the 2018 US dollar exchange rate.

Figure 2 – *Former African colonies map*



Note: this map was drawn considering the prevailing former colonizer.

Figure 3 – *Foreign aid divided by sectors, and Foreign aid for Social infrastructure sectors*

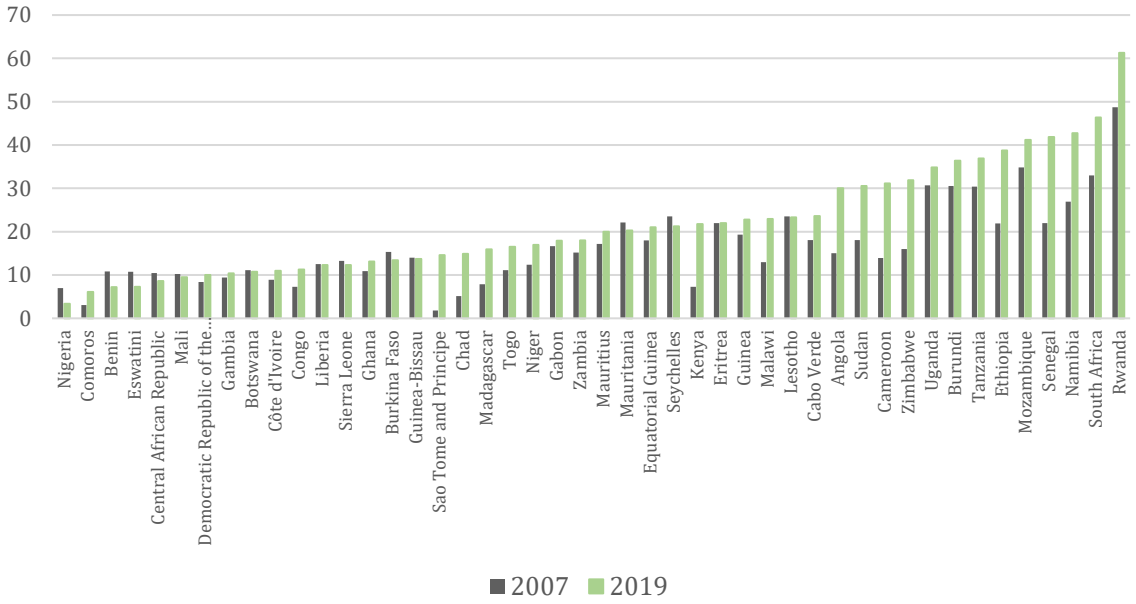


Source: elaboration on OECD (CRS) dataset 2019.

Within the Social Infrastructure and Services sector (fig. 3b), the enlarged Health sector (Health and Population Policies/Programmes & Reproductive Health) receives the greatest amount of aid resources (34%), followed by Government and Civil Society (33%), Education (23%) and Water Supply and Sanitation (10%).

The data on women in parliaments (WIP) show the percentage of parliamentary seats in a single or lower chamber held by women and are from the IPU. Figure 4 compares the data on the proportion of women in the parliaments of Sub-Saharan African countries in 2007 and 2019 to better understand how much the presence of women in parliament has increased within the sample, in some cases considerably in the observation period.

Figure 4 – *A Benchmark: women in parliament in 2007 and in 2019*



Source: World Bank development indicators database.

3. Empirical model, data and descriptive statistics

3.1. Data

The sample of observation is given by 40 Sub-Saharan countries observed over the period 2007-2019. The dependent variable of the model (*Growth*) is the annual percentage growth rate per capita of GDP at market prices based on constant local currency[6] from World Bank national accounts data and OECD National Accounts data files. The variables of interest are foreign aid and women in parliament. The intensity of foreign aid in each country is computed as the ratio between aid inflows and GDP (*Aid/GDP*). While much has already been said about aid and women in parliament in Sub-Saharan Africa in section 2, here something more needs to be said about the control variables.

