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Empirical Analysis of Foreign Aid from the Gulf States

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1 Introduction

The Gulf States have been a big donor of Official Development Aid (ODA) in the past few decades and are known to allocate their aid quit differently to DAC[1] counties. It is hypothesized, that ODA is strongly used to promote Muslim countries and strengthen Arab solidarity (Villanger 2007).

The term Gulf States refers to seven countries which include Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Out of these seven countries there are four major donors of foreign aid which are Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates with Saudi Arabia being the 11th largest donor in terms of volume in the world between 2019 and 2021 (Table 4).

With the following analysis I am aiming to work out the factors, that drive the four major donors of the Gulf States to provide ODA to a certain country. In order to do so, I will use different regression techniques. In am going to examine which determinants the Gulf States have in common and where they seem to differ from each other. For that, I will start with a review of the current literature and provide some statistics about their aid allocation to justify my methodology and variable selection. After that, I will explain the variables of my models including their transformation and the general methodology. Then I will present the results of the analysis and come to an conclusion. The term ODA, aid, foreign aid, development aid and Arab aid will be used interchangeably. All refer to Official Development Aid from the four Gulf States. All figures and tables and the whole analysis only include bilateral flows, which are, with more than 90% of all provided aid from the Gulf States, the biggest part (OECD 2023*d*,*b*,*c*,*e*).

2 Literature Review

Even though the Gulf States have been an impotent donor, who provided a significant amount of aid during the last decades, statistical analysis of their motives are still relatively rare. One cause for that is that they have started to report about their foreign aid only recently (Colombo & Ragab 2017). The United Arab Emirates were the first one who started to submit comprehensive data of their aid allocation to OECD DAC in

[1] Development Assistance Committee

2009 (Cochrane 2021). Neumayer (2003) already mentioned this lack of statistical analysis regarding the motives of Arab donors of providing foreign aid 20 years ago in his paper, where he analyzed the determinants of Arab aid. But after his paper, to my best knowledge, not a lot of papers followed which aimed to analyze these determinants again. Neumayer (2003) used a Heckman´s two-step estimator to analyze the determinants of Arab aid, on the gate keeping and level stage. His findings were that poorer, Arab, and sub-Sahara African countries, who did not have diplomatic relationships with Israel, and that had similar voting patterns in the United General Assembly as Saudi Arabia, are more likely to get a positive amount of aid. Arab and Islamic countries, and countries with a larger population size, received a higher amount of bilateral aid. (Neumayer 2003). The goal of my paper is to examine these determinants again, 20 years after his paper. With some changes, I based the method and variable selection of my work on his paper.

3 Descriptive Statistics

Figure 1: Mean ODA Disbursements (2019 - 2021 in constant 2021 Mio. US$)

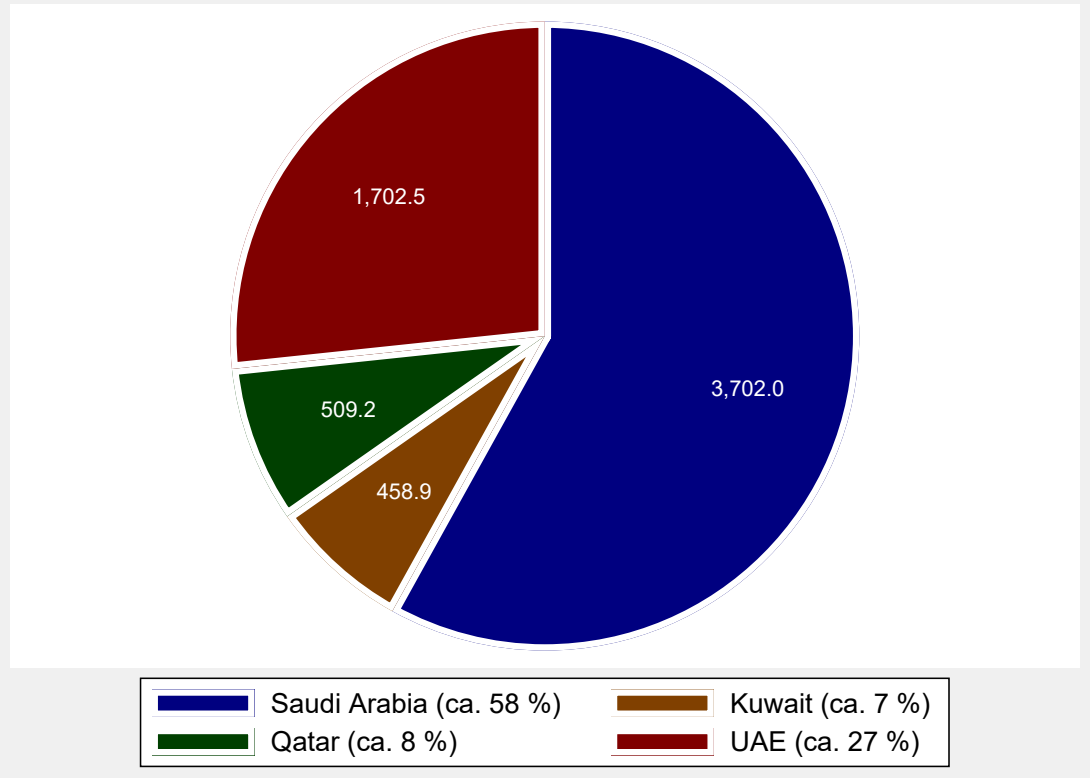

Table 1: Variable: Mean ODA Disbursements (in constant 2021 Mio. US$)

	Obs	Positiv	Mean	Median	SD	Min	Max
Saudi Arabia	137	116	27.02	0.48	141.87	0.00	1345.67
Kuwait	137	43	3.35	0.00	28.04	-40.79	320.58
Qatar	137	97	3.72	0.08	26.11	0.00	301.43
UAE	137	125	12.43	0.74	50.28	-19.44	484.44
Total	137	119	46.90	2.48	180.51	0.00	1407.32

Data from OECD (2023*a*).
Positive refers to the number of countries which got a positive amount of aid.
Positive can be higher for UAE than for Total, because for some countries the repayments were higher than the amount of ODA they got.

