

Does EU Foreign Aid Cause Growth in the Short-Term? An Extension and Replication of Carnegie and Marinov (2017)

David Alzate *

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Abstract

Foreign aid from the EU and other “Western” sources continues to be a sizable source of resources for low- and middle-income countries. Yet the effects of aid on recipient countries’ institutions and development continues to be a topic of heated debate. Following [Carnegie and Marinov \(2017\)](#), I leverage variation in the rotating presidency of the Council of the European Union to study the causal effects of aid on growth. I find that increased EU aid does not have a statistically significant positive impact on (log) GDP or GDP per capita in the short-term (i.e., a four-year period), and find suggestive evidence of a negative effect. I replicate [Carnegie and Marinov \(2017\)](#)’s findings that EU aid leads to short-lived improvements in measures of human rights and democracy.

1 Introduction

Foreign aid – or Overseas Development Assistance (ODA) – has been a stable source of financing for low- and middle-income countries since aid flows began in the aftermath of World War II ([Ahmad et al., 2020](#)). While low- and middle-income countries have other sources of development financing, ODA continues to be a stable and sizable source of resources ([Ahmad et al., 2020](#)). “Western” aid – or ODA from OECD members, including the EU – is still larger than “non-Western” aid from non-OECD members such as China. International development cooperation funds in China reached

*Yale University. Replication files and code are available in <https://github.com/dalzatepro/aqrd-paper>

USD 4.4 billion in 2019, compared to 152.8 billion by members of the OECD's Development Assistance Committee (Ahmad et al., 2020).

The effects of aid, and particularly "Western" aid, on recipient countries continues to be a topic of heated debate. Some scholars argue that aid has the potential to unlock economic growth and development in recipient countries (e.g., Sachs (2005)). Others argue aid has a pernicious effect as it can breed corruption, create dependencies, impose agendas that do not cause growth in recipient countries, and crowd-out domestic development (Easterly, 2006; Pritchett, 2015). Yet it is hard to determine the causal effects of aid on development. Aid might affect development by changing local institutions and politics, by changing productivity and economic activity, a combination both, or through other effects. Most studies about the effects of aid have relied on cross-country data and associations (Edwards, 2014), which makes it difficult to assess any causal claims and disentangle mechanisms.

One cross-country study that goes beyond associations and aims to make a causal claim is Carnegie and Marinov (2017). These authors study the effects of EU aid on indicators of human rights and democracy in recipient countries. They are able to isolate the causal effects of aid by leveraging as-if-random variation from the rotating presidency of the Council of the European Union. Using an instrumental variables approach, they find EU Council presiding countries allocate significantly more aid to their former colonies. This increased aid, in turn, has positive effects on human rights and democracy, although "the effects are short-lived after the shock to aid dissipates" (Carnegie and Marinov, 2017).

If "Western" aid appears to have positive, albeit temporary, effects on democracy and human rights, does it also affect economic growth? Scholars argue that democracy and development are connected: Acemoglu et al. (2019) find democracy has a positive effect on GDP per capita. Yet the effects of democracy on growth might take time to materialize; short-lived improvements on democracy might not suffice to bring about growth. Aid might also improve economic growth even if it has limited effects on democracy and human rights, for example, by investing in capital that enhances productivity in recipient countries. On the other hand, aid might disincentivize local growth if it leads to the types of dependencies and corruption that aid detractors warn about.

Following Carnegie and Marinov (2017), I leverage variation in the rotating presidency of the Council of the European Union to study the effects of aid on growth. I find that increased EU aid does not have a statistically significant impact on (log) GDP or GDP per capita in the short-term (i.e., a four-year period). If anything, I find suggestive evidence that EU aid leads to a slight decrease in GDP growth in the short term. I also replicate Carnegie and Marinov (2017)'s original findings about aid's impact on democracy and human rights.

This paper is organized as follows. Section 2 describes the details of my data and methods. Section 3 replicates [Carnegie and Marinov \(2017\)](#)’s results and extends them to include (log) GDP and GDP per capita as outcome variables. Section 4 concludes.