In order to control for different political, economic, and social drivers for economic growth, some control variables have been included in this regard. The level of per capita GDP[7] (*lnGDP_pc*)

[6] Aggregates are based on constant 2010 US dollars.
[7] Expressed in constant 2010 US dollars.

is included, expressed in a logarithm. A measure of demographic structure is given by the logarithm of population (*lnPOP*). As a measure of capital endowment, the amount of public expenditure (*public expenditure*), for public investment, and the foreign direct investment (*FDI*), which indicates the net amount of foreign investments, are included for each country. As a measure of the balance of payments constraint, the *trade openness* is considered, which is the sum of exports and imports of goods and services, measured as a share of gross domestic product, and is from the world bank database*. Control of corruption* accounts for the quality of governments within surveyed countries. Specifically, this variable observes the quantity of public power exercised for private gain, including both petty and grand forms of corruption present in a country. Corruption is usually considered as a factor that can affect both growth performance of a country and the effectiveness of the aid itself. This variable is one of the Worldwide Governance Indicators[8] (WGI) of the World Bank (Kaufmann et al., 2011). Higher values of this indicator mean a better functioning of the institutions. *Polity* is a variable that measures the level of democracy, taking values between –10 to 10. Values for this variable are taken from the polity IV dataset (Marshall et al., 2013). The variable *oil* is included to account for oil rents (difference between crude and total cost of production, at world prices) in percentage of GDP, made available by the World Bank dataset. Also, the *infant mortality* rate and the *primary education completion rate* are included to account for the health situation and for the human capital of the sample. These variables are available from the World Bank dataset. Finally, the data on the *development levels* are taken from World Economic Situation and Prospects (WESP), a statistical annex that contains a set of data that delineates trends in various dimensions of the world economy. The variable *female labor force participation* is a key driver of women's empowerment in politics. It is an external and individual factor that could influence their decision to engage/disengage in political life at all levels. The variable is from the ILOSTAT dataset and is the female labor force participation that is the proportion of a country's population of females (15+) that is employed. In order to estimate also for the causal effect of women legislators on economic activity in their constituencies to compare legislations more feminized with those more masculinized (Baskaran and Hessami, 2018) and to account for the gender equality situation in each country, I add variables such as: *gender gaps in employment* (female to male employment rates), *gender wage gaps* (female to male wage rates) and *female primary enrollment rates*; all variables are from the World Development Indicators dataset.

Table 2 shows some descriptive statistics. The average growth rate in the sample is 0.158 with a mean of 0.49, a minimum of –3.656 and a maximum of 1.807. The fraction of aid on GDP is on average 4%, with a minimum of 0.03% and a maximum of 64%. These statistics indicate that the intensity of foreign aid is highly volatile in the countries included in the sample. The share of women in parliament is on average 19.6% with a minimum of 0 and a maximum of 63.7%. *Polity* is on average quite low, which is hardly surprising given the underdevelopment conditions of most countries considered in the analysis. The primary education completion rate is only 63%, and *infant mortality* is relatively high, 55%. *Trade openness* on GDP is almost 70%, showing the greater propensity to import of the countries analyzed.

[8] The WGI indicators are based on surveys summarizing the opinions on the quality of governance provided by entrepreneurs, citizens and experts from industrialized and developing countries (Kaufmann et al., 2011).

Table 2 – Summary statistics

	Mean	Std. Dev.	Min	Max
Growth per capita	0.158	0.414	–3.656	1.807
Aid/GDP	4.206	5.084	0.030	64.024
WIP	19.655	12.580	0.000	63.750
Population	20 700 000	3 900 000	505 235	201 000 000
GDP_pc	2256	3005	208	18 254
FDI	4.421	8.771	–11.620	103.340
Trade openness	69.894	36.702	16.67	311.35
Public Expenditure	88.323	19.368	31.720	241.970
Polity	2.924	4.976	–9	10
Control of Corruption	–0.637	0.606	–1.826	1.039
Oil	3.100	8.279	0.000	56.140
Education	63.957	22.125	14.38	115.18
Infant mortality	55.000	19.855	12.500	118.200
Female labor force	59.766	15.462	27.77	87.68
School enrollment primary female	94.732	25.304	22.37	151.31
Wage and salaried gender gap	11.386	7.870	–10.08	33.46
Employment gender gap	13.940	10.649	–8.400	43.64
As/Pop_don	0.241	0.047	0.164	0.350
Influence	0.405	0.491	0	1
IMF	1 999 353	635 867	954 395	2 995 272

Table A1 in the Appendix shows the correlations between variables.