Figure 1 gives information about the mean amount of ODA provided by the Gulf States to developing countries between the years 2019 and 2021. Together they donated an average of 6,372.6 mio. US$ per year. With 58%, Saudi Arabia accounted for the largest share, followed by the United Arab Emirates (27%), Qatar (8%), and Kuwait (7%). The substantial impact of Saudi Arabia on the outcomes, when examining the Gulf States as a collective entity, should be kept in mind. In fact, Saudi Arabia was the 11th largest donor of ODA in that time (Table 4). All Gulf States together had a share of roughly 5% of the whole disbursed ODA between the years 2019 and 2021 (Table 4). With that share, they were the 7th biggest donor, directly behind France, Japan, and Turkey and followed by Canada, Sweden, and the Netherlands. That underlines their importance and why it is reasonable to analyze their motives behind providing aid.

In this analysis, I included 137 ODA eligible countries (OECD 2021). Out of these, a total amount of 119 countries got some amount of aid from the Gulf State (Table 1). It is striking, that there is a large difference in the number of countries each individual donor provided aid to (e.g. UAE: 125 vs. Kuwait: 43). They seem to behave differently in their aid allocation. The distribution of their aid disbursements is in all cases highly right skewed[2] (Table 1). That indicates that a few countries got a large amount of aid while many only got a bit.

[2]The mean is larger that the median and the absolute values of the means are vary small in comparison to the maximal values.

Figure 2: Saudi Arabia: Top 10 Recipients (2019 - 2021)

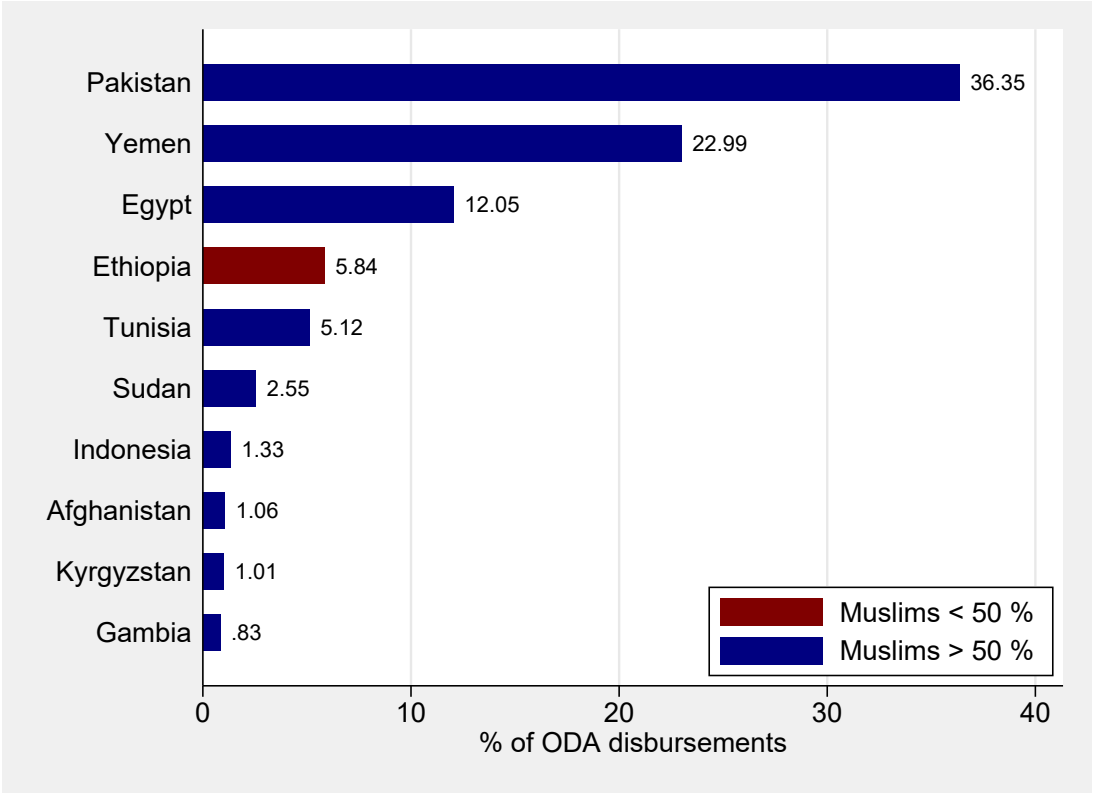

Figure 3: Kuwait: Top 10 Recipients (2019 - 2021)