2 Data and Methods

To isolate the effects of EU foreign aid on economic growth over the short-term, I [Carnegie and Marinov \(2017\)](#)’s instrumental variables approach. The Presidency of the EU Council rotates every six months among member states, based on alphabetical order. The country presiding the Council has influence over the EU foreign aid budget. For historical and political reasons, the presiding country might decide aid allocations in favor of countries that used to be its former colonies.¹ This as-if-random variation in who allocates EU foreign aid can be used as an instrument to isolate the effects of aid itself. The instrument, in this case, is defined as $Colony_{i(t-2)}$, an indicator variable that equals one when an aid recipient country is a former colony of the country presiding the EU Council in the second half of the year $t - 2$.

The relationship between $Colony_{i(t-2)}$ and foreign aid is defined by the following first-stage equation:

$$\log(ODA)_{i(t-1)} = \gamma_0 + \gamma_1 Colony_{i(t-2)} + u_{it}$$

Where $\log(ODA)$ is the logarithm of the amount of EU aid a country i received in year $t - 1$, and u_{it} is an error term.

We can expand on this first-stage equation by adding country-level and year-level fixed effects. While these are not necessary to isolate the first-stage relationship between $Colony_{i(t-2)}$ and $\log(ODA)_{i(t-1)}$, they can help add precision by reducing sampling variability ([Carnegie and Marinov, 2017](#)). Adding fixed effects controls for the time-invariant characteristics within each foreign aid recipient country (such as geography), as well as the country-invariant characteristics across years (such as global shocks that affected all countries). These effects are shown in the equation below:

$$\log(ODA)_{i(t-1)} = \gamma_0 + \gamma_1 Colony_{i(t-2)} + \sum_{k \in K} \beta_k I(i = k) + \sum_{j \in J} \beta_j I(t = j) + u_{it}$$

$\sum_{k \in K} \beta_k I(i = k)$ stands for country-level fixed effects; $\sum_{j \in J} \beta_j I(t = j)$ stands for year-level fixed effects.

For this instrument to be valid, it must be the case that (i) the rotating presidency of the EU Council must be randomly assigned; (ii) the rotating presidency of the EU

¹For details on how this rotating presidency works, please refer to [Carnegie and Marinov \(2017\)](#)

Council affects the amount of EU foreign aid allocated to recipient countries (i.e., γ_1 must be nonzero); and (iii) the rotating presidency of the EU Council only affects economic growth through its effect on foreign aid. The instrument meets the first assumption due to the alphabetical basis of the rotation ². [Carnegie and Marinov \(2017\)](#) test the first assumption, finding a statistically significant correlation between “holding the Council presidency and increased foreign aid to former colonies”. The third assumption is not directly testable. There is no suggestive evidence to indicate that the EU rotating presidency affects economic growth in recipient channels through other means; however, the inclusion of fixed effects and other covariates below help control for potential confounding effects.

The above first-stage specification generates an estimate for $\log(ODA)_{i(t-1)}$. This estimate allowed [Carnegie and Marinov \(2017\)](#) to measure the causal effect of foreign aid on democracy and human rights in a second-stage specification. They use two different indices – the CIRI Human Rights Dataset index and Polity IV democracy index – as their outcome variables in this second stage. To focus on short-term effects while also considering that the effects of $\log(ODA)_{i(t-1)}$ may not be immediate, they averaged the values of the CIRI and Polity IV indexes over four years (from year t until $t+3$) in their main specification.