3.2. The empirical model

In the econometric model of this study the dependent variable is the growth rate and the variables of interest are foreign development aid, the proportion of women in parliament, and the interaction between these two. The interaction term aims to capture the influence of female parliamentarians on aid management outcome, measured in terms of growth. Controls for different social and economic factors are also included, and, in order to account for common factors to all countries and for time-invariant characteristics, time and country fixed effects are also included. Owing to the fact that the effect of the interest variable and of most of the control variables is not immediate on the growth rate, the independent variables are lagged by a period of 5 years. The empirical model, tested by means of panel data approaches, is structured as follows:

$$g_{it} = \alpha + \delta Aid_{i(t-5)} + \beta WIP_{i(t-5)} + \mu Aid_{i(t-5)} WIP_{i(t-5)} + \boldsymbol{X}_{i(t-5)} + \eta_i + \upsilon_{i(t-5)} + \varepsilon_{i(t-5)} \quad (1)$$

where: g_{it}indicates the GDP per capita growth rate in country i (with $i = 1, \dots, 40$) at time t (with $t = 1, \dots, 13$), Aid_{it} is the total amount of Official Development Assistance in terms of the recipient country's GDP, W_{it} represents the share of women in parliament (available from the IPU database), $\boldsymbol{X}_{it}$ is a vector of socio-economic variables suggested in the empirical growth literature, η_i are country fixed effects accounting for countries' exogenous heterogeneity, υ_t are time fixed effects which measure common events and factors affecting all countries, and ε_{it} is the error term ($iid \sim N(0, \sigma^2)$).

The baseline model is first estimated by means of an OLS approach with fixed effect, whose results will be taken as a benchmark. Then, since this simple estimation does not account for possible endogeneity, the model is estimated again by a GMM approach.

A source of endogeneity is related to the omitted variables problem. The distribution of foreign aid, for example, might be driven by some unobserved characteristics of the recipient countries and is not randomly distributed across countries. Since my analysis is based on panel data, the first attempt to treat endogeneity controls for unobserved factors, including in the model fixed effects at the time and country level. Another source of endogeneity might arise from reverse causality because of the amount of foreign aid received by a country, but also the presence of women in parliament can be determined by the rate of growth. And, finally, the model may suffer from measurement errors. In particular, the variable *Aid* could be an imperfect measure of foreign aid, because it may not consider all the aid sent (like Chinese[9] aid).

To this extent, following Rajan and Subramanian (2008), an instrument was built for foreign aid and for the interaction term by estimating, with OLS, an equation with aid as a dependent variable and with different historical and political factors that determine aid and satisfy the exclusion restrictions taken as explanatory variables. After running this estimation, the predicted values of aid are used to instrument *Aid* itself and *Aid*W* in the growth regression (equation 1).

In this line, foreign aid sent to a recipient country i is derived from the estimation of the following model:

$$Aid_{it} = AS_{it} + Inf_{it} + IMF_{it} + \gamma_i + \tau_t + \omega_{it} \quad (2)$$

where: AS_{it} is the proportion of asylum seekers from the recipient country i at time t towards donor countries; Inf_{it} is the colonial influence, which is a dummy variable, that is, one if the former colonizer country is also the major donor and zero otherwise; IMF_{it} is the value of the International Monetary Fund quota of donors; γ_i are country fixed effects; τ_t are time fixed effects; and ω_{it} is the error term.

4. Results of the econometric analysis

This section shows the results of the econometric analysis. The empirical relationship among growth, aid and gender parliament composition is first estimated through the OLS methodology and then, accounting for the presence of endogeneity, the GMM proposed by Arellano and Bond (1991) is followed.

4.1. OLS results

Table 3 presents the results of the OLS estimations of the empirical model formalized in equation (1). The OLS approach evaluates the correlation between aid and growth, to see whether and to what extent foreign aid is associated with recipient countries' growth performances, considering the interaction with women in parliament.

[9] Aid from China is not included in the Creditor Reporting System dataset.