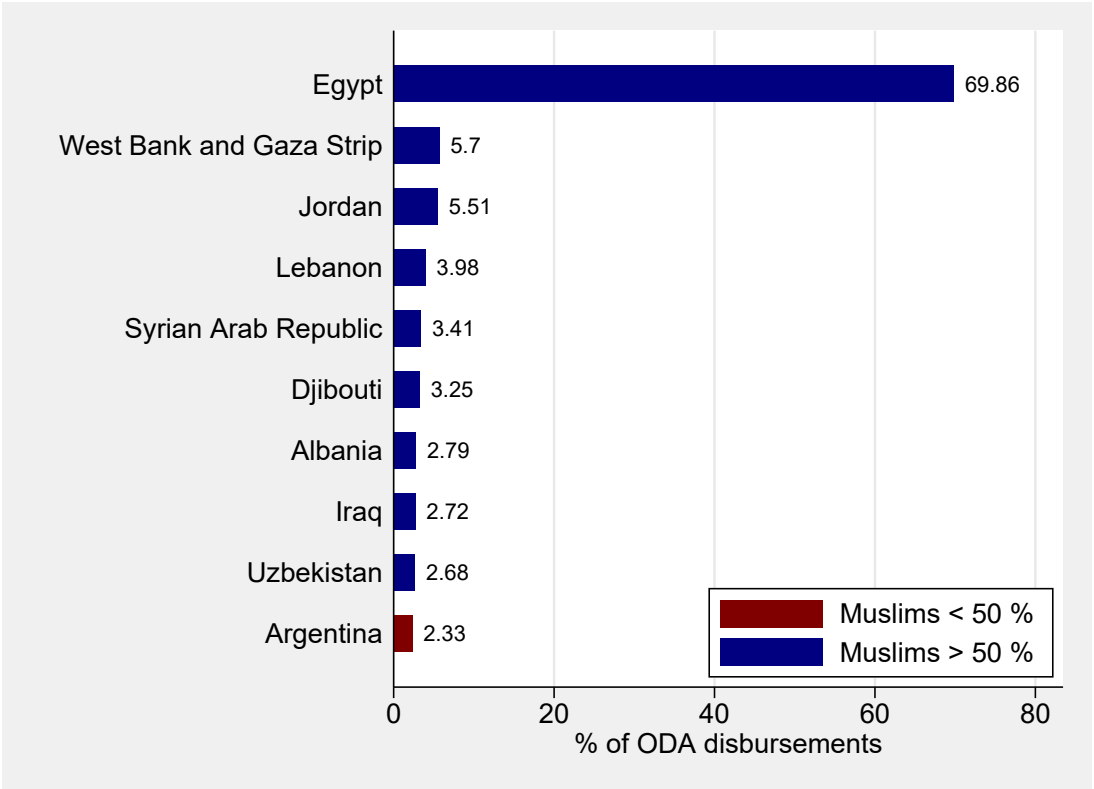

Figure 4: Qatar: Top 10 Recipients (2019 - 2021)

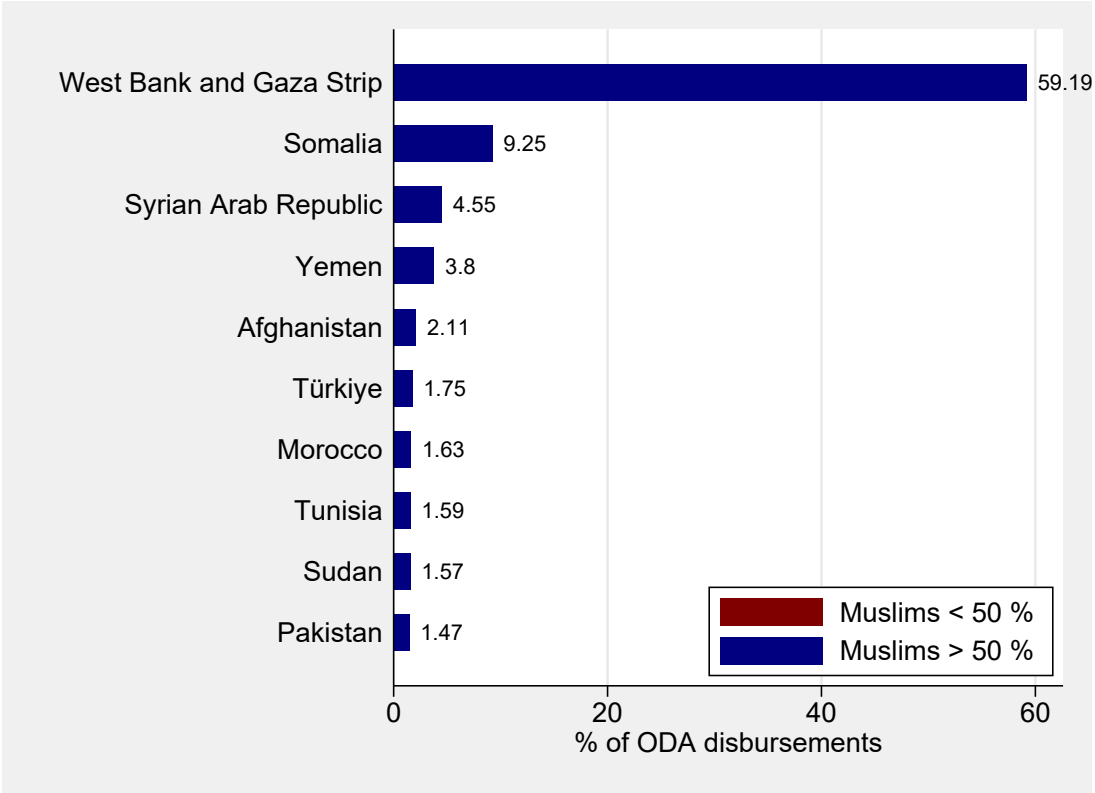

Figure 5: UAE: Top 10 Recipients (2019 - 2021)