I take the same approach and use the first-stage estimates of $\log(ODA)_{i(t-1)}$ to measure the causal effect of foreign aid on economic growth in recipient countries. I replace CIRI and Polity IV in [Carnegie and Marinov \(2017\)](#) with measures of economic growth: the four-year averages of log GDP and log GDP per capita in recipient countries. I use the logarithm of both measures in order to linearize the relationship between GDP and ODA; I look at GDP per capita as well as overall GDP to take into account the population size of each country. In addition, I include country and time fixed effects, as well the same series of covariates that [Carnegie and Marinov \(2017\)](#) add.³ This results in the following second-stage equation:

$$\log(GDP_{it'}) = \beta_0 + \beta_1 \log(ODA)_{i(t-1)} + \beta_x X_{it} + \sum_{k \in K} \beta_k I(i = k) + \sum_{j \in J} \beta_j I(t = j) + u_{it}$$

Where $GDP_{it'}$ is the average of the log of GDP (or GDP per capita) for recipient country i across years t and $t + 3$ and X is a vector of covariates. In this main specification,

²The rotation rules changed after 2006. After then, three countries held the EU Council presidency at a time. Following [Carnegie and Marinov \(2017\)](#), the data in this analysis is limited to 1986-2006

³These covariates are: Avg. Years of Education, Log Exports, FDI, Log Imports, Religiosity, Petroleum Revenues, Democracies in Region, and the CIRI and Polity IV indices. In addition, following [Carnegie and Marinov \(2017\)](#), I add dummies indicating missing values for all covariates. Missing values themselves across these covariates are coded as -99. These dummies ensure that I do not drop missing data across my analysis (which can result in a potentially biased sample if missing observations correlate with the outcomes), while at the same time ensuring that observations with missing data are flagged in the regression itself.

β_1 captures the causal effect of increasing foreign aid on a country's economic growth. In other words, it captures the effect of a one unit increase in (instrumented) log EU foreign aid flows in year $t-1$ on a country's averaged log GDP values in subsequent years.

In addition to this main two-stage-least-squares specification, I also replicate and extend [Carnegie and Marinov \(2017\)](#)'s year-by-year analysis of the effects of foreign aid. Rather than look at the effects of foreign aid on the four-year average of GDP, I look at whether (instrumented) foreign aid given to a country at $t - 1$ affects log GDP (per capita) in years $t = 0$ through $t = 5$ individually. For this complementary analysis, I include country and year fixed effects but exclude covariates. This year-by-year analysis allows me to determine whether, as in [Carnegie and Marinov \(2017\)](#)'s analysis of human rights and democracy outcomes, effects dissipate over time.

Across all analyses, the data used is taken from [Carnegie and Marinov \(2017\)](#). Observations are at the recipient country-year level. Table 1 below shows summary statistics for all variables used in the above specifications. While some variables – in particular, Religiosity – have several missed observations, the use of missing value dummy indicators ensures that missing observations are not dropped in the analysis, as described in footnote 3.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation	No. of Observations
Human Empowerment Index, 4 yr avg	7.78	3.76	1,792.00
Polity IV combined score, 4 yr avg	0.85	6.39	1,818.00
ODA net, millions of 1995 constant US dollars	2.40	1.45	2,728.00
Colony indicator variable (IV)	0.10	0.30	2,505.00
Avg Educational Attainment (Years)	5.52	2.33	2,357.00
Exports (log, lagged)	3.38	0.74	2,279.00
FDI	3.70	6.58	2,229.00
Imports (log, lagged)	3.64	0.63	2,279.00
Religiosity	2.00	1.02	67.00
Petroleum Imports (% GDP)	5.48	13.36	2,448.00
No. of democracies in region	0.36	0.29	2,480.00
GDP per capita (log)	7.12	1.34	2,418.00
GDP (log)	22.34	2.03	2,418.00

3 Results

I replicate and extend [Carnegie and Marinov \(2017\)](#)'s results below. First, Table 2 shows the results of the second-stage TSLS specifications with outcome variables for democracy, human rights, and economic growth (equations number three and four above). As in [Carnegie and Marinov \(2017\)](#), (instrumented) foreign aid has a statistically significant and positive impact on measures of human rights and democracy, including after adjusting for covariates and controlling for country and time fixed effects. In column 1, for instance, a one unit increase in our first-stage estimate for log ODA in $t - 1$ leads to a 1.885 increase in the average of the CIRI human rights index averaged across t and $t + 3$, holding time and country invariant characteristics fixed.