Table 3 – OLS with fixed effects results

	(1)	(2)	(3)	(4)	(5)	(6)
Aid/gdp	−0.0952	−0.0944	−0.0843	−0.0841	−0.140	−0.286*
	(0.0780)	(0.0775)	(0.0836)	(0.0843)	(0.149)	(0.155)
WIP	0.00107	−0.000187	−0.00174	−0.00152	−0.0661	
	(0.0333)	(0.0348)	(0.0341)	(0.0348)	(0.0527)	
WMIN						−0.0298
						(0.0499)
*Aid/gdp*WIP*	0.00640*	0.00647*	0.00603*	0.00602*	0.00923*	
	(0.00321)	(0.00329)	(0.00334)	(0.00340)	(0.00515)	
*Aid/gdp*WMIN*						0.00731*
						(0.00421)
log_pop	−1.869	−2.151	−3.242	−3.266	2.733	−6.224
	(4.923)	(4.655)	(4.852)	(5.015)	(6.614)	(13.51)
log_GDP_pc	−5.902**	−5.735*	−5.876*	−5.898*	−6.496*	−13.04***
	(2.716)	(3.092)	(3.089)	(3.298)	(3.505)	(3.178)
Trade_openess			0.0123	0.0122	0.0243*	0.0270
			(0.0110)	(0.0107)	(0.0124)	(0.0301)
FDI	−0.0198	−0.0193	−0.0184	−0.0185	−0.0400*	−0.0597
	(0.0172)	(0.0175)	(0.0168)	(0.0166)	(0.0215)	(0.0623)
final_cons_exp_GDP	0.00961	0.00985	−0.00468	−0.00461	0.00978	−0.0239
	(0.0163)	(0.0166)	(0.0276)	(0.0273)	(0.0312)	(0.0537)
Polity	−0.0130	−0.00804	−0.0222	−0.0224	−0.00130	−0.0569
	(0.0707)	(0.0788)	(0.0776)	(0.0780)	(0.0768)	(0.0787)
Control of corruption		−0.313	−0.183	−0.178	0.392	2.807**
		(1.261)	(1.264)	(1.293)	(1.194)	(1.136)
Oil_gdp	0.0991***	0.0989***	0.0852**	0.0851**	0.0744	0.184***
	(0.0357)	(0.0358)	(0.0413)	(0.0418)	(0.0617)	(0.0607)
Primary education	0.0710***	0.0710***	0.0668***	0.0666**	0.0814***	0.0215
	(0.0229)	(0.0229)	(0.0241)	(0.0249)	(0.0273)	(0.0283)
Infant mortality	0.0987*	0.0952*	0.0943*	0.0947*	0.0296	0.0317
	(0.0567)	(0.0552)	(0.0529)	(0.0532)	(0.0578)	(0.102)
Labor force female				−0.00460	−0.111	−0.0766
				(0.0948)	(0.126)	(0.133)
School enrollment primary female					−0.0750***	−0.0755**
					(0.0266)	(0.0297)
Wage and salaried gender gap					0.0682	0.0706
					(0.114)	(0.123)
Employment gender gap					−0.297**	−0.178
					(0.114)	(0.146)
Country FE	Y	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y	Y
Observations	488	488	488	488	408	291
R-squared	0.122	0.122	0.124	0.124	0.124	0.123
Number of countries	40	40	40	40	40	36

Notes: the dependent variable is the growth rate. In column (1) a parsimonious model is shown; in column (2) has been added the variable *control of corruption*; in column (3) has been added the variable *trade_gdp*; in column (4) has been added the variable *labor force female*; in column (5) has been added the variables *school enrollment primary female*, *wage and salaried gender gap* and *employment gender gap*; in column (6) has been added substituted the variable *WIP* with *WMIN*; All regressions include time and country fixed effects; robust standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Results reveal that total aid is always negatively correlated with the per capita GDP growth rate, confirming the presence of a process that the literature defines as "The curse of aid" (Djankov et al., 2008). The variable, women in parliament, is not statistically significant, although it is positive.

However, when aid is interacted with the share of women in parliament, the coefficient turns out to be positive, suggesting that a higher presence of women drives a more virtuous management of foreign aid. This finding is robust to different controls for political factors (columns 1-3). In the first specification of the model (column 1), I take into account only the level of democracy (*polity*), then I also take into account the *control of corruption* (column 2). In the third specification of the model, I also take into account the level of *trade openness* (column 3). Moreover, the findings are also robust to different controls for gender equality situation (columns 4-5).