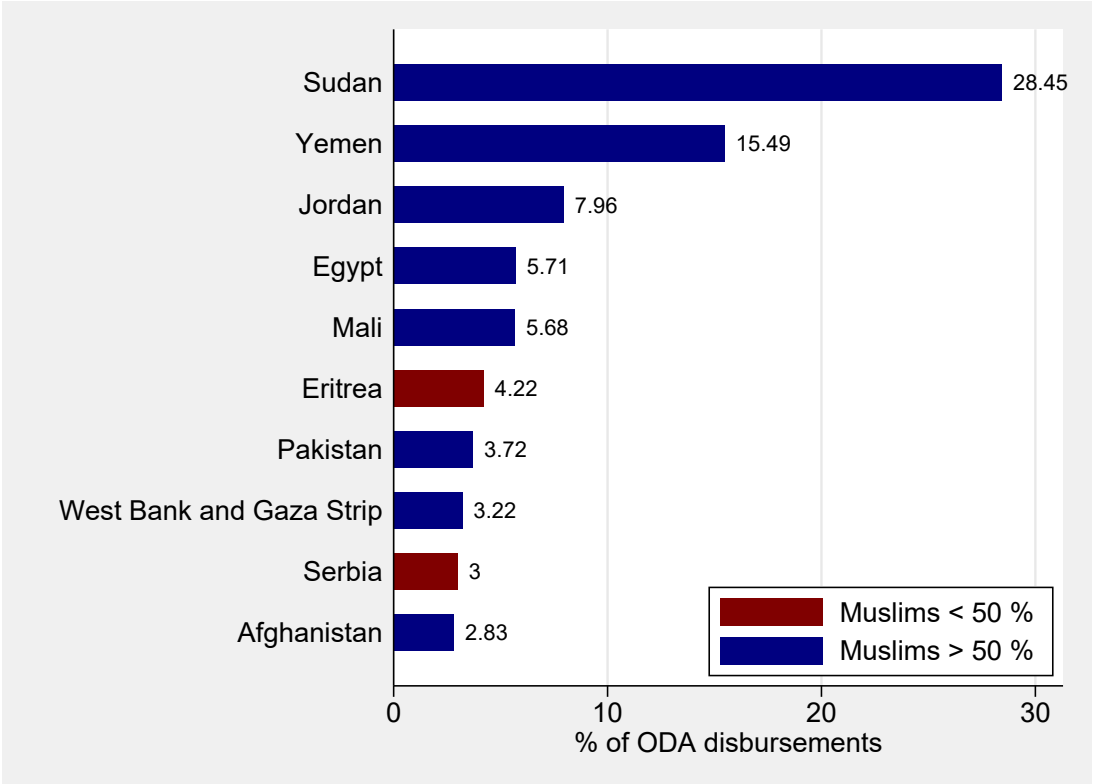

Figure 2, 3, 4 and 5 provide a deeper inside into their geographical allocation patterns. These bar charts list the ten biggest recipients of each individual Gulf State. I highlighted countries without a Muslim majority ($> 50\%$) with red bars. There are only very few of them in the graphics, so it can be seen that the biggest part of ODA was donated to Muslim countries. Also, a lot of these countries are part of the Arab League (European Union n.d.). This figures are explaining the high skewness of the aid distribution. Only a few countries got the largest part of the whole disbursed ODA. In the case of Kuwait and Qatar, this pattern is even more noticeable in comparison to Saudi Arabia and the United Arab Emirates.

From these statistics it can be hypothesized that Muslim and Arab solidarity play a big role in the ODA allocation process. In the following sections I will examine, whether this factors play a significant role. I will also test, whether other donor interests, like general political alignment, trade relations or a countries susceptibility to corruption, affect the aid allocation process of the Gulf States. In addition to that, I will test, if the indigence of a recipient is taken into account. These factors will be approximated by the income of the population, a risk measurement, and the fact if there is a war in that country or not.

4 Variables

4.1 Dependent Variables

For the dependent variable, I took bilateral ODA net disbursements from the OECD (2023*a*) database. In theory, commitments would have been a better measurement because the donors have bigger influence on their commitments than they have on actual disbursements, which strongly depends on whether recipients actually draw upon all commitments (White & McGillivray 1995). But due to the fact that on OECD (2023*a*), commitments of Qatar were only available for 2019[3] and disbursements and commitments are highly correlated (Neumayer 2003), disbursements were the best option in that case. OECD (2023*a*) offers data about ODA disbursements for a three-year-period time, between 2019 and 2021, for all four countries. Three years are still very few, so they could potentially show a wrong picture, but it was the biggest recent time span I was able to

[3]One year could be highly influenced by special events like uncommon natural catastrophes and therefor present an inaccurate picture.

find data about. It should be kept in mind that during this time, the coronal pandemic started, which could have influenced the aid disbursements (e.g. through changes of the oil prices). The values are purchasing power parity values and in constant 2021 US$. Some values were also negative due to the fact, that some countries were paying more money back (e.g. load repayments) than they actually got during this period.

Unfortunately, the data of Saudi Arabia was only divided into regional groups (e.g. Middle Africa) rather than recipient countries (e.g. Yemen). To solve this problem, without leaving Saudi Arabia out, I took aid data from the Saudi Aid Platform (King Salman Humanitarian Aid and Relief Centre 2019). They claim on their website, that they are reporting their aid data under international standards of the United Nation Financial Tracking System, DAC-OECD and IATI, so I assumed, that their data refers to actual ODA. I subset the data for the years 2019 to 2021 and selected only finished projects because I assumed that finished projects refers to disbursed aid. After that, I compared the total amount donated in this three-year-period time from that database with the total amount indicated by the OECD (2023*a*) database and it was nearly the same.

For the individual ODA variables, I took the arithmetic mean over the three years. Then I computed the sum over this values to construct the collective ODA variable. Due to strong distribution skewness of the dependent variables, I computed the natural logarithm of them. This leaded to much more normal distributed values. To construct a binary variable for the logistic regression, I created separate variables for each donor and a combined variable for all donors together, which takes the value 1 if a country got a positive amount of aid during that period and 0 otherwise.

4.2 Independent Variables

4.2.1 Recipient Need Variables

To test whether recipients needs play a significant roll in the aid allocation process, I included several need variables in both, logistic and OLS regressions.

The first one is GDP per capita. The GDP per capita has been shown to be a very good variable to measure poorness of a country and general living conditions. It is highly correlated with other need variable such as life expectancy, infant mortality and literacy rates (Neumayer 2003). I took the data from The World Bank (2019-2021) database for

the years 2019 to 2021 and calculated the arithmetic mean over the years. The values are price purchasing parity values and denoted in constant 2017 international US$. However, this data set did not contain values for all countries of my analysis. I deleted some of the countries with missing values from my data set[4]. These were especially very small islands, which should not change my result dramatically. For the larger countries[5], some of them being major recipients of Arab aid, I took data from World Religion Database (Johnson & Grim 2023*a*). This values are denoted in US$, but I did not find out, whether this values are price purchasing parity values and in constant US$. I compared values of other countries from The World Bank (2019-2021) data set with the values from the World Religion Database (Johnson & Grim 2023*a*) and the majority of them were very close. Still, this could result in potential mistakes in my results, but leaving too many countries out, especially such impotent ones, could also lead to wrong conclusions, so taking the values from the World Religion Database (Johnson & Grim 2023*a*) was the better option in that situation. To establish a more linear relationship between the logarithm of received ODA and GDP per capita, I applied the natural logarithm to the GDP per capita variable. This improved (or at least did not worsen) R^2 and information criteria like AIC and BIC for both, the logistic and the OLS models.

The second recipient need variable of the model is a dummy variable, which I set to 1, if there was an ongoing armed conflict in the year 2021. I took the information from (Berghof Foundation 2022). In this paper, I will use armed conflict and war interchangeably, even though, strictly speaking, not every armed conflict is a war.