In contrast, however, foreign aid has a muted impact on log GDP and log GDP per capita. Column 5 shows a one unit increase in our first-stage estimate for log ODA in $t - 1$ leads to a statistically insignificant -1.69 decrease in log GDP averaged across t and $t + 3$. Controlling for other covariates on top of country and time fixed effects changes this negative impact to -2.96 (column 6), but it is still not statistically significant. I find a similar story for log GDP per capita as the outcome variable. In Column 7, we see foreign aid decreases log GDP per capita by -1.8 units. This estimate is statistically significant at a $p < 0.10$ level. Although only just significant, the effect is sizable: a 1.8 unit decrease in log GDP per capita is slightly above a one standard-deviation decrease. This result, together with the size and direction of coefficients across columns 5-8, provides suggestive evidence that foreign aid may have a negative effect on some measures of growth.

Table 2: TSLS Estimates of Effects of EU Foreign Aid (given in year $t-1$) from the European Community on Dependent Variables (average measure in years t through $t-3$)

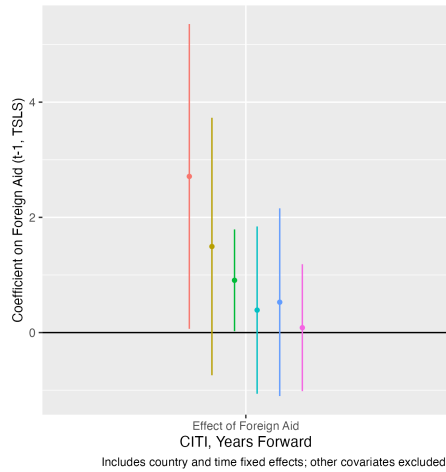
	(1) CIRI Index	(2) CIRI Index	(3) Polity IV	(4) Polity IV	(5) GDP (log)	(6) GDP (log)	(7) GDP per capita (log)	(8) GDP per capita (log)
Effect of Aid	1.885+	1.705*	2.031**	1.337*	-1.694	-2.961	-1.807+	-2.529
	(0.946)	(0.814)	(0.708)	(0.502)	(1.383)	(1.785)	(1.023)	(1.591)
Num.Obs.	1792	1792	1818	1818	2297	2297	2297	2297
Covariates	No	Yes	No	Yes	No	Yes	No	Yes
Country and Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$								
Extension of Carnegie and Marinov, 2017. Each dependent variable is averaged over years t through $t+3$. Following covariates not shown in even columns: Avg. Years of Education, Log Exports, FDI, Log Imports, Religiosity, Petroleum Revenues, Democracies in Region, Log GDP and GDP Per capita (only for columns 1-4), CIRI and Polity IV indices (only for columns 5-8). Dummies indicating missing values also not shown. Fixed effects held by country and year with robust standard errors.								

To determine whether the effects of aid on democracy, human rights, and growth are short-lived, I replicate and extend [Carnegie and Marinov \(2017\)](#)'s year-by-year analysis in Figures 1 and 2 below. As in [Carnegie and Marinov \(2017\)](#), Figure 1 shows that a one unit increase in our first-stage estimate for log ODA in $t - 1$ leads to positive and statistically significant increases in CITI (human rights) at $t = 0$. These effects wear off after $t = 0$ and are no longer statistically significant by $t + 5$. Looking at Polity IV (democracy), an increase in ODA first leads to statistically insignificant improvements in $t = 0$ and $t + 1$, then leads to statistically significant improvements in $t + 2$ through $t + 4$, before waning off and becoming statistically insignificant again by $t + 5$.