When the variable *WIP* is replaced with another indicator of gender empowerment in politics, that is, women in ministerial positions (*WMIN*), results are similar because the variable *WMIN* is not statistically significant but positive, and aid interacted with *WMIN* is positive and significant, confirming the results obtained with the variable *WIP* (column 6). The specification of the model that will be used from now on is that of column 6, which I consider to be the most complete and which takes into account all economic, political and social factors. In this specification, all the control variables have the expected sign and, among the significant ones, it is possible to see that *trade openness* is positive and significant in increasing the growth rate. *Primary education* is also positive and significant, and this is perfectly in line with the expected results because it reveals that, as the country's education level increases, its growth rate increases. Finally, another result perfectly in line with my expectations is the negative and significant *employment gender gap*, which shows how the reduction of the gender gap in previous years can have a positive impact on the growth rate.

4.2. GMM results

Owing to the fact that these results can be biased because of omitted variables that can induce endogeneity problems, the model is estimated also by a GMM.

Table 4 presents the results estimation of equation (2), which shows the goodness of variables chosen to instrument aid.

Indeed, the effect of the variable asylum seekers on the donor population (*As/Pop_don*) is negatively correlated with the variable *Aid/GDP*, suggesting that donor countries where more asylum seekers flock tend to send less aid because they are forced to increase the domestic expenditure to support migrants arriving in the country. *Colonial influence* shows a negative relationship with *Aid/GDP*, suggesting that countries that have a more exclusive relationship with their former colonizers (as they continue to be their largest donors) receive less from others. Finally, the International Monetary Fund quota of donors is positively correlated with *Aid/GDP*, suggesting that richer countries with more liquidity still tend to send more foreign aid.

Table 4 – Estimation results for determinants of foreign Aid

	Instrument
As/Pop_don	–10.26**
	(4.940)
Influence	–1.254**
	(0.554)
Ln_IMF	41.12***
	(12.13)
Country FE	Y
Time FE	Y
Cluster Development level	Y
Observations	698
Number of countries	41

Notes: the dependent variable is the *Aid/GDP*. The regression include time and country fixed effects; robust standard errors are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Overall GMM results (table 5) are consistent with the OLS findings. As instruments, as explained in the previous section, I consider all the explanatory variables at different lags. To test the validity of the instruments and for serial correlation in the residuals, all GMM results are accompanied by a Sargan test for overidentifying restrictions and a test for serial correlation. Both the tests report a p-value greater than 5%, so I cannot reject the null hypothesis. With the Sargan test, I see that the instruments as a group are exogenous and, with the AR(2), that there is no autocorrelation of order 2.

For brevity, table 5 shows only the variables of interest and their instruments but the regressions include the same set of control variables as in column (5) of table 3. The tests reveal that neither of them allows rejection of the assumption of consistency of the GMM estimator.

Table 5 – *GMM results*

	GMM 1–2	**GMM 1–3**	**GMM 1–4**	**GMM 1–5**
Aid/gdp	–0.190**	–0.203**	–0.209***	–0.217***
	(0.0841)	(0.0795)	(0.0774)	(0.0763)
WIP	–0.0279	–0.0387	–0.0481	–0.0499
	(0.0416)	(0.0372)	(0.0354)	(0.0342)
*Aid/gdp*WIP*	0.00830*	0.00978**	0.0104**	0.0105**
	(0.00484)	(0.00444)	(0.00428)	(0.00419)
Observations	408	408	408	408
Number of countries	40	40	40	40
AR(2) test (p value)	0.365	0.367	0.368	0.368
Sargan test (p value)	0.451	0.337	0.488	0.206

Notes: the dependent variable is the *growth rate*. The model is specified in different columns at different lags; standard errors are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

4.3. Further results

In table 6 a further analysis is proposed. Table 6 shows how, by replicating the same type of analysis made previously but changing only the dependent variable and the sector towards which the aid is destined, the effects of a higher proportion of women in parliament who interact with development aid remain the same. In this analysis, for each model specification, the growth rate was replaced with an indicator that could be considered more suitable for measuring the effectiveness of growth. More specifically: the effectiveness of *education aid* was estimated using the primary school completion rate as a dependent variable; the effectiveness of *health and water aid* was estimated using the infant mortality rate as a dependent variable; the effectiveness of *government and civil society aid* was estimated using the political stability and absence of violence indicator[10] as a dependent variable; the effectiveness of *economic aid* was estimated using the final consumption expenditure indicator as a dependent variable; and the effectiveness of *production aid* was estimated using the trade openness indicator as a dependent variable.