Next, I included a variable from Bündnis Entwicklung Hilft (2019) that measures the general risk of disasters from extreme natural events and negative consequences of climate change of a country as well as their capacities to cope such events. It is calculated as the geometric mean of exposure and vulnerability. Higher values correspond to higher risk. For the OLS regressions, I did take the natural logarithm which resolved in a more linear relationship between the dependent and risk variable in all models. For the logistic regression, this transformation was not necessary.

In order to control for the population size of a recipient, I included a variable which contains the population size of that country from 2019 (The World Bank 2019). A country

[4]Montserrat, Niue Saint Helena, Tokelau and Wallis & Futuna

[5]Cuba, North Korea, Eritrea South Sudan, Syria, Venezuela and Yemen

with more citizens should generally be more likely to get a higher amount of aid compared to a smaller country. To generate less skewed distributed values and to get a more linear relationship with the dependent variable in the regressions, I transformed this variable with the natural logarithm. This improved R^2, AIC, BIC and the general significance of all models.

4.2.2 Donor Interest Variables

To test donor interests in the aid allocation process of the Gulf States, I included several variables which should proxy different factors that could be of interest for the donor countries.

At first, to check for a potential cultural bias towards Arab and Muslim countries, I included a dummy variable which was set to 1 if a country is part of the Arab League (European Union n.d.) and therefore could be classified as Arab. To test Muslim solidarity, so whether countries with higher share of Muslim people are more likely to get aid and to get more of it, I took the World Religion Dataset from Maoz & Henderson (2013) which contains the percentage of Muslims in different countries between 2010 and 2015. However, this data set had some missing values, which I closed with the data from Word Religion Database (Johnson & Grim 2023*b*). I added a quadratic term for some donors in the OLS regressions, because this terms improved my models (F-value & adjusted R^2) and where significant itself ($p < 0.1$).

To check for importance of political considerations during the aid allocation process, I introduced a variable which measures the political alignment of the recipient countries with each donor in the United Nation General Assembly Voting. It was constructed by Voeten et al. (2022). The variable I used from their data set was the ideal point distance for each donor with the recipient countries. It lies in a one dimensional political space with a lower bound of 0. Higher values correspond to greater voting differences. Due to the fact that only members of the United Nations are eligible to vote in the General Assembly, this data set contained missing values for Palestine and Kosovo. It is not advisable to estimate their values and a regression with missing values in an observation is not possible, so I had to exclude this countries in all regressions. For the collective regressions, I computed the mean ideal point distance over all donor countries.

Furthermore, to test economical interest of the Gulf States when giving aid to a country, I included a trade related variable into the models. I took import and export data from UN Comtrade (n.d.) of each donor with the recipients between 2019 and 2021 and computed the mean of the sum of imports and exports over the three years. The unit of the values is US$. Due to high distribution skewness, I computed the natural logarithm of that variables. That leaded to a much more linear relationship with the dependent variable. For the collective regressions, I summed up all individual trade variables.

More corrupt countries are likely to be more susceptible to influence by ODA in their decisions, which could be of interest to the Gulf States if they really want to use aid to influence other countries economically and politically. To proxy this proneness for corruption, I introduced a variable from Kraay et al. (2010) which measures the perception of households, firms and experts regarding the extent to which the government is susceptible to corruption. The values are approximately standard normal distributed and higher values correspond to higher control of corruption. In the OLS regression of Qatar, the quadratic term of that variable was significant ($p < 0.05$) and it improved adjusted R^2, so I included it into that model.

5 Methodology

The analysis of foreign aid has to deal with the fact, that multiple countries got no aid at all. That leads to a dependent variable with a lot of zeros, while other values are very high. Only using an OLS regression to examine the determinants of Arab aid could lead to wrong results. That is, because a large number of zeros in the dependent variable results in highly skewed data, with a significant weight on one particular value. Even if I were to use only non-negative values, add a constant[6] and than take the logarithm to mitigate distribution skewness, all positive values would be much more normally distributed, but a heavy weight on the lowest value would remain, so the data still would not be approximately normally distributed. This could lead to error terms that are not normally distributed, resulting in less reliable inference. A heavy weight on one values, especially when this value is far away from the mean, could lead to biased parameter estimation. In addition to that, the assumption of homoskedasticity of the error terms would be violated. One way of solving

[6] I would have to take non-negative values and add a constant (usually 1 in this case) to cope the problem, that the logarithm is only defined for non-zero positive values.

this problem is using two estimation steps, the first one being the so called gate keeping stage and the second one the level stage (Neumayer 2003). For both stages I estimated a model for all countries as a collective entity and for each country individually, to account for potential differences between the donors. As potential recipients, I included all ODA eligible countries (OECD 2021), except the ones I had to exclude during the data cleaning process, as mentioned in the variable section.

For the gate keeping stage, I used a logistic regression with the dependent variable set as a binary variable, taking the value 1 if a country received a positive amount of aid during the time span of 2019 to 2021. With this regression I estimated, which factors significantly influenced the probability of a country of getting aid from the Gulf States. The GDP per capita, trade and population variable were log-transformed, to distribute them less skewed and to get a better pseudo R^2, AIC and BIC. I had to exclude the war dummy variable for Saudi Arabia, the United Arab Emirates and for the collective model, because for these donors, there was no country which had an ongoing armed conflict and did not get aid. In that case, the estimation of the model is not possible, because the war variable perfectly predicted that a country got Arab aid. The same was necessary for the Arab variable in the case of Saudi Arabia.

To examine the factors that significantly influenced the amount of ODA a country received (level stage), I decided to use an OLS regression. I excluded all countries who did not get aid during that time from my model. For the OLS regression it is desirable, that the values of the dependent variable are approximately normally distributed, because that increases the probability of normal distributed error terms. Taking the logarithm of the mean of received ODA transformed the values from highly skewed to approximately normally distributed. In addition to that, the GDP per capita, risk, trade and population variable were log-transformed in order to get a linear relationship between the dependent and independent variables. After that, I tested the models for remaining non-linear relationships. In the Islam percentage[7] and corruption[8] variable I found evidence for a quadratic relationship for some countries, so I introduced quadratic terms for them. The error terms of the transformed models were approximately normal distributed, but a test for heteroskedastisity was significant for Saudi Arabia ($p < 0.05$) and the collective model

[7] for Total, Saudi Arabia and Qatar
[8] for Qatar

($p < 0.1$) so I used heteroskedastisity robust variance estimation for these two models. I found some outliers and high leverage points. These have to be notice, because they lead to higher weight on some observations which could lead to biased parameter estimation. In this case, the outliers and high leverage points could indicate, that some recipients are very different from each other, so they are probably just the nature of the model. Finally, I looked at variance inflation factors to search for multicollinearity. Only the quadratic term of the Islam percentage variable leaded to higher VIFs in islam_pct and islam_pct^2. Still, these coefficients were significant and improved the model, so I let them in the model.