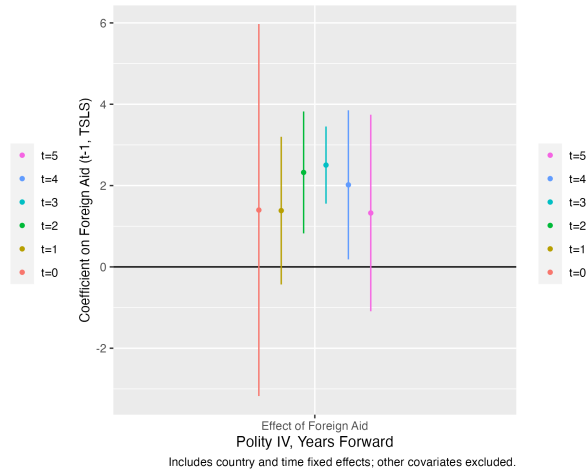
In contrast to the generally positive (albeit often not statistically significant) results above, Figure 2 shows foreign aid given at $t - 1$ has consistently negative results on subsequent-year log GDP and log GDP per capita measures. The effects of aid on growth are only statistically significant (and barely so) for log GDP, and only in some years ($t = 0$, $t + 1$, and $t + 3$). They are not statistically significant when log GDP per capita is the outcome variable.

4 Conclusion

As [Carnegie and Marinov \(2017\)](#) show, EU foreign aid has positive, yet short-term, effects on recipient countries' measures of democracy and human rights. In contrast,

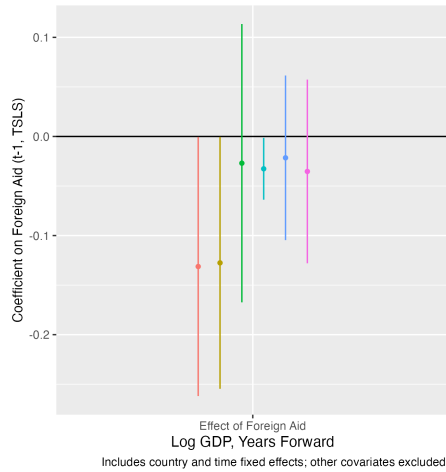


(a) CIRI Human Empowerment Index

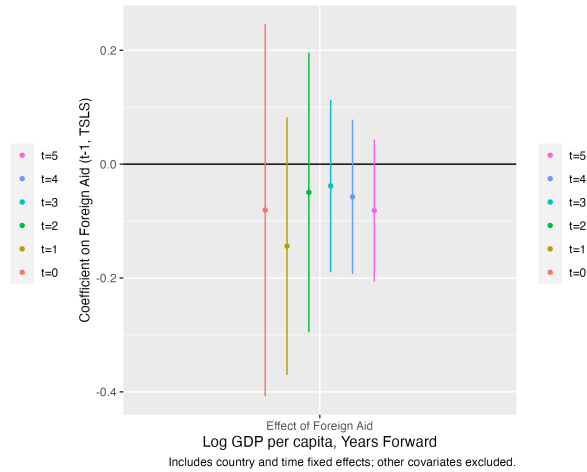


(b) Polity IV Score

Figure 1: Replication of Carnegie and Marinov (2017): Effects of Foreign Aid (TSLS, given at $t-1$) on human rights and democracy measures in later years



(a) Log GDP



(b) Log GDP per capita

Figure 2: Extension of Carnegie and Marinov (2017): Effects of Foreign Aid (TSLS, given at $t-1$) on economic growth in later years

this aid does not seem to improve recipient countries' GDP in the short-term. Indeed, there is suggestive evidence of a negative effect of aid on short-term growth. Leveraging as-if-random variation from the presidency of the EU Council allowed **Carnegie and Marinov (2017)** and I to isolate the causal impact of aid on these outcomes through an instrumental variables approach.

Other cross-country studies looking at the effect of foreign aid on economic growth have painted a more positive picture. **Arndt et al. (2015)** summarize the findings from multiple studies, pointing out that they generally find a positive association between aid and growth. However, they also note that these effects appear to take place over a longer time horizon. This suggests that the results above need not be at odds with these other studies, as my analysis only considers a 5-year time horizon. Future extensions could replicate these findings over a longer time period, and consider alternative measures of economic growth beyond GDP and GDP per capita.

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