[10] Databank – Worldwide Governance Indicators, The World Bank.

Table 6 – *Evaluating efficiency by sectors of aid*

	(1) Primary Education	(2) Infant Mortality	(3) Political stability & absence of violence	(4) Final consumption expenditure	(5) Trade openness
Education aid	−0.281*				
	(0.142)				
*Education Aid*WIP*	0.0230**				
	(0.010)				
Health & Water Aid		0.164**			
		(0.0626)			
Health & Water Aid WIP*		−0.008***			
		(0.003)			
Government Aid			−0.009		
			(0.008)		
Government Aid WIP*			0.0007		
			(0.001)		
Economic Aid				−0.044	
				(0.072)	
Economic Aid WIP*				0.004	
				(0.004)	
Production Aid					−0.349
					(0.222)
Production Aid WIP*					0.0001
					(0.017)
WIP	−0.157	−0.179	0.007	−0.037	0.216
	(0.150)	(0.112)	(0.011)	(0.155)	(0.223)
log_pop	−14.73	−29.82	−1.618	−16.33	16.30
	(21.29)	(19.67)	(1.037)	(22.69)	(63.49)
log_GDP_pc	−14.50**	−2.169	−0.036	9.284	2.166
	(6.221)	(4.887)	(0.401)	(9.647)	(15.67)
trade_gdp	0.0424	0.0205	0.00138	−0.0545	
	(0.0353)	(0.0270)	(0.00186)	(0.0612)	
FDI	−0.128**	0.0291	−0.00766	−0.127*	0.177
	(0.0528)	(0.0216)	(0.00649)	(0.0648)	(0.273)
final_cons_exp_GDP	−0.177***	−0.0393	0.000267		−0.310
	(0.0607)	(0.0437)	(0.00450)		(0.307)
polity	0.0766	−0.150	0.0136	−0.119	−0.458
	(0.252)	(0.126)	(0.0167)	(0.237)	(0.597)
Control of corruption	8.415**	−2.887*	0.0318	−2.383	−3.358
	(3.186)	(1.623)	(0.154)	(3.126)	(6.647)
Oil_gdp	−0.206*	0.142**	0.00951	−0.351*	−0.506
	(0.104)	(0.0598)	(0.00852)	(0.204)	(0.496)
Primary education		−0.00401	−0.0102**	−0.00424	0.224
		(0.0576)	(0.00473)	(0.0965)	(0.159)
Infant mortality	−0.116		−0.0149**	0.0891	−0.120
	(0.139)		(0.00725)	(0.178)	(0.248)
Labor force female	−0.679	0.322	0.0117	0.648*	−0.0954
	(0.457)	(0.220)	(0.0271)	(0.378)	(0.630)
Wage and salaried gender gap	0.736***	−0.149	0.0108	−0.421	−0.491
	(0.217)	(0.236)	(0.0149)	(0.251)	(0.535)
Employment gender gap	−0.555	−0.188	−0.0316	0.495*	0.502
		(0.0233)	(0.00310)	(0.0760)	(0.146)
School enrollment primary female		−0.0764	−0.00406	0.0823	0.236
		(0.0457)	(0.00324)	(0.0720)	(0.148)
Country FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Observations	646	540	540	548	540
R-squared	0.561	0.917	0.263	0.189	0.198
Number of countries	40	40	40	40	40

Notes: the dependent variables are the efficiency indicators at the head of each column. In column (1) the dependent variable is *primary education completion*; in column (2) the dependent variable is *infant mortality*; in column (3) the dependent variable is *political stability & absence of violence*; in column (4) the dependent variable is *final consumption expenditure*; in column (5) the dependent variable is *trade openness*. All regressions include time and country fixed effects; robust standard errors are in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

In this case, aid to the different sectors is negatively correlated with the dependent variable, although not always significant, the share of women in parliament is not particularly significant but it is positive in some cases and negative in others. On the other hand, when the share of women in parliament interacts with aid, the variable is positive in the case of effectiveness of education aid and health and water aid.