6 Results

Table 2: Logistic Regression

	Total	Saudi Arabia	Kuwait	Qatar	UAE
log_GDPpc	-0.608*	-0.589	-0.616**	0.0000377	-0.186
	[0.100]	[0.333]	[0.024]	[1.000]	[0.629]
war			-1.491**	0.669	
			[0.036]	[0.604]	
risk	0.145**	0.0625	-0.0465	-0.0571	0.0371
	[0.040]	[0.388]	[0.133]	[0.132]	[0.432]
arab	-1.814		1.318	-0.761	-0.838
	[0.262]		[0.123]	[0.678]	[0.468]
islam_pct	1.973	160.7**	1.377**	4.698**	-0.501
	[0.185]	[0.043]	[0.046]	[0.014]	[0.670]
UNGAVD	0.499	-0.292	0.331	0.609	-0.389
	[0.453]	[0.770]	[0.518]	[0.338]	[0.549]
log_trade	0.445**	0.470***	-0.0246	-0.0703	0.243
	[0.024]	[0.008]	[0.808]	[0.314]	[0.285]
corruption	-0.221	1.174	0.493	0.872	-0.163
	[0.646]	[0.128]	[0.212]	[0.104]	[0.766]
log_pop	-0.534*	0.378	0.338	1.282***	-0.280
	[0.056]	[0.185]	[0.107]	[0.000]	[0.369]
pseudo R^2	0.197	0.652	0.169	0.453	0.040
p	0.00750	8.39e-14	0.000862	2.07e-12	0.919
N	135	135	135	135	135

p-values in brackets

coefficient of conastant not reported

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2 provides the results of the logistic regressions. Before diving into the analysis it is worthwhile to mention, that the effectiveness of a logistic regression in explaining the data is heightened when there is a balanced amount of ones and zeros in the dependent variable. Conversely, as the proportion of a particular value increases, it becomes progressively less likely for logistic regression to provide a satisfying explanation of the data. In addition to that, interpreting the exact value of a coefficient in a logistic regression is not as straight forward as it is in an OLS regression, so I will only look on the significance and direction

of the coefficients.

Due to big difference in the number of countries the donors provided aid to, the outcomes at the gate keeping stage differ a lot. The biggest outlier are the United Arab Emirates, where the model was not able to explain any variation in the gate keeping stage. The overall model was not significant at all ($p = 0.919$ & pseudo $R^2 = 0.04$). So to interpret the estimated coefficient would be pointless. In this model, it seems to be random who is getting aid and who is not. At least, none of the variables was able to significantly explain factors that lead the United Arab Emirates to provide aid to a certain country, except form the war variable, which had to be excluded due to its perfect predictive ability in determining that a country receives aid.

The model of Qatar has got a much better fit ($p < 0.01$ & adjusted $R^2 = 0.453$). Countries with a higher share of Muslim people are significantly more likely to get aid from Qatar ($p < 0.05$). The same applies to countries with a higher population ($p < 0.01$).

For Kuwait, an increasing amount of GDP per capita of a country and the fact that there was war in that country, lowers the probability of getting aid for that country significantly ($p < 0.05$). With an increasing share of Muslim inhabitants, the probability of Kuwait providing aid to that country increases significantly ($p < 0.05$). The overall fit of the model is significant ($p < 0.01$ & pseudo $R^2 = 0.169$).

Out of this five models, the model of Saudi Arabia has got the best fit ($p < 0.01$ and pseudo $R^2 = 0.652$). Every country that had got an ongoing armed conflict in 2021 and every member of the Arab League got a positive amount of aid, so these variables had to be excluded. An increasing share of Muslim people in a country and a higher trade volume with Saudi Arabia significantly increases the probability of getting aid from Saudi Arabia ($p < 0.05$ & $p < 0.01$).

Coming to the collective model, countries with a lower GDP per capita are significantly more likely to get ODA from the Gulf States ($p = 0.1$). A higher risk and a higher trade volume of a country with the Gulf States corresponds to a higher probability of getting Arab aid ($p < 0.05$). The population variable was significant with a negative coefficient ($p = 0.1$) so smaller countries seem to be more likely to get some positive amount of aid from the Gulf States. The overall model was significant ($p < 0.01$ & pseudo $R^2 = 0.197$).

Table 3: OLS Regression

	Total	Saudi Arabia	Kuwait	Qatar	UAE
log_GDPpc	-0.326*	-0.913***	0.685**	-0.146	-0.129
	[0.062]	[0.002]	[0.045]	[0.486]	[0.560]
war	0.357	0.432	-0.514	0.517	0.849
	[0.385]	[0.478]	[0.596]	[0.304]	[0.113]
log_risk	-0.134	-0.291	0.0949	-0.273	-0.107
	[0.530]	[0.310]	[0.775]	[0.228]	[0.629]
arab	1.207*	1.078	1.502	2.557***	1.041
	[0.055]	[0.230]	[0.109]	[0.000]	[0.167]
islam_pct	5.587***	10.71***	1.591**	4.902**	2.379***
	[0.003]	[0.000]	[0.029]	[0.023]	[0.000]
islam_pct^2	-2.782	-7.084***		-3.896*	
	[0.150]	[0.009]		[0.075]	
UNGAVD	-0.0752	-0.480	-0.0922	1.106**	-0.293
	[0.853]	[0.450]	[0.870]	[0.011]	[0.520]
log_trade	0.144	0.208*	-0.0685	-0.0624	0.0861
	[0.106]	[0.069]	[0.533]	[0.316]	[0.517]
corruption	0.463	0.353	0.485	1.782***	0.0731
	[0.122]	[0.467]	[0.278]	[0.005]	[0.823]
corruption^2				0.989**	
				[0.028]	
log_pop	0.362***	0.528**	0.431**	0.835***	0.234
	[0.006]	[0.011]	[0.047]	[0.000]	[0.190]
R^2	0.669	0.595	0.533	0.496	0.452
p	2.63e-21	3.18e-18	0.00153	1.02e-08	1.49e-11
N	117	114	42	95	123

p-values in brackets

coefficient of conastant not reported

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3 provides the results of the OLS regressions. With this regressions I wanted to examine the factors that significantly effect the amount of aid a country got from the Gulf States, if they got a positive amount of aid. All statements I make about the coefficients are expected effects and controlled for other variables (c.p.).