These results show us that, when using fewer generic indicators of the growth rate and those more suitable for evaluating the effectiveness of each single sector to which the aid is sent, it appears that women are more interested, in particular, in the efficiency of some foreign aid donated to the social sector. Precisely, this greater interest in the social sector can be seen as the channel through which women are able to give greater efficiency to the flows of foreign aid; the social sector, in fact, as shown in figure 3, is one of the sectors towards which most of the aid is directed.

5. Conclusions

This paper is placed in the strand of literature related to the debate on the relationship between foreign aid and economic growth. In this strand of literature, indeed, the various results obtained in the studies done in the last 50 years led to further researches in order to investigate better the question of foreign aid effectiveness.

The aim of this study is to investigate whether a greater involvement of women in parliaments can have an impact on aid effectiveness, measured in terms of receiving countries' growth performances.

In this study, foreign aid effectiveness is measured directly against the GDP growth rate and also indirectly via the presence of women in politics, proxied by the share of women in parliaments.

The empirical analysis focuses on a sample of 40 Sub-Saharan African countries observed over the period 2007-2019. Sub-Saharan African countries, despite collecting the highest amount of aid from Western rich countries, performed worse than other countries. As regards the empirical strategy, in this paper an appropriate econometric methodology is followed that is able to deal with endogeneity problems arising from the aid-growth reverse causality and omitted explanatory variables. To this end, I employ first an OLS with fixed effects and then a GMM methodology in which I employ an instrument for development aid based on different political and historical determinants.

The empirical analysis reveals that, even if development aid has a negative effect on growth, a larger participation of women in parliament dealing with aid flows increases its effectiveness. The channel via which women manage foreign aid, proxied by the proportion of women in parliament, is their major interest toward the social sector. The policy implication is that the larger the presence of women in politics, the more effective can be the aid in promoting economic growth and that, more specifically, they do this through specific sectors to which the aid is destined, health and education, which form the greatest part of total foreign aid.

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Appendix

Table A.1, which shows the correlations between variables, demonstrates that there are no highly correlated variables.

Table A.1 – *Correlations (n=100)*

Growth rate	1																
Aid/gdp	–0.0092	1															
WIP	0.064	0.125	1														
log_pop	0.0983	–0.0101	0.2002	1													
log_GDP_pc	0.0407	–0.4677	–0.0311	–0.3575	1												
trade_gdp	0.0544	0.043	–0.1192	–0.4684	0.431	1											
FDI	0.1015	0.2517	0.0162	–0.0459	–0.0553	0.322	1										
final_cons_exp_GDP	–0.1039	0.503	0.049	–0.123	–0.4913	0.0112	0.1146	1									
polity	0.0621	0.0709	–0.0368	0.021	0.1685	0.147	0.0533	0.0837	1								
Control of corruption	0.0864	–0.035	0.2403	–0.3718	0.4135	0.2305	–0.0139	0.0735	0.438	1							
Oil_gdp	0.0868	–0.1394	–0.1459	–0.0106	0.2955	0.271	0.0508	–0.5577	–0.1716	–0.3771	1						
Primary education	0.032	–0.252	0.0558	–0.1756	0.5246	0.2771	–0.0338	–0.0586	0.3236	0.5264	–0.1815	1					
Infant mortality	0.0333	0.1759	–0.3099	0.228	–0.4425	–0.1285	0.0445	0.1154	–0.2733	–0.5931	0.1818	–0.7011	1				
Labor force female	0.002	0.3558	0.2635	0.3342	–0.5305	–0.1614	0.0626	0.1744	–0.0057	–0.1068	–0.0342	–0.2001	0.1639	1			
School enrollment primary female	0.0471	0.0893	0.3492	–0.09	0.0258	0.1379	0.0219	0.083	0.1216	0.2921	–0.1598	0.516	–0.4235	0.2826	1		
Wage and salaried gender gap	–0.0085	0.051	–0.0312	–0.0407	–0.0895	0.2043	0.1528	–0.0566	–0.2623	–0.2601	0.2551	–0.0249	0.1573	–0.0679	0.1243	1	
Employment gender gap	0.0156	–0.2658	–0.2283	–0.213	0.3506	0.0297	–0.0638	–0.1246	0.0263	0.1315	–0.0117	0.0049	–0.1832	–0.7823	–0.4291	–0.0959	1