For the United Arab Emirates, only the Islam percentage variable was significant ($p < 0.01$).

A country that has got a one percent point higher share of Muslims gets 238 % more ODA. The overall model is significant ($p < 0.01$) and it can explain 45.2 percent of the variance ($R^2 = 0.452$), so quite a lot with only one significant variable. This indicates, that the share of Muslims in a potential recipient country plays a big role in the aid allocation process of the United Arab Emirates.

Qatar has got more significant coefficients. The first one being the Arab dummy variable ($p < 0.01$). Arab countries receive an estimated amount of 255.7 % more aid from Qatar than non Arab countries. Also, the Islam percentage variable and its quadratic term are significant ($p < 0.05$ & $p < 0.1$). A higher share of Muslims in the population of a country leads Qatar to provide more aid to them. As indicated by the negative sign of the quadratic term, this effect is diminishing, but keeps positive[9]. Countries with a more similar voting pattern in the United Nations General Assembly are getting significantly more aid from Qatar ($p < 0.05$). In this model, also the corruption variable and its quadratic term are significant, but in the other direction as expected. Countries with more control of corruption get significantly more aid ($p < 0.01$) and the effect gets even stronger for countries with higher corruption control[10] ($p < 0.05$). An increase in the population size of one percent correspond to 0.835% more received aid ($p < 0.01$). The overall model is significant ($p < 0.01$ & $R^2 = 0.496$)

Kuwait seems to provide more aid to richer countries. An increase of the GDP per capita of one percent, increases the amount of provided aid from Kuwait to this country by 0.685% ($p < 0.05$). This is in the other direction as expected. An increase of the share of Muslims in country of 1 percent point, leads to an increase of provided aid of 159.1%. Countries with a one percent larger population get 0.431 % more aid from Kuwait ($p < 0.05$). The model as a whole is significant ($p < 0.01$ & $R^2 = 0.533$).

Saudi Arabia is the only country out of this four countries which seems to provide significantly more aid to poorer countries. A one percent decrease of GDP per capita of a country leads to an increase of provided aid by Saudi Arabia of 0.913% ($p < 0.01$). Countries with a higher share of Muslims get significantly more aid ($p < 0.01$) but this effect is diminishing ($p < 0.01$). If the trade volume of a country with Saudi Arabia increases by

[9]The absolute value of the coefficient of the quadratic term is lower than the one of the linear term and $0 \leq islam\_pct \leq 1$, so the positive effect of the linear term is always superior.

[10]Indicated by the positive coefficient of quadratic term.

one percent, the amount of provided aid to this country increases by 0.208% ($p < 0.1$). Countries with a one percent larger population get 0.528 % more aid from Saudi Arabia ($p < 0.05$). The overall model is significant ($p < 0.01$ & $R^2 = 0.595$).

When analyzing the collective outcomes of the Gulf States, it has to be noted that the patterns of the individual countries affect these result to a different degree, depending on the share they are having on the whole ODA disbursements (Figure 1). Saudi Arabia contributed the most to the collective results. A one percent decrease in GDP per capita of a country corresponds to a 0.326% increase of received ODA. If a country is part of the Arab League, it gets 120.7% more bilateral Arab aid. A one percent increase of the share of Muslim people in a country, leads to an 558.7% increase of received aid by this country. The quadratic term is not significant in this case ($p > 0.1$). Countries with a one percent larger population get 0.362% more aid from the Gulf States. The whole model is significant ($p < 0.01$ & $R^2 = 0.669$).

7 Conclusion

The analysis has shown that the Gulf States share some similarities but also differ in some areas of their aid allocation, so analyzing them individually does make sense. The United Arab Emirates are providing aid to a much larger number of countries than for example Kuwait. One cause for that could be, that the size of the four economies differ a lot. The amount of provided aid increased with the size of the economy, and with that tendentially also the number of countries which received aid from that country. But still, they share one striking similarity. They seem to have a cultural bias in their aid allocation process towards Muslim countries, so the hypothesis of Muslim solidarity seems to be true. As expected, with a higher share of Muslim people, a country tends to get significantly more aid. While all countries favor more Muslim countries at the level stage, the same does not hold not true for the United Arab Emirates at the gate keeping stage. The fact, that there are not many ODA eligible countries, who did not get aid from the United Arab Emirates could have contributed to this result. For the other ones, the share of Muslim people has also been shown to be impotent at the gate keeping stage. The fact, that a country is classified as Arab only seems to matter for Saudi Arabia at the gate keeping stage and for for Qatar at the level stage ($p < 0.01$). In all other cases, the hypothesis of

Arab solidarity could be rejected. Qatar seems to be the only country that has a political bias, and seems to reward political alignment of recipient at the level, but not at the gate keeping stage. Trade relation only seem to matter for Saudi Arabia in both, the level and gate keeping stage. The control of corruption index has been show to be insignificant for all countries and stages except for Qatar in the level stage, but in the other direction as expected so I would be careful in putting too much weight on that finding. Looking at the more recipient need oriented factors, the income of a recipient only seems to matter for Saudi Arabia and Kuwait at the level stage and only for Kuwait at the gate keeping stage. The fact that there was war in a country was only important at the gate keeping stage for Saudi Arabia, Kuwait and the United Arab Emirates. The risk of natural events has only been shown to be significant in the gate keeping stage, when looking at the Gulf States as a whole.

Summing up by far the most important factor in the aid allocation process for all Gulf States is the share of Muslim people in the recipient country. Other factors also seem to matter, but that differs between the four countries. The countries do not seem to take only the needs of the recipients into account. A further interesting analysis would be, to do this analysis again, but only with countries who have a Muslim majority and look for significant factors in that setting.

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Appendix

Table 4: ODA Disbursements: Top 40 Donor (2019 - 2021 constant 2021 Mio. US$)

Place	Donor	Value	Share
1	United States	99736.45	24.06
2	Germany	68777.43	16.59
3	United Kingdom	38162.53	9.21
4	France	29723.88	7.17
5	Japan	28928.41	6.98
6	Türkiye	28144.08	6.79
7	Canada	12683.78	3.06
8	Sweden	11885.27	2.87
9	Netherlands	11405.49	2.75
10	Norway	11309.71	2.73
11	Saudi Arabia	10588.95	2.55
12	Switzerland	8483.54	2.05
13	Australia	8297.58	2
14	Korea	6215.35	1.5
15	Denmark	5775.68	1.39
16	United Arab Emirates	5661.6	1.37
17	Italy	5279.12	1.27
18	Belgium	3846.45	.93
19	Spain	2829.61	.68
20	Finland	2061.22	.5
21	Austria	1792.84	.43
22	Ireland	1765.99	.43
23	Qatar	1764.18	.43
24	New Zealand	1579.08	.38
25	Kuwait	1378.54	.33
26	Luxembourg	1126.01	.27
27	Israel	821.6	.2
28	Poland	730.68	.18
29	Chinese Taipei	676.9	.16
30	Hungary	669.15	.16
31	Portugal	459.76	.11
32	Greece	316.85	.08
33	Czech Republic	278.2	.07
34	Romania	236.76	.06
35	Thailand	210.56	.05
36	Iceland	164.2	.04
37	Malta	134.05	.03
38	Slovenia	112.34	.03
39	Slovak Republic	100.1	.02
40	Kazakhstan	98.27	.02

Data from OECD (2023*a*).

Table 5: ODA % of GDP (2019 - 2021)

Place	Donor	Share
1	Norway	1.086
2	Sweden	.728
3	Denmark	.581
4	Luxembourg	.522
5	Germany	.521
6	Switzerland	.466
7	United Kingdom	.424
8	Netherlands	.39
9	Türkiye	.38
10	France	.33
11	United Arab Emirates	.291
12	Iceland	.275
13	Finland	.257
14	New Zealand	.244
15	Qatar	.235
16	Canada	.233
17	Kuwait	.229
18	Saudi Arabia	.223
19	Australia	.219
20	Belgium	.218
21	Malta	.2
22	Japan	.187
23	United States	.162
24	Ireland	.126
25	Austria	.124
26	Korea	.093
27	Israel	.073
28	Italy	.072
29	Hungary	.07
30	Spain	.052
31	Slovenia	.046
32	Portugal	.044
33	Greece	.034
34	Czech Republic	.022
35	Slovak Republic	.019
36	Poland	.019
37	Romania	.014
38	Kazakhstan	.007
39	Thailand	.006
40	Chinese Taipei	

Data from (OECD 2023*a*) & (The World Bank 2019-2021)

Table 6: Descriptiv Statistics of all Varibales including their Transforation

	Obs	Mean	Median	SD	Min	Max
log_meanvalueSaudiArabia	116	13.41	13.79	3.44	3.28	21.02
log_meanvalueKuwait	43	14.80	14.57	1.81	10.06	19.59
log_meanvalueQatar	97	12.69	12.75	2.28	8.11	19.52
log_meanvalueUAE	125	13.75	13.67	2.51	8.11	20.00
log_meanvaluesTotal	119	15.14	15.39	2.52	9.32	21.06
GDPpcMean	137	9336.61	8086.95	6875.73	715.35	29363.28
log_GDPpcMean	137	8.80	9.00	0.91	6.57	10.29
war	137	0.18	0.00	0.38	0.00	1.00
risk	137	9.32	4.57	10.08	0.49	46.99
log_risk	137	1.72	1.52	1.03	-0.71	3.85
arab	137	0.12	0.00	0.32	0.00	1.00
islam_pct	137	0.30	0.06	0.38	0.00	1.00
idealpointdistanceSaudiArabia	135	0.40	0.28	0.40	0.00	1.72
idealpointdistanceKuwait	135	0.55	0.38	0.46	0.00	2.08
idealpointdistanceQatar	135	0.52	0.37	0.46	0.01	2.05
idealpointdistanceUAE	135	0.46	0.31	0.45	0.00	1.95
idealpointdistanceMean	135	0.48	0.31	0.43	0.12	1.95
tradeSaudiArabia	137	7.1e+08	1.5e+07	3.4e+09	0.00	3.7e+10
log_tradeSaudiArabia	137	16.15	16.52	4.11	0.00	24.35
tradeKuwait	137	1.1e+08	9.3e+05	5.8e+08	0.00	6.3e+09
log_tradeKuwait	137	13.50	13.74	4.27	0.00	22.56
tradeQatar	137	2.8e+08	2.0e+06	1.5e+09	0.00	1.4e+10
log_tradeQatar	137	12.87	14.49	6.44	0.00	23.37
tradeUAE	137	1.7e+09	2.6e+08	5.8e+09	0.00	5.3e+10
log_tradeUAE	137	18.65	19.37	3.33	0.00	24.69
tradeTotal	137	2.8e+09	3.4e+08	1.1e+10	0.00	1.1e+11
log_tradeTotal	137	19.01	19.63	3.30	0.00	25.43
corruption	137	-0.53	-0.52	0.65	-1.78	1.62
pop	137	4.6e+07	1.0e+07	1.7e+08	10956.00	1.4e+09
log_pop	137	15.75	16.12	2.22	9.30	21.07

Mean in dummy variables is the share of observations with a 1 in that variable.

Declaration

I hereby declare that I wrote this thesis paper independently, without assistance from external parties, and without use of other resources than those indicated. All information taken from other publications or sources in text or in meaning are duly acknowledged in the text. I give my consent to have this thesis checked by plagiarism